Installation and service instructions

for contractors

Vitovalor 300-P
Type C3TB, 1 to 20 kW
Micro CHP unit based on a fuel cell with integral gas condensing boiler
Natural gas version

For applicability, see the last page

VITOVALOR 300-P

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Please keep safe.

Safety instructions

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

Safety instructions explained

Danger
This symbol warns against the risk of injury.

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

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

Target group

These instructions are exclusively intended for qualified contractors.
- Work on gas installations must only be carried out by a registered gas fitter.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations to be observed

- National installation regulations
- Statutory regulations for the prevention of accidents
- Statutory regulations for environmental protection
- Codes of practice of the relevant trade associations
- All current safety regulations as defined by DIN, EN, DVGW, TRGI, TRF, VDE and all locally applicable standards
  - (A) ÖNORM, EN, ÖVGW-TR Gas, ÖVGW-TRF and ÖVE
  - (CH) SEV, SUVA, SVGW, SVTI, SWKI, VKF and EKAS guideline 1942: LPG, part 2

Safety instructions for working on the system

Working on the system

- Where gas is used as the fuel, close the main gas shut-off valve and safeguard it against unintentional reopening.
- Isolate the system from the power supply, e.g. by removing the separate fuse or by means of a mains isolator, and check that it is no longer 'live'.
- Safeguard the system against reconnection.

Danger
Hot surfaces can cause burns.
- Before maintenance and service work, switch OFF the appliance and let it cool down.
- Never touch hot surfaces on the boiler, burner, flue system or pipework.

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

Repair work

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

Auxiliary components, spare and wearing parts

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

Safety instructions for operating the system

If you smell gas

Danger
Escaping gas can lead to explosions which may result in serious injury.
- Do not smoke. Prevent naked flames and sparks. Never switch lights or electrical appliances on or off.
- Close the gas shut-off valve.
- Open windows and doors.
- Evacuate any people from the danger zone.
- Notify your gas or electricity supply utility from outside the building.
- Have the power supply to the building shut off from a safe place (outside the building).

If you smell flue gas

Danger
Flue gas can lead to life threatening poisoning.
- Shut down the heating system.
- Ventilate the installation site.
- Close doors to living spaces to prevent flue gases from spreading.

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Safety instructions (cont.)

What to do if water escapes from the appliance

⚠ **Danger**
When water escapes from the appliance there is a risk of electrocution.
Switch off the heating system at the external isolator (e.g. fuse box, domestic power distribution).

Flue systems and combustion air

Ensure that flue systems are clear and cannot be sealed, for instance due to accumulation of condensate or other causes. Ensure an adequate supply of combustion air.
Instruct system users that subsequent modifications to the building characteristics are not permissible (e.g. cable/pipework routing, cladding or partitions).

⚠ **Danger**
Leaking or blocked flue systems, or an inadequate supply of combustion air can cause life threatening poisoning from carbon monoxide in the flue gas.
Ensure the flue system is in good working order. Vents for supplying combustion air must be non-closable.

Extractors

Operating appliances that extract air to the outside (cooker hoods, extractors, air conditioning units, etc.) can create negative pressure. If the boiler is operated at the same time, this can lead to reverse flow of the flue gas.

⚠ **Danger**
The simultaneous operation of the boiler and appliances that extract air to the outside can result in life threatening poisoning due to reverse flow of the flue gas.
Fit an interlock circuit or take suitable steps to ensure an adequate supply of combustion air.

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Disposal of packaging

Please dispose of packaging waste in line with statutory regulations.

DE: Use the disposal system organised by Viessmann.
AT: Use the ARA statutory disposal system (Altstoff Recycling Austria AG, licence number 5766).
CH: Packaging waste is disposed of by the HVAC contractor.

Symbols

Symbol	Meaning
	Reference to other document containing further information
	Step in a diagram: The numbers correspond to the order in which the steps are carried out.
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	▪ 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

Intended use

The appliance is only intended to be installed and operated in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions. It is only designed for the heating of water that is of potable water quality and for power generation.

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

Intended use (cont.)

Commercial or industrial usage for a purpose other than heating the building or DHW shall be deemed inappropriate.

Any usage beyond this must be approved by the manufacturer in each individual case.

Incorrect usage or operation of the appliance (e.g. the appliance being opened by the system user) is prohibited and results in an exclusion of liability. Incorrect usage also occurs if the components in the heating system are modified from their intended use (e.g. if the flue gas and ventilation air paths are sealed).

Product information

Vitovalor 300-P, type C3TB

Preset for operation with natural gas E, adjustable to natural gas LL

The Vitovalor 300-P may in principle be supplied only to the countries indicated on the type plate. For deliveries to other countries, approved contractors must arrange individual approval on their own initiative and in accordance with the law of the country in question.

Note on positioning

When the Vitovalor 300-P is installed close to the coast, it should be positioned such that the flue gas and ventilation air apertures do not come into direct contact with saline air, in order to prevent damage due to corrosion.
Minimum temperature inside the installation room +3 °C

Vitovalor 300-P in systems with photovoltaic and solar thermal equipment

Operating the Vitovalor 300-P in conjunction with a photovoltaic or solar thermal system is not recommended. An integral PV system would falsify the statistical data of the energy manager as it is not designed for such a combination. Vitovalor 300-P runtimes could be reduced and economically efficient operation would no longer be guaranteed. The same applies if the Vitovalor 300-P is operated in conjunction with a solar thermal system or any additional heat generator. The integral heating water buffer cylinder would be heated additionally which would, in turn, reduce the Vitovalor 300-P runtime. If the Vitovalor 300-P is nevertheless operated in conjunction with a photovoltaic or solar thermal system, a higher ranking energy manager must be provided on site.

Handling

If possible, leave the fuel cell module and the gas condensing module on their pallet during handling.

Fuel cell module

- When transporting the fuel cell module, keep it upright at all times on the pallet or its base.
- On delivery, check the tilt indicators on the packaging: If the tilt angle on delivery is ≥ 60°, reject the delivery but notify Viessmann.
- If possible, only remove the fuel cell module from its pallet once it is at its final installation site. Undo the screws and remove the transport locking plates.

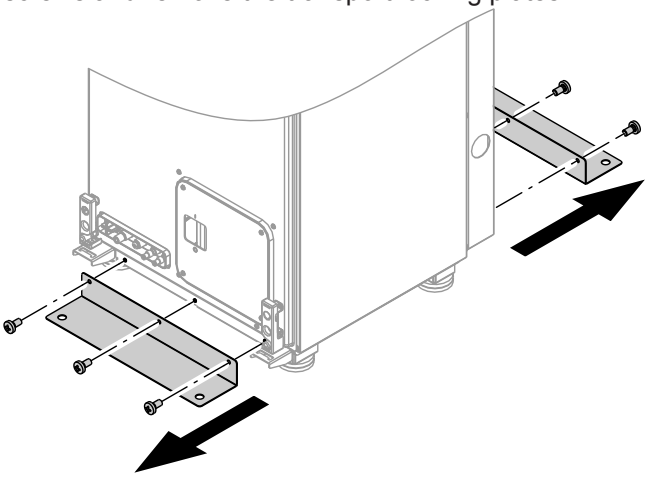

Fig. 1

- Never subject the fuel cell module to strong vibrations or shaking.
- For easier handling, the fuel cell module may be tilted up to 90°. See following diagram. Store the fuel cell module upright.

! **Please note**
To prevent damage to the appliance, when transporting up or down stairs, always keep the underside of the appliance lower than the top.

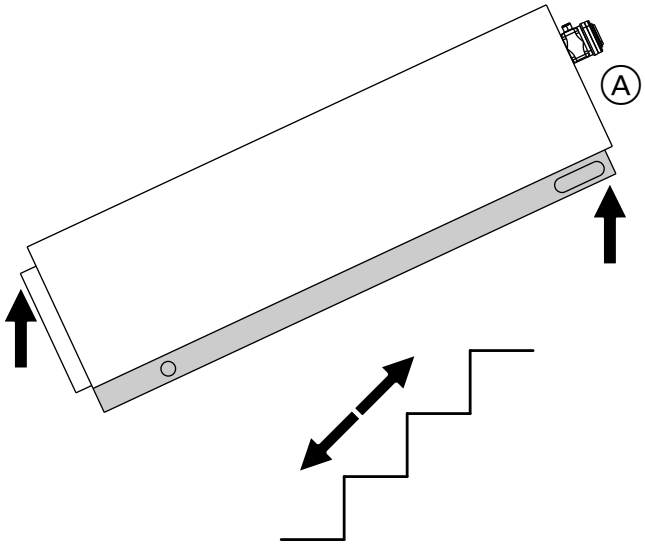

Fig. 2

Ⓐ Appliance top

Gas condensing module

! **Please note**
Prevent damage to the appliance during handling.
Never lay the gas condensing module on its front or side, or subject it to pressure.

If space constraints make it necessary, the gas condensing module can be split for handling.
See page 45 for an illustration of the necessary measures.

Siting

Room height required: min. 2250 mm

The Vitovalor 300-P must be installed with the gas condensing module downstream of the fuel cell module in the flue gas flow direction.

Siting (cont.)

Dimensions of siting options

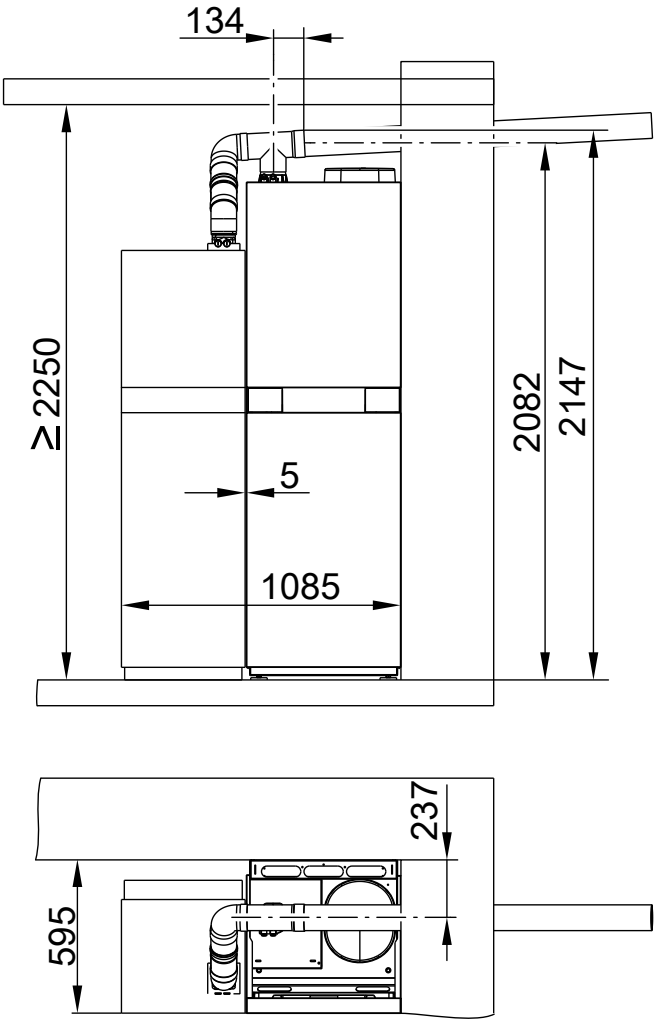

Fig. 3 Fuel cell module to the left of the gas condensing module

Siting (cont.)

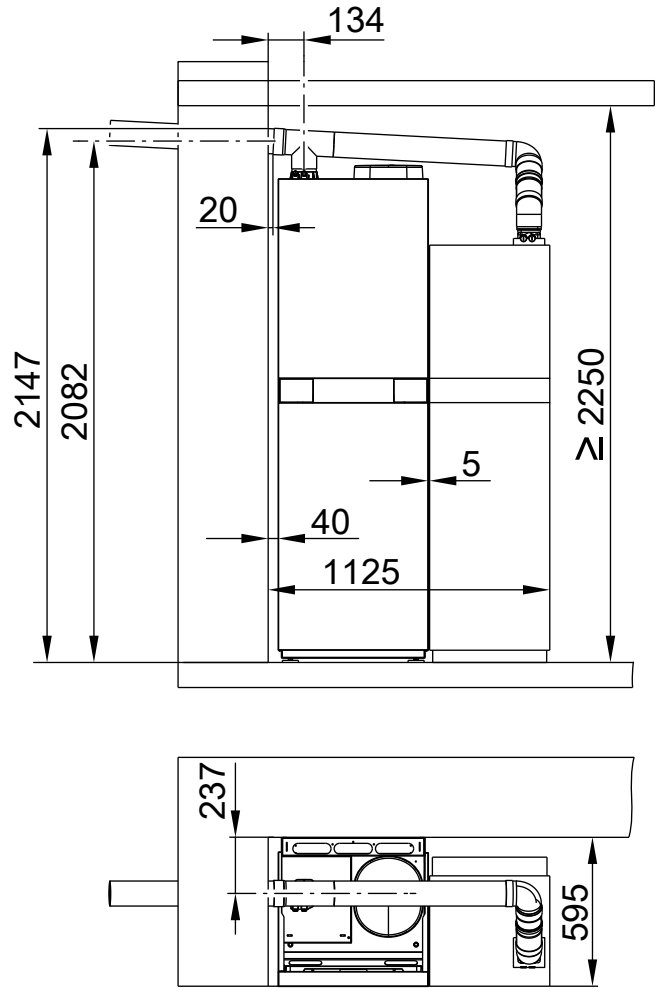

Fig. 4 Fuel cell module to the right of the gas condensing module

Preparing for installation

Use a connection set – available as an accessory – to make the connections on the gas and water sides.

Fitting accessories
Before final siting, attach all of the accessories that are to be mounted from the back of the boiler (e.g. connection sets).

! **Please note**
Avoid damaging the appliance.
Connect all pipework free of load and torque stress.

Preparing connections on site:

Connection set installation instructions

Preparing for installation (cont.)

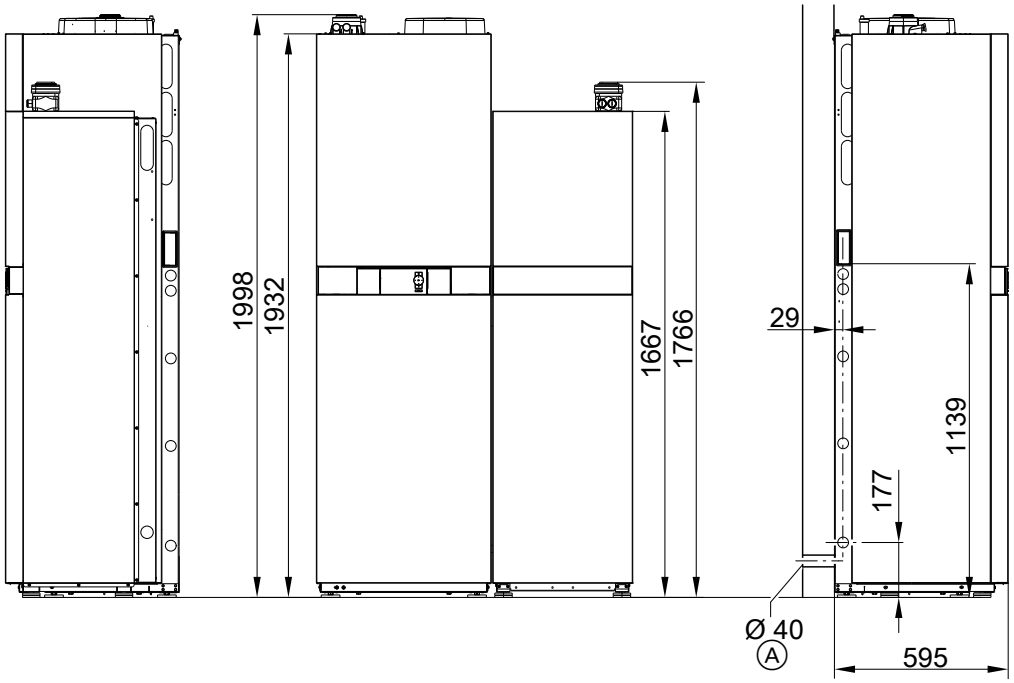

Fig. 5

Ⓐ Condensate drain in the wall
Observe the necessary fall.

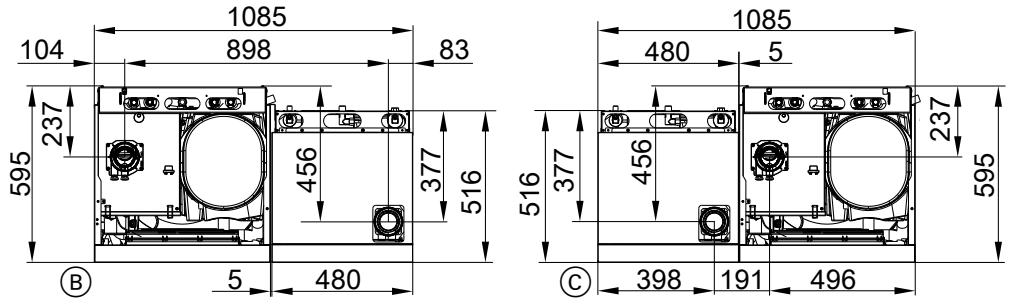

Fig. 6

Ⓑ Fuel cell module to the right of the gas condensing module
Ⓒ Fuel cell module to the left of the gas condensing module

Note
All height dimensions have a tolerance of +15 mm on account of the adjustable feet.

Preparing for installation (cont.)

Connecting gas and water using connection sets (accessories)

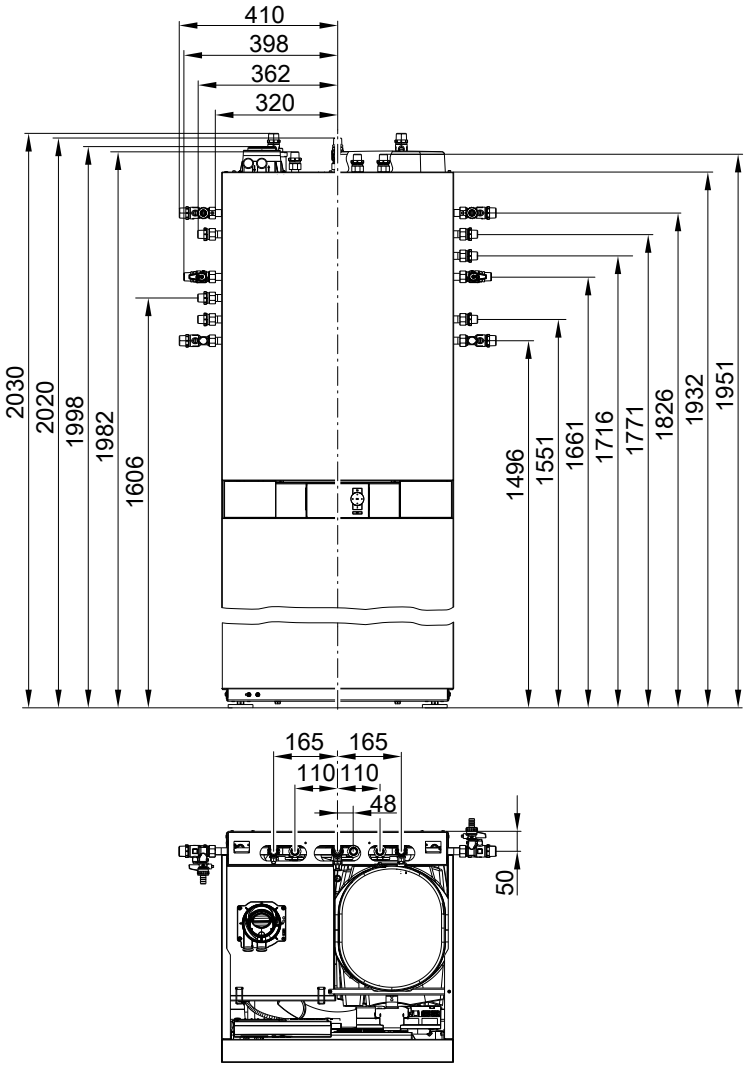

Fig. 7 All possible connection sets are shown (connection to the right, left or top).

1. Prepare the connections on the heating water side. See page 26.
Thoroughly flush the heating system.

Note
Fit the on-site expansion vessel to the heating return.

2. Prepare the connections on the DHW side. Install the safety assembly (accessory or on-site provision) in the cold water line to DIN 1988 and EN 806 (see page 26).
Recommendation:
Install the safety valve above the DHW cylinder. This protects the valve against soiling, scaling and high temperatures.

3. Prepare the connection from the fuel cell module and from the gas condensing module to on-site drain or trap:
See diagram on page 12.

4. Prepare gas connection to TRGI [or local regulations].

5. Prepare electrical connections: see following chapter.

! **Please note**
Switching off by means of an emergency stop switch for the heating system can damage the appliance.
Remove any emergency stop switches from the existing heating system.

Accessory cables: NYM with the required number of cores for external connections.

Notes on connecting to the mains supply

Vitovalor 300-P in mains parallel mode

During operation of the Vitovalor 300-P, any generated power is fed into the building distribution system and/or exported to the grid. This operating mode is described as mains parallel mode. For this, the Vitovalor 300-P is mechanically coupled to the grid.

Separate guidelines and regulations apply to this mode of operation which must be taken into account when making the electrical connection to the mains:
- Current technical connection conditions for connections to the LV grid. These connection conditions must be obtained from the relevant power supply utility.
- The applicable DIN VDE guidelines, specifically DIN VDE 0100, Part 701, DIN VDE 0100-551, DIN VDE 0126-1-1 and DIN VDE AR-N 4105
- Connect the power supply (230 V/50 Hz) via a permanent connection.
- Regulations on safety at work and those of appropriate trade associations
- LV connection ordinances as well as supplementary conditions of the relevant grid operator
- Any applicable statutory or local regulations

Notify the local grid operator before commissioning the Vitovalor 300-P. We recommend you contact the local grid operator prior to installation and clarify any technical points as well as the acceptance procedure. Hand the relevant application forms as per VDE AR-N 4105 [or local regulations] to the relevant grid operator. Application forms [for German grid operators] are available at **www.viessmann.de**.

Note
Different documentation may be required by grid operators in other regions.

Metering generated power

A net AC meter (Z2) is integrated into the Vitovalor 300-P. This meter captures total electrical power generated, minus that consumed by the Vitovalor 300-P itself. The meter is MID-calibrated and is approved for billing according to DIN VDE AR-N 4105:2011-08 and the German Combined Heat and Power Generation Act (KWKG).
The calibration of the integral meter is valid for 8 years. After expiry of this time, the meter must be recalibrated or be replaced by a qualified contractor. The power supply utility must also be notified of any new meter. Any existing main electricity meter installed in the LV distribution board (meter cupboard) must be replaced with a balancing bi-directional meter if excess power is exported to the grid [check local regulations]. The change of meter with all necessary formalities must be undertaken by an authorised electrician in agreement with the grid operator.

Notes on connecting to the mains supply (cont.)

Arrangement of excess export system when connected into a sub-distribution board

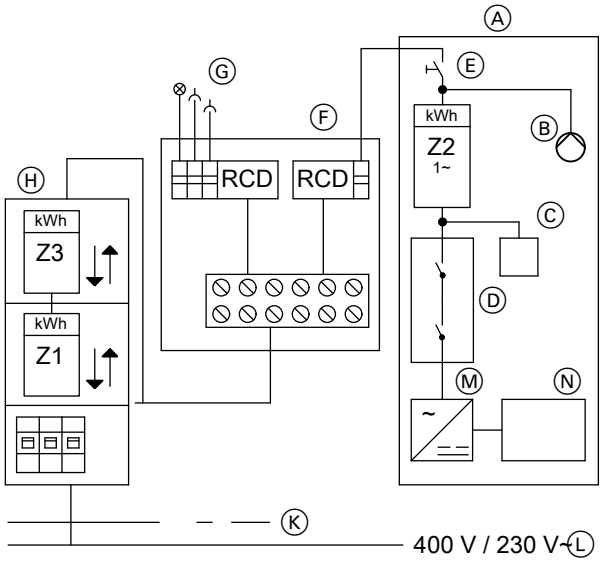

Fig. 8

Arrangement of excess export when connected into a main LV distribution board

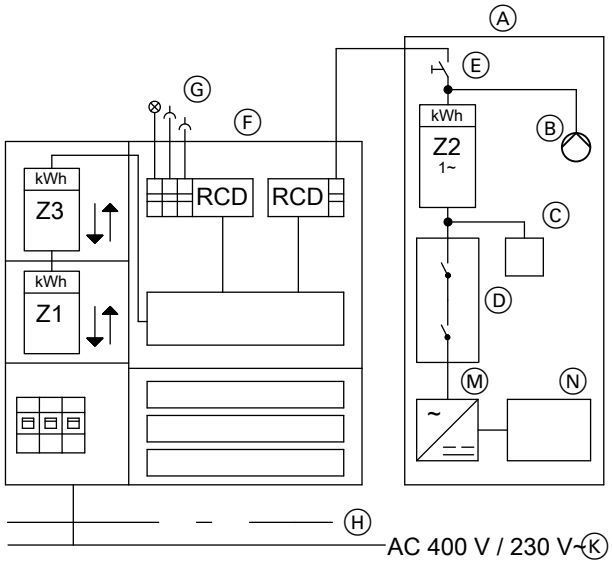

Fig. 9

Ⓐ Vitovalor 300-P
Ⓑ Internal circulation pump
Ⓒ Internal consumers
Ⓓ GS protection
Ⓔ ON/OFF switch
Ⓕ Sub-distribution board
Ⓖ On-site consumers
Ⓗ Meter cupboard
Ⓚ Property boundary
Ⓛ Low voltage grid
Ⓜ Inverter (DC/AC converter) S_{EMAX} = 1.5 kVA
Ⓝ Fuel cell stack
Z1 Balancing bi-directional meter
Z2 Net electricity meter (standard delivery Vitovalor 300-P)
Z3 Bi-directional energy management (not relevant for billing by the grid operator)

Ⓐ Vitovalor 300-P
Ⓑ Internal circulation pump
Ⓒ Internal consumers
Ⓓ GS protection
Ⓔ ON/OFF switch
Ⓕ Meter cupboard
Ⓖ On-site consumers
Ⓗ Property boundary
Ⓚ Low voltage grid
Ⓜ Inverter (DC/AC converter) S_{EMAX} = 1.5 kVA
Ⓝ Fuel cell stack
Z1 Balancing bi-directional meter
Z2 Net electricity meter (standard delivery Vitovalor 300-P)
Z3 Bi-directional energy management (not relevant for billing by the grid operator)

Notes on connecting to the mains supply (cont.)

Property boundaries and transfer point without power storage system

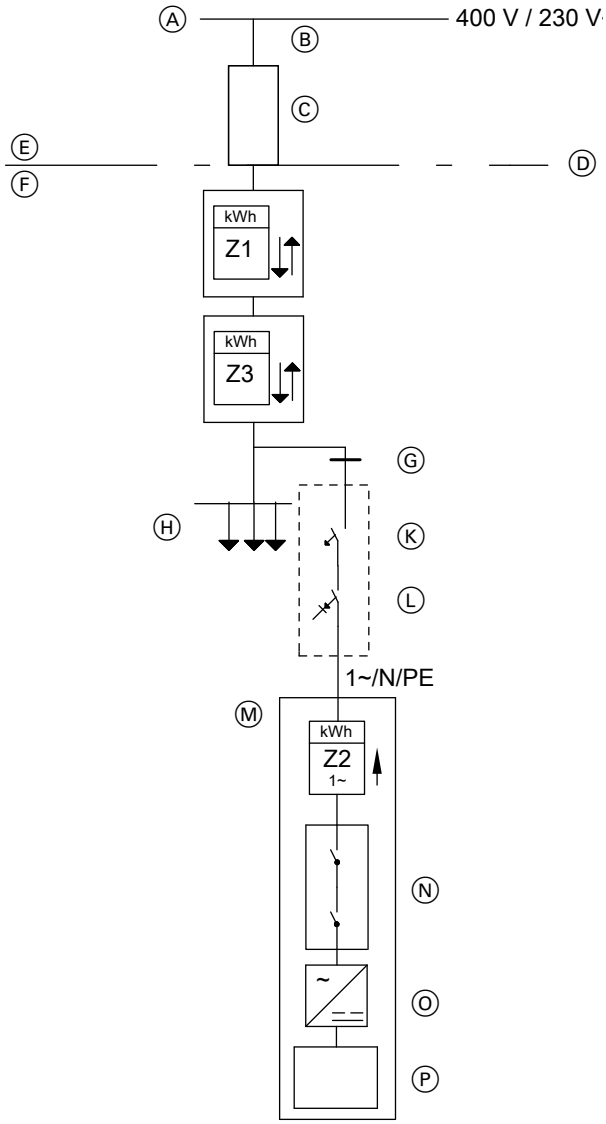

Fig. 10 Source: VDE AR-N 4105

Ⓐ Low voltage grid
Ⓑ Main power supply
Ⓒ Domestic distribution box
Ⓓ Property boundary
Ⓔ Grid operator
Ⓕ Customer
Ⓖ Power distribution
Ⓗ On-site consumers
Ⓚ Short circuit protection
Ⓛ Overload protection, RCD
Ⓜ Vitovalor 300-P
Ⓝ GS protection
Ⓞ Inverter (DC/AC converter) S_{EMAX} = 1.5 kVA
Ⓟ Fuel cell
Z1 Balancing bi-directional meter (observe meter circuit)
Z2 Net electricity meter (standard delivery Vitovalor 300-P)
Z3 Bi-directional energy management (not relevant for billing by the grid operator)

Notes on connecting to the mains supply (cont.)

Property boundaries and transfer point with power storage system

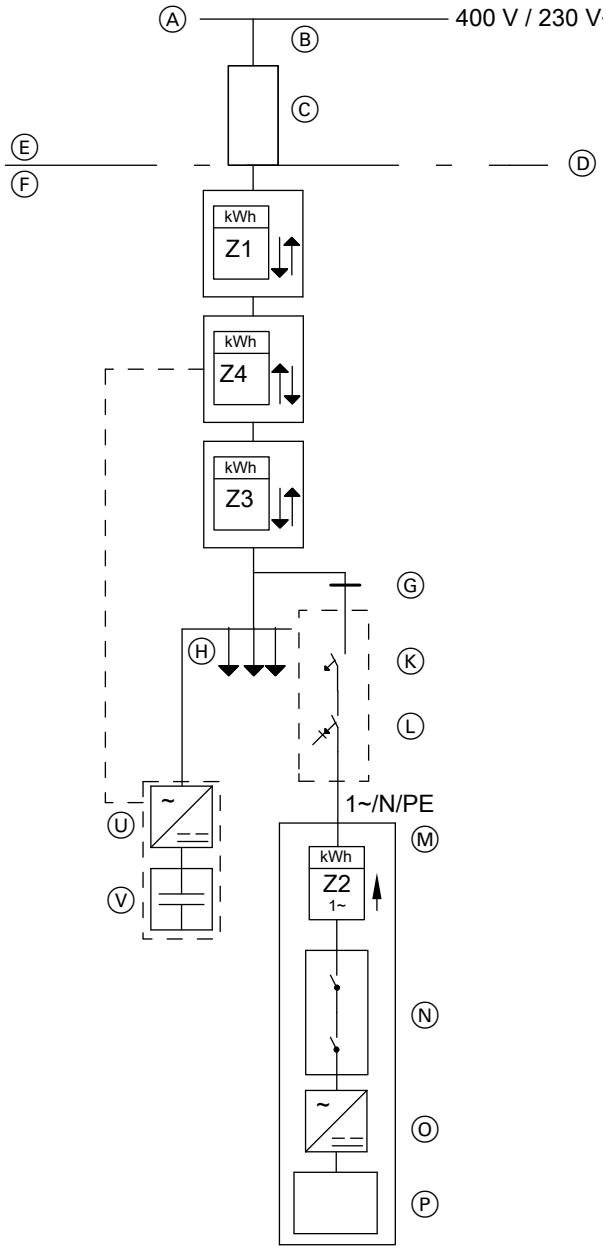

Fig. 11 Source: VDE AR-N 4105

Ⓐ Low voltage grid
Ⓑ Main power supply
Ⓒ Domestic distribution box
Ⓓ Property boundary
Ⓔ Grid operator
Ⓕ Customer
Ⓖ Power distribution
Ⓗ On-site consumers
Ⓚ Short circuit protection
Ⓛ Overload protection, RCD
Ⓜ Vitovalor 300-P
Ⓝ GS protection
Ⓞ Inverter (DC/AC converter) S_{EMAX} = 1.5 kVA
Ⓟ Fuel cell
Ⓤ Power storage system inverter
Ⓥ Power storage unit
Z1 Balancing bi-directional meter (observe meter circuit)
Z2 Net electricity meter (standard delivery Vitovalor 300-P)
Z3 Bi-directional energy management (not relevant for billing by the grid operator)
Z4 Power storage management bi-directional meter (power storage system standard delivery)

Notes on connecting to the mains supply (cont.)

Connection for excess export without power storage system

On-site energy consumption to paragraphs 33 and 4(3)
KWK [Germany]

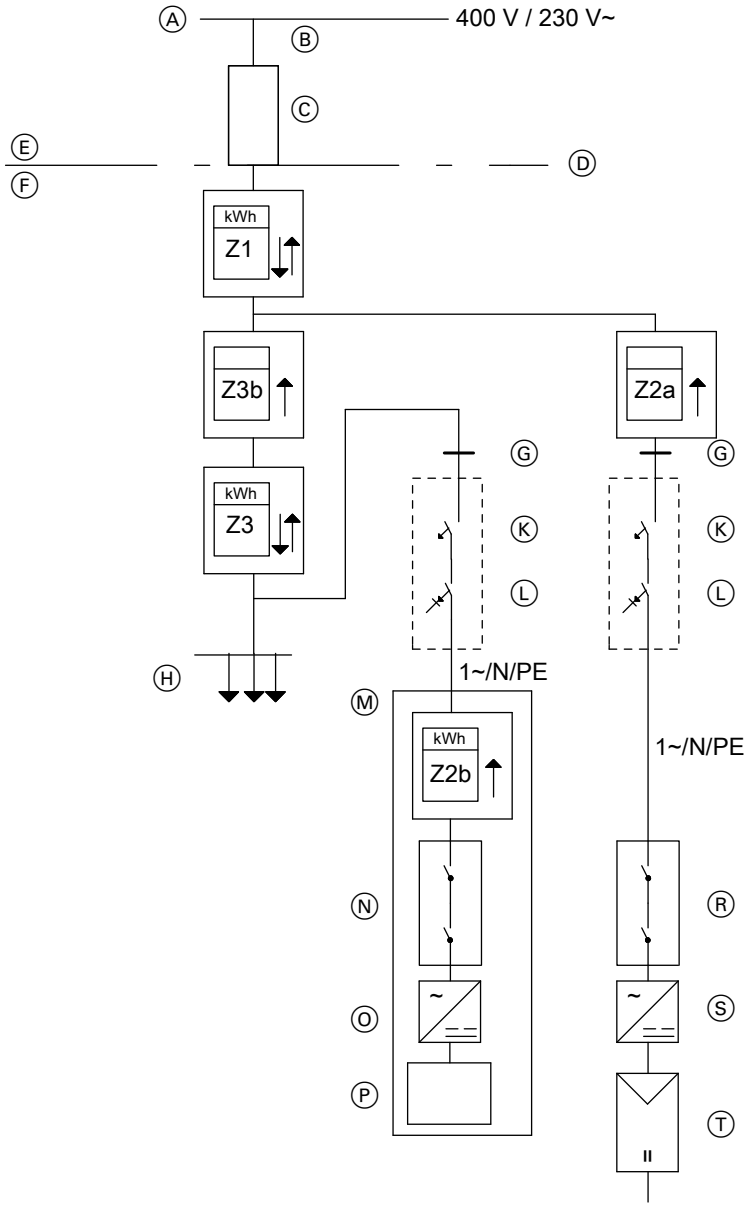

Fig. 12

Ⓐ Low voltage grid
Ⓑ Main power supply
Ⓒ Domestic distribution box
Ⓓ Property boundary
Ⓔ Grid operator
Ⓕ Customer
Ⓖ Power distribution
Ⓗ On-site consumers
Ⓚ Short circuit protection
Ⓛ Overload protection, RCD
Ⓜ Vitovalor 300-P
Ⓝ GS protection
Ⓞ Inverter (DC/AC converter) S_{EMAX} = 1.5 kVA
Ⓟ Fuel cell
Ⓡ GS protection for PV system
Ⓢ PV inverter
Ⓣ Photovoltaic system
Z1 Balancing bi-directional meter (observe meter circuit)
Electricity meter for power export and drawing
Z2a Export/generation meter, PV system power generation
Z2b Export/generation meter for power generation by Vitovalor 300-P (standard delivery with Vitovalor 300-P)
Z3 Bi-directional energy management meter (optional, not relevant to billing by the grid operator)
Z3b Export/generation meter for Vitovalor 300-P alone

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Notes on connecting to the mains supply (cont.)

Connection for excess export with power storage system

On-site energy consumption to paragraphs 33 and 4(3)
KWK [Germany]

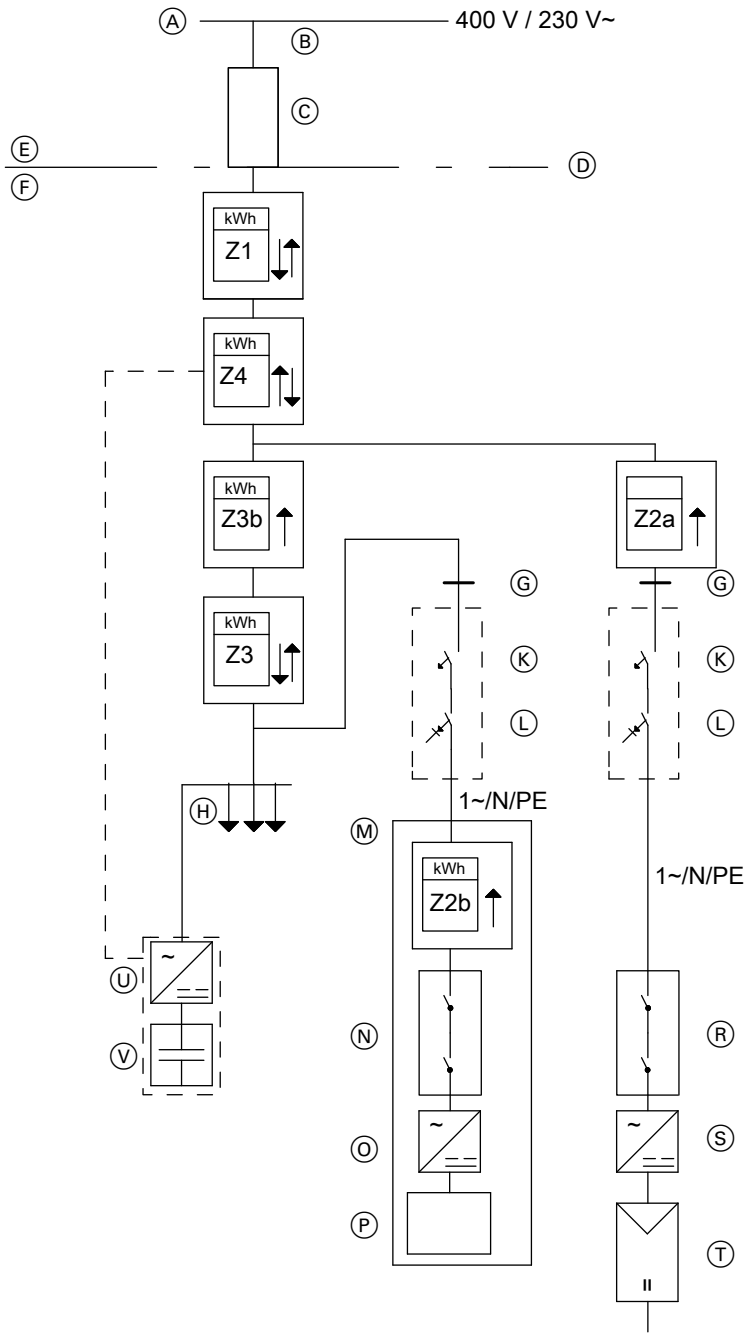


Fig. 13

Ⓐ Low voltage grid
Ⓑ Main power supply
Ⓒ Domestic distribution box
Ⓓ Property boundary
Ⓔ Grid operator
Ⓕ Customer
Ⓖ Power distribution
Ⓗ On-site consumers
Ⓚ Short circuit protection
Ⓛ Overload protection, RCD
Ⓜ Vitovalor 300-P
Ⓝ GS protection
Ⓞ Inverter (DC/AC converter) S_{EMAX} = 1.5 kVA
Ⓟ Fuel cell
Ⓡ GS protection for PV system
Ⓢ PV inverter
Ⓣ Photovoltaic system
Ⓤ Power storage system inverter
Ⓥ Power storage unit
Z1 Balancing bi-directional meter (observe meter circuit)
Electricity meter for power export and drawing

▶▶

Notes on connecting to the mains supply (cont.)

Z2a Export/generation meter, PV system power generation
Z2b Export/generation meter for power generation by Vitovalor 300-P (standard delivery with Vitovalor 300-P)
Z3 Bi-directional energy management meter (optional, not relevant to billing by the grid operator)
Z3b Export/generation meter for Vitovalor 300-P alone
Z4 Power storage management bi-directional meter (power storage system standard delivery)

Cable sizing

Inadequate cross-sections result in yield losses when generating power. Consequently, select larger cross-sections for the Vitovalor 300-P power cable than is technically required. Cross-sections recommended in line with economic considerations:

Cable lengths in m	Recommended cable
≤ 35	NYM 3 x 2.5 mm^2
> 35 ≤ 55	NYM 3 x 4 mm^2
> 55 ≤ 80	NYM 3 x 6 mm^2

Fuse protection

The Vitovalor 300-P has been factory-tested as a unit that is ready for connection. Only an adequately sized power cable needs to be connected on site. This cable should be routed either to the main LV distribution board (mains distribution or meter cupboard) or to the nearest suitable sub-distribution board. The Vitovalor 300-P is protected by a mains isolator. Depending on the nature of the domestic grid, or as required by DIN VDE 0100-410, a residual current device (RCD) may also be required.

! **Please note**
Switching off by means of an emergency stop switch for the heating system can damage the appliance.
Remove any emergency stop switches from the existing heating system.

Mains isolator:
- B response characteristics
- 1-pole
- Response current 10 A
- Design breaking capacity to EN 60898: 10 kA
- Design voltage 230 V/400 V~

RCD:
- RCD 25 A
- 2-pole
- Response current 10 A
- For AC and pulsating DC fault currents
- Design residual current 30 mA
- Design voltage 230/400 V~
- Surge current resistance 1 kA

Never install the Vitovalor 300-P downstream of existing fuses/MCBs. In the case of a consumer short circuit there is a risk that high currents may flow which are impermissible and load the cables to excess. During installation, the electrician must also test the selectivity of the residual current device (RCD) and the protective equipment (overload/short circuit protection)

Notes on connecting to the mains supply (cont.)

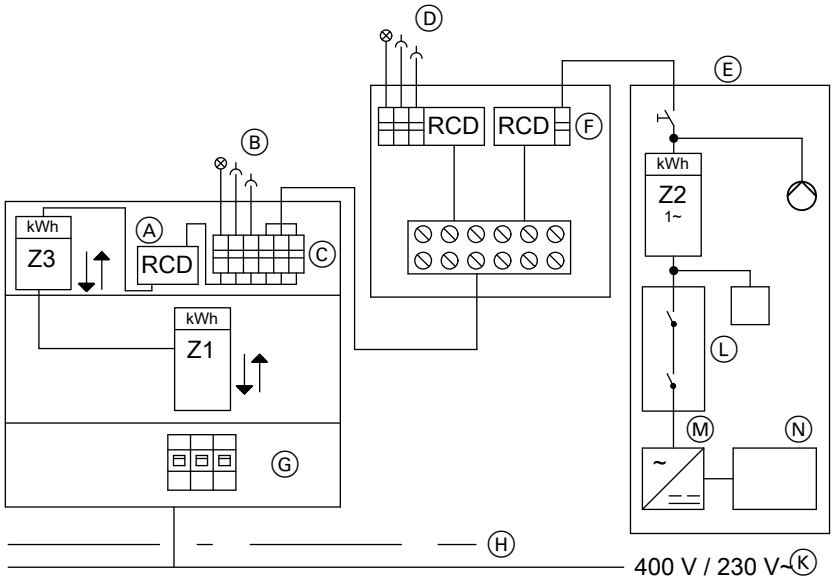


Fig. 14 Example: Selective sizing of the protective devices

Ⓐ RCD (on-site) e.g. 40 A/0.5 A, 4-pole
Ⓑ On-site consumers
Ⓒ Fuse/MCB to the sub-distribution board, e.g. 3 x 35 A
Ⓓ On-site consumers
Ⓔ Vitovalor 300-P
Ⓕ RCD Vitovalor 300-P 25 A/30 mA, single pole (if required)
Ⓖ Selective mains circuit breaker 3 x 63 A
Ⓗ Property boundary
Ⓚ Low voltage grid
Ⓛ GS protection
Ⓜ Inverter (DC/AC converter) S_{EMAX} = 1.5 kVA
Ⓝ Fuel cell stack
Z1 Balancing bi-directional meter (observe meter circuit)
Z2 Net electricity meter (standard delivery Vitovalor 300-P)
Z3 Bi-directional energy management (not relevant for billing by the grid operator)

Ensure adequate selectivity if any new RCD is installed downstream of any existing circuit breaker. In order to ensure complete selectivity of two residual current devices connected in series, the fault current of upstream RCD Ⓐ must be at least 3 times as high as that of RCD Ⓕ used to protect the Vitovalor 300-P. Adjust the activation times of both RCDs connected in series such that the disconnection time of RCD Ⓕ is less than the shortest disconnection time for RCD Ⓐ. Both conditions ensure that RCD Ⓕ of the Vitovalor 300-P responds earlier than upstream RCD Ⓐ

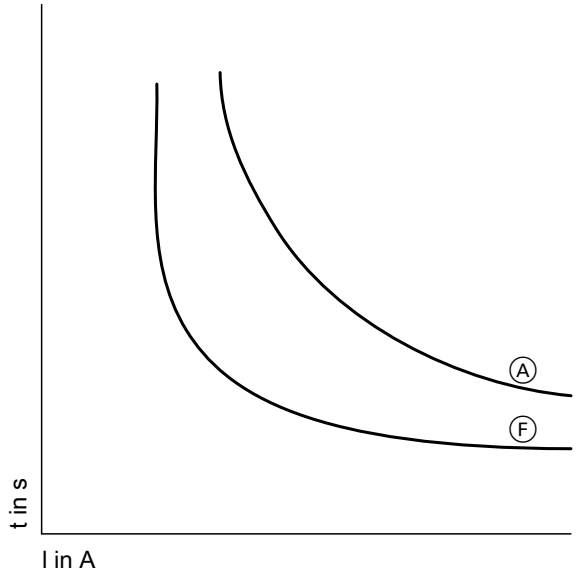


Fig. 15 Response characteristics of the residual current devices

Installing the Vitovalor 300-P

Removing the front panel of the gas condensing module

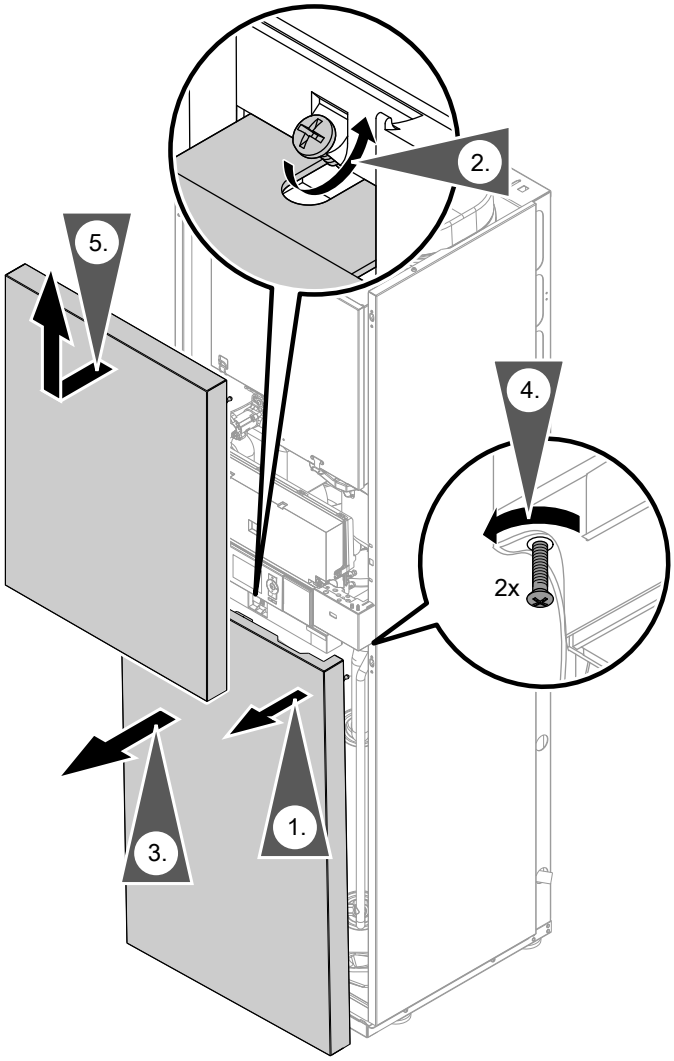


Fig. 16

Installing the Vitovalor 300-P (cont.)

Connecting the fuel cell module on the heating water and gas sides

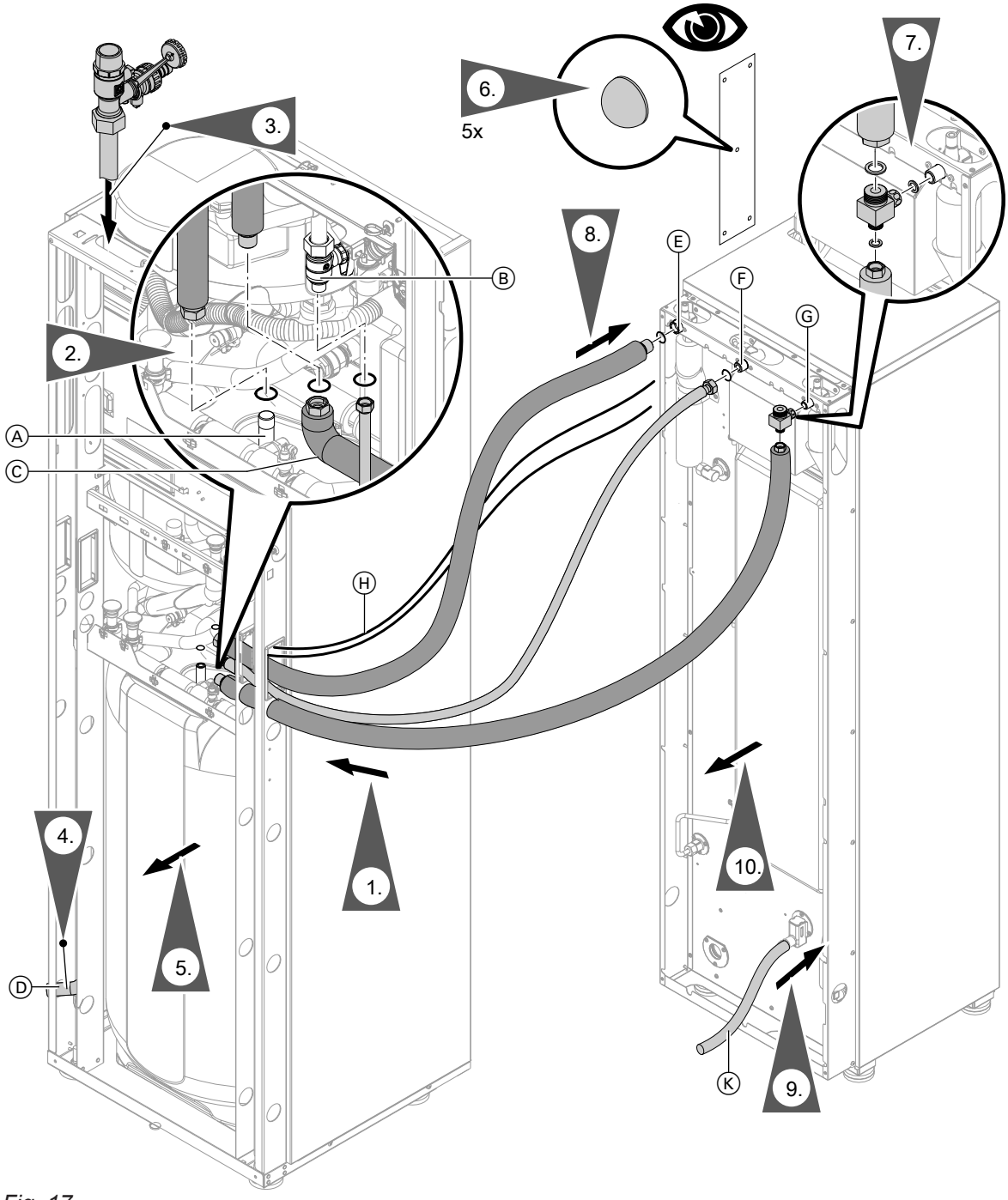


Fig. 17

Ⓐ Heating water flow buffer cylinder Connector G ⅜
Ⓑ Gas connection to fuel cell module, connector G ½
Ⓒ Heating water return buffer cylinder Union nut G ½
Ⓓ Condensate drain hose, gas condensing module
Ⓔ Heating water flow, fuel cell module union nut G ½
Ⓕ Gas connection, fuel cell module connector G ½
Ⓖ Heating water return, fuel cell module connector G ⅜
Ⓗ Cables and leads
Ⓚ Condensate drain hose, fuel cell module

Installing the Vitovalor 300-P (cont.)

1. Route the connection lines through the side openings in the gas condensing module:
   - the gas line and one heating water line through the rectangular aperture
   - one heating water line through the round opening directly below the rectangular aperture
   - cables from the fuel cell module through the rectangular aperture

   Attach the connecting lines at the back of the fuel cell module.
   Never kink lines (min. bending radius 20 mm).

2. Connect the gas and heating water lines to the gas condensing module using gaskets.
   - Torque G ½: 30 Nm
   - Torque G ⅜: 10 Nm

   Note
   Unscrew the cap on the gas connection. Use the gasket supplied for the connection.

3. Ensure connecting sets (accessories) are mounted to the gas condensing module.

4. Route condensate drain hose Ⓓ from the gas condensing module with a constant fall to on-site drainage system (see page 29).

5. Position and align the gas condensing module against the wall (see page 25).

6. Affix the spacers onto the side panel of the fuel cell module as shown.

7. Attach the separate diaphragm expansion vessel (standard delivery). See page 24.

8. Connect the gas and heating water lines to the fuel cell module using gaskets.
   - Torque G ½: 30 Nm
   - Torque G ⅜: 10 Nm

   Route the lines in such a way that they do not kink. Using cable ties, attach the gas line to the frame of the fuel cell module.

9. Connect condensate drain hose Ⓚ to the fuel cell module. Route the drain hose with a constant fall to on-site drainage system.

10. Position and align the fuel cell module against the wall (see page 25).

Mounting the diaphragm expansion vessel

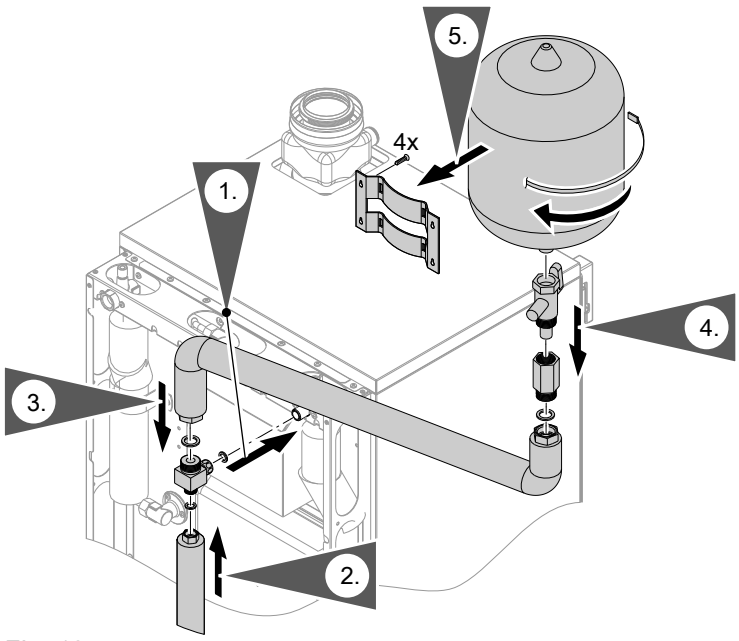


Fig. 18

1. Attach the tee with gasket to the heating water return of the fuel cell module.

2. Attach the heating water return line from the fuel cell module to the tee, using a gasket.

3. Attach the connection line from the diaphragm expansion vessel to the tee, using a gasket.

Installing the Vitovalor 300-P (cont.)

4. Bend the connection line to the position of the diaphragm expansion vessel. Never kink the connection line (min. bending radius 25 mm). Attach the connection line with gasket to the diaphragm expansion vessel.
5. Mount the diaphragm expansion vessel on the wall using the bracket supplied.
6. Adjust the charge pressure in the diaphragm expansion vessel to 0.9 bar (0.09 MPa).

Aligning the Vitovalor 300-P

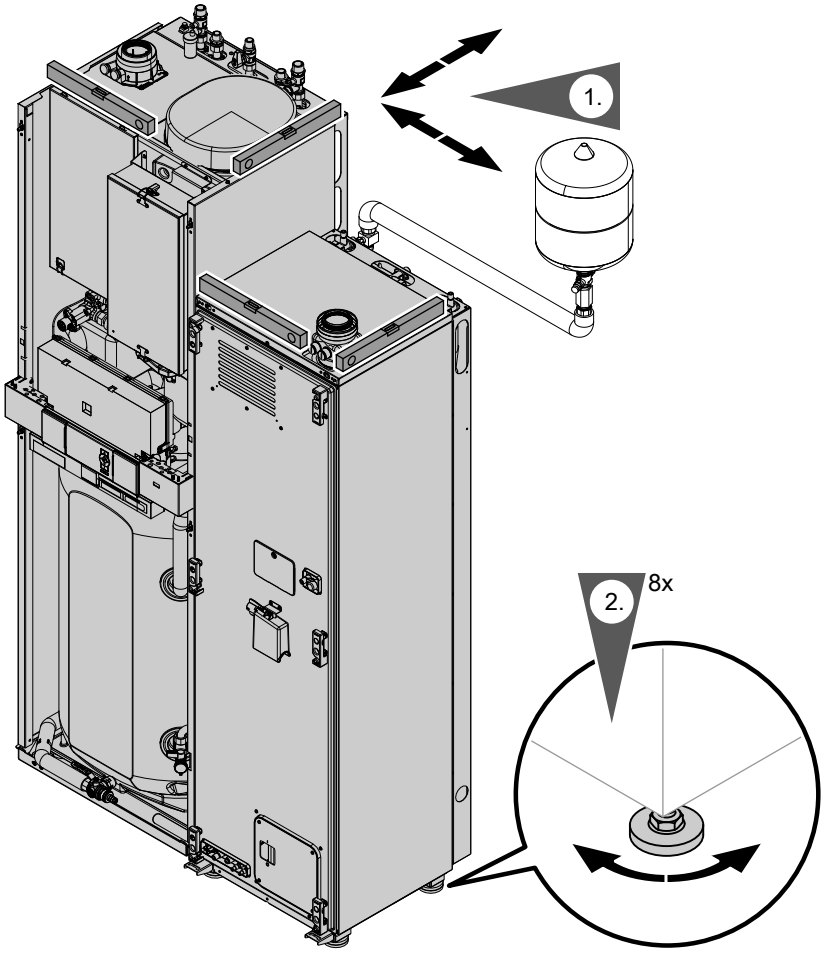


Fig. 19

1. Align the fuel cell module flush with the front of the gas condensing module. Temporarily reattach the front panel for this purpose (see page 44).
2. Align the gas condensing module and the fuel cell module in their final installation location.

Installing the Vitovalor 300-P (cont.)

Heating water and DHW connections

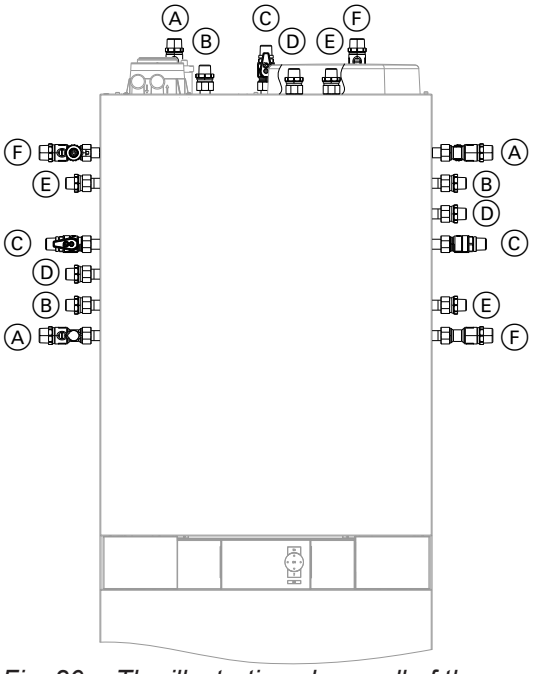


Fig. 20 The illustration shows all of the connection sets available as accessories.

Ⓐ Heating flow R ¾
Ⓑ DHW R ½
Ⓒ Gas connection R ½
Ⓓ DHW circulation R ½
Ⓔ Cold water R ½
Ⓕ Heating return R ¾

Please note
Under certain operating conditions, DHW outlet temperatures above 60 °C may arise, which could result in scalding.
Install an automatic thermostatic mixing valve (accessories) in the DHW line as protection against scalding.

Safety assembly to DIN 1988 and EN 806 on the cold water connection

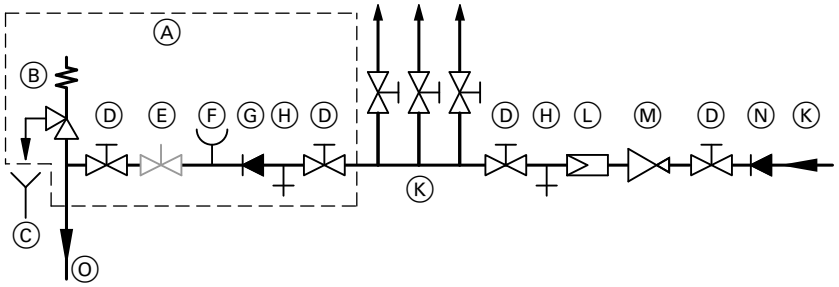


Fig. 21

Ⓐ Safety assembly
Ⓑ Safety valve 10 bar (AT: 6 bar)
Ⓒ Visible discharge pipe outlet point (tundish)
Ⓓ Shut-off valve
Ⓔ Flow regulating valve (installation recommended)
Ⓕ Pressure gauge connection
Ⓖ Non-return valve
Ⓗ Drain
Ⓚ Cold water
Ⓛ Drinking water filter
Ⓜ Pressure reducing valve to DIN 1988-2, Dec. 1988 issue
Ⓝ Non-return valve/pipe separator
Ⓞ Cold water connection at connection set (accessories)

Installing the Vitovalor 300-P (cont.)

Note
Fit safety assembly Ⓐ on site immediately upstream of the cold water connection on the Vitovalor 300-P. No shut-off equipment may be installed between the safety assembly and the Vitovalor 300-P. Install a discharge line Ⓒ with constant fall and in a frost-free environment.

Safety valve

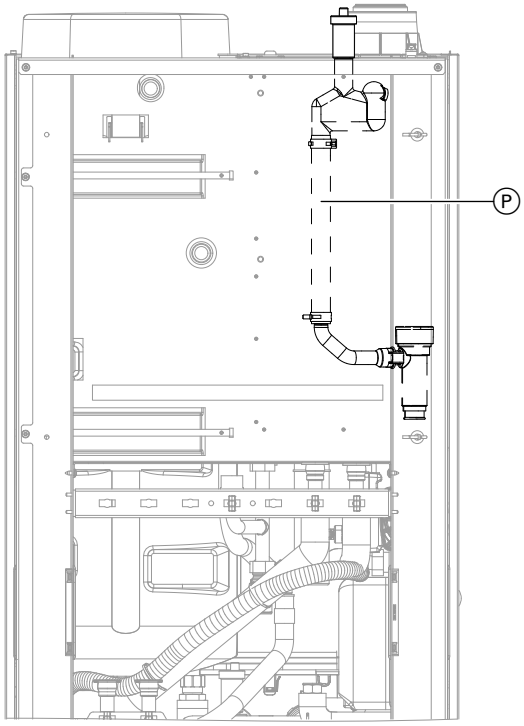


Fig. 22

Note
***Never** connect the safety valve of the DHW cylinder to hose Ⓟ. **Never** change the location of hose Ⓟ (it acts as vent).*

Balanced flue terminal

Do not carry out **commissioning** until the following conditions are met:
- Free passage through the flue gas pipes.
- Flue system with positive pressure is gas-tight.
- Apertures for ensuring sufficient combustion air supply are open and cannot be closed off.
- Applicable regulations on installing and commissioning flue systems have been followed.

Danger
Leaking or blocked flue systems or an insufficient supply of combustion air cause life threatening poisoning due to carbon monoxide in the flue gas.
Ensure the flue system functions correctly. Apertures for combustion air supply must not be able to be closed off.

Route all horizontal sections of the flue pipe with a constant fall of 3°.

Flue system installation instructions

Installing the Vitovalor 300-P (cont.)

Attaching the connection lines to the fuel cell module and gas condensing module

Fuel cell module to the right of the gas condensing module

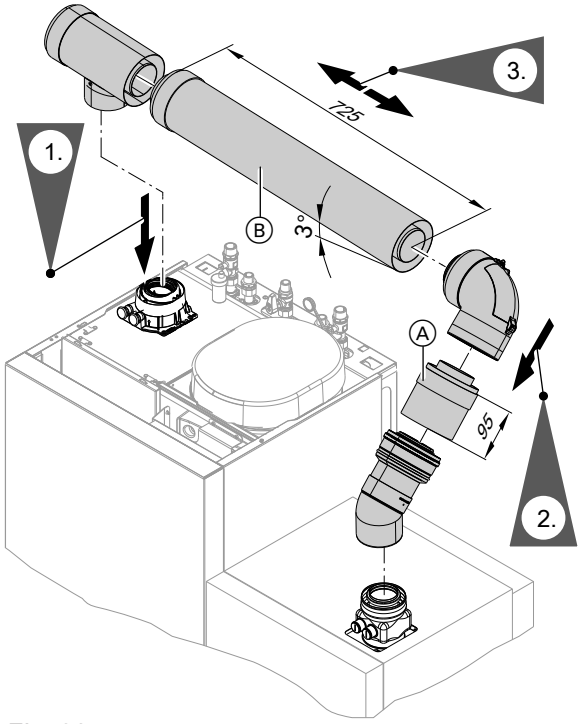


Fig. 23

Trim the straight flue pipes Ⓐ and Ⓑ.

Route all horizontal sections of the flue pipe with a constant fall of 3°.

Fuel cell module to the left of the gas condensing module

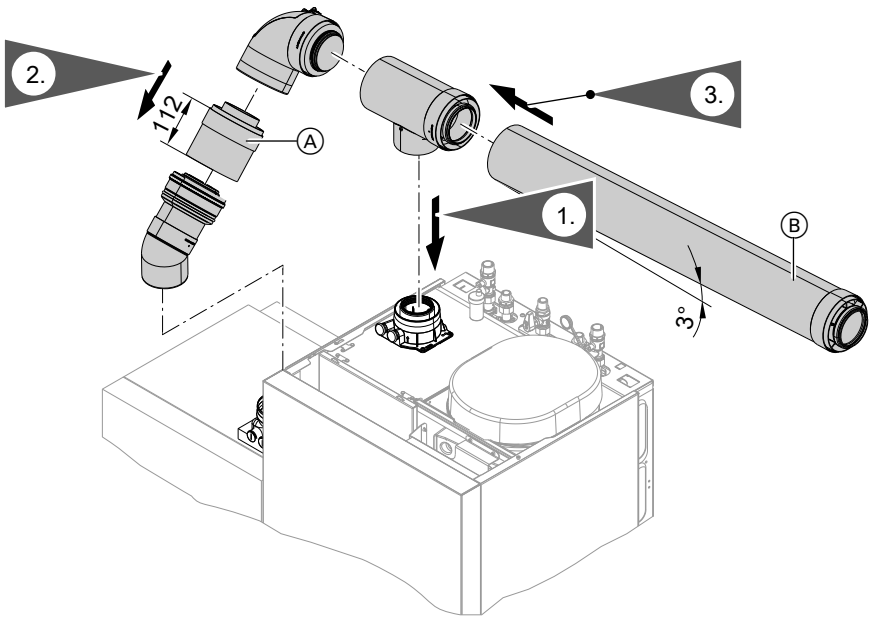


Fig. 24

Trim flue pipe Ⓑ as required.
Route all horizontal sections of the flue pipe with a constant fall of 3°.

Note
Only use the "System certificate" and "Skoberne GmbH flue system" labels in conjunction with the Viessmann flue system made by Skoberne.

Connecting the downstream balanced flue
Flue system installation instructions

5775 636 GB

Installing the Vitovalor 300-P (cont.)

Routing drain lines

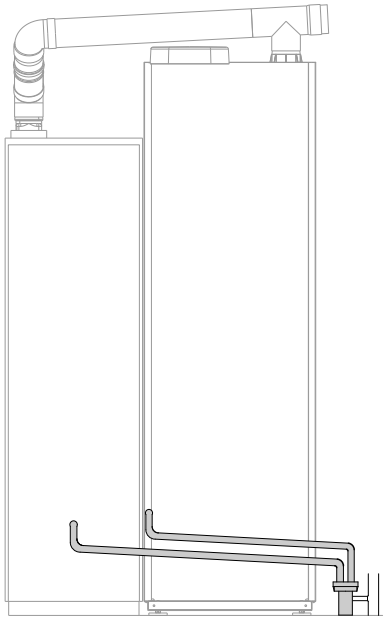


Fig. 25

Route the condensate hoses to the rear or side openings (see page 12).
Route the drain hoses with a constant fall to the building's drainage system. If required, install a condensate removal pump (accessories).

Note
Pull the hoses out of the appliance far enough to prevent unnecessary bends inside the appliance.

Gas connection

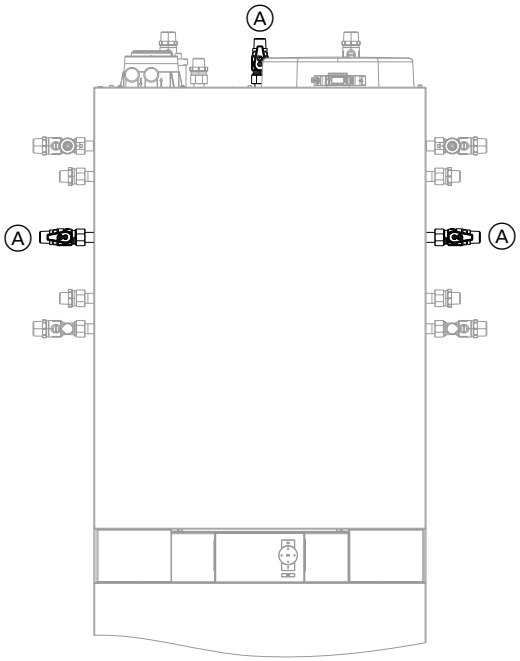


Fig. 26 The illustration shows all of the connection sets available as accessories.

Ⓐ Gas connection R ½

1. Connect the gas line to gas shut-off valve Ⓐ.

Installing the Vitovalor 300-P (cont.)

2. Check the gas connections for tightness. Also check the line to the fuel cell module. See page 23.

   Note
   Use only suitable and approved leak detection agents (EN 14291) and devices for the tightness test. Leak detection agents with unsuitable constituents (e.g. nitrides, sulphides) can cause material damage.
   Remove leak detection agent residues after testing.

   Please note
   Excessive test pressure can damage the appliance.
   Max. test pressure 150 mbar (15 kPa).
   Where higher pressure is required for tightness tests, disconnect the appliances from the gas supply pipe (undo the fitting).

3. Vent the gas line.

Opening the control unit enclosure on the gas condensing module

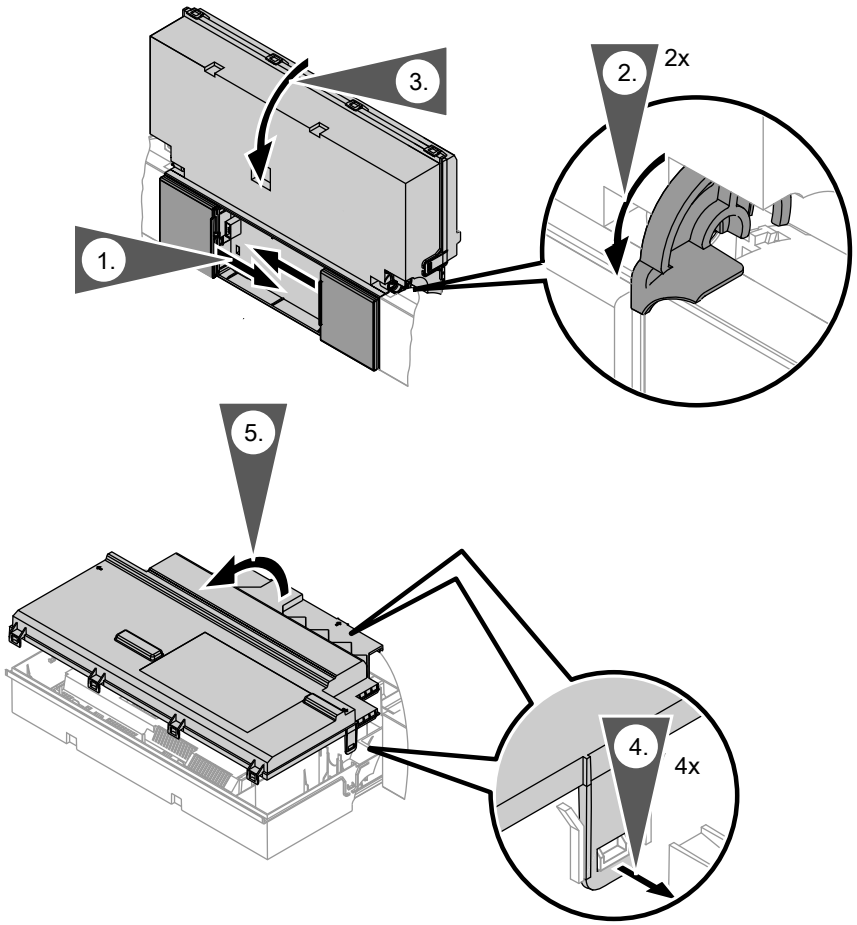


Fig. 27

Opening the control unit enclosure on the gas… (cont.)

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

Electrical connections

Vitotronic 200

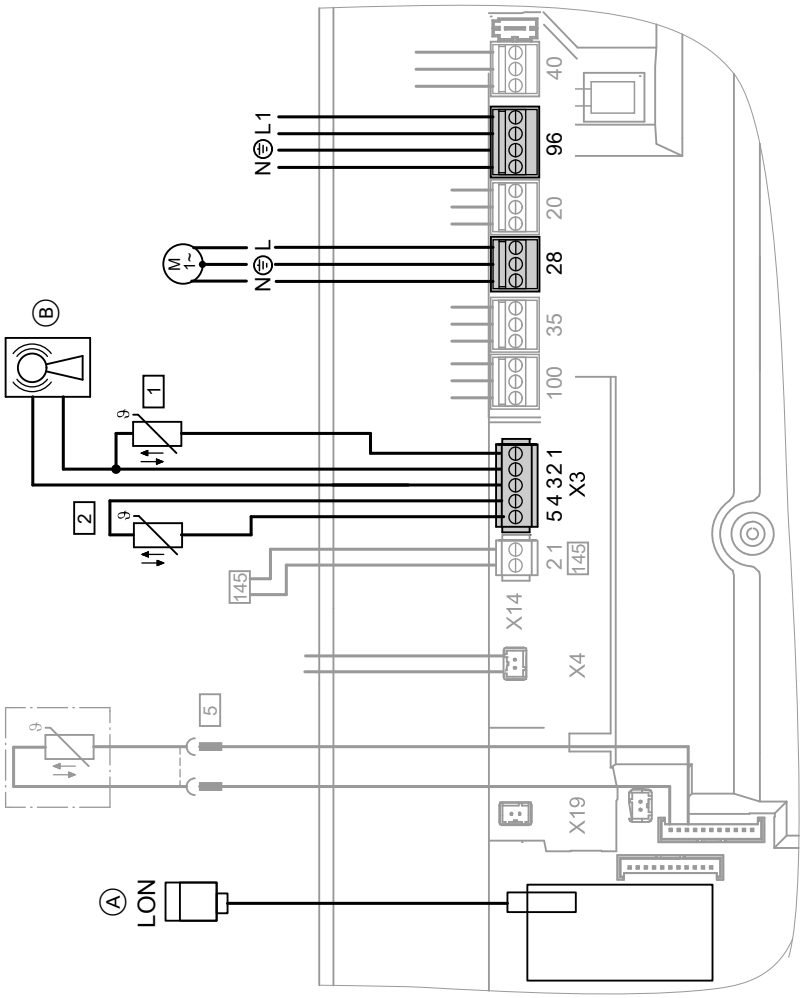


Fig. 28

Ⓐ LON connection, process controller
Ⓑ Radio clock receiver

Connections to 230 V~ plugs
28 DHW circulation pump or heating circuit pump for heating circuit without mixer
Note
Connect DHW circulation pumps with standalone functions directly to the 230 V~ supply.
96 External demand/blocking

Connections to LV plugs
X3 Plug X3 can be pulled to make assembly easier.
1 Outside temperature sensor
2 Flow temperature sensor for low loss header (accessories)
Ⓑ Radio clock receiver

Electrical connections (cont.)

Process controller

Opening the process controller

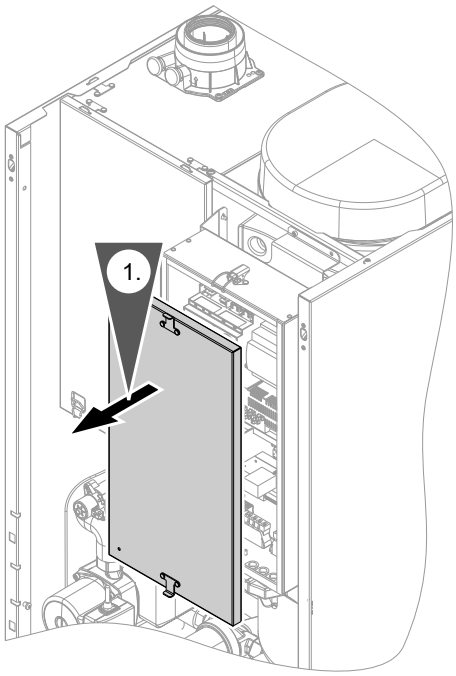


Fig. 29

Electrical connections (cont.)

Overview of the process controller

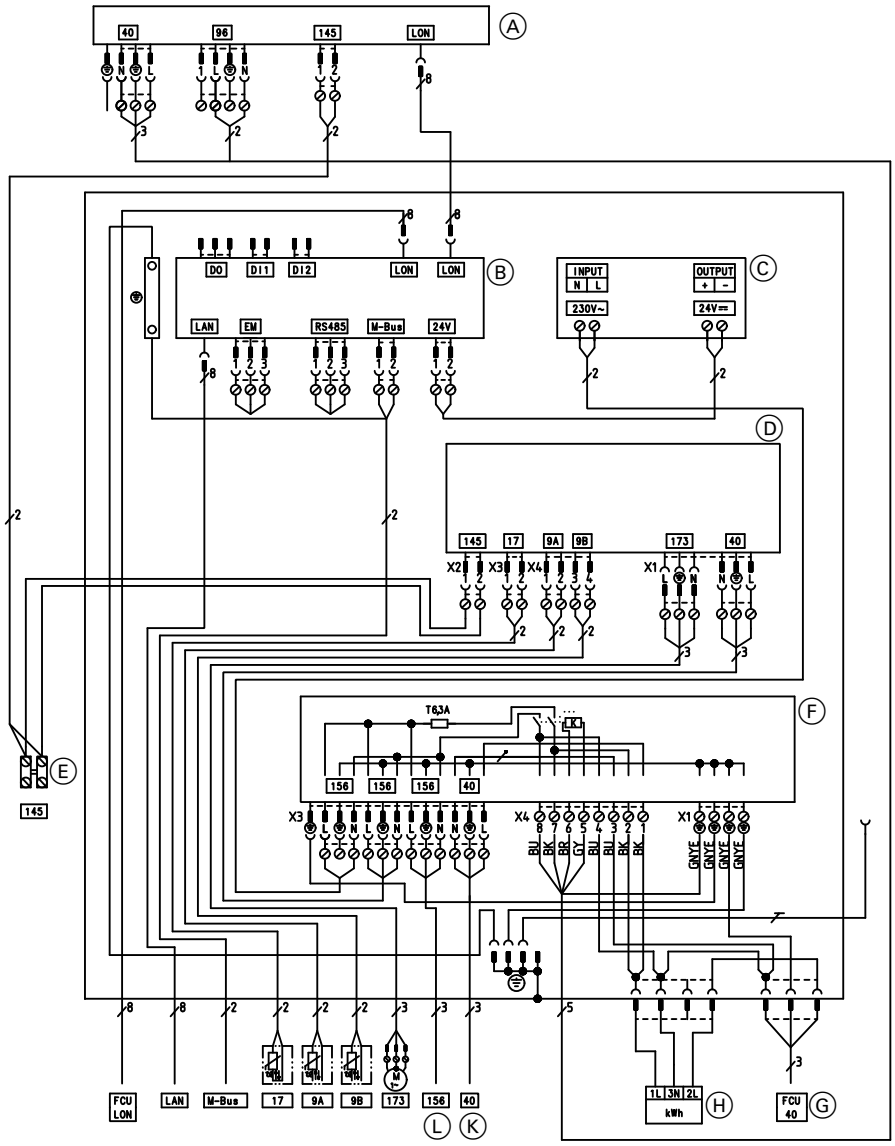


Fig. 30

Ⓐ Control unit, gas condensing module
Ⓑ Vitocom 300
Ⓒ Vitocom 300 power supply unit
Ⓓ Differential temperature controller
Ⓔ KM-BUS terminals
Ⓕ Power distributor
Ⓖ Power supply, fuel cell module
Ⓗ Internal electricity meter
Ⓚ System power supply
Ⓛ Power supply for accessories

Information on connecting accessories
When connecting accessories observe the separate installation instructions provided with them.

Electrical connections (cont.)

Making the electrical connection between the fuel cell module and the gas condensing module

Check that the fuel cell module is switched off

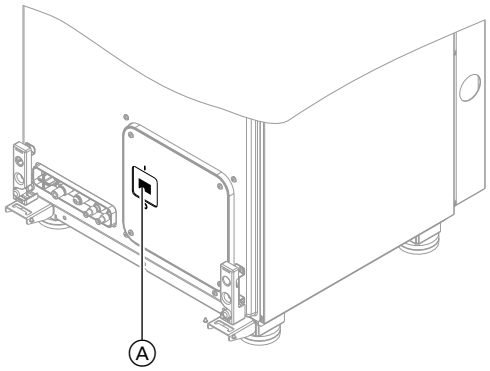


Fig. 31

1. Remove the front panel of the fuel cell module (see page 52).
2. Before connecting the fuel cell module, ensure that ON/OFF switch Ⓐ on the fuel cell module is switched off (0).

Connecting the fuel cell module to the process controller

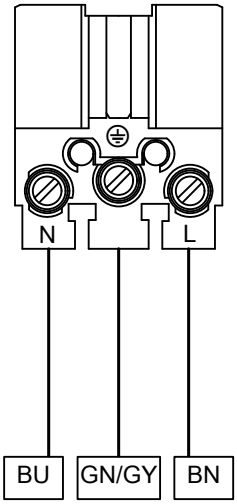


Fig. 32

1. Attach connecting cable Ⓐ to the fuel cell module using the plug provided.
   In its delivered condition, the plug is connected to the process controller (see diagram below).

Electrical connections (cont.)

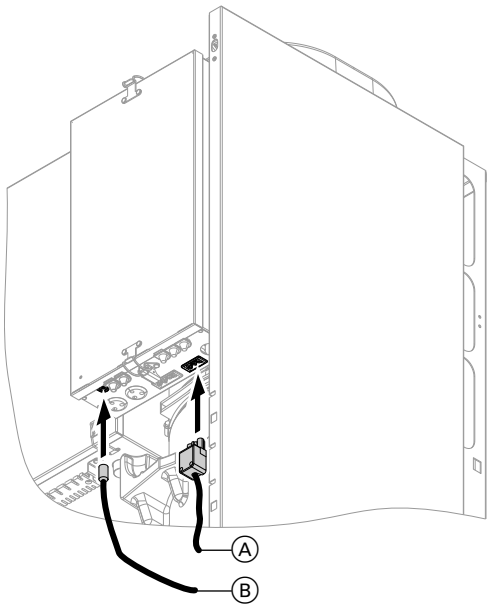


Fig. 33

2. Insert the plug on connecting cable Ⓐ from the fuel cell module into the process controller of the gas condensing module.

3. Pass LON cable Ⓑ through the left-most cable entry and plug it into the Vitocom 300 (see page 33).
   To connect the fuel cell module to the LON, see page 73.

Outside temperature sensor 1 (hard-wired)

Fitting location for outside temperature sensor

- North or north-westerly wall, 2 to 2.5 m above ground level; on multi storey buildings, in the upper half of the second floor
- Not above windows, doors or vents
- Not immediately below balconies or gutters
- Never render over

Outside temperature sensor connection

2-core lead, length up to 35 m with a cross-section of 1.5 mm^2

Note
To fit a wireless outside temperature sensor (wireless accessories), see page 41.

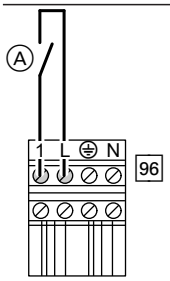
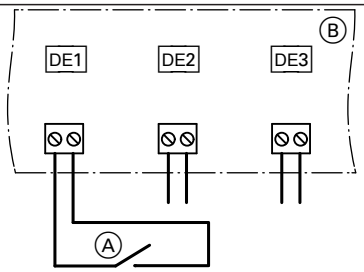
External demand via switching contact

Connection options:
- EA1 extension (accessory, see separate installation instructions)
- Plug 96

When the contact is closed, burner operation is load-dependent. The boiler water is heated to the set value selected in coding address "9b" in group **"General"/1**. The boiler water temperature is limited by this set value and by the electronic maximum limit (coding address "06" in group **"Boiler"/2**).

! **Please note**
Live contacts lead to short circuits or phase failure.
The external connection **must be floating** and meet the requirements of protection class II.

Electrical connections (cont.)

Plug 96	EA1 extension
	
Ⓐ Floating contact (when connected, remove jumper between L and 1)	Ⓐ Floating contact Ⓑ EA1 extension
Codes ▪ "4b:1" in group **"General"/1** ▪ Effect of the function on the relevant heating circuit pump: Coding address "d7" in group **"Heating circuit"** (only for weather-compensated control units) ▪ Effect of the function on the circulation pump for cylinder heating: Coding address "5F" in group **"DHW"/3**	**Codes** ▪ Set "3A" (DE1), "3b" (DE2) or "3C" (DE3) to 2 in group **"General"/1** ▪ Effect of the function on the relevant heating circuit pump: Coding address "d7" in group **"Heating circuit"** (only for weather-compensated control units) ▪ Effect of the function on the circulation pump for cylinder heating: Coding address "5F" in group **"DHW"/3**

External demand via 0 – 10 V input

Connection at 0 – 10 V input to **EA1 extension**.

Please note

Ensure DC separation between the earth conductor and the negative pole of the on-site voltage source.

0 – 1 V ≙ No default set boiler water temperature
1 V ≙ Set value 10 °C
10 V ≙ Set value 100 °C

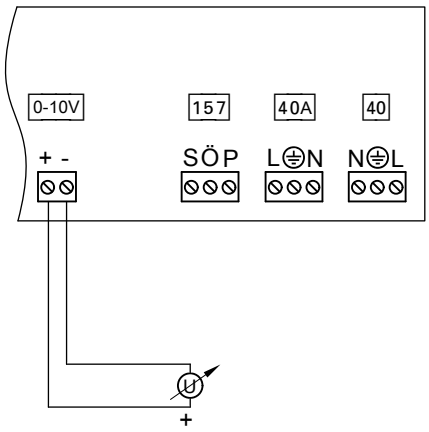


Fig. 34

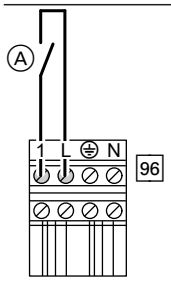
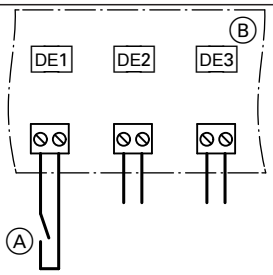
External blocking via switching contact

Connection options:
- Plug 96
- EA1 extension (accessory, see separate installation instructions)

When the contact is closed, the burner is switched off. The heating circuit pump and (if installed) the circulation pump for cylinder heating are switched according to the set code (see the following table "Codes").

Electrical connections (cont.)

! **Please note**
Live contacts lead to short circuits or phase failure.
The external connection **must be floating** and meet the requirements of protection class II.

Plug 96	**EA1 extension**
	
Ⓐ Floating contact (when connected, remove jumper between L and 1)	Ⓐ Floating contact Ⓑ EA1 extension
Codes ▪ "4b:2" in group **"General"/1** ▪ Effect of the function on the heating circuit pump: Coding address "d6" in group **"Heating circuit"** (only for weather-compensated control units) ▪ Effect of the function on the circulation pump for cylinder heating: Coding address "5E" in group **"DHW"/3**	**Codes** ▪ Set "3A" (DE1), "3b" (DE2) or "3C" (DE3) to 3 or 4 in group **"General"/1**. ▪ Effect of the function on the heating circuit pump: Coding address "d6" in group **"Heating circuit"** (only for weather-compensated control units) ▪ Effect of the function on the circulation pump for cylinder heating: Coding address "5E" in group **"DHW"/3**

Power supply for accessories (230 V ~)

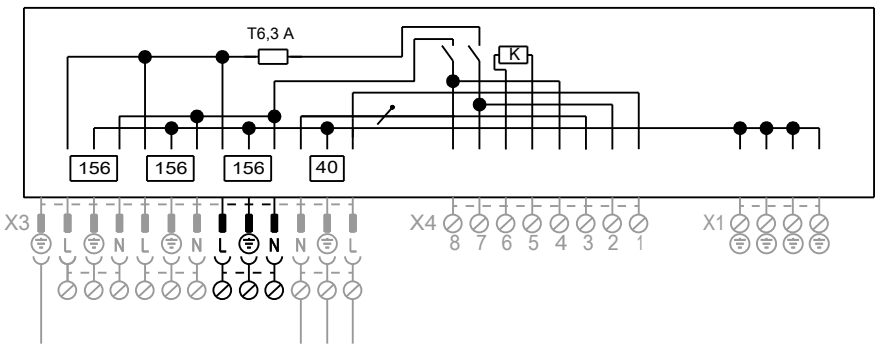


Fig. 35

Power cables for accessories can be connected to plug 156 on the distribution board. This connection is switched using the ON/OFF switch on the control unit of the gas condensing module.

If the total system current exceeds 6 A, connect one or more extensions directly to the mains supply via an ON/OFF switch.

Electrical connections (cont.)

KM-BUS connections

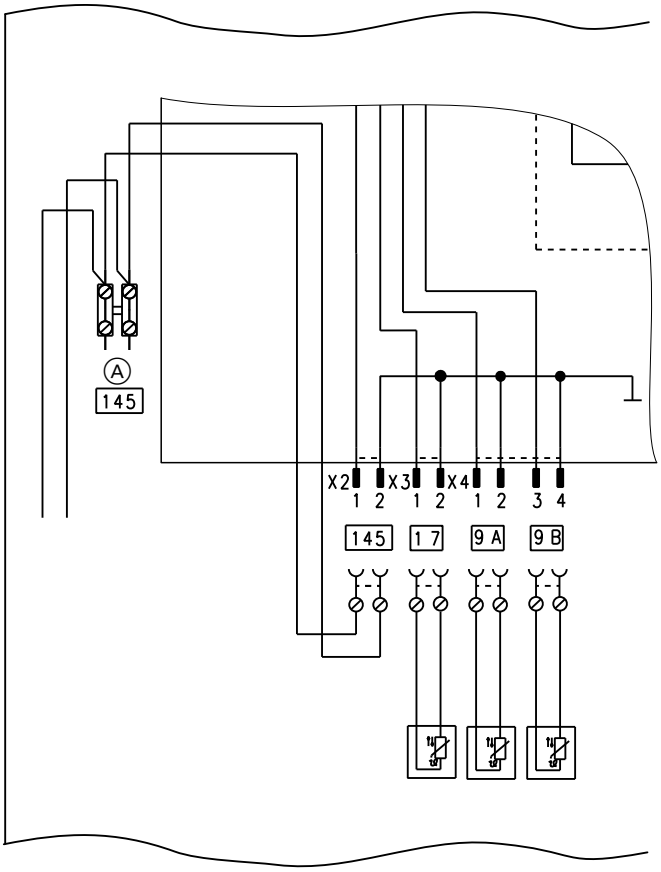


Fig. 36

Connect the KM-BUS on accessories or the KM-BUS distributor to terminals Ⓐ.

Electrical connections (cont.)

Connecting Vitocom 300 to LAN

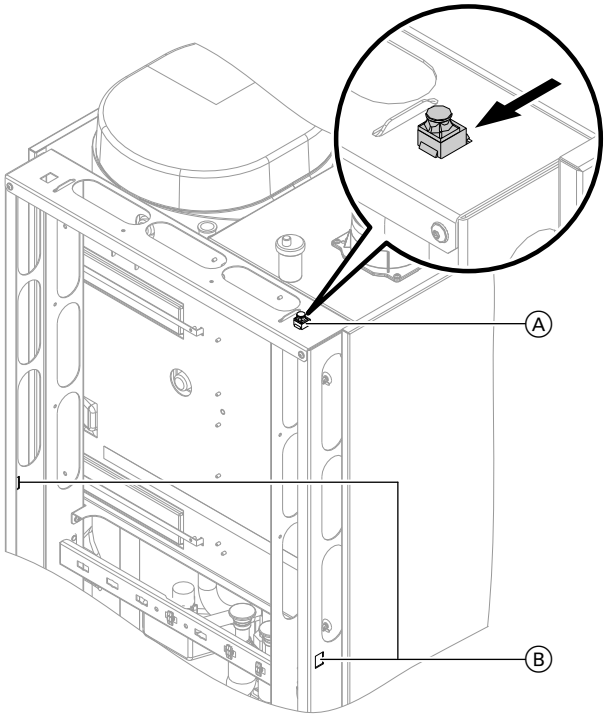


Fig. 37

In its delivered condition, the LAN socket is attached to the rear of the top panel Ⓐ on the gas condensing module. If necessary, unclip the LAN socket and insert into aperture Ⓑ, on the left or right.

Power supply to the system

Connect the power supply to the system according to the operating mode selected during preparations for installation; see page 14.

Electrical connections (cont.)

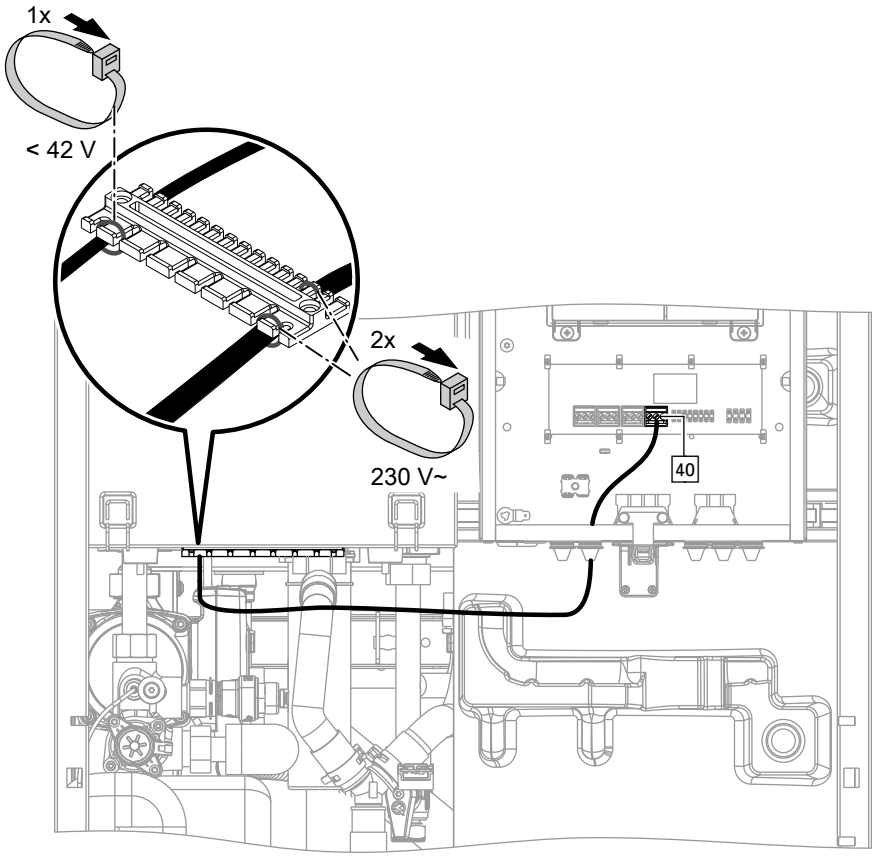


Fig. 38

1. Connect the power cable for the entire system to plug [40] on the distribution board.
2. Pass the power cable out of the gas condensing module towards the rear.
3. Tie the 230 V cables and LV leads separately to the underside of the air box.
4. Tie the connecting cables from accessories to the underside of the air box.

Danger
Incorrectly executed electrical installations can result in injuries from electrical current and damage to the appliance.

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with the following regulations:
- IEC 60364-4-41
- VDE regulations
- Connection requirements specified by your local power supply utility

- Install an isolator in the power line to provide omnipolar separation from the mains for all active conductors, corresponding to overvoltage category III (3 mm) for complete isolation. The isolator must be fitted in the permanent electrical installation, in line with installation requirements.
  In addition we recommend the installation of an AC/DC-sensitive RCD (FI Class B ⏦ ⎓) for DC (fault) currents that can arise from energy efficient equipment.

Danger
The absence of component earthing for the system can lead to serious injury from electric current if an electrical fault occurs.
Connect the appliance and pipework to the equipotential bonding of the building.

Electrical connections (cont.)

Installing wireless accessories (if present)

Wireless outside temperature sensor

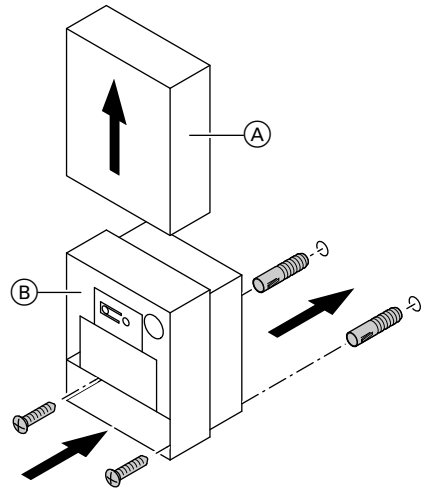


Fig. 39

1. Prepare the wireless outside temperature sensor for commissioning:
   Remove the outside temperature sensor from its packaging and position with its front facing a light source, so that the internal power supply can be charged. This process takes about 15 min.

2. Pair the outside temperature sensor with the control unit. See page 60.

3. Remove casing Ⓐ and attach outside temperature sensor RF Ⓑ.

   Installation location:
   - Choose an installation location such that the radio signals are beamed as perpendicularly as possible to walls and other equipment.
   - North or north-westerly wall, 2 to 2.5 m above ground level; on multi storey buildings, in the upper half of the second floor.
   - Not above windows, doors or vents
   - Not immediately below balconies or gutters
   - Never render over.

Wireless repeater (accessories)

For amplifying the wireless signal between the wireless base station in the boiler and the wireless outside temperature sensor or wireless remote controls

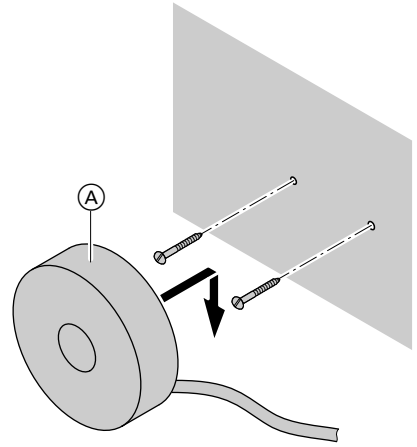


Fig. 40

Note
Required if building characteristics prevent an adequate signal quality.

1. Secure wireless repeater Ⓐ close to a wall socket.

   Note
   Never adjust the DIP switches on the back of the unit.
   For correct positioning, see page 60.

2. Plug the wireless repeater cable into the plug-in power supply unit.

3. Plug the power supply unit into a socket.

4. Pair the wireless repeater. See "commissioning".

Vitotrol 200-RF and Vitotrol 300-RF wireless remote controls (accessories)

"Vitotrol" installation and service instructions

Electrical connections (cont.)

Routing the connecting cables and leads

! **Please note**
If cables come into contact with hot components they will be damaged.
When routing and securing cables/leads on site, ensure that the maximum permissible temperature for these is not exceeded.

Closing the control unit enclosure

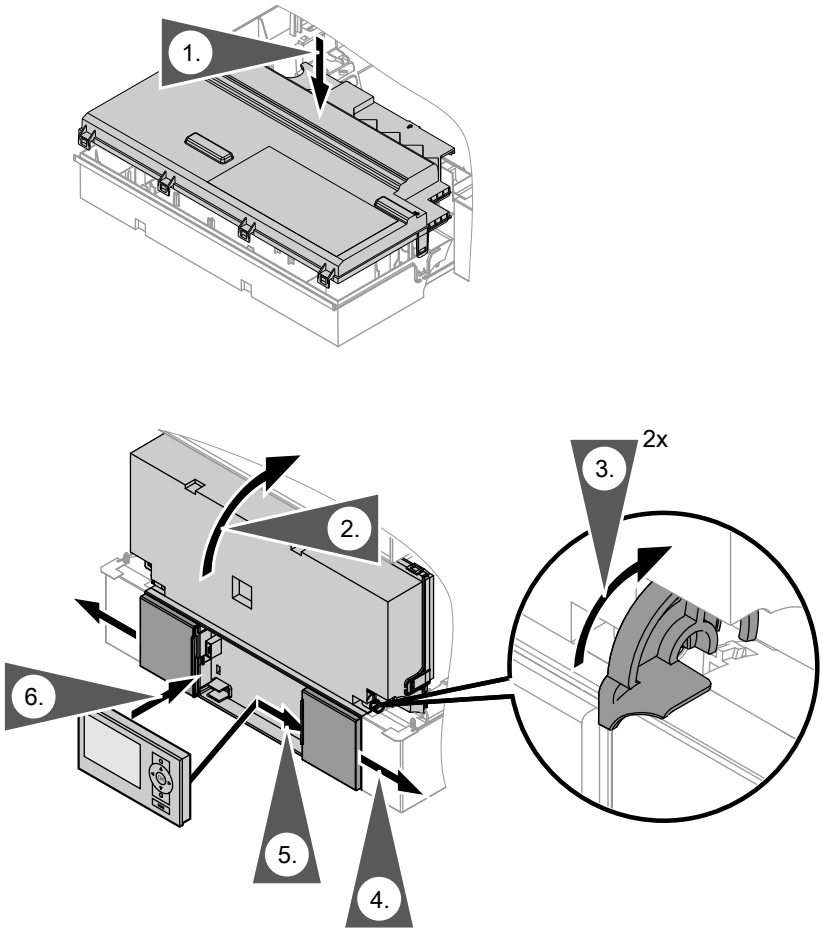


Fig. 41

Insert the programming unit (packed separately) into the control unit support.

Note
The programming unit can also be inserted into a wall mounting base (accessories) near the boiler.

Wall mounting base installation instructions

Closing the control unit enclosure (cont.)

Closing the process controller

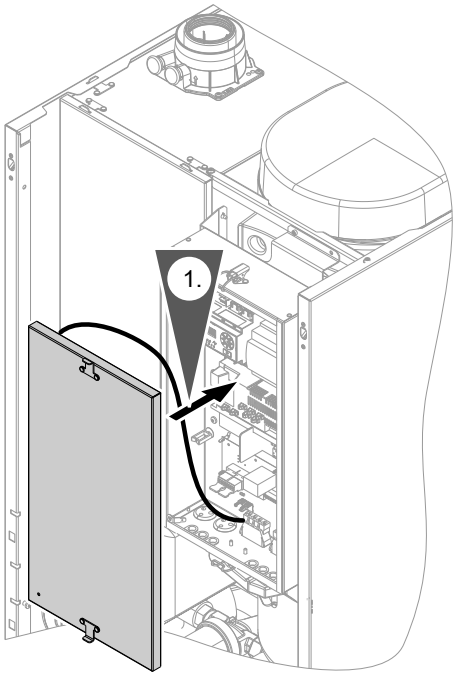


Fig. 42

Attach the earth cable to the casing cover.

Fitting the front panels

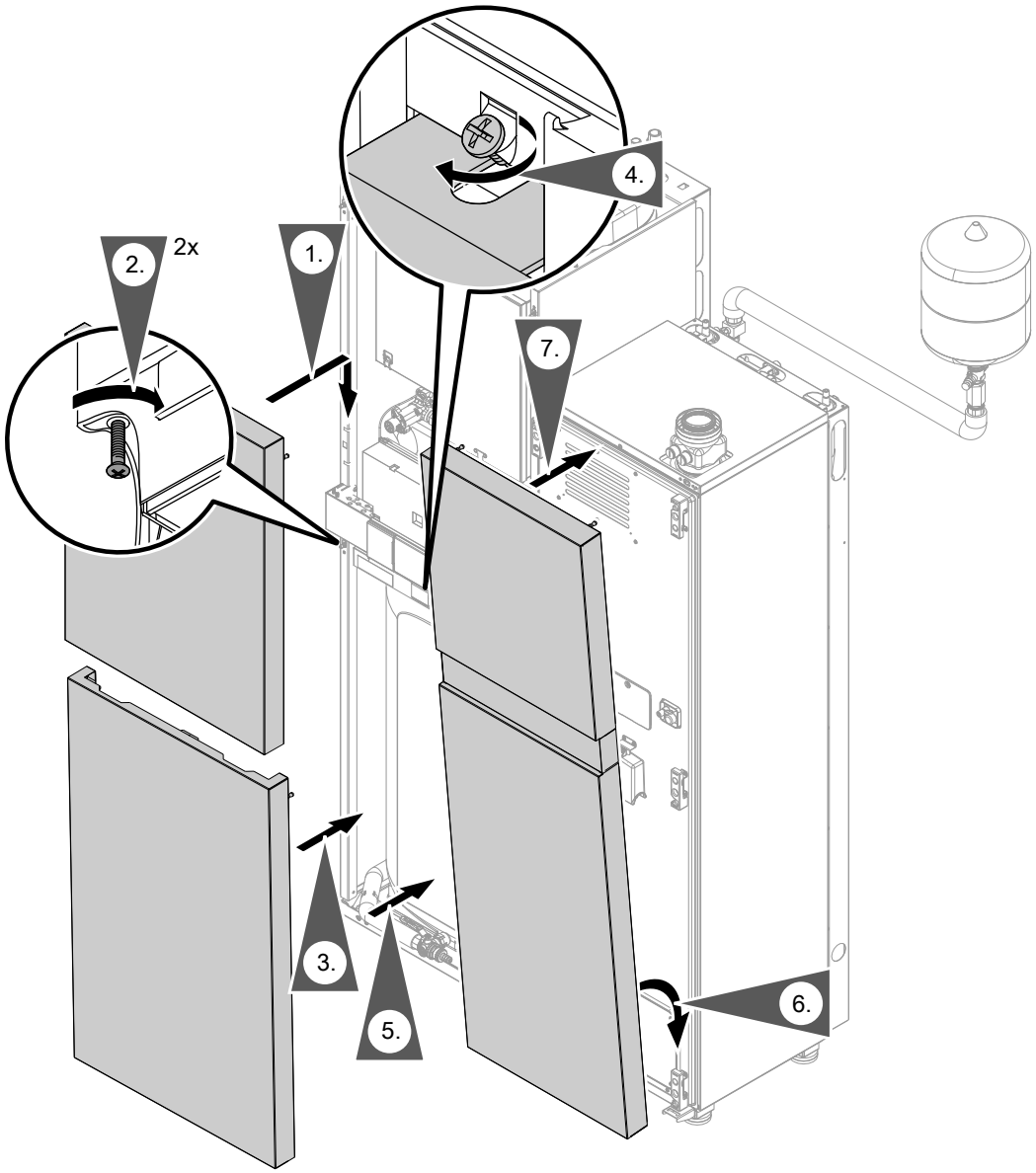


Fig. 43

If required for easier handling: Dismantling the gas condensing module

Note
Residual water may escape during dismantling.

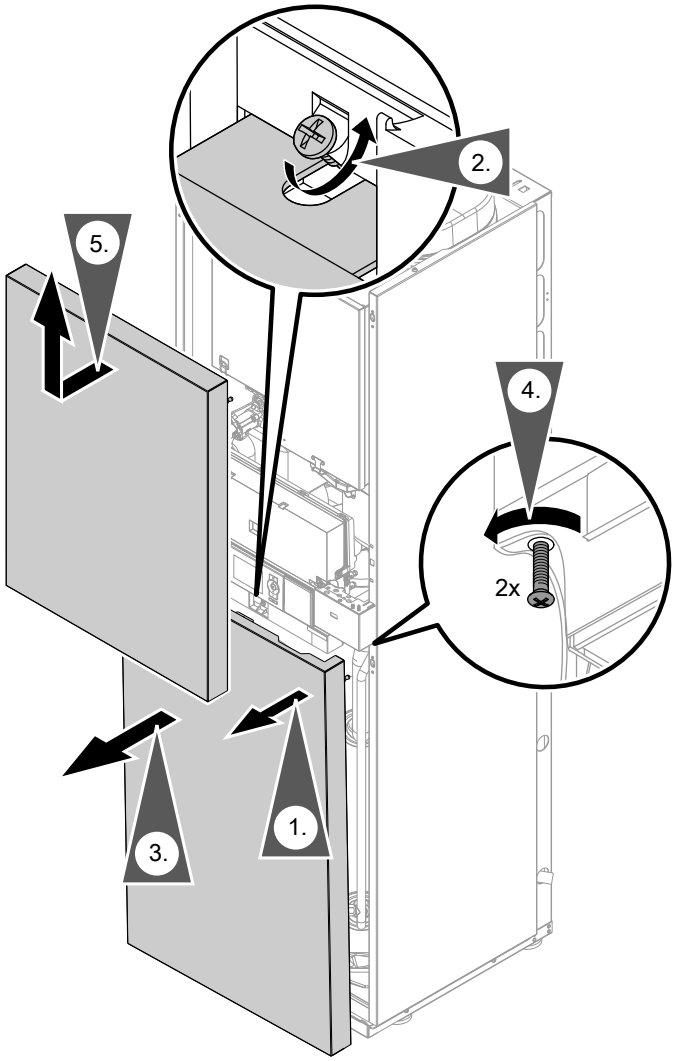


Fig. 44

If required for easier handling: Dismantling… (cont.)

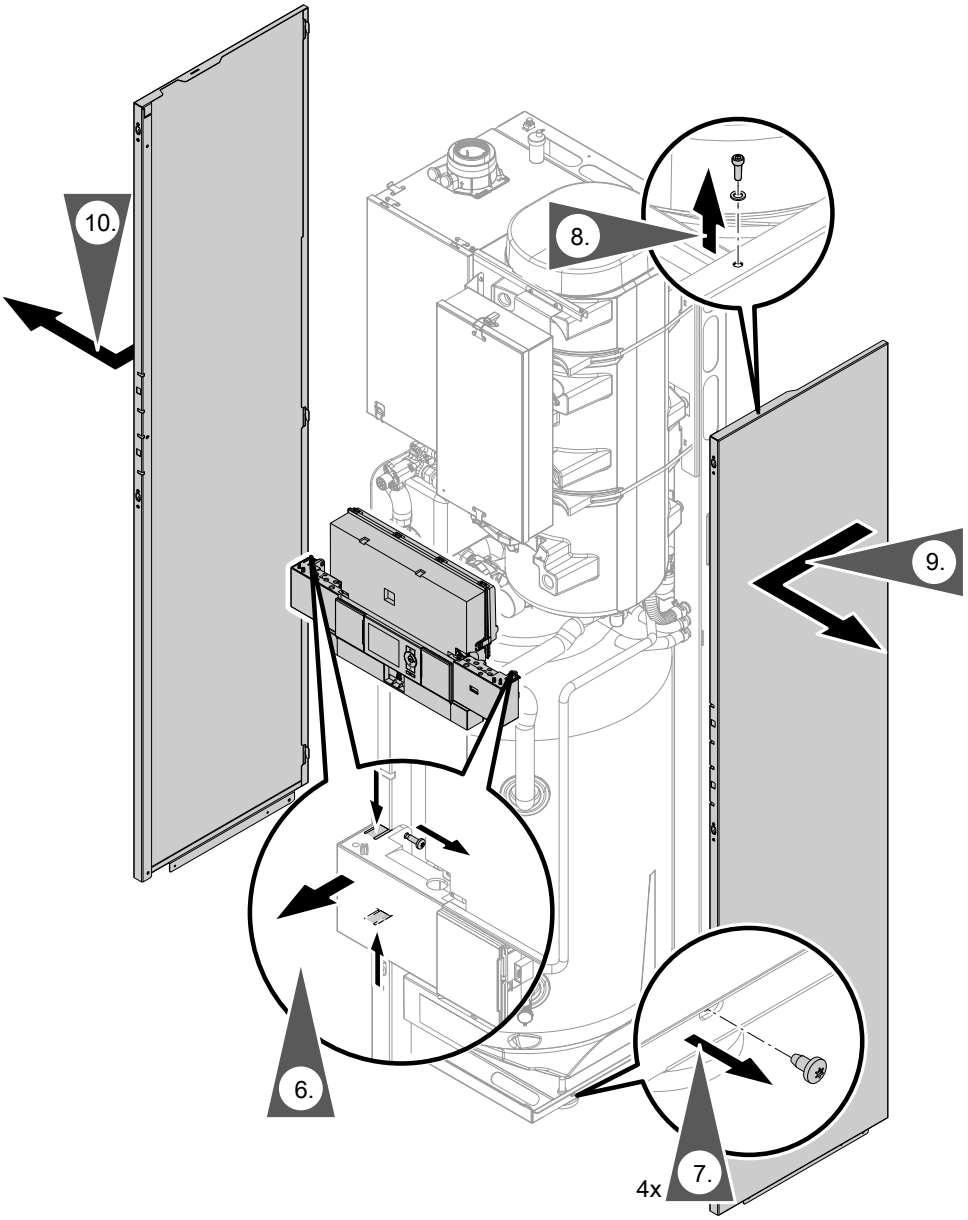


Fig. 45

Note
Re-insert the serrated lock washer on the right-hand side panel when assembling.

If required for easier handling: Dismantling… (cont.)

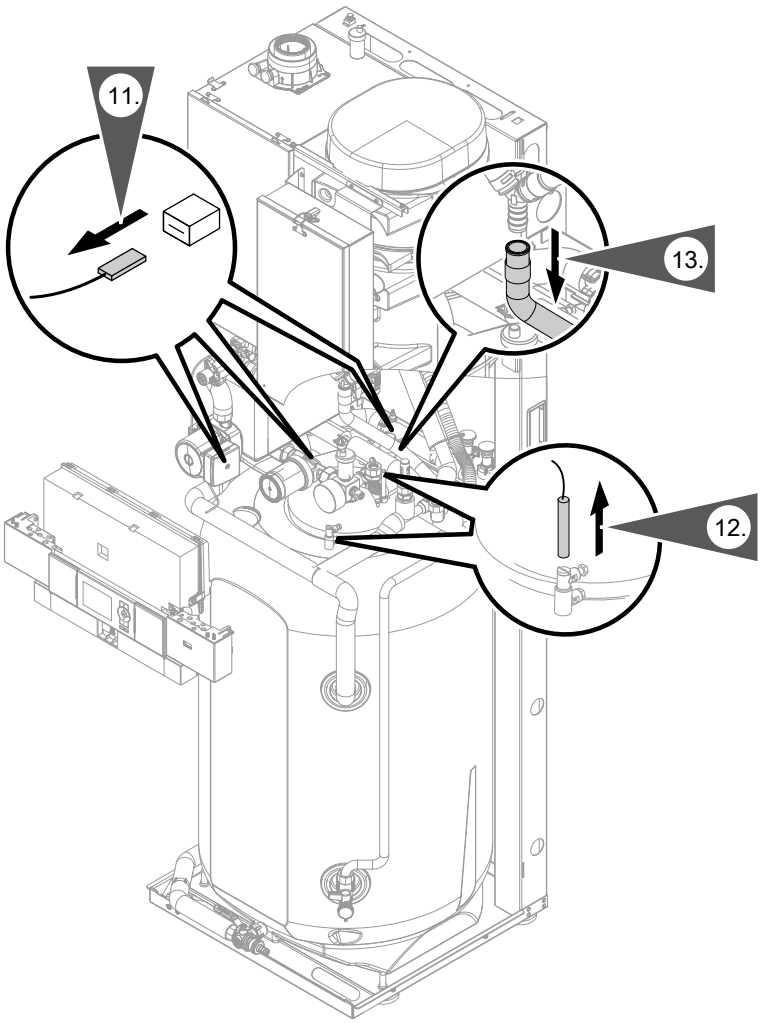


Fig. 46

If required for easier handling: Dismantling… (cont.)

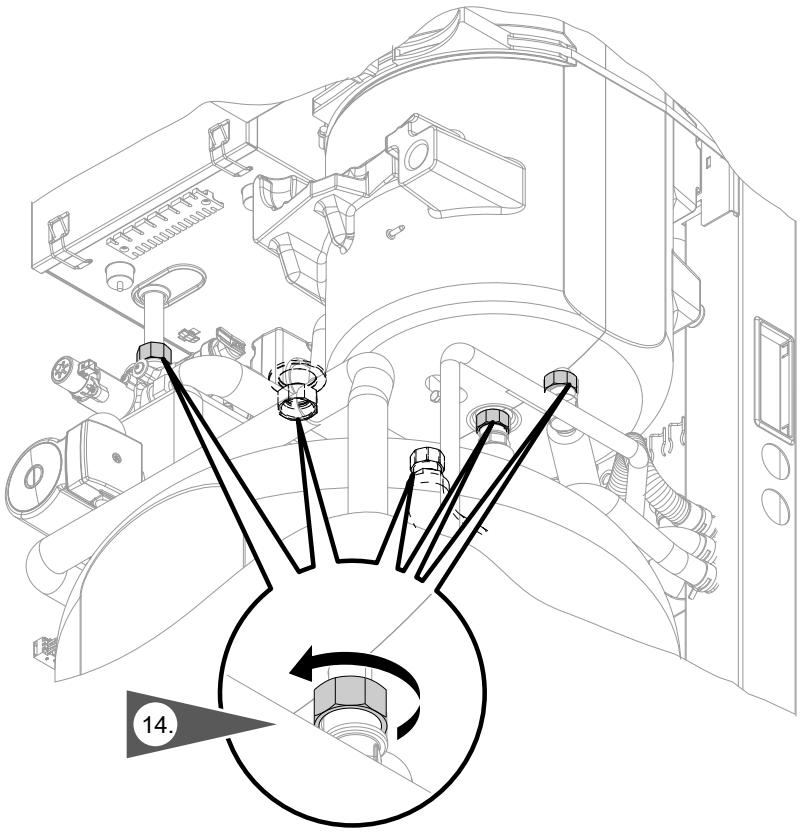


Fig. 47

If required for easier handling: Dismantling… (cont.)

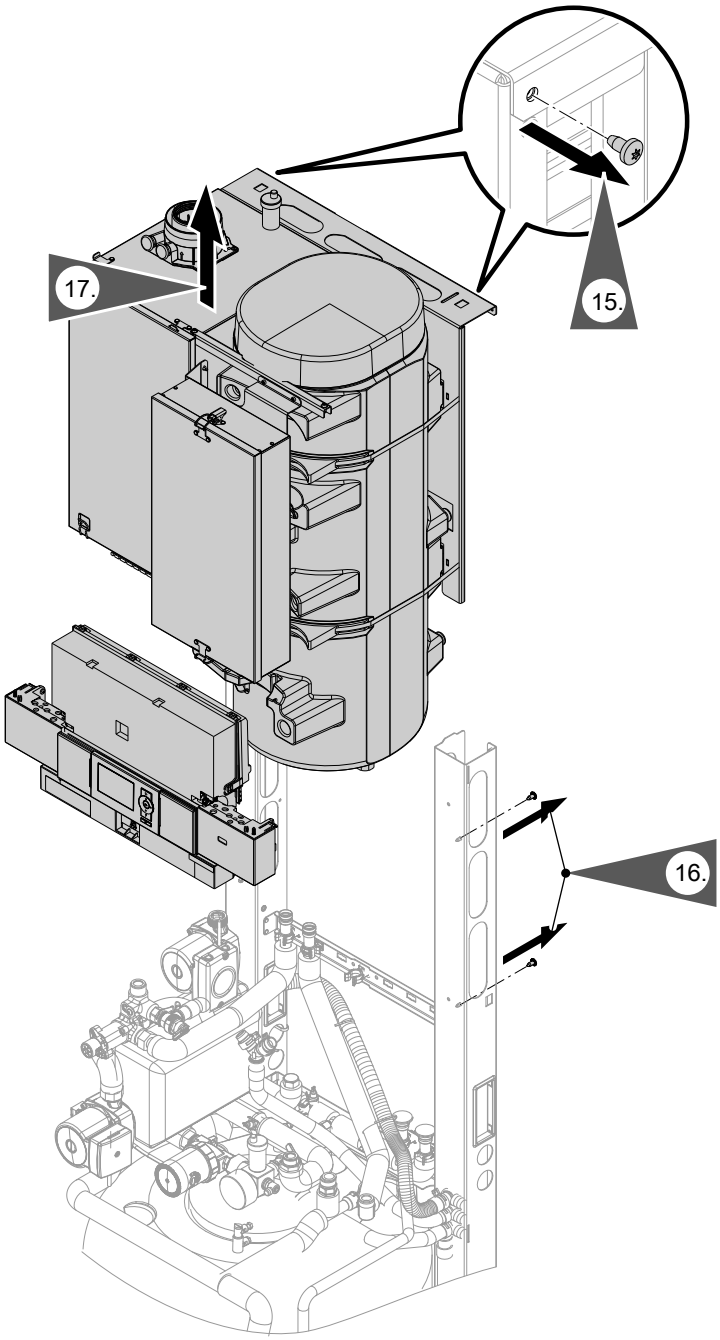
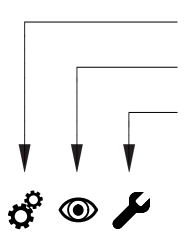


Fig. 48

Steps - commissioning, inspection and maintenance

Commissioning steps
Inspection steps
Maintenance steps

Steps - commissioning, inspection and… (cont.)



Page

Removing the front panels

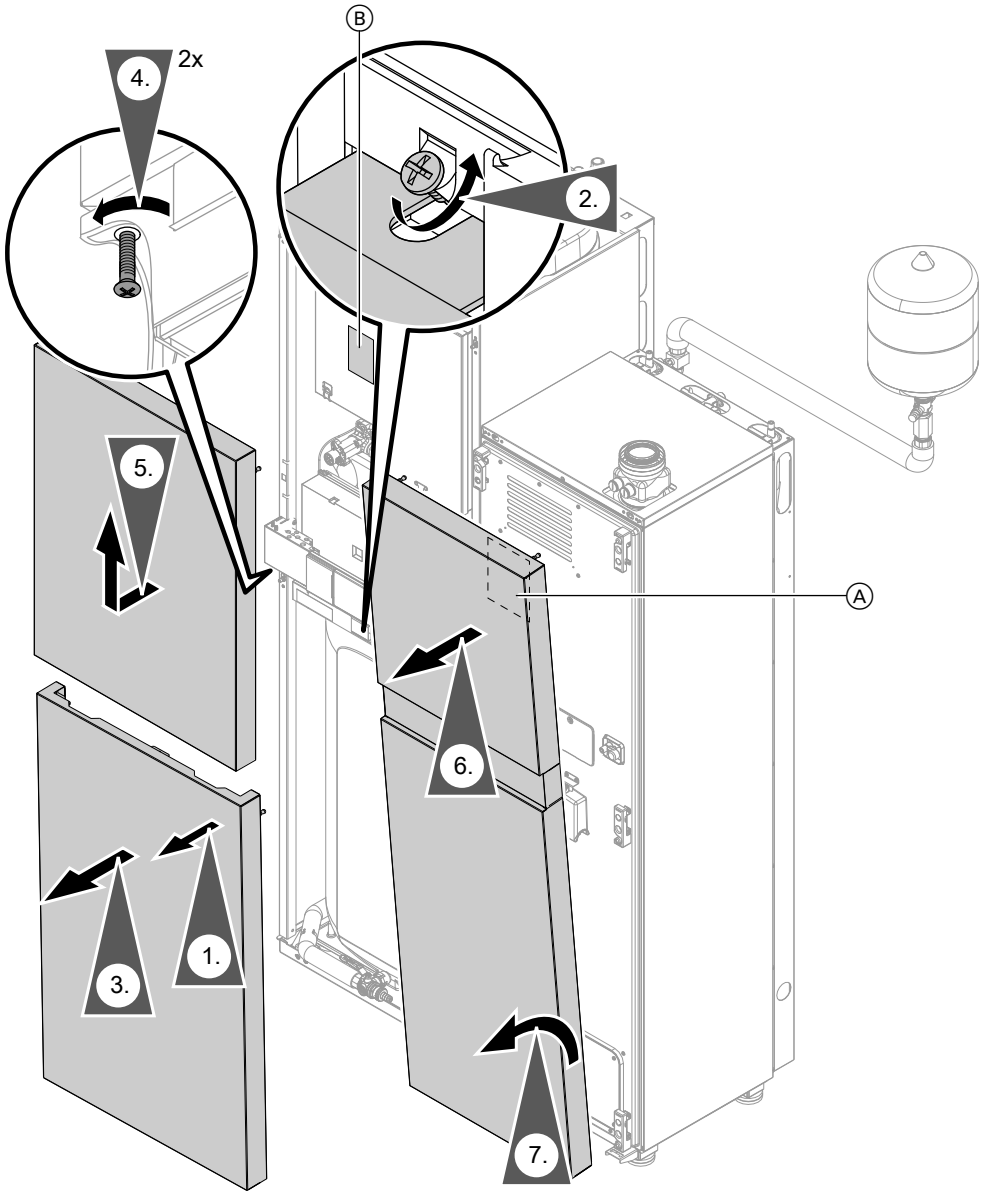


Fig. 49

Marking the type on the type plate

Check the fuel cell type on type plate Ⓐ of the fuel cell module and indicate it with ☑ on type plate Ⓑ of the Vitovalor 300-P (see fig. 49).

The following two types can be used:
☐ FC-V75CF1HD
☐ FC-V75FS1AD

Checking the power supply

Overview of water circuits

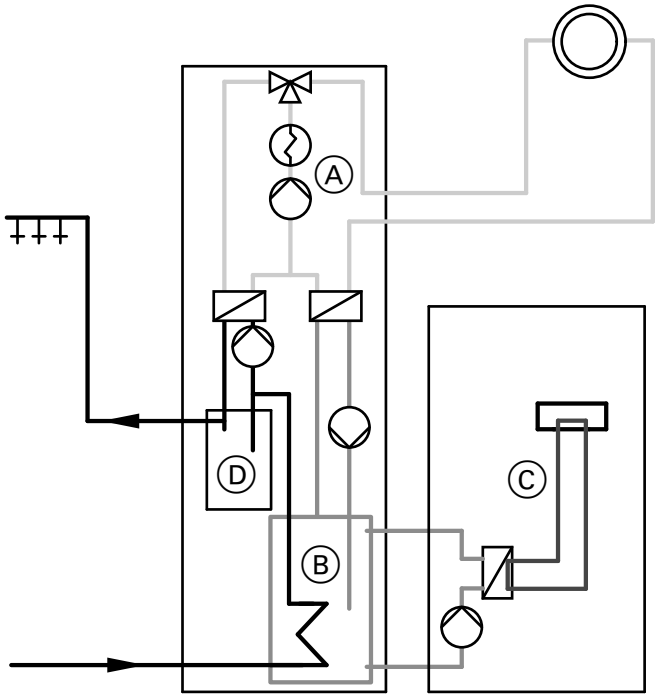


Fig. 50

The system has three separate water circuits, each with different requirements in terms of the quality of fill water, plus the DHW water circuit.

Ⓐ Gas condensing module and heating circuits (page 55)
Ⓑ Fuel cell module and heating water buffer cylinder (page 53)
Ⓒ Fuel cell module process circuit (page 70)
Ⓓ DHW

Filling the fuel cell module and heating water buffer cylinder

Please note
Unsuitable fill water increases the level of deposits and corrosion. This can cause damage to the appliance.

- The fill and top-up water must be softened, e.g. with a small heating water softener.
- Total permissible hardness of the fill and top-up water: < 0.02 mol/m^3 (0.11 °dH)
- Antifreeze must not be added to the fill or top-up water.

Filling the fuel cell module and heating water… (cont.)

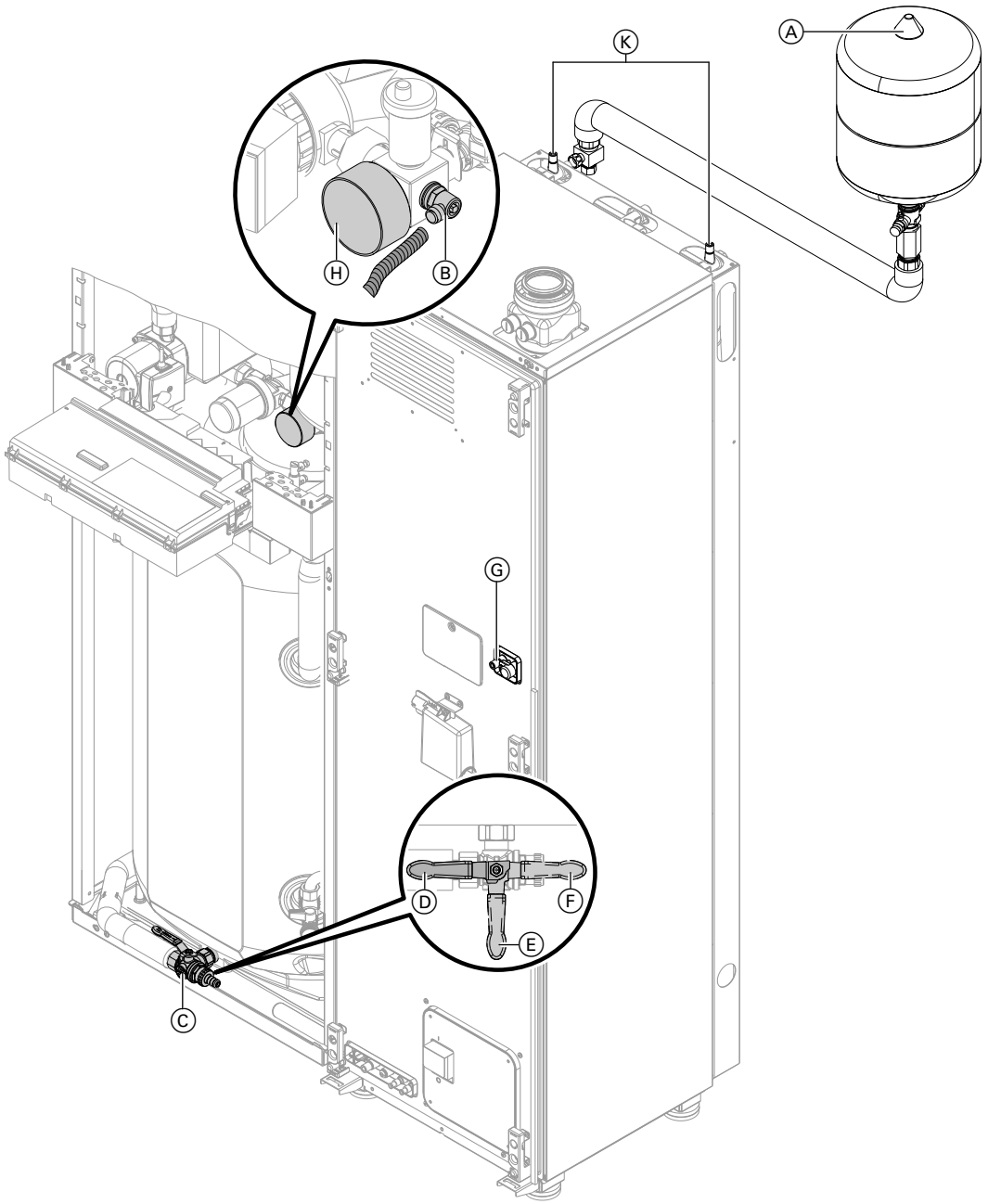


Fig. 51

1. Check and if necessary adjust the pre-charge pressure at test connector Ⓐ on the diaphragm expansion vessel.
   Set value: 0.9 bar (0.09 MPa)

2. Connect the drain hose to air vent valve Ⓑ and to the drainage system.

3. Turn the lever of tap Ⓒ to position Ⓔ.
   The fuel cell module is filled in this position.

4. Fill the fuel cell module via tap Ⓒ.

   Vent via:
   - Air vent valve Ⓖ at the front of the fuel cell module
   - Air vent valves Ⓚ at the top of the fuel cell module

   Note
   Place a suitable container below air vent valves Ⓖ and Ⓚ to catch any fill water that escapes. Dry off any moisture that may appear on the fuel cell module.

5. Once no more air is escaping through the air vent valves, turn tap Ⓒ to position Ⓕ.
   Close air vent valves Ⓖ and Ⓚ.

Filling the fuel cell module and heating water… (cont.)

6. Fill the heating water buffer cylinder via tap Ⓒ. Vent the heating water buffer cylinder via air vent valve Ⓑ.

7. Close air vent valve Ⓑ and adjust the charge pressure to 1.0 bar (0.1 MPa). Read off the charge pressure on pressure gauge Ⓗ.

8. Turn the lever of tap Ⓒ to position Ⓓ.

9. Remove the drain hose from air vent valve Ⓑ. Remove the fill hose from tap Ⓒ.

Filling gas condensing module and heating circuits

Fill water

Please note
Unsuitable fill water increases the level of deposits and corrosion and may lead to appliance damage.
- Flush the heating system thoroughly before filling.
- Only use fill water of potable water quality.
- Antifreeze suitable for heating systems can be added to the fill water. The antifreeze manufacturer must verify its suitability.
- Fill and top-up water with a water hardness in excess of the following values must be softened, e.g. with a small softening system for heating water.

Total permissible hardness of the fill and top-up water

Total heating output	Specific system volume		
kW	< 20 l/kW	≥ 20 l/kW to < 50 l/kW	≥ 50 l/kW
≤ 50	≤ 3.0 mol/m³ (16.8 °dH)	≤ 2.0 mol/m³ (11.2 °dH)	< 0.02 mol/m³ (0.11 °dH)
> 50 to ≤ 200	≤ 2.0 mol/m³ (11.2 °dH)	≤ 1.5 mol/m³ (8.4 °dH)	< 0.02 mol/m³ (0.11 °dH)
> 200 to ≤ 600	≤ 1.5 mol/m³ (8.4 °dH)	≤ 0.02 mol/m³ (0.11 °dH)	< 0.02 mol/m³ (0.11 °dH)
> 600	< 0.02 mol/m³ (0.11 °dH)	< 0.02 mol/m³ (0.11 °dH)	< 0.02 mol/m³ (0.11 °dH)

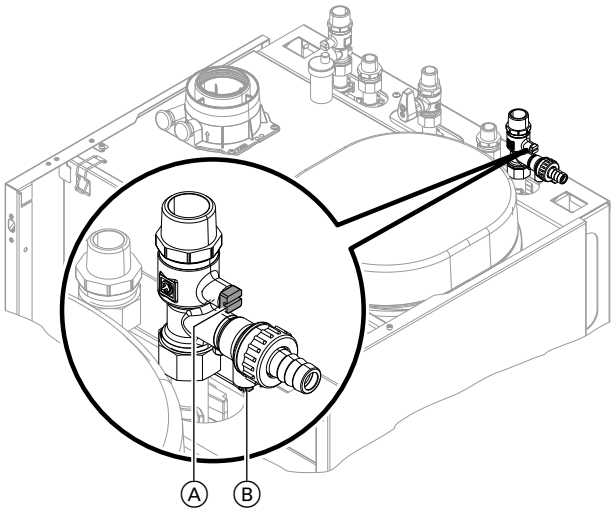


Fig. 52 Illustration shows top connection set (accessories)

Filling gas condensing module and heating… (cont.)

1. Check the pre-charge pressure of the diaphragm expansion vessel. See page 86.
2. Close the gas shut-off valve.
3. Open shut-off valves Ⓐ on the heating water side.
4. Fill the heating system via boiler drain & fill valve Ⓑ on the heating return (to the top or side).
   - Min. operating pressure 1.0 bar (0.1 MPa).
   - Permissible operating pressure 3.0 bar (0.3 MPa).

   Note
   If the control unit has not been switched on prior to filling the system, then the servomotor of the diverter valve will still be in its central position, and the system will be completely filled.
5. If the control unit was already on before filling: Switch the control unit ON and activate the fill program (see next chapter).
6. Close boiler drain & fill valve Ⓑ.

Activating the filling function

Service menu
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Service functions"**
3. **"Filling"**
   Filling function is enabled.
4. Ending filling function:
   Press **OK** or ⮌.

Filling the DHW cylinder

1. Open the on-site potable water supply (cold water connection) and one DHW draw-off point.
2. The DHW cylinder has been completely filled when no more air flows out of the DHW draw-off point.

Filling the trap on the gas condensing module with water

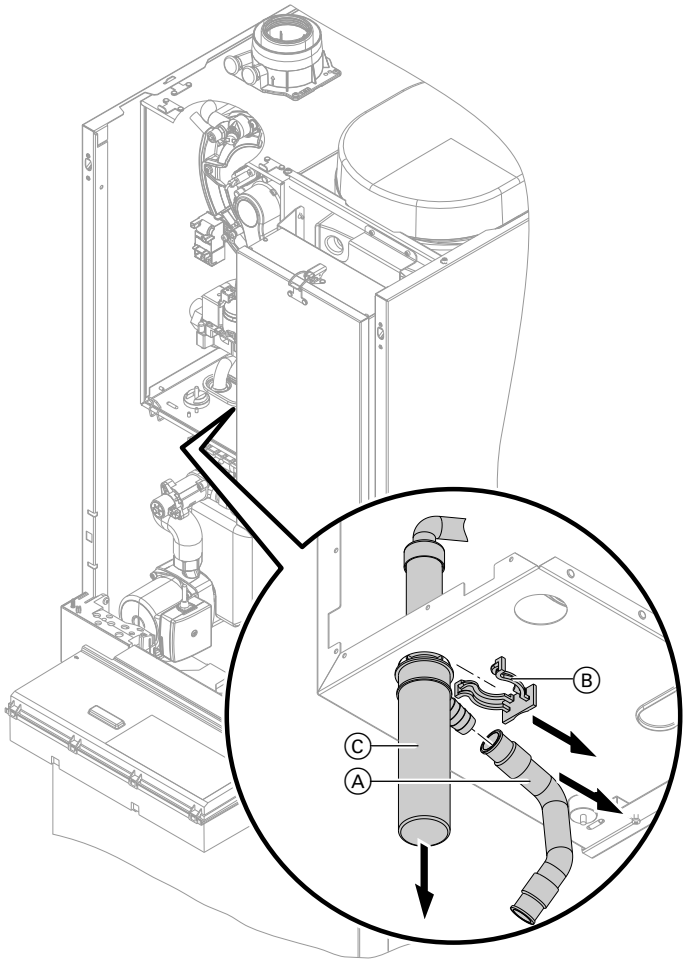


Fig. 53

1. Pivot the control unit forwards.
2. Pull off drain hose Ⓐ.
3. Pull off retaining clip Ⓑ.
4. Remove trap bottle Ⓒ downwards.
5. Fill trap with water and refit.
6. Reconnect drain hose Ⓐ.
7. Check that the condensate pipe is correctly attached to the trap and heat exchanger.

   Note
   Route the drain hose without any bends and with a constant fall.
8. Remount the cover panel.
9. Secure the control unit back in the operating position.

Venting the gas condensing module

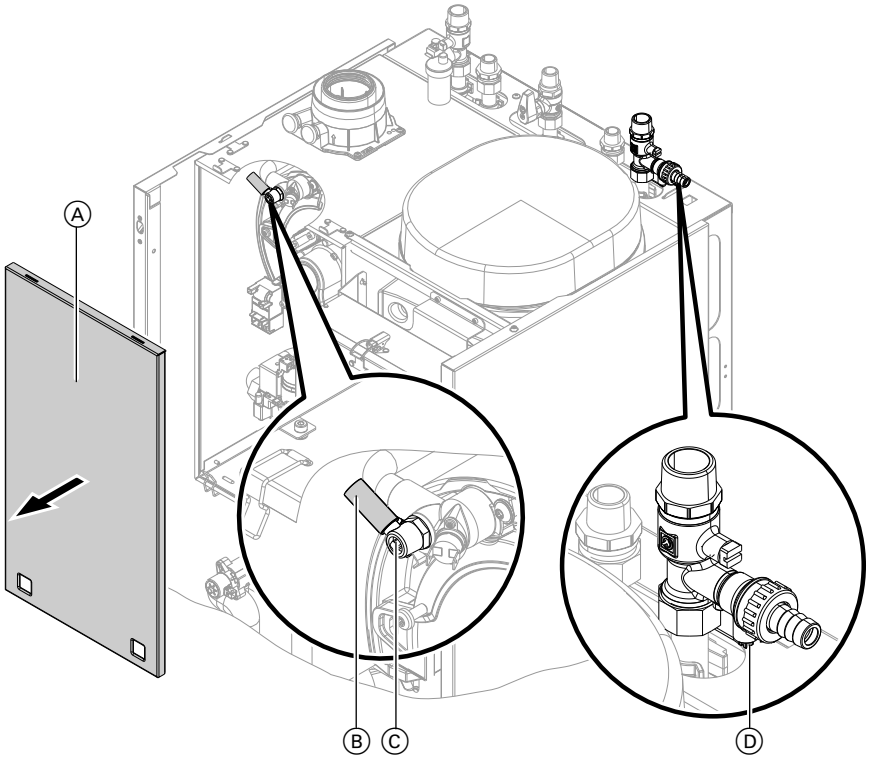


Fig. 54

1. Close the shut-off valves on the heating water side.
2. Remove cover panel Ⓐ.
3. Push drain hose Ⓑ onto air vent valve Ⓒ and connect to a drain.
4. Open air vent valve tap Ⓒ and fill valve Ⓓ on the heating return and vent (flush) under mains pressure until air noise can no longer be heard.
5. First close vent valve Ⓒ.
6. Once the required operating pressure has built up, close fill valve Ⓓ. Open the shut-off valves on the heating water side.
7. Remove drain hose Ⓑ from fill valve Ⓒ and keep safe.

Gas condensing module only: Switching on mains power and control unit

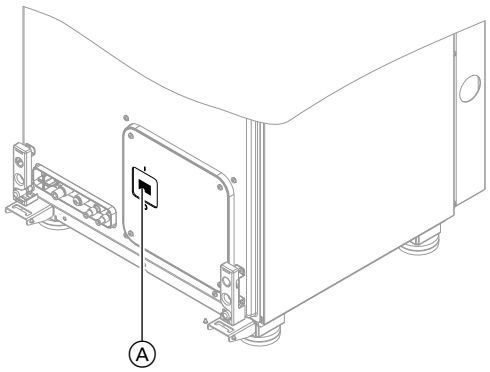


Fig. 55

1. Ensure that ON/OFF switch Ⓐ on the **fuel cell module** is switched off (0).
2. Close the gas shut-off valve.
3. If the **gas condensing module** was not already switched on for filling, switch on mains power and control unit.

Changing language setting (control unit, gas condensing module)

At the commissioning stage, the display is in German (factory setting).

Extended menu:
1. ☰
2. **"Einstellungen"**
3. **"Sprache"**
4. Select the required language with ▲/▼.

Fig. 56

Setting time and date (control unit, gas condensing module)

The time and date need to be reset during commissioning or after a prolonged time out of use (approx. 18 days).

Extended menu:
1. ☰
2. **"Settings"**
3. **"Time / Date"**
4. Set current time and date.

Note on automatic testing the flue gas temperature sensor

The control unit automatically checks the function of the flue gas temperature sensor as soon as the time and date have been set.
The display shows: **"Flue gas temp sensor test"** and **"Active"**.

Note
If the flue gas temperature sensor is positioned incorrectly, commissioning is cancelled and fault message A3 is displayed (see page 132).

Venting the heating system

1. Close the gas shut-off valve and switch the control unit ON.
2. Activate venting program (see next chapter).

   Note
   For function and sequence of the venting program, see page 171.
3. Check the system pressure.
4. Open the gas shut-off valve.

Activating the venting function

Service menu
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Service functions"**
3. **"Venting"**
   Venting function is enabled.
4. Ending venting function:
   Press **OK** or ⮌.

Registering the external meter on Vitocom 300 as an M-Bus subscriber

Note
The Vitocom 300 can be found in the process controller junction box.

1. Select **"Service"** using ▼.
2. Confirm with **OK**.
3. Select **"M BUS config"** using ▲/▼.
4. Confirm with **OK**.
5. Select **"M BUS Scan"** using ▲/▼.
6. Confirm with **OK**.
   The display shows:
   "M BUS scan:" "Start"
7. Confirm with **OK**.
   The display shows:
   "Scan: XX %" "Please wait"
8. Select **"Subscriber"** using ▲/▼.
9. Confirm with **OK**.
10. Select required subscriber using ▲/▼.
11. Confirm with **OK**.
12. Select **"Map"** using ▲/▼.
13. Confirm with **OK**.
    The subscriber has been registered.

Pairing wireless accessories (where present)

Pairing wireless components

Note
"Wireless status" *must be set to* ***"Enabled"*** *(delivered condition). If* ***"Wireless status"*** *is set to* ***"Disabled"****, the subsequent* ***"Wireless"*** *menu will not be displayed.*

1. Place all components close to the boiler.
   Position the wireless repeater (if present) at least 1 m away from the control unit and connect to power supply.
2. Press **OK** and ☰ simultaneously for approx. 4 s.
3. **"Service functions"**
4. **"Wireless"**
5. **"Add wireless subscriber"**
6. When pairing first component only: **"Add with repeater"**:
   - Without wireless repeater: **"NO"**
   - With wireless repeater: **"YES"**

   Note
   If a wireless repeater subsequently proves necessary, 'forget' all components and re-pair via the wireless repeater (see page 62).
7. **"Wireless key"** is displayed.
   The three digits are entered when pairing each of the wireless components (except the wireless outside temperature sensor).
   Pair the components as wireless subscribers within 15 min (see following chapter).
   If connection cannot be established with a subscriber, install a wireless repeater or choose another installation location.

Pairing wireless accessories (where present) (cont.)

Logging on the wireless outside temperature sensor

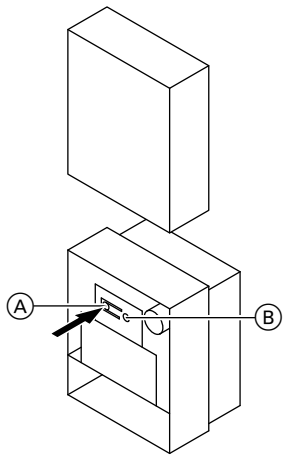


Fig. 57

1. Open the enclosure of the outside temperature sensor.

2. Briefly press Ⓐ on the outside temperature sensor.
   While the connection is being established, LED Ⓑ on the outside temperature sensor briefly flashes red.
   Once the connection is established, **"New subs.: OK"** is displayed on the control unit.
   If the connection cannot be established, **"No subscriber"** is displayed.

Pairing the Vitotrol 200-RF

1. Insert batteries (LR 6/AA, part of the standard delivery) into the remote control.
   The configuration assistant then starts automatically.
   "**CI**" appears on the remote control display and **"Lrn"** flashes.

2. On the remote control, press **OK**.
   The remote control sends a pairing signal to the control unit.
   - Pairing successful:
     "**C2**" appears on the remote control display and **"000"** (first digit flashes).
   - Pairing unsuccessful:
     "_ _ _ _ " and ⚠ appears on the remote control display.
     Repeat the pairing process.

3. Once pairing succeeds, enter the 3-digit wireless key on the remote control. The wireless key is displayed on the control unit.
   - With **+/-** enter the first digit, then confirm with **OK**.
   - Select the next position using ▶ and enter the next digit using **+/-**.
   - Confirm each entry with **OK**.

4. Once the wireless key has been fully entered, "**C3**" and **"H 1"** appears on the remote control. On the control unit, **"New subs.: OK"** is displayed.
   After this, assign the required heating circuit to the remote control.

Pairing the Vitotrol 300-RF

1. Supply power to the Vitotrol 300-RF (via batteries or table-top dock).
   The commissioning assistant starts automatically.

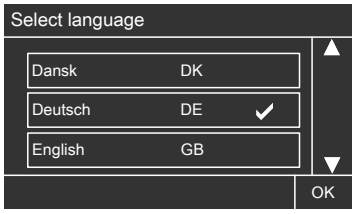
2. 

Fig. 58

   Select language.

   Note
   When the unit is first commissioned, ***"Select language [Sprache wählen]"*** *is displayed in German.*

3. **"Activate wireless connection"** appears.

4. Press **"OK"** on the remote control.

Pairing wireless accessories (where present) (cont.)

5.

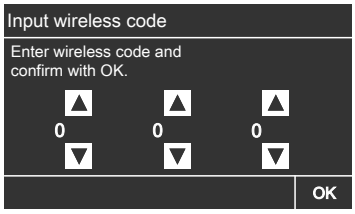


Fig. 59

Enter the 3-digit wireless key. The wireless key is displayed on the control unit.

Note
If pairing was unsuccessful:

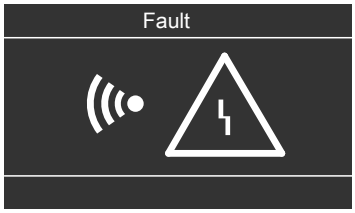


Fig. 60

re-activate the RF connection.

If pairing was successful, **"New subs.: OK"** is displayed on the control unit.

6.

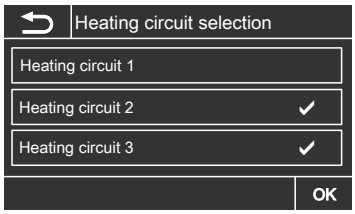


Fig. 61

Select the heating circuits that are to be operated by the Vitotrol 300-RF and confirm with **"OK"**. Initialisation bar is progressing (can take approx. 5 min).
After successful initialisation, the standard menu appears.

Note
Wireless transmission can take some time, so there may be a delay in the display of symbols.

Note
All paired wireless subscribers are displayed in the ***"Wireless subscriber list"*** *menu point.*

Forgetting wireless components

If a faulty component is replaced or the wireless connection is unstable, forget all components (including the wireless repeater, if installed) from the control unit and then re-pair them all.

Forgetting components:

1. Call up service menu: Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Service functions"**
3. **"Wireless"**
4. **"Forget wireless subscriber"**
5. **"Yes"**
   All wireless subscribers are forgotten.

DIP switch at the back of the wireless repeater

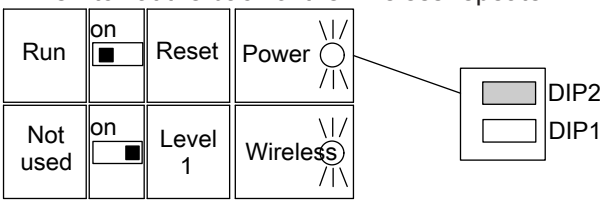


Fig. 62

Forgetting the wireless repeater (if installed):

1. Switch the wireless repeater OFF and ON again (pull power plug).
2. Within 5 minutes, set DIP switch 2 at the back of the wireless repeater to "**Reset**".
   The wireless repeater has been logged off from the wireless base station if the red LED at the front flashes (for approx. 20 s).
3. Then set DIP switch 2 to "**Run**" again.

Naming the heating circuits

In the delivered condition, the heating circuits are designated **"Heating circuit 1"**, **"Heating circuit 2"** and **"Heating circuit 3"** (if installed).
If the system user prefers, the heating circuits can be designated differently to suit the specific system.

Enter names for heating circuits:
Operating instructions

Checking the static pressure and supply pressure

Danger
CO formation as a result of incorrect burner adjustment can have serious health implications. Always carry out a CO test before and after work on gas appliances.

On the gas condensing module

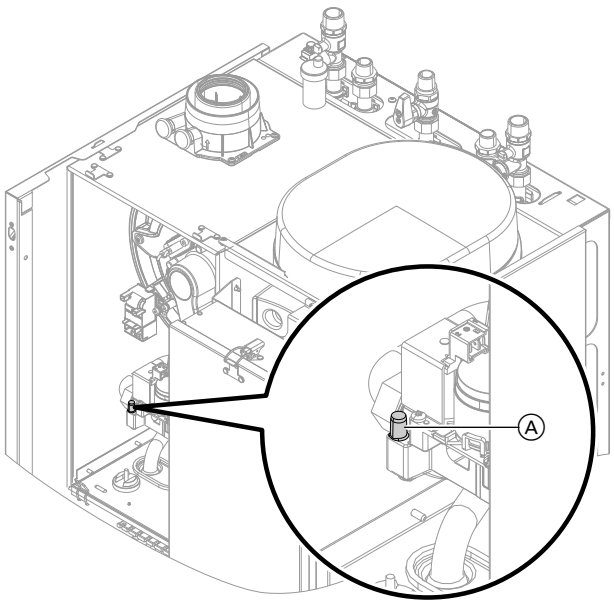


Fig. 63

1. Close the gas shut-off valve.
2. Undo the screw in test connector "PE" Ⓐ on the gas train but do not remove it. Connect the pressure gauge.
3. Open the gas shut-off valve.
4. Measure static pressure and record value in the report on page 180.
   Set value: max. 25 mbar (2.5 kPa).
   If the set value is exceeded, take steps according to the table on page 65.
5. Commission the appliance.

   Note
   *During commissioning, the boiler can enter a fault state (fault EE is displayed) because of air in the gas line. After approx. 5 s, press reset **R** (see operating instructions) to reset the burner.*
6. Check the supply (flow) pressure.
   Set value: 20 mbar (2.0 kPa)
   If the set value is exceeded, take steps according to the table on page 65.

   Note
   Use a suitable tester with a resolution of at least 0.1 mbar (0.01 kPa) to check the supply pressure.
7. Record the actual value in the report on page 180.
8. Shut down the appliance and close the gas shut-off valve. Remove the pressure gauge and tighten the screw in test connector Ⓐ.

Checking the static pressure and supply pressure (cont.)

9. Open the gas shut-off valve and start the appliance.

Danger
Gas escaping from the test connector leads to a risk of explosion.
Check gas tightness at test connector Ⓐ.

On the fuel cell module

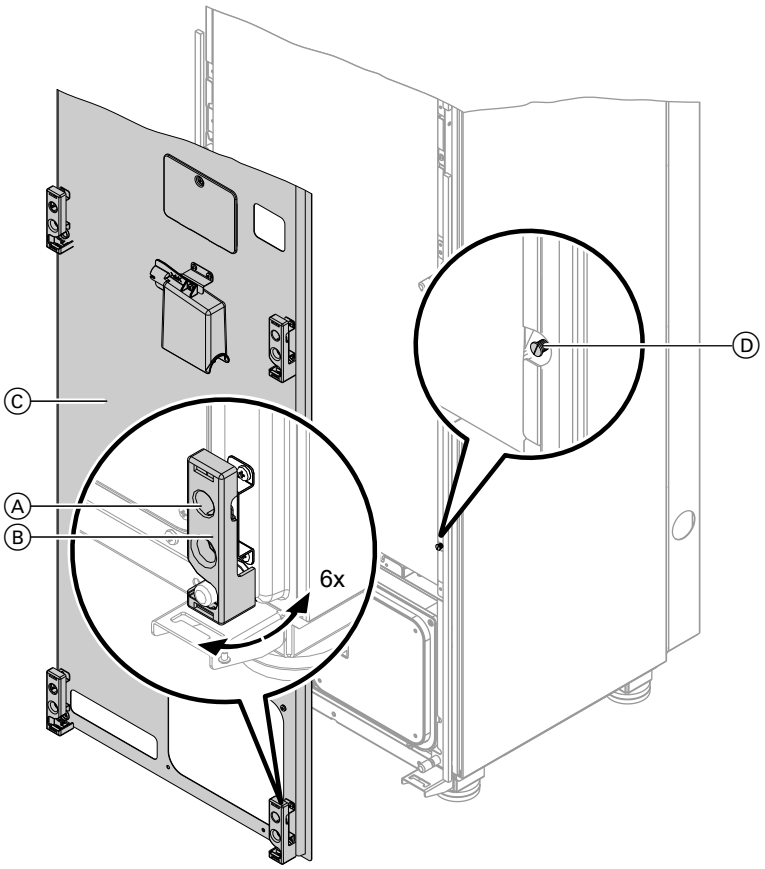


Fig. 64

1. Undo screws Ⓐ and open clasps Ⓑ.

2. Remove cover panel Ⓒ.

3. Close the gas shut-off valve.

4. Undo screw in test connector Ⓓ but do not remove it. Then connect the pressure gauge.

5. Open the gas shut-off valve.

6. Measure the static pressure.
Set value: max. 25 mbar (2.5 kPa).

7. If the set value is exceeded, take steps according to the table on page 65.

8. Close the gas shut-off valve, remove the pressure gauge, tighten the screw in test connector Ⓓ.

9. Open the gas shut-off valve.

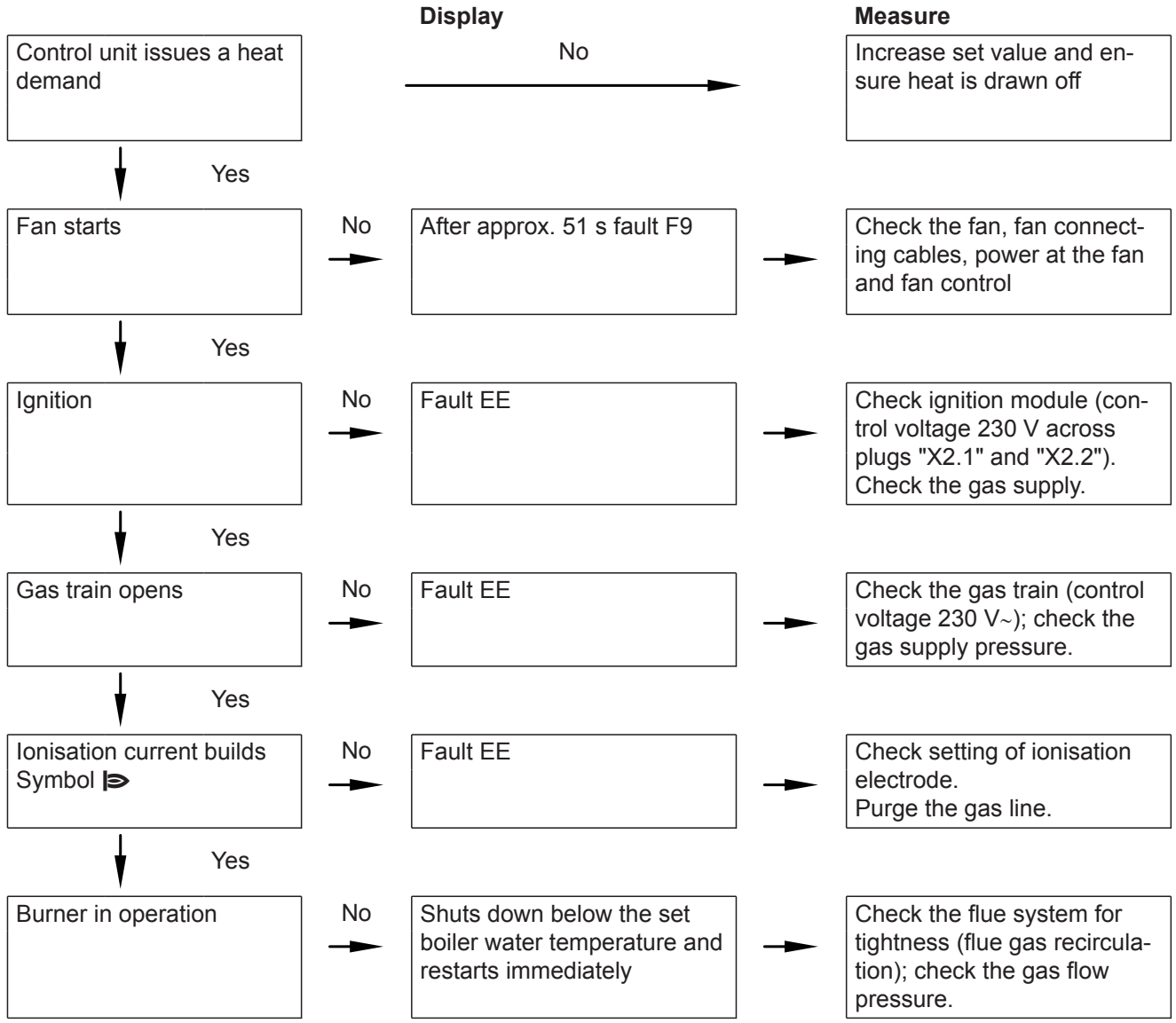
Danger
Gas escaping from the test connector leads to a risk of explosion.
Check test connector Ⓓ for gas tightness.

10. Remount cover panel Ⓒ.

Checking the static pressure and supply pressure (cont.)

Supply pressure (flow pressure)	Steps
Below 17.4 mbar (1.74 kPa)	Do not commission the appliance. Notify your gas supply utility.
17.4 to 25 mbar (1.74 to 2.5 kPa)	Commission the appliance.
Above 25 mbar (2.5 kPa)	Connect the separate gas pressure governor upstream of the system and set the pre-charge pressure to 20 mbar (2.0 kPa). Notify your gas supply utility.

Function sequence and possible faults (gas condensing module)



Function sequence and possible faults (gas… (cont.)

Yes

Automatic calibration of the combustion controller	No →	Fault E3	→	Ensure adequate heat transfer. Press reset button **R**.
		Fault Eb		Check gap between ionisation electrode and burner gauze assembly. Check allocation of gas type (coding address 82, gas train setting). Check flue system; remedy flue gas recirculation if required. Press reset button **R**.

For further details regarding faults, see page 115.

Preparing the fuel cell module for commissioning

Checking the power supply

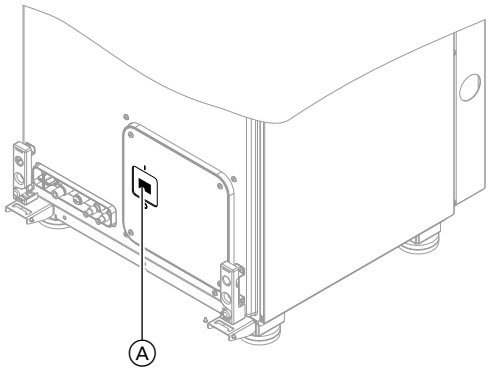


Fig. 65

1. Check that the power supply has been connected according to the details on page 39.
2. Removing the front panel (if it is still attached); see page 52.
3. Ensure that ON/OFF switch Ⓐ on the fuel cell module is switched OFF (**0**).
4. Switch on the power supply at the sub-distribution board.

Programming unit on the fuel cell module

All settings for commissioning and maintenance are made using the programming unit on the fuel cell module.

Preparing the fuel cell module for commissioning (cont.)

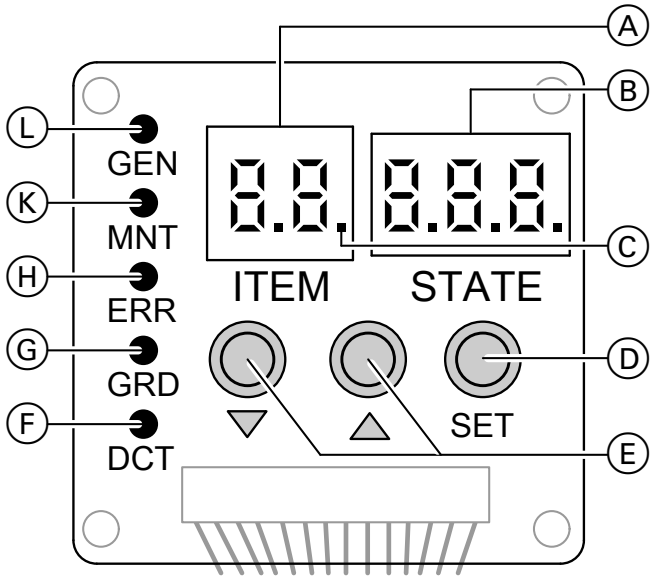


Fig. 66

Ⓐ Function display
Ⓑ Status
Ⓒ Commissioning indicator (flashing or constant)
Ⓓ Confirm selection/adjustment
Ⓔ Select/adjust value
Ⓕ No function
Ⓖ Power supply indicator
Ⓗ Fault indicator
Ⓚ Commissioning/maintenance indicator
Ⓛ Power generation indicator

Note
The display switches off when, in standard mode (economy mode), no input has been made for 1 min. When a key is pressed, the display switches back on.

Preparing the fuel cell module for commissioning (cont.)

Starting the fuel cell module (Commissioning/maintenance operating mode)

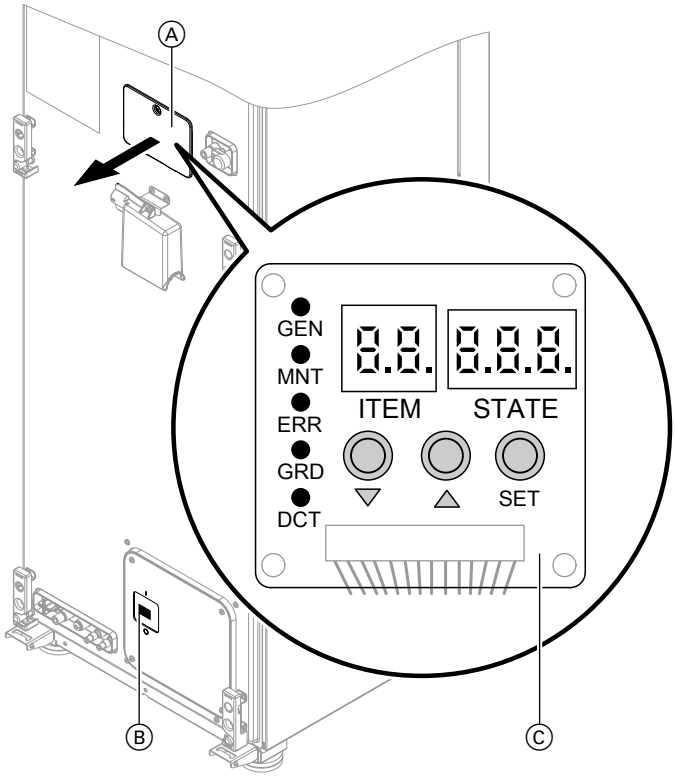


Fig. 67

1. Remove cover Ⓐ.
2. Turn ON/OFF switch Ⓑ on the fuel cell module to **"I"**.
   After a 20 second start-up routine, programming unit Ⓒ displays:

01		oFF
ITEM		STATE

3. Press **SET**.
   "oFF" flashes.
4. Within the next 30 s select **"on"** using ▲/▼.
5. Press **SET** to confirm.
   The **MNT** indicator lights up. The fuel cell module is in **"Commissioning/maintenance"** operating mode.

Changing the gas type on the fuel cell module

Delivered condition: Gas type "E"
Conversion is required only for gas type "LL".
"Commissioning/maintenance" operating mode must be enabled (**MNT** illuminates).

1. Select **"94"** using ▲/▼.
2. Press **SET** to confirm.
3. Select gas type **"E"** or **"LL"** using ▲/▼.
4. Press **SET** to confirm.
5. Hold down **SET** until **"END"** and **"nd"** are displayed.
6. Turn ON/OFF switch Ⓑ on the fuel cell module to **"0"** and then back to **"I"**.
7. Select **"94"** using ▲/▼ and check the setting made.

Adjusting country settings for grid monitoring on the fuel cell module

"Commissioning/maintenance" operating mode must be enabled (**MNT** illuminates).

1. Select **"80"** using ▲/▼.
2. Press **SET** to confirm.
3. Using ▲/▼, set the relevant country number (from the table).
4. Press **SET** to confirm.
5. Hold down **SET** until **"END"** and **"nd"** are displayed.
6. Turn ON/OFF switch Ⓑ on the fuel cell module to **"0"** and then back to **"I"**.
7. Select **"80"** using ▲/▼ and check the setting made.

Country	Number to set
DE, CH	0 (delivered condition)
AT	1
FR	2
GB	3

Commissioning the fuel cell module

Preparing to fill the process circuit with distilled water

Please note
Commissioning with **non-distilled water** (e.g. tap water) will damage the appliance.
Fill only with the distilled water supplied or available as an accessory (VDE 0510)**.**

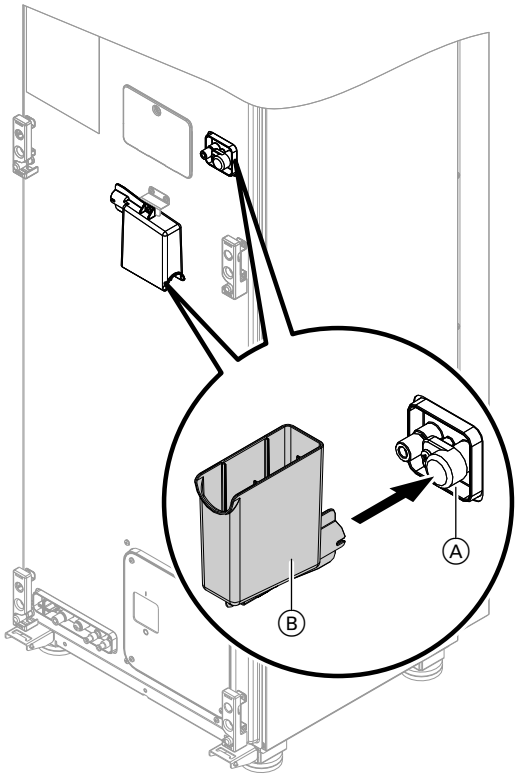


Fig. 68

1. Undo the screw and remove the cover from distilled water filler neck Ⓐ.
2. Remove the screw and remove funnel Ⓑ.
3. Attach funnel Ⓑ to distilled water filler neck Ⓐ.

Commissioning the fuel cell module (cont.)

4. Check that the "Commissioning/maintenance" operating mode is enabled. The **MNT** indicator must be lit.
   There is a fault if the display shows **"n1"**, **"n2"** or **"n3"**. See the following table.

Commissioning faults

For further information on the fault display see page 122.

Fault messages

Display under STATE	Cause	Remedy
n1	Heating water buffer cylinder is fully charged.	Use consumers to draw off heat until the "n1" message disappears.
	Commissioning process started too soon after switching on	Re-start the commissioning process after about 5 min.
n2	Fuel cell module is in cooling mode.	Wait until cooling mode has terminated and the "n2" message disappears. This process takes about 90 min.
n3	Fuel cell fault	Inform Viessmann Technical Services.

Commissioning process

Since the complete commissioning process requires some time, there are two different ways in which it can be carried out:
- In commissioning mode 1, the fuel cell is filled with distilled water and then commissioned. Power generation is initiated after about 1 hour (see page 70). Commissioning mode 1 terminates automatically if power has been generated for 10 hours without interruption (**MNT** indicator extinguishes).
- In commissioning mode 3, the fuel cell is filled with distilled water but is not then commissioned. If commissioning is to be carried out in full later, select commissioning mode 1. The filling process already carried out will then be skipped (see page 71).

Note
To make use of the waiting times that arise during commissioning of the fuel cell module, carry out additional commissioning steps during these periods.

These steps might include:
- *Tightness tests*
- *Visual inspections*
- *Adjustments to the control unit*
- *Instructing the system user*

During these additional steps, watch the filling process on the display and continue with it.

Note
Stopping commissioning (in emergency only). See page 72
- *Commissioning mode 3 can be stopped during phases 01 to 04.*
- *Commissioning mode 1 can be stopped during phases 01 to 05. During phases 06 to 12, the commissioning process cannot be stopped.*

Filling with distilled water and starting fuel cell module (commissioning mode 1)

1. Select **"11"** using ▲/▼.

Commissioning the fuel cell module (cont.)

2. Press **SET**. Commissioning mode 1 is activated. Under **ITEM**, a dot will flash while commissioning mode 1 is active.

11.		01
ITEM		STATE

It will not be possible to carry out commissioning mode if "n1", "n2" or "n3" is flashing under **STATE**. For the meaning of fault messages and to correct faults, see page 70.

3. Fill with the distilled water supplied.
While indicators "01" to "04" are flashing, continue to fill with distilled water until they switch to constant. The switch from flashing to constant display will be repeated several times.
The whole process takes about 40 min.

Phase	Duration min. approx.
01	4
02	15
03	20
04	0.5

When phase 04 shows constant, add another 0.5 l of distilled water so that the integral trap is filled.

Please note
Escaping flue gas can damage your health. Ensure that the integral trap is filled with water.

Note
A fault has occurred during the commissioning process if the display shows alternately "End" and "nP".
Turn the ON/OFF switch on the fuel cell module OFF and then ON again. Then restart commissioning mode 1.

4. When "05" is displayed under **STATE**, the filling process has finished and the start phase will commence.
The starting procedure then continues automatically:

Phase	Duration min. approx.	Function
05	15	Venting
06 to 09	60	Process start
10	< 0.5	Process start completed
11	< 0.5	Preparation for power generation
12	–	Power generation (indicators **GEN** and **GRD** illuminate)

5. Remove the funnel from the filler neck and secure it to the front panel with the screw (see page 69).

6. Replace the cover on the distilled water filler neck and secure it with the screw (see page 69).

Filling with distilled water (commissioning mode 3)

1. Select **"13"** using ▲/▼.

Commissioning the fuel cell module (cont.)

2. Press **SET**. Commissioning mode 3 is activated. Under **ITEM**, a dot will flash while commissioning mode 3 is active.

13.		01
ITEM		STATE

It will not be possible to carry out commissioning mode if "n1", "n2" or "n3" is flashing under **STATE**. For the meaning of fault messages and to correct faults, see page 70.

3. Fill with the distilled water supplied.
While indicators "01" to "04" are flashing, continue to fill with distilled water until they switch to constant. The switch from flashing to constant display will be repeated several times.
The whole process takes about 40 min.

Phase	**Duration min. approx.**
01	4
02	15
03	20
04	0.5

When phase 04 shows constant, add another 0.5 l of distilled water so that the integral trap is filled.

! **Please note**
Escaping flue gas can damage your health. Ensure that the integral trap is filled with water.

4. The filling process has been completed when "End" flashes under **STATE**.

13.		End
ITEM		STATE

Press **SET** to complete commissioning mode 3.

Note
A fault has occurred during the commissioning process if in phase 04 the display shows alternately "End" and "nP".
Turn the ON/OFF switch on the fuel cell module OFF and then ON again. Then restart commissioning mode 3.

5. Remove the funnel from the filler neck and secure it to the front panel with the screw (see page 69).

6. Replace the cover on the distilled water filler neck and secure it with the screw (see page 69).

Stopping commissioning mode 1 or 3 (in emergency only)

"Commissioning/maintenance" operating mode must be enabled (**MNT** illuminates)
- Commissioning mode 1: Possible only during phases 01 to 05.
- Commissioning mode 3: Possible only during phases 01 to 04.

1. Select **"18"** using ▲/▼.

2. Press and hold **SET** for at least 3 s. The current commissioning phase is displayed under **STATE**. If commissioning mode is stopped, "End" will appear under **STATE**.

18.		End
ITEM		STATE

3. Press **SET**. 01 is displayed under **STATE**. "01" appears under **ITEM**, and the dot disappears. Commissioning mode has terminated.

Commissioning the fuel cell module (cont.)

Quitting "Commissioning/maintenance" mode

1. Select **"01"** under **ITEM** using ▲/▼.
2. Press **SET** to confirm.
3. Select **"OFF"** in **SET** using ▲/▼.
4. Press **SET** to confirm.
   The **MNT** indicator extinguishes.

Activating start time optimisation

Values for start time optimisation captured during commissioning are deleted.
In control mode, start times are then changed according to usage characteristics for the whole system, thereby optimising power generation.

1. Check that the **MNT** indicator is lit.
2. Select **"19"** using ▲/▼.

19	
ITEM	STATE

3. Press and hold **SET** for at least 3 s. During the process, the dot under **ITEM** will flash.
   When **"CL"** appears under **STATE**, start time optimisation is enabled.

Ending commissioning mode – switching to standard mode

1. Check whether the fuel cell module is set to **"Energy manager ON"** (delivered condition) or **"Energy manager OFF"**. See page 86.
2. Check that the **MNT** indicator is lit.
   Depending on the commissioning mode, either **"11"** or **"13"** will be displayed under **ITEM**.
3. Select **"17"** using ▲/▼.
   - Power generation continues.
   - Commissioning mode will be terminated.
   - Gas and power supply remain on.
4. Press and hold **SET** until **"oFF"** appears under **STATE**.
   Commissioning mode has terminated when the **MNT** indicator is no longer lit. The fuel cell module switches to control mode.

   Note
   Electrical output generated in control mode can be scanned. See page 113.

Linking the fuel cell module and other subscribers in LON

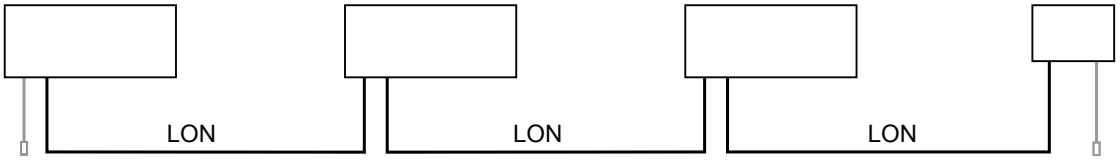
Note
Data transfer via LON can take several minutes.

Set LON subscriber numbers and further functions via code 2 (see the following table)

Note
*The same subscriber number must **not** be allocated twice within the LON.*
***Only one Vitotronic** may be programmed as fault manager.*

Linking the fuel cell module and other… (cont.)

All coding addresses in the table are listed in the "General" group.

Boiler control unit	Vitocom	Vitotronic 200-H (accessories)	Fuel cell module
			
Subscriber no. 1 Code "77:1"	Subscriber no. 99	Subscriber no. 11 **Set** code "77:11".	Subscriber no. 27 Code "77:27"
Control unit is fault manager. Code "79:1"	Device is fault manager.	Control unit is not fault manager. Code "79:0"	Control unit is not fault manager. Code "79:0"
Control unit transmits the time. Code "7b:1"	Device receives the time.	Control unit receives the time. **Set** code "81:3".	
Control unit transmits outside temperature. **Set** code "97:2".	—	Control unit receives outside temperature. **Set** code "97:1".	
Viessmann system number. Code "98:1"	—	Viessmann system number. Code "98:1"	
LON subscriber fault monitoring. Code "9C:20"	—	LON subscriber fault monitoring. Code "9C:20"	LON subscriber fault monitoring. Code "9C:20"

Carrying out a LON subscriber check

The subscriber check is used to test communication with the system devices connected to the fault manager.

Requirements:
- The control unit must be programmed as **fault manager** (code "79:1" in the **"General"** group).
- The LON subscriber number must be programmed in all control units.
- The LON subscriber list in the fault manager must be up to date.

Service menu:
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Service functions"**
3. **"Subscriber check"**
4. Select subscriber (e.g. subscriber 10).
5. Start subscriber check with **"OK"**.

- Successfully checked subscribers are designated with **"OK"**.
- Unsuccessfully checked subscribers are identified with **"Not OK"**.

Note

*To carry out a new subscriber check, create a new subscriber list with **"Delete list?"** (subscriber list is updated).*

Note

*During the subscriber check, the display of the relevant subscriber shows the subscriber no. and **"Wink"** for approx. 1 min.*

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

Setting the max. heating output (gas condensing module)

The maximum output for **heating operation** can be limited. The limit is set via the modulation range. The max. adjustable output is limited upwards by the boiler coding card.

Service menu
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Service functions"**
3. **"Max. output"**

Setting the max. heating output (gas condensing… (cont.)

4. **"Change?"** Select **"Yes"**.
   A value is shown on the display (e.g. **"85"**). In the delivered condition, this value represents 100 % of rated heating output.
5. Set the required value.

Tightness test of balanced flue system (annular gap test)

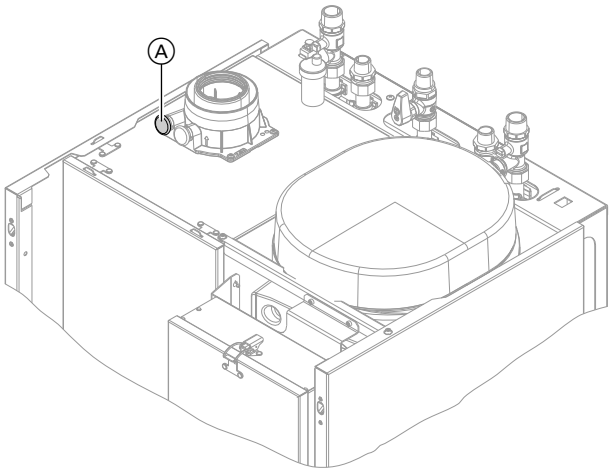


Fig. 69

Ⓐ Combustion air aperture (ventilation air)

Note
Only the gas condensing module may be operational during the annular gap test procedure. Disable power generation by the fuel cell module before starting the test.

For balanced flue systems tested together with the heat source, there is no requirement for a tightness test (overpressure test) during commissioning by the flue gas inspector.
In this case, we recommend that your heating contractor carries out a simple tightness test during the commissioning of your system. For this it would be sufficient to check the CO_2 or O_2 concentration in the combustion air at the annular gap of the balanced flue pipe.

If the CO_2 concentration is less than 0.2 % or the O_2 concentration is greater than 20.6 %, the flue pipe is deemed to be sufficiently gas tight.
If actual CO_2 values are higher or actual O_2 values are lower, a pressure test with a static pressure of 200 Pa will need to be carried out on the flue pipe.

Starting service mode

Start the service mode in order to carry out maintenance work on the fuel cell module.
The fuel cell module will be shut down. Power generation will be interrupted.

Extended menu
1. ☰
2. **"Fuel cell"**
3. **"Operating mode"**
4. ▲/▼ for **"Service mode"**
5. ▲/▼ for **"Activate service mode" "Yes"**

Removing the burner (gas condensing module)

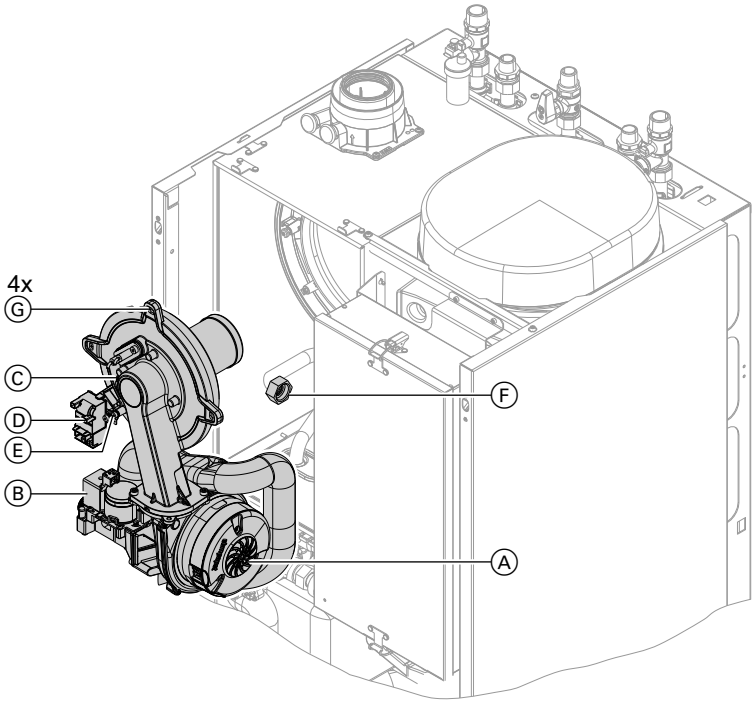


Fig. 70

1. Switch OFF the power supply and the ON/OFF switch at the control unit.
2. Close the gas shut-off valve and safeguard against reopening.
3. Remove cables from fan motor Ⓐ, gas train Ⓑ, ignition and ionisation electrode Ⓒ, ignition unit Ⓓ and earth tab Ⓔ.
4. Undo gas supply pipe fitting Ⓕ.
5. Undo four screws Ⓖ and remove the burner.

! **Please note**
Prevent damage to the burner.
Never rest the burner on the burner gauze assembly.

Checking the burner gasket and burner gauze assembly (gas condensing module)

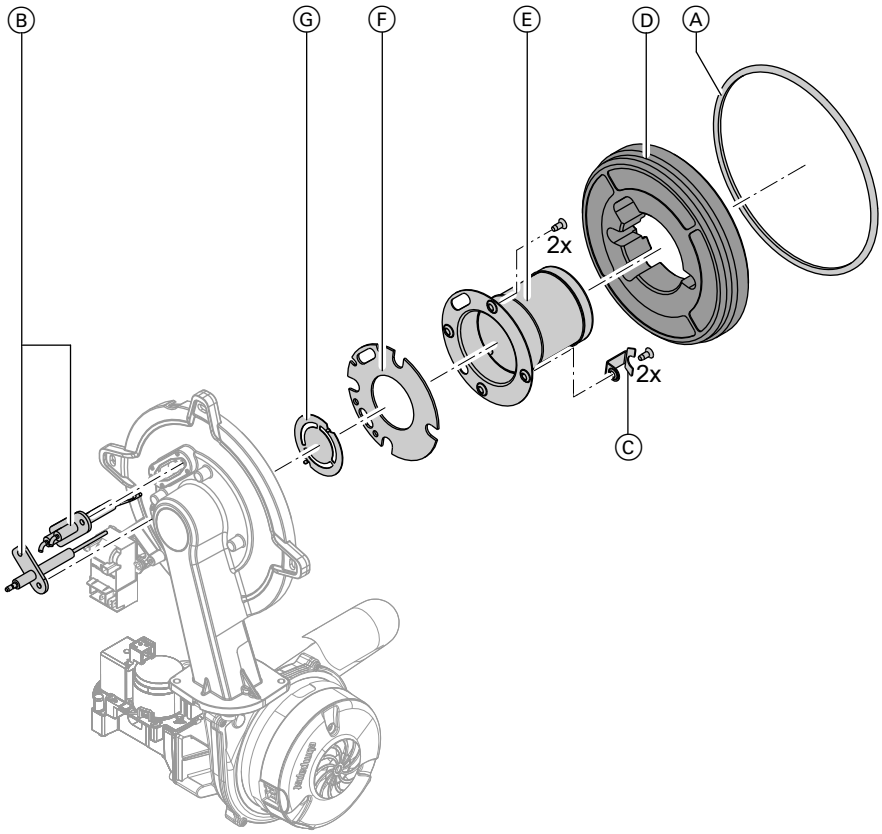


Fig. 71

Check burner gasket Ⓐ and burner gauze assembly Ⓔ for possible damage and replace if required.

1. Remove electrodes Ⓑ.

2. Undo 2 retaining clips Ⓒ on thermal insulation ring Ⓓ and then remove thermal insulation ring Ⓓ.

3. Undo two Torx screws and remove burner gauze assembly Ⓔ with gasket Ⓕ and restrictor Ⓖ.

4. Insert and secure new burner gauze assembly Ⓔ with new gasket Ⓕ and restrictor Ⓖ.
Torque: 5.0 Nm.

5. Fit thermal insulation ring Ⓓ.

6. Fit electrodes Ⓑ.
Torque: 4.5 Nm.

Checking the back draught safety device

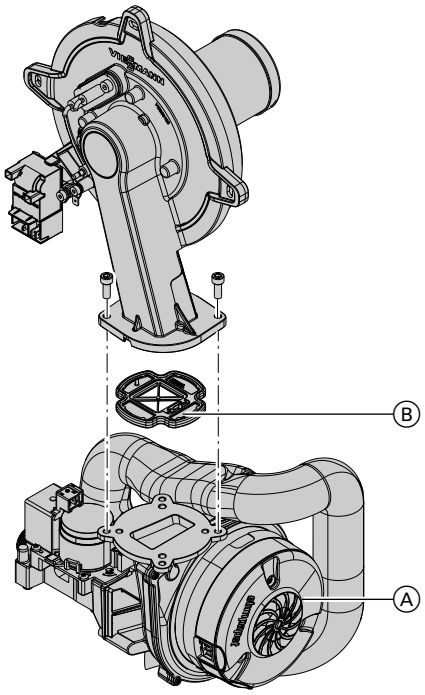


Fig. 72

1. Undo two screws and remove fan Ⓐ.
2. Remove back draught safety device Ⓑ.
3. Check the damper and gasket of the back draught safety device for soiling and damage. Replace if necessary.
4. Refit back draught safety device Ⓑ.
5. Refit fan Ⓐ and secure with two screws. Torque: 5.0 Nm.

Checking and adjusting ignition and ionisation electrode (gas condensing module)

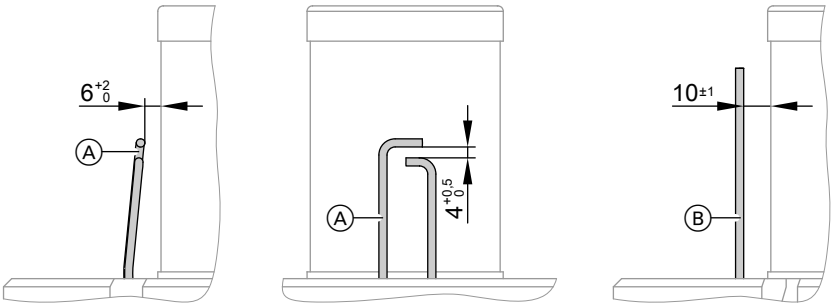


Fig. 73

Ⓐ Ignition electrodes
Ⓑ Ionisation electrode

1. Check the electrodes for wear and contamination.
2. Clean the electrodes with a small brush (not with a wire brush) or sandpaper.
3. Check the electrode gaps. If the gaps are not as specified or the electrodes are damaged, replace the electrodes together with new gaskets and adjust them as required. Tighten the electrode fixing screws with 4.5 Nm.

Cleaning heating surfaces (gas condensing module)

! **Please note**
Scratches to the surfaces of the heat exchanger that come into contact with hot gas can result in corrosion damage.
Never use brushes to clean the heat exchanger.

! **Please note**
Brushing can cause deposits to become lodged in the gaps between the coils.
Never use brushes to clean the heat exchanger.

Cleaning heating surfaces (gas condensing… (cont.)

Note
Discolouration on the heat exchanger surface is a normal sign of use. It has no bearing on the function and service life of the heat exchanger.
The use of chemical cleaning agents is not required.

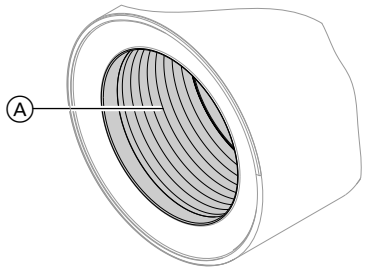


Fig. 74

1. Use a vacuum cleaner to remove combustion residues from heating surface Ⓐ of the heat exchanger.
2. Flush heating surface Ⓐ with water.
3. Check condensate drain and clean trap. See the following chapter.
4. Flush the heating surface again with water. This will also fill the trap with water.

Checking condensate drain and cleaning the trap (gas condensing module)

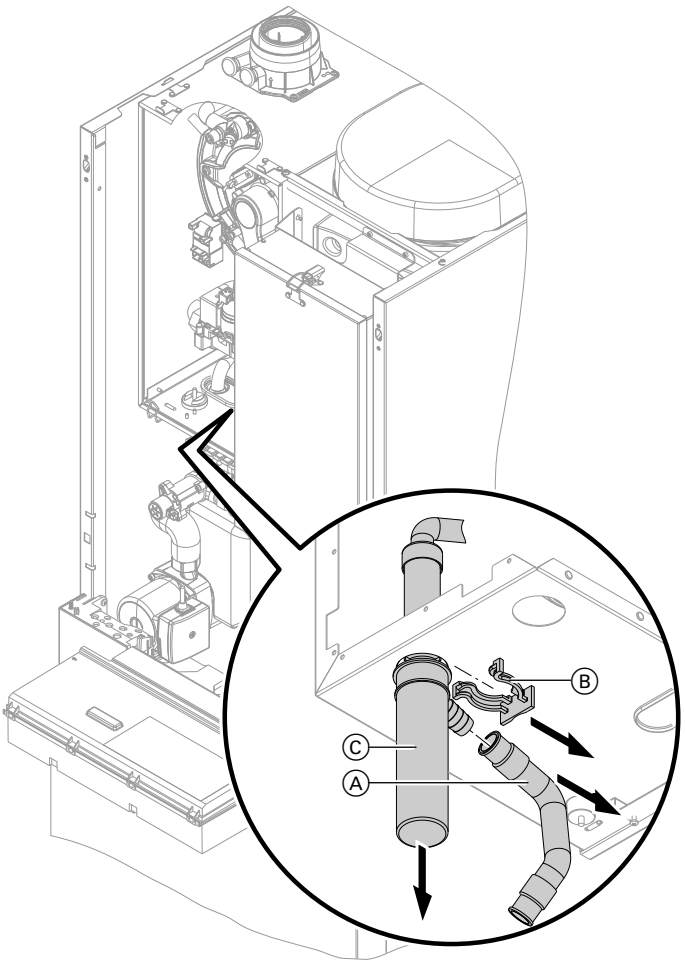


Fig. 75

1. Check at the trap that the condensate can drain freely.
2. Pull off drain hose Ⓐ.
3. Pull off retaining clip Ⓑ.
4. Remove trap bottle Ⓒ downwards.
5. Clean the trap.

Checking condensate drain and cleaning the trap… (cont.)

6. Fill bottle Ⓒ with water and reattach with retaining clip Ⓑ.
7. Reconnect drain hose Ⓐ.
8. Check that the condensate pipe is correctly attached to the trap and heat exchanger.

   Note
   Route the drain hose without any bends and with a constant fall.

Fitting the burner (gas condensing module)

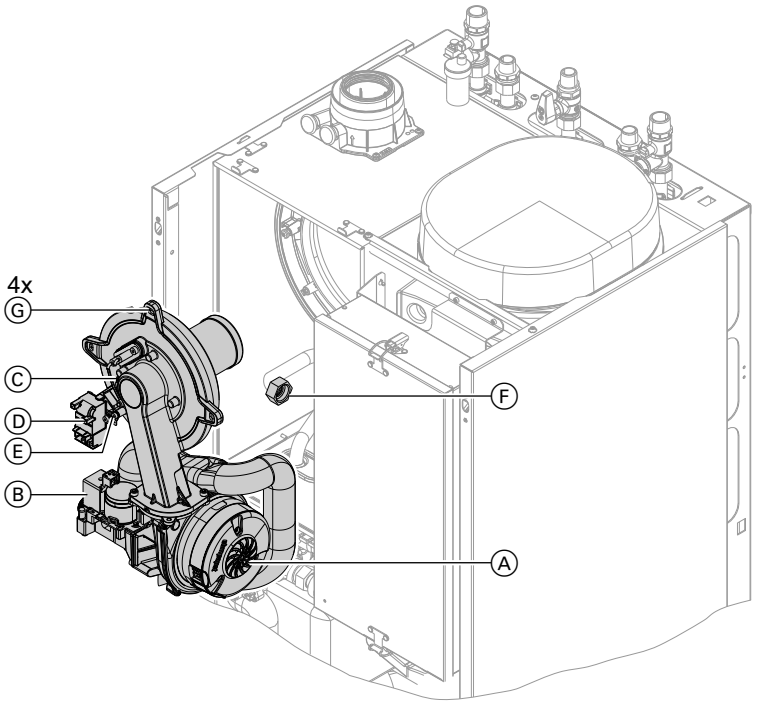


Fig. 76

1. Insert the burner and tighten screws Ⓖ crosswise.
   Torque: 8.5 Nm
2. Fit gas supply pipe Ⓕ with a new gasket.
   Torque: 30 Nm
3. Check gas connections for tightness.

   Danger
   Escaping gas leads to a risk of explosion.
   Check the fitting for gas tightness.

4. Connect the electrical cables/leads:
   - Fan motor Ⓐ
   - Ionisation electrode Ⓒ
   - Gas train Ⓑ
   - Ignition unit Ⓓ
   - Earth Ⓔ

Checking the neutralising system (if installed)

Cleaning the air intake on the fuel cell module

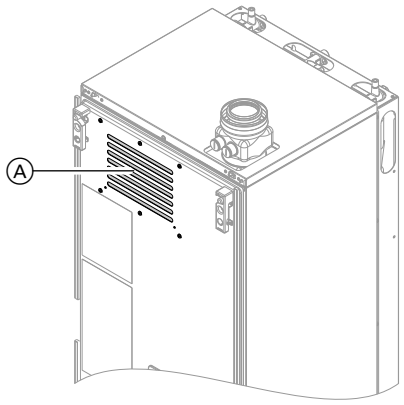


Fig. 77

Remove dirt from air intake Ⓐ with a vacuum cleaner.

2-yearly maintenance of fuel cell module

Draining the distilled water

Note
This is required for the following maintenance work.
The fuel cell module must be in service mode.
To save time, the system user can start service mode in advance.
It takes about 15 min to drain the distilled water (approx. 4.5 l).

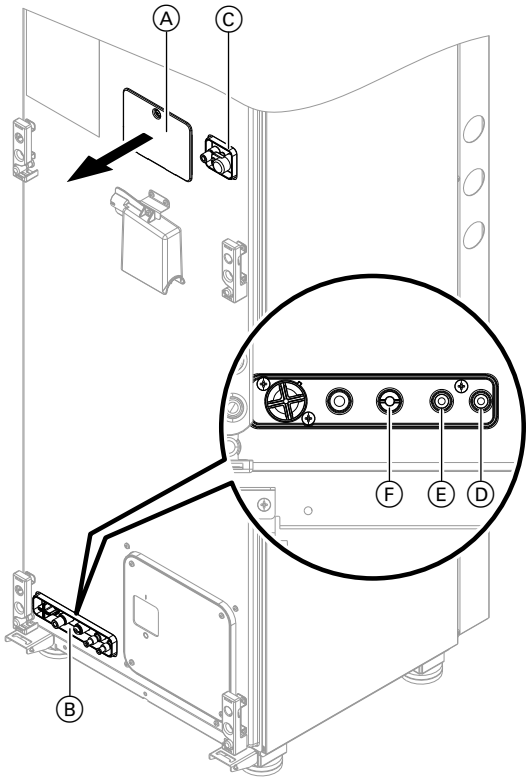


Fig. 78

2-yearly maintenance of fuel cell module (cont.)

1. If these have not yet been actioned: Set service mode (see page 75).

   Note
   The cooling process on the fuel cell module lasts approximately 90 min. Only then should maintenance work on the fuel cell module be started.

   Please note
   If this waiting time is not observed, there is a risk of scalding and damage to the appliance.

2. Remove the front panel of the fuel cell module and programming unit cover Ⓐ. See page 68.

3. Select **"01"** using ▲/▼.

4. Press **SET**.
   "oFF" flashes.

5. Within the next 30 s select **"on"** using ▲/▼.

6. Press **SET**.
   The **MNT** indicator lights up. The fuel cell module is in "Commissioning/maintenance" mode.

7. Select **"22"** using ▲/▼.

8. Press and hold **SET** for at least 3 s.
   Under **STATE**, **"01"** and **"02"** appear in succession.
   The water can be drained when **"02"** flashes.

9. Place a shallow container of sufficient size (min. 5 l) below drain ports Ⓑ.

10. Undo the screw and remove right-hand cover Ⓒ for ventilation.

11. Undo the screw in drain port Ⓓ approx. 1.5 turns.

12. Remove plug Ⓕ (do **not** remove screw Ⓔ).

13. When no more water emerges and **"04"** is flashing under **STATE**, close openings Ⓒ, Ⓓ and Ⓕ again.

14. Press **SET**.
    "End" and **"nP"** will appear alternately under **STATE**.

Replacing the distilled water filter element and air filter

Replace the distilled water filter element and air filter every two years.
For parts, see page 163.

Please note
Take care to avoid injury from sharp edges. Wear personal protective equipment (safety gloves).

Note
Never lubricate the gaskets.

2-yearly maintenance of fuel cell module (cont.)

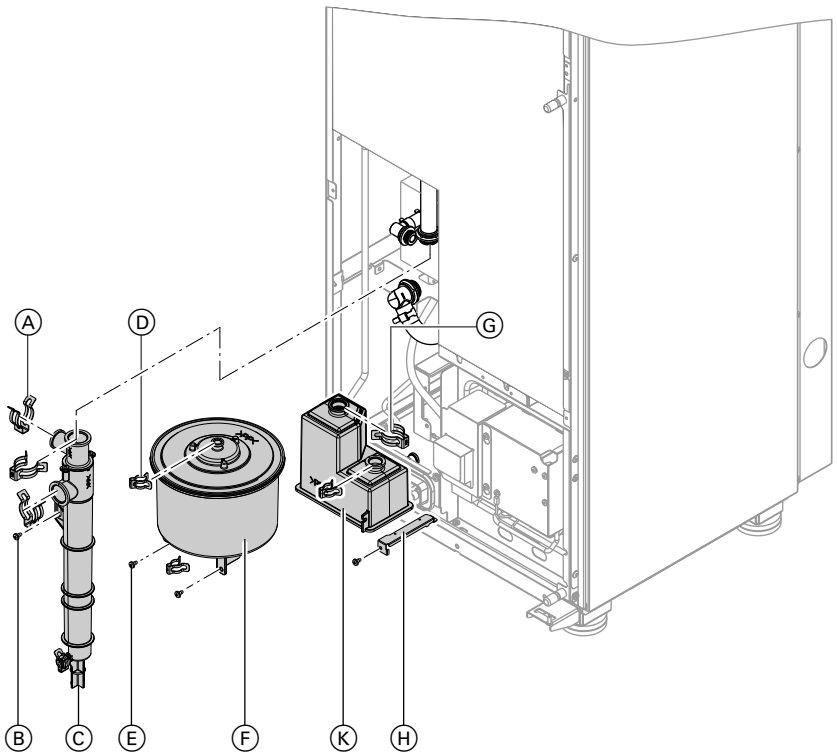


Fig. 79

1. Turn off the ON/OFF switch on the fuel cell module (see page 58) and secure against it being turned back on.
2. Remove the cover panel (see page 64).
3. Pull off four clips Ⓐ and undo screw Ⓑ.
4. Remove trap Ⓒ.
5. Release both clips Ⓓ and remove the hoses.
6. Undo both screws Ⓔ and remove distilled water filter element Ⓕ.
7. Release both clips Ⓖ and remove the air ducts.
8. Undo the screw and remove metal clamp Ⓗ.
9. Remove air filter Ⓚ.
10. Fit new air filter Ⓚ and secure with metal clamp Ⓗ and screw.
11. Reattach the air ducts with clips Ⓖ.
12. Fit new distilled water filter element Ⓕ and secure with the two screws.
13. Reattach the hoses with two clips Ⓓ.
14. Refit trap Ⓒ with clips Ⓐ and screw Ⓑ.

Resetting the service indicator on the fuel cell module

Note
*If **"bAD"** appears on the display, the service indicator cannot be reset. This may be because the maintenance interval had not yet been reached, for example. In such a case, inform Viessmann Technical Services.*

1. Turn on the ON/OFF switch on the fuel cell module.
2. Select **"33"** using ▲/▼.
3. Simultaneously press **SET** and ▼.
   "34" will appear on the display.
4. Press and hold **SET** for at least 3 s.
   "_CL" will appear on the display. The service indicator has been reset.

Filling with distilled water

1. Prepare to fill with distilled water (see page 69).
2. Select **"11"** using ▲/▼.

2-yearly maintenance of fuel cell module (cont.)

3. Press **SET**. A dot will flash under **ITEM** (commissioning mode 1 enabled).

11.	01
ITEM	STATE

A fault has arisen if "n1", "n2" or "n3" is flashing under **STATE**.
For the meaning of fault messages and to correct faults, see page 70.

4. Select **"on"** using ▲/▼.

5. Press **SET** to confirm.

6. Fill with distilled water (VDE 0510).
Distilled water (5 l) is available as an accessory (see page 160).
While indicators "01" to "04" are flashing, continue to fill with distilled water until they switch to constant. The switch from flashing to constant display will be repeated several times.
The whole process takes about 40 min.

Phase	Duration min. approx.
01	4
02	15
03	20
04	0.5

When phase 04 shows constant, add another 0.5 l of distilled water so that the integral trap is filled.

! **Please note**
Escaping flue gas can damage your health. Ensure that the integral trap is filled with water.

Note
A fault has occurred during the commissioning process if the display shows alternately "End" and "nP".
Turn the ON/OFF switch on the fuel cell module OFF and then ON again. Then restart commissioning mode 1.

7. When "05" is displayed under **STATE**, the filling process has finished and the start phase will commence.
The starting procedure then continues automatically:

Phase	Duration min. approx.	Function
05	15	Venting
06 to 09	60	Process start
10	< 0.5	Process start completed
11	< 0.5	Preparation for power generation
12	–	Power generation (indicators **GEN** and **GRD** illuminate)

8. Remove the funnel from the filler neck and secure it to the front panel with the screw (see page 69).

9. Replace the cover on the distilled water filler neck and secure it with the screw (see page 69).

10. Check the distilled water filter element and connections for tightness.

11. Reattach the cover panel and programming unit cover.

2-yearly maintenance of fuel cell module (cont.)

Checking the diaphragm expansion vessel and system pressure

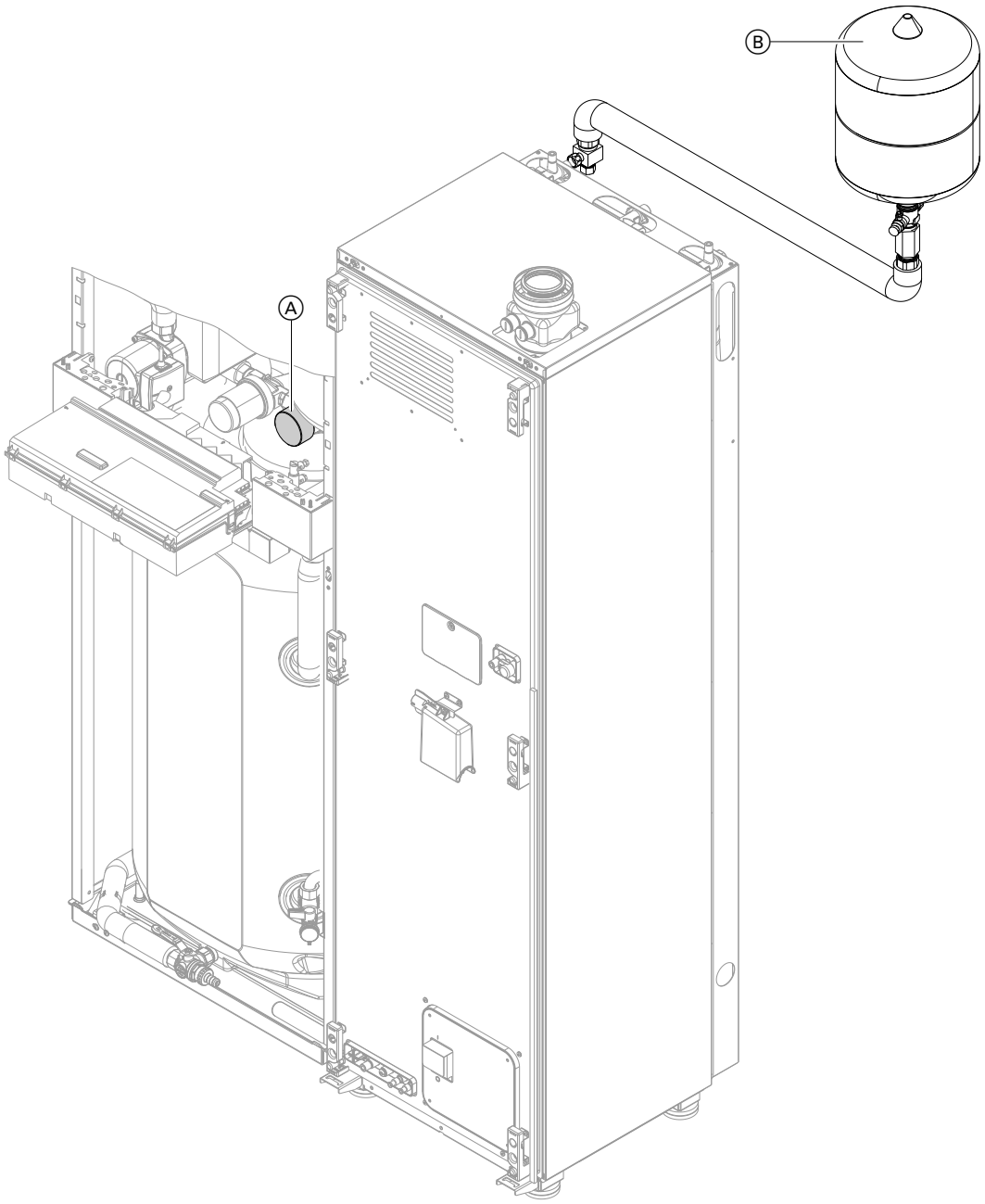


Fig. 80

Note
Carry out this test on a cold system.
The system must be shut down.

1. Drain the heating water buffer cylinder until pressure gauge Ⓐ shows "0".
2. Check the pre-charge pressure of the diaphragm expansion vessel. Set value: 0.9 bar (0.09 MPa).
3. If the charge pressure of the diaphragm expansion vessel is lower than this, recharge with nitrogen via connection Ⓑ.
4. Top up with water. Observe the specifications for fill and top-up water; see page 55.
   Operating pressure: 1.0 bar (0.1 MPa).

2-yearly maintenance of fuel cell module (cont.)

Enabling energy manager

Note
The fuel cell module will return into operation only if ***"Energy manager OFF"*** *has been selected on the programming unit of the gas condensing module.*

Extended menu
1. ☰
2. **"Fuel cell"**
3. **OK**
4. **"Operating mode"**
5. ▲/▼ for **"Energy manager OFF"**
6. **OK**

Terminating maintenance mode

Fuel cell module programming unit
1. Select **"17"** with ▲/▼.
2. Press and hold **SET** for at least 3 s.
   "oFF" will appear under **STATE**.
   Maintenance mode has terminated when the **MNT** indicator is no longer lit. The fuel cell module switches to control mode.

5-yearly maintenance of fuel cell module

The 5-yearly maintenance work is carried out by Viessmann Technical Services.

A notification will appear in the control unit display.

Checking the external diaphragm expansion vessel (heating circuit) and system pressure

Note
The expansion vessel can lose some of its charge pressure over time. When the boiler heats up, the pressure gauge will indicate a higher pressure of 2 or 3 bar (0.2 or 0.3 MPa). The safety valve may also respond and discharge the excess pressure. Therefore check the expansion vessel pre-charge pressure annually.

Check whether the installed expansion vessel is adequate for the system water volume (GB only).
Carry out this test on a cold system.

1. Drain the system until the pressure gauge shows "0".
   Alternatively, close the cap valve on the expansion vessel and reduce the pressure until the pressure gauge indicates "0".
2. If the pre-charge pressure of the expansion vessel is lower than the static system pressure, top up with nitrogen until the pre-charge pressure is 0.1 to 0.2 bar (10 to 20 kPa) higher than the static system pressure.
3. Top up with water until the charge pressure of the cooled system is at least 1.0 bar (0.1 MPa), and is 0.1 to 0.2 bar (10 to 20 kPa) higher than the pre-charge pressure of the expansion vessel.
   Permiss. operating pressure: 3 bar (0.3 MPa)

Checking the safety valve function

Checking the firm seating of electrical connections

Checking for tightness the gas-bearing parts of the gas condensing module and connections to the fuel cell module under operating pressure

Danger
Escaping gas leads to a risk of explosion.
Check all gas equipment for tightness.

Note
Only use suitable and approved leak detection agents (EN 14291) and devices for the tightness test. Leak detection agents with unsuitable constituents (e.g. nitrides, sulphides) can cause material damage. Remove leak detection agent residues after testing.

Checking the combustion quality

Gas condensing module

The electronic combustion controller automatically ensures optimum combustion quality. During commissioning/maintenance, only the combustion values need to be checked. For this, measure the CO content and the CO_2 or O_2 content. For a description of the electronic combustion controller functions, see page 176.

Note
To prevent operating faults and damage, operate the appliance with uncontaminated combustion air.

CO content
- The CO content must be < 1000 ppm for all gas types.

CO_2 or O_2 content
- The CO_2 content must be within the following limits for upper and lower heating output respectively:
  − 7.5 to 9.5 % in the case of natural gas E
- The O_2 content must be between 4.0 and 7.6 % for all gas types.

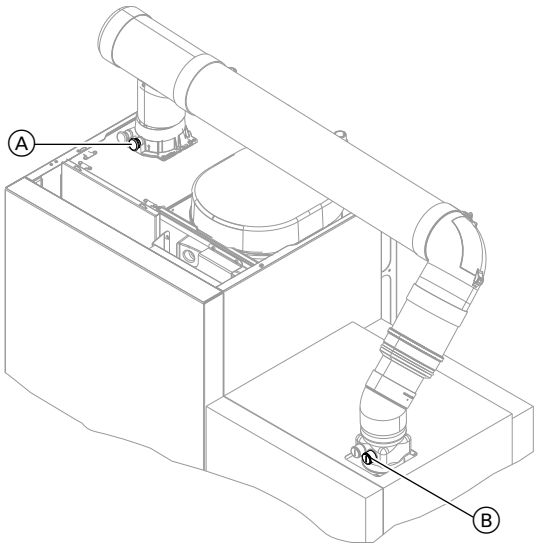


Fig. 81

1. Connect a flue gas analyser at flue gas port Ⓐ on the boiler flue connection.
2. Open the gas shut-off valve, start the boiler and create a heat demand.

If the actual CO_2 or O_2 values lie outside their respective ranges, proceed as follows:
- check the balanced flue system for tightness, see page 75.
- check the ionisation electrode, see page 78.
- check the connecting cable on the ionisation electrode.

Note
During commissioning, the combustion controller carries out an automatic calibration. Start emissions capture no sooner than about 30 s after the burner has started.

3. Set the lower heating output (see page 88).
4. Check the CO_2 content. Should the actual value deviate from the aforementioned ranges by more than 1 %, implement steps detailed on page 87.

Checking the combustion quality (cont.)

5. Enter the actual value into the report.

6. Set the upper heating output (see page 88).

7. Check the CO_2 content. Should the actual value deviate from the aforementioned ranges by more than 1 %, implement steps detailed on page 87.

8. After testing, press **OK**.

9. Enter the actual value into the report.

Select higher/lower heating output

Service menu
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Actuator test"**
3. Select the lower heating output:
   Select **"Base load OFF"**. Then **"Base load ON"** appears and the burner operates at its lower heating output.
4. Select the upper heating output:
   Select **"Full load OFF"**. Then **"Full load ON"** appears and the burner operates at its upper heating output.
5. Ending output selection:
   Press ⮌.

Fuel cell module

1. Connect a flue gas analyser at flue gas port Ⓑ on the boiler flue connection.

2. Check the CO content.
The CO content must be < 1000 ppm for all gas types.
If the fuel cell module is not operating, see the "Emissions test mode" chapter in the operating instructions.

Checking the flue system for unrestricted flow and tightness

Matching the control unit to the heating system

The control unit must be matched to the system equipment level.
- To do this, select the applicable system scheme.
  "System examples"
- Set the codes according to the accessories fitted:
  Accessories installation and service instructions

Note
Various system components are recognised automatically by the control unit and the relevant codes are set automatically.
For individual coding steps, see page 92.

Adjusting the heating curves

The heating curves illustrate the relationship between the outside temperature and the boiler water or flow temperature.
To put it simply, the lower the outside temperature, the higher the boiler water or flow temperature.
The boiler water or flow temperature in turn affects the room temperature.

Settings in the delivered condition:
- Slope = 1.4
- Level = 0

Note
If the heating system includes heating circuits with mixers, then the flow temperature of the heating circuit without mixer is higher by a selected differential (8 K in the delivered condition) than the flow temperature of the heating circuits with mixers.
*The differential temperature is adjustable via coding address "9F" in the **"General"** group.*

Adjusting the heating curves (cont.)

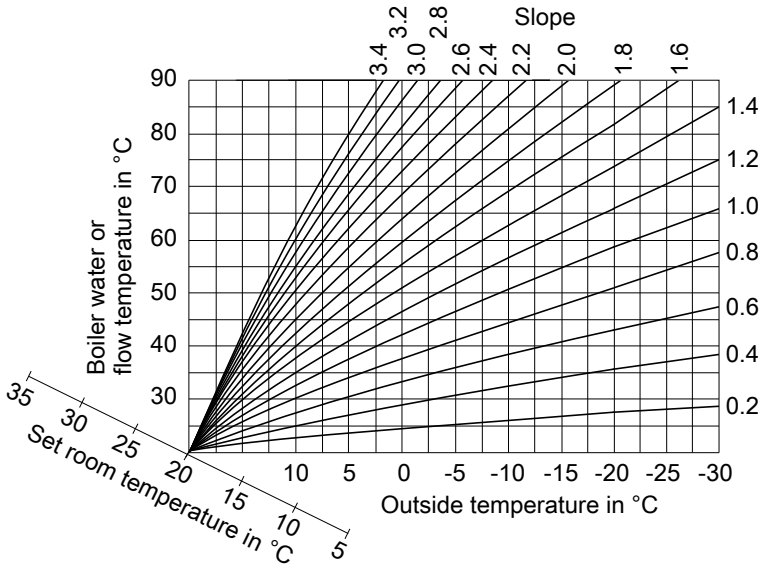


Fig. 82

Slope setting ranges:
- Underfloor heating systems: 0.2 to 0.8
- Low temperature heating systems: 0.8 to 1.6

Selecting the set room temperature

Individually adjustable for each heating circuit.
The heating curve is offset along the axis of the set room temperature. With the heating circuit pump logic function enabled, the curve modifies the starting and stopping characteristics of the heating circuit pump.

Standard set room temperature

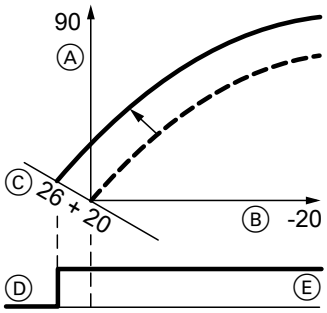


Fig. 83 Example 1: Adjustment of the standard set room temperature from 20 to 26 °C

Ⓐ Boiler water temperature or flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Changing the standard set room temperature

Operating instructions

Reduced set room temperature

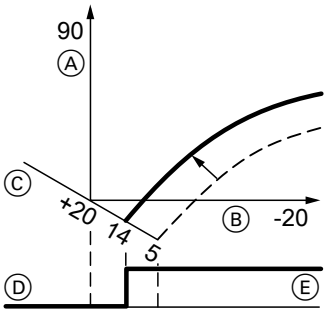


Fig. 84 Example 2: Adjustment of the reduced set room temperature from 5 °C to 14 °C

Ⓐ Boiler water temperature or flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Changing the reduced set room temperature

Operating instructions

Changing the slope and level

Individually adjustable for each heating circuit.

Adjusting the heating curves (cont.)

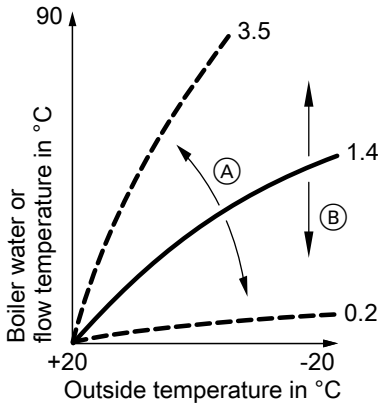


Fig. 85

Ⓐ Changing the slope
Ⓑ Changing the level (vertical parallel offset of the heating curve)

Extended menu:
1. ☰
2. **"Heating"**
3. Select heating circuit.
4. **"Heating curve"**
5. **"Slope"** or **"Level"**
6. Select heating curve according to the system requirements.

Calling up and resetting "Service" on the programming unit of the gas condensing module

In the following cases, **"Service"** and "🔧" will appear in the display (red fault indicator flashes):
- The limits specified in coding addresses "21" and "23" in the **"Boiler"** group have been reached
- The fuel cell module requires a service.

Scanning service messages

1. **OK**
2. ▲/▼ for **"Auxiliary heating appliance"** or **"fuel cell"**
3. **OK**
   - Gas condensing boiler: To display the reason for maintenance

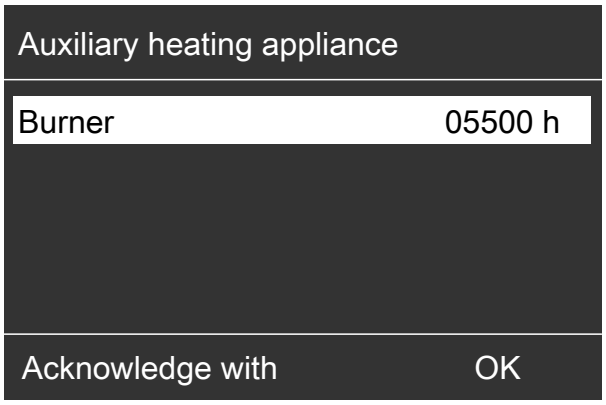


Fig. 86 Example

   - Fuel cell module: To display the time remaining before a service is due
4. Pressing **?** displays information on the service due.

Acknowledging and resetting service indicator

Press **OK** to acknowledge a service message.

Note
An acknowledged service message that was not reset reappears the following Monday.

After a service has been carried out (resetting service indicator)

1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Service functions"**
3. **"Service indicator reset"**

   Note
   The selected service parameters for hours run and time intervals restart at 0.

Mounting the cover panel and front panel (fuel cell module)

- To mount the cover panel see page 64.
- Mount the front panels; see page 44.

Instructing the system user

The system installer should hand the operating instructions to the system user and instruct the user in operating the system.
This includes all components installed as accessories, e.g. remote control units. In addition, the system installer must make the user aware of the required maintenance work.

Coding level 1

Calling up coding level 1

- On weather-compensated control units, codes are displayed as plain text.
- Codes that are not assigned, due to the heating system equipment level or the setting of other codes, are not displayed.
- Heating systems with 1 heating circuit without mixer and 1 or 2 heating circuits with mixer:
  Below, the heating circuit without mixer is designated **"Heating circuit 1"** and the heating circuits with mixer as **"Heating circuit 2"** or **"Heating circuit 3"**.
  If the heating circuits were given individual designations, the selected designation and **"HC1"**, **"HC2"** or **"HC3"** appear instead.

1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Coding level 1"**
3. Select the group of required coding addresses:
   - **"General"**
   - **"Boiler"**
   - **"DHW"**
   - **"Heating circuit 1/2/3"**
   - **"All codes Standard appliance"**
     In this group, all coding addresses from coding level 1 are displayed in ascending order.
4. Select the coding address.
5. Set the value according to the following tables and confirm with **OK**.
6. **If you want to reset all codes to their delivered condition:**
   Select **"Standard setting"** in **"Coding level 1"**.

   Note
   This also resets codes at coding level 2.

"General"

Select **"General"** (see page 92).

Coding

Coding in the delivered condition		Possible change	
System design			
00:2	One heating circuit without mixer A1 (heating circuit 1)	00:4 to 00:10	For system schemes, see the following table:

Value, address 00: ...	Description
2	1 heating circuit without mixer A1 (heating circuit 1) Code is set automatically.
4	1 heating circuit with mixer M2 (heating circuit 2)
6	1 heating circuit without mixer A1 (heating circuit 1) 1 heating circuit with mixer M2 (heating circuit 2) Code is set automatically.
8	1 heating circuit with mixer M2 (heating circuit 2) 1 heating circuit with mixer M3 (heating circuit 3)
10	1 heating circuit without mixer A1 (heating circuit 1) 2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3) Code is set automatically.

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Coding level 1 (cont.)

Coding in the delivered condition		Possible change	
Function, internal circulation pump			
51:0	The internal circulation pump always starts when there is a heat demand.	51:1	System with low loss header: The internal circulation pump only starts upon heat demand if the burner is active. The circulation pump stops on expiry of the run-on time.
		51:2	System with heating water buffer cylinder: The internal circulation pump only starts upon heat demand if the burner is active. The circulation pump stops on expiry of the run-on time.
Subscriber no.			
77:1	LON subscriber number	77:2 to 77:99	LON subscriber number adjustable from 1 to 99: 1 - 4 = Boiler 27 = Fuel cell module 28 - 97 = Vitotronic 200-H 98 = Vitogate 99 = Vitocom
Detached house/apartment building			
7F:1	Detached house	7F:0	Apartment building Holiday program and time program for DHW heating can be set separately
Lock out controls			
8F:0	Operation enabled in standard and extended menu. ***Note*** *The respective code is only enabled when you exit the service menu.*	8F:1	Operation locked out in standard **and** extended menu. Emissions test mode can be enabled.
		8F:2	Operation enabled in standard menu, but locked out in extended menu. Emissions test mode can be enabled.
Set flow temperature for external demand			
9b:70	Set flow temperature for external demand 70 °C	9b:0 to 9b:127	Set value adjustable from 0 to 127 °C (limited by boiler-specific parameters)

"Boiler"

Select **"Boiler"** (see page 92).

Coding

Coding in the delivered condition		Possible change	
Burner service in 100 hours			
21:0	No service interval set (in hours run)	21:1 to 21:100	The number of hours run before the burner should be serviced is adjustable from 100 to 10,000 h. One adjusting step ≙ 100 h

Coding level 1 (cont.)

Coding in the delivered condition		Possible change	
Service interval in months			
23:0	No time set for burner service interval	23:1 to 23:24	Interval adjustable from 1 to 24 months
Service status			
24:0	**"Service"** not shown on the display	24:1	**"Service"** shown on the display. The address is set automatically and must be reset manually after a service.
Filling/venting			
2F:0	Venting program/fill program disabled	2F:1	Venting program enabled
		2F:2	Fill program enabled

"DHW"

Select **"DHW"** (see page 92).

Coding

Coding in the delivered condition		Possible change	
Enable DHW circulation pump			
73:0	DHW circulation pump: "ON" according to time program	73:1 to 73:6	During time program "ON" for 5 min once an hour up to "ON" for 5 min six times an hour
		73:7	Permanently "ON"

"Heating circuit ..."

Select **"Heating circuit ..."** (see page 92).

Coding

Coding in the delivered condition		Possible change	
Economy function, outside temperature			
A5:5	With heating circuit pump logic function (economy control): Heating circuit pump "OFF" when the outside temperature (OT) is 1 K higher than the set room temperature (RT_{set}) OT > RT_{set} + 1 K	A5:0	Without heating circuit pump logic function
		A5:1 to A5:15	With heating circuit pump logic function: heating circuit pump "OFF"; see following table

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
1	OT > RT_{set} + 5 K
2	OT > RT_{set} + 4 K
3	OT > RT_{set} + 3 K
4	OT > RT_{set} + 2 K
5	OT > RT_{set} + 1 K
6	OT > RT_{set}

Coding level 1 (cont.)

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
7 to 15	OT > RT_{set} – 1 K OT > RT_{set} – 9 K

Coding in the delivered condition		Possible change	
Extended economy function, adjusted outdoor temperature			
A6:36	Extended economy mode **disabled**	A6:5 to A6:35	Extended economy mode enabled: The burner and heating circuit pump will stop at a variable value, adjustable between 5 and 35 °C plus 1 °C. Mixer is being closed. Basis for this is the adjusted outside temperature. This is composed of the actual outside temperature and a time constant that takes account of the way an average building cools down.
Extended economy function, mixer			
A7:0	Only for heating circuit with mixer: Without mixer economy function	A7:1	With mixer economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": ▪ If the mixer has been trying to close for longer than 20 min. Heating circuit pump "ON": ▪ If the mixer changes to control function ▪ If there is a risk of frost
Pump idle time, transition reduced Operation			
A9:7	With pump idle time: heating circuit pump "OFF" when set value is modified by changing the operating mode or changing the set room temperature	A9:0	Without pump idle time
		A9:1 to A9:15	With pump idle time, adjustable from 1 to 15. 1 = short idle time 15 = long idle time
Weather-compensated/room temperature hook-up			
b0:0	For heating circuit with mixer and remote control only: Heating mode/reduced mode: Weather-compensated	b0:1	Heating mode: Weather-compensated Reduced mode: With room temperature hook-up
		b0:2	Heating mode: With room temperature hook-up Reduced mode: Weather-compensated
		b0:3	Heating mode/reduced mode: With room temperature hook-up
Economy function room temperature			
b5:0	For heating circuit with mixer and remote control only: Without room temperature-dependent heating circuit pump logic function	b5:1 to b5:8	Heating circuit pump logic function, see the following table.

Coding level 1 (cont.)

Parameter address b5:...	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	Heating circuit pump "ON"
1	$RT_{actual} > RT_{set} + 5$ K	$RT_{actual} < RT_{set} + 4$ K
2	$RT_{actual} > RT_{set} + 4$ K	$RT_{actual} < RT_{set} + 3$ K
3	$RT_{actual} > RT_{set} + 3$ K	$RT_{actual} < RT_{set} + 2$ K
4	$RT_{actual} > RT_{set} + 2$ K	$RT_{actual} < RT_{set} + 1$ K
5	$RT_{actual} > RT_{set} + 1$ K	$RT_{actual} < RT_{set}$
6	$RT_{actual} > RT_{set}$	$RT_{actual} < RT_{set} - 1$ K
7	$RT_{actual} > RT_{set} - 1$ K	$RT_{actual} < RT_{set} - 2$ K
8	$RT_{actual} > RT_{set} - 2$ K	$RT_{actual} < RT_{set} - 3$ K

Coding in the delivered condition		Possible change	
Min. flow temperature, heating circuit			
C5:20	Electronic minimum flow temperature limit 20 °C (only when operating at standard room temperature)	C5:1 to C5:127	Minimum limit adjustable from 1 to 127 °C (limited by boiler-specific parameters)
Max. heating circuit flow temperature			
C6:74	Electronic maximum flow temperature limit set to 74 °C	C6:10 to C6:127	Maximum limit adjustable from 10 to 127 °C (limited by boiler-specific parameters)
Heating program - changeover			
d5:0	With external heating program changeover. Observe settings of coding addresses "3A", "3b" and "3C" in **"General"** group. Operating program switches to "constant central heating with reduced room temperature" or "standby mode" depending on the setting of the reduced set room temperature.	d5:1	Operating program switches to "constant operation with standard room temperature".
Ext. heating program changeover to heating circuit			
d8:0	With EA1 extension: No operating program changeover	d8:1	Operating program changeover via input DE1
		d8:2	Operating program changeover via input DE2
		d8:3	Operating program changeover via input DE3
Max. pump speed in standard mode			
E6:...	Only for heating systems without a heating circuit with mixer: Max. speed of internal variable speed heating circuit pump as % of max. speed in standard mode. Value is specified by boiler-specific parameters (only for weather-compensated control unit).	E6:0 to E6:100	Maximum speed adjustable from 0 to 100 %

Coding level 1 (cont.)

Coding in the delivered condition		Possible change	
Min. pump speed			
E7:30	Only for heating systems without a heating circuit with mixer: Min. speed of the internal variable speed heating circuit pump: 30 % of max. speed (only for weather-compensated control units)	E7:0 to E7:100	Minimum speed adjustable from 0 to 100 % of maximum speed
Screed drying			
F1:0	Screed drying disabled	F1:1 to F1:6	Only for heating circuit with mixer: Screed drying adjustable, with choice of 6 temperature/time profiles (see page 171)
		F1:15	Constant flow temperature 20 °C
Party mode time limit			
F2:8	Time limit for party mode or external heating program changeover via pushbutton: 8 h [*1] ***Note*** *Observe settings for coding addresses "3A", "3b" and "3C" in group* ***"General"****, as well as "d5" and "d8" in group* ***"Heating circuit..."****.*	F2:0	No time limit[*1]
		F2:1 to F2:12	Time limit adjustable from 1 to 12 h[*1]
Start temperature increase			
F8:–5	Temperature limit for terminating reduced mode –5 °C; see example on page 173. Observe setting for coding address "A3".	F8:+10 to F8:–60	Temperature limit adjustable from +10 to –60 °C
		F8:–61	Function disabled
End temperature increase			
F9:–14	Temperature limit for raising the set reduced room temperature –14 °C; see example on page 173.	F9:+10 to F9:–60	Temperature limit for raising the set room temperature to the value selected for standard mode adjustable from +10 to –60 °C
Increase of set flow temperature			
FA:20	Raising the set boiler water or flow temperature by 20 % when switching from operation with reduced room temperature to operation with standard room temperature. See example on page 174.	FA:0 to FA:50	Temperature increase adjustable from 0 to 50 %
Duration set flow temperature increase			
Fb:60	Period for raising the set boiler water or set flow temperature (see coding address "FA") 60 min. See example on page 174.	Fb:0 to Fb:240	Period adjustable from 0 to 240 min.

[*1] *In the "Heating and DHW" program, party mode ends* ***automatically*** *when the system changes over to operation with standard room temperature.*

Coding level 2

Calling up coding level 2

- In coding level 2 **all** codes are accessible.
- Codes that are not assigned, due to the heating system equipment level or the setting of other codes, are not displayed.
- Below, the heating circuit without mixer is designated **"Heating circuit 1"** and the heating circuits with mixer as **"Heating circuit 2"** or **"Heating circuit 3"**. If the heating circuits were given individual designations, the selected designation and **"HC1"**, **"HC2"** or **"HC3"** appear instead.

1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. Press **OK** and ↩ simultaneously for approx. 4 s.
3. **"Coding level 2"**
4. Select the group of required coding addresses:
   - **"General"**
   - **"Boiler"**
   - **"DHW"**
   - **"Heating circuit 1/2/3"**
   - **"All codes Standard appliance"**
     In this group, all coding addresses from coding level 1 are displayed in ascending order.
5. Select the coding address.
6. Set the value according to the following tables and confirm with **OK**.
7. **If you want to reset all codes to their delivered condition:**
   Select **"Standard setting"** in **"Coding level 2"**.

   Note
   This also resets codes at coding level 1.

"General"

Select **"General"** (see page 98).

Coding

Coding in the delivered condition		Possible change	
00:2	One heating circuit without mixer A1 (heating circuit 1)	00:4 to 00:10	For system schemes, see the following table:

Value, address 00: ...	Description
2	1 heating circuit without mixer A1 (heating circuit 1) Code is set automatically.
4	1 heating circuit with mixer M2 (heating circuit 2)
6	1 heating circuit without mixer A1 (heating circuit 1) 1 heating circuit with mixer M2 (heating circuit 2) Code is set automatically.
8	1 heating circuit with mixer M2 (heating circuit 2) 1 heating circuit with mixer M3 (heating circuit 3)
10	1 heating circuit without mixer A1 (heating circuit 1) 2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3) Code is set automatically.

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
11:≠9	No access to the coding addresses for the parameters of the combustion controller	11:9	Access to the coding addresses for the parameters of the combustion controller open
2A:0	Without wireless outside temperature sensor	2A:1	Do not set.
		2A:2	No wireless outside temperature sensor used.
		2A:3	With wireless outside temperature sensor via integral wireless base station (recognised automatically)
2b:1	Never adjust		
2d:1	Never adjust.		
32:0	Without AM1 extension	32:1	With AM1 extension (automatic recognition)
33:1	Function of output A1 at AM1 extension: Heating circuit pump	33:0	DHW circulation pump
		33:2	Circulation pump for cylinder heating
34:0	Function of output A2 at AM1 extension: DHW circulation pump	34:1	Heating circuit pump
		34:2	Circulation pump for cylinder heating
35:0	Without EA1 extension	35:1	With EA1 extension (automatic recognition)
36:0	Function of output 157 at EA1 extension: Fault message	36:1	Feed pump
		36:2	DHW circulation pump
39:0	Function of output 28: DHW circulation pump	39:1	Function of output 28: Heating circuit pump
		39:2	Function of output 28: Circulation pump for cylinder heating
3A:0	Function of input DE1 at EA1 extension: No function	3A:1	Heating program - changeover
		3A:2	External demand with set flow temperature. Set value setting: Coding address "9b" in this group. Internal circulation pump function: Coding address "3F" in this group.
		3A:3	External blocking. Internal circulation pump function: Coding address "3E" in this group.
		3A:4	External blocking with fault message input. Internal circulation pump function: Coding address "3E" in this group.
		3A:5	Fault message input
		3A:6	Brief operation of DHW circulation pump (keypad function). Adjusting DHW circulation pump runtime: Coding address "3d" in this group.
3b:0	Function of input DE2 at EA1 extension: No function	3b:1	Heating program - changeover
		3b:2	External demand with set flow temperature. Set value setting: Coding address "9b" in this group.

▶▶

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
			Internal circulation pump function: Coding address "3F" in this group.
		3b:3	Function of input DE2: External blocking. Internal circulation pump function: Coding address "3E" in this group.
		3b:4	Function of input DE2: External blocking with fault message input Internal circulation pump function: Coding address 3E
		3b:5	Function of input DE2: Fault message input
		3b:6	Function of input DE2: Brief operation of DHW circulation pump (keypad function). Adjusting DHW circulation pump runtime: Coding address 3d
3C:0	Function of input DE3 at EA1 extension: No function	3C:1	Heating program - changeover
		3C:2	External demand with set flow temperature. Set value setting: Coding address "9b" in this group. Internal circulation pump function: Coding address "3F" in this group.
		3C:3	External blocking. Internal circulation pump function: Coding address "3E" in this group.
		3C:4	External blocking with fault message input Internal circulation pump function: Coding address "3E" in this group.
		3C:5	Fault message input
		3C:6	Brief operation of DHW circulation pump (keypad function). Adjusting DHW circulation pump runtime: Coding address "3d" in this group
3d:5	Runtime of DHW circulation pump during brief operation: 5 min	3d:1 to 3d:60	Runtime of DHW circulation pump adjustable from 1 to 60 min
3E:0	Internal circulation pump stays in control mode on signal "External blocking".	3E:1	Internal circulation pump stops on signal "External blocking".
		3E:2	Internal circulation pump starts on signal "External blocking".
3F:0	Internal circulation pump stays in control mode on signal "External demand".	3F:1	Internal circulation pump stops on signal "External demand".
		3F:2	Internal circulation pump starts on signal "External demand".
4b:0	Function of input 96: No function	4b:1	External demand
		4b:2	External blocking
51:0	The internal circulation pump always starts when there is a heat demand.	51:1	System with low loss header:

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
			The internal circulation pump only starts upon heat demand if the burner is active. The circulation pump stops on expiry of the run-on time.
		51:2	System with heating water buffer cylinder: The internal circulation pump only starts upon heat demand if the burner is active. The circulation pump stops on expiry of the run-on time.
52:0	Without flow temperature sensor for low loss header	52:1	With flow temperature sensor for low loss header (automatic recognition)
54:0	Never adjust.		
6E:50	No display correction for outside temperature	6E:0 to 6E:49	Display correction –5 K to Display correction –0.1 K
		6E:51 to 6E:99	Display correction +0.1 K to Display correction +4.9 K
76:0	Without LON communication module	76:1	With LON communication module (automatic recognition)
77:1	LON subscriber number	77:2 to 77:99	LON subscriber number adjustable from 1 to 99: 1 - 4 = Boiler 27 = Fuel cell module 28 - 97 = Vitotronic 200-H 98 = Vitogate 99 = Vitocom
79:1	Control unit for weather-compensated operation with LON communication module: Control unit is fault manager	79:0	Control unit is not fault manager.
7b:1	Control unit for weather-compensated operation with LON communication module: Control unit transmits the time	7b:0	No time transmission.
7F:1	Detached house	7F:0	Apartment building Holiday program and time program for DHW heating can be set separately
80:6	A fault message is issued if a fault arises for at least 30 s.	80:0	Immediate fault message
		80:2 to 80:199	Minimum fault duration before a fault message is issued, adjustable from 10 to 995 s. 1 step ≙ 5 s
81:1	Automatic summer/wintertime changeover	81:0	Manual summer/wintertime changeover
		81:2	Use of the radio clock receiver (automatic recognition)
		81:3	With LON communication module: Control unit receives the time
82:0	Operation with natural gas	82:1	Operation with LPG (do not set)

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
86:...	Never adjust		
87:...	Never adjust		
88:0	Temperature displayed in °C (Celsius)	88:1	Temperature displayed in °F (Fahrenheit)
8A:175	Never adjust		
8F:0	Operation enabled in standard and extended menu. ***Note*** *The respective code is only enabled when you exit the service menu.*	8F:1	Operation locked out in standard **and** extended menu. Emissions test mode can be enabled.
		8F:2	Operation enabled in standard menu, but locked out in extended menu. Emissions test mode can be enabled.
90:128	Time constant for calculating the adjusted outside temperature 21.3 h	90:1 to 90:199	Subject to the set value, the flow temperature is adjusted quickly (lower values) or slowly (higher values) when the outside temperature changes. 1 step ≙ 10 min
94:0	Without OpenTherm extension	94:1	With OpenTherm extension (automatic recognition)
95:0	Without Vitocom 100 type GSM communication interface	95:1	With Vitocom 100 communication interface (automatic recognition)
97:0	With LON communication module: The outside temperature of the sensor connected to the control unit is used internally.	97:1	The control unit receives the outside temperature.
		97:2	The control unit sends the outside temperature to the Vitotronic 200-H.
98:1	With LON communication module: Viessmann system number in conjunction with monitoring several systems via Vitocom 300	98:1 to 98:5	System number adjustable from 1 to 5
99:0	Never adjust		
9A:0	Never adjust		
9b:70	Set flow temperature for external demand 70 °C	9b:0 to 9b:127	Set flow temperature for external demand adjustable from 0 to 127 °C (limited by boiler-specific parameters)
9C:20	With LON communication module: Monitoring LON subscribers. If there is no response from a subscriber for 20 min, the values specified in the control unit are used. Only then will a fault message be issued. (Only for weather-compensated control units)	9C:0	No monitoring
		9C:5 to 9C:60	Time adjustable from 5 to 60 min
9F:8	Only for heating circuit with mixer: Differential temperature 8 K (only for weather-compensated control units)	9F:0 to 9F:40	Differential temperature adjustable from 0 to 40 K

Coding level 2 (cont.)

"Boiler"

Select **"Boiler"** (see page 98).

Coding

Coding in the delivered condition		Possible change	
04:1	Minimum burner pause time subject to boiler load (specified by boiler coding card)	04:0	Minimum burner pause time set permanently (specified by boiler coding card)
		04:2	Minimum burner pause time subject to boiler load. With adjustable threshold (see coding address 10). Specified by boiler coding card
06:...	Maximum limit of the boiler water temperature, defaulted in °C by the coding card	06:20 to 06:127	Maximum limit adjustable within the ranges defaulted by the boiler
0d:0	Never adjust		
0E:0	Never adjust		
10:20	Threshold for switching off burner	10:1 to 10:100	Threshold adjustable from 5 to 255 The higher the value, the later the burner switches off
13:1	Never adjust		
14:1	Never adjust		
15:1	Never adjust		
21:0	No service interval set (in hours run)	21:1 to 21:100	The number of hours run before the burner should be serviced is adjustable from 100 to 10,000 h. One adjusting step ≙ 100 h
23:0	No time set for burner service interval	23:1 to 23:24	Interval adjustable from 1 to 24 months
24:0	**"Service"** not shown on the display	24:1	**"Service"** shown on the display. The address is set automatically and must be reset manually after a service.
2F:0	Venting program/fill program disabled	2F:1	Venting program enabled
		2F:2	Fill program enabled
30:2	Internal variable speed circulation pump (set automatically)	30:0	Internal circulation pump not variable speed (e.g. temporarily for service)
31:...	Set speed in % of the internal circulation pump when operated as boiler circuit pump, defaulted by the coding card	31:0 to 31:100	Set speed adjustable from 0 to 100 %
38:0	Status of burner control unit: Operational (no fault)	38:≠0	Status of burner control unit: Fault

"DHW"

Select **"DHW"** (see page 98).

Coding level 2 (cont.)

Coding

Coding in the delivered condition		Possible change	
56:0	Set DHW temperature adjustable from 50 to 60 °C	56:1	Set DHW temperature adjustable from 50 to 60 °C ***Note*** *Maximum value subject to boiler coding card.* *Observe the maximum permissible DHW temperature.*
57:0	Never adjust		
58:0	Without auxiliary function for DHW heating	58:50 to 58:60	Input of a second set DHW temperature, adjustable from 50 to 60 °C. Observe coding address "56" and "63" in this group.
59:0	Cylinder heating: Start point -2.5 K Stop point +2.5 K	59:1 to 59:10	Start point adjustable from 1 to 10 K below set value
5A:1	Never adjust		
5E:0	Never adjust		
5F:0	Never adjust		
60:20	During DHW heating, the boiler water temperature is set up to 20 K higher than the set DHW temperature.	60:5 to 60:25	The differential between the boiler water temperature and the set DHW temperature is adjustable from 5 to 25 K
62:2	Circulation pump with 2 min run-on time after cylinder heating	62:0	No circulation pump run-on
		62:1 to 62:15	Run-on time adjustable from 1 to 15 min
65:...	Never adjust Information on type of diverter valve, defaulted by the coding card		
6C:100	Set speed of internal circulation pump for DHW heating 100 %	6C:0 to 6C:100	Set speed adjustable from 0 to 100 %
6F:...	Max. heating output for DHW heating in %, defaulted by the coding card	6F:0 to 6F:100	Max. heating output for DHW heating adjustable from min. heating output to 100 %
71:0	DHW circulation pump: "ON" according to time program	71:1	"OFF" during DHW heating to set value 1
		71:2	"ON" during DHW heating to set value 1
72:0	DHW circulation pump: "ON" according to time program	72:1	"OFF" during DHW heating to set value 2
		72:2	"ON" during DHW heating to set value 2
73:0	DHW circulation pump: "ON" according to time program	73:1 to 73:6	During time program "ON" for 5 min once an hour up to "ON" for 5 min six times an hour
		73:7	Permanently "ON"

Coding level 2 (cont.)

"Heating circuit ..."

Select **"Heating circuit ..."** (see page 98).

Coding

Coding in the delivered condition		Possible change	
A0:0	Without remote control	A0:1	With Vitotrol 200-A/200-RF in conjunction with an external wireless base station (recognised automatically)
		A0:2	With Vitotrol 300-A/300-RF or Vitocomfort in conjunction with an external wireless base station (recognised automatically)
		A0:3	With Vitotrol 200-RF in conjunction with an integral wireless base station (recognised automatically)
		A0:4	With Vitotrol 300-RF in conjunction with an integral wireless base station (recognised automatically)
A1:0	All settings available on the remote control can be carried out.	A1:1	Only on Vitotrol 200: Only party mode can be set at the remote control.
A3:2	Outside temperature below 1 °C: Heating circuit pump "ON" Outside temperature above 3 °C: Heating circuit pump "OFF"	A3:–9 to A3:15	Heating circuit pump "ON/OFF" (see the following table)

Please note
With settings below 1 °C there is a risk that pipes outside the thermal envelope of the building could freeze up.
Standby mode in particular must be taken into consideration, e.g. during holidays.

Parameter address A3:...	Heating circuit pump "ON"	"OFF"
–9	–10 °C	–8 °C
–8	–9 °C	–7 °C
–7	–8 °C	–6 °C
–6	–7 °C	–5 °C
–5	–6 °C	–4 °C
–4	–5 °C	–3 °C
–3	–4 °C	–2 °C
–2	–3 °C	–1 °C
–1	–2 °C	0 °C
0	–1 °C	+1 °C
1	0 °C	+2 °C
2 to 15	+1 °C to +14 °C	+3 °C to +16 °C

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
A4:0	With frost protection	A4:1	No frost protection; this setting is only possible if code "A3:–9" has been set. ! **Please note** "Important": Observe for coding address "A3".
A5:5	With heating circuit pump logic function (economy control): Heating circuit pump "OFF" when the outside temperature (OT) is 1 K higher than the set room temperature (RT_{set}) $OT > RT_{set} + 1\ K$	A5:0	Without heating circuit pump logic function
		A5:1 to A5:15	With heating circuit pump logic function: heating circuit pump "OFF"; see following table

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
1	$OT > RT_{set} + 5\ K$
2	$OT > RT_{set} + 4\ K$
3	$OT > RT_{set} + 3\ K$
4	$OT > RT_{set} + 2\ K$
5	$OT > RT_{set} + 1\ K$
6	$OT > RT_{set}$
7 to 15	$OT > RT_{set} - 1\ K$ $OT > RT_{set} - 9\ K$

Coding in the delivered condition		Possible change	
A6:36	Extended economy mode **disabled**	A6:5 to A6:35	Extended economy mode enabled: The burner and heating circuit pump will stop at a variable value, adjustable between 5 and 35 °C plus 1 °C. Mixer is being closed. Basis for this is the adjusted outside temperature. This is composed of the actual outside temperature and a time constant that takes account of the way an average building cools down.
A7:0	Only for heating circuit with mixer: Without mixer economy function	A7:1	With mixer economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": ▪ If the mixer has been trying to close for longer than 20 min. Heating circuit pump "ON": ▪ If the mixer changes to control function ▪ If there is a risk of frost
A8:1	Heating circuit with mixer creates a demand on internal circulation pump.	A8:0	Heating circuit with mixer does not create a demand on internal circulation pump.

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
A9:7	With pump idle time: heating circuit pump "OFF" when set value is modified by changing the operating mode or changing the set room temperature	A9:0	Without pump idle time
		A9:1 to A9:15	With pump idle time, adjustable from 1 to 15. 1 = short idle time 15 = long idle time
b0:0	For heating circuit with mixer and remote control only: Heating mode/reduced mode: Weather-compensated	b0:1	Heating mode: Weather-compensated Reduced mode: With room temperature hook-up
		b0:2	Heating mode: With room temperature hook-up Reduced mode: Weather-compensated
		b0:3	Heating mode/reduced mode: With room temperature hook-up
b2:8	Only for heating circuit with mixer and remote control. Operation with room temperature hook-up must be programmed for the heating circuit: Room influence factor 8	b2:0	Without room influence
		b2:1 to b2:64	Room influence factor adjustable from 1 to 64. The higher the value, the greater the room influence.
b5:0	For heating circuit with mixer and remote control only: Without room temperature-dependent heating circuit pump logic function	b5:1 to b5:8	Heating circuit pump logic function, see the following table.

Parameter address b5:...	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	Heating circuit pump "ON"
1	$RT_{actual} > RT_{set} + 5\ K$	$RT_{actual} < RT_{set} + 4\ K$
2	$RT_{actual} > RT_{set} + 4\ K$	$RT_{actual} < RT_{set} + 3\ K$
3	$RT_{actual} > RT_{set} + 3\ K$	$RT_{actual} < RT_{set} + 2\ K$
4	$RT_{actual} > RT_{set} + 2\ K$	$RT_{actual} < RT_{set} + 1\ K$
5	$RT_{actual} > RT_{set} + 1\ K$	$RT_{actual} < RT_{set}$
6	$RT_{actual} > RT_{set}$	$RT_{actual} < RT_{set} - 1\ K$
7	$RT_{actual} > RT_{set} - 1\ K$	$RT_{actual} < RT_{set} - 2\ K$
8	$RT_{actual} > RT_{set} - 2\ K$	$RT_{actual} < RT_{set} - 3\ K$

Coding in the delivered condition		Possible change	
C5:20	Electronic minimum flow temperature limit 20 °C (only when operating at standard room temperature)	C5:1 to C5:127	Minimum limit adjustable from 1 to 127 °C (limited by boiler-specific parameters)
C6:74	Electronic maximum flow temperature limit 74 °C (only for weather-compensated control units)	C6:10 to C6:127	Maximum limit adjustable from 10 to 127 °C (limited by boiler-specific parameters)
d3:14	Heating curve slope = 1.4	d3:2 to d3:35	Heating curve slope adjustable from 0.2 to 3.5 (see page 88)
d4:0	Heating curve level = 0	d4:–13 to d4:40	Heating curve level adjustable from –13 to 40 (see page 88)

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
d5:0	With external heating program changeover. Observe settings of coding addresses "3A", "3b" and "3C" in **"General"** group. Operating program switches to "constant central heating at reduced room temperature" or "standby mode" depending on the setting of the reduced set room temperature.	d5:1	Operating program switches to "constant operation with standard room temperature".
d6:0	Heating circuit pump stays in control mode at "External blocking" signal.	d6:1	Heating circuit pump stops on signal "External blocking", depending on coding addresses "3A", "3b" and "3C".
		d6:2	Heating circuit pump starts on signal "External blocking", depending on coding addresses "3A", "3b" and "3C".
d7:0	Heating circuit pump stays in control mode at "External demand" signal.	d7:1	Heating circuit pump stops on signal "External demand", depending on coding addresses "3A", "3b" and "3C".
		d7:2	Heating circuit pump stops on signal "External demand", depending on coding addresses "3A", "3b" and "3C".
d8:0	With EA1 extension: No operating program changeover	d8:1	Operating program changeover via input DE1
		d8:2	Operating program changeover via input DE2
		d8:3	Operating program changeover via input DE3
E1:1	Never adjust		
E2:50	With remote control: No display correction for the actual room temperature (only for weather-compensated control units)	E2:0 to E2:49	Display correction –5 K to Display correction –0.1 K
		E2:51 to E2:99	Display correction +0.1 K to Display correction +4.9 K
E5:0	Never adjust		
E6:...	Only for heating systems without a heating circuit with mixer: Max. speed of internal variable speed heating circuit pump as % of max. speed in standard mode. Value is specified by boiler-specific parameters (only for weather-compensated control unit).	E6:0 to E6:100	Maximum speed adjustable from 0 to 100 %
E7:30	Only for heating systems without a heating circuit with mixer: Min. speed of the internal variable speed heating circuit pump:	E7:0 to E7:100	Min. speed adjustable from 0 to 100 % of max. speed

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
	30 % of max. speed (only for weather-compensated control units)		
E8:1	Only for heating systems without a heating circuit with mixer: Min. speed of the internal variable speed heating circuit pump in operation at reduced room temperature, depending on setting in coding address "E9" (only on weather-compensated control unit)	E8:0	Speed corresponding to setting in coding address "E7"
E9:45	Only for heating systems without a heating circuit with mixer: Speed of the internal variable speed heating circuit pump: 45 % of the max. speed during operation with reduced room temperature (only for weather-compensated control units)	E9:0 to E9:100	Speed adjustable from 0 to 100 % of the max. speed during operation with reduced room temperature
F1:0	Screed drying disabled	F1:1 to F1:6	Only for heating circuit with mixer: Screed drying adjustable, with choice of 6 temperature/time profiles (see page 171)
		F1:15	Constant flow temperature 20 °C
F2:8	Time limit for party mode or external heating program changeover via pushbutton: 8 h [*1] ***Note*** *Observe settings of coding addresses "3A", "3b" and "3C" in group* ***"General"****, and "d5" and "d8" in group* ***"Heating circuit..."****.*	F2:0	No time limit[*1]
		F2:1 to F2:12	Time limit adjustable from 1 to 12 h[*1]
F8:–5	Temperature limit for terminating reduced mode –5 °C; see example on page 173. Observe setting for coding address "A3".	F8:+10 to F8:–60	Temperature limit adjustable from +10 to –60 °C
		F8:–61	Function disabled
F9:–14	Temperature limit for raising the set reduced room temperature –14 °C; see example on page 173.	F9:+10 to F9:–60	Temperature limit for raising the set room temperature to the value selected for standard mode adjustable from +10 to –60 °C
FA:20	Raising the set boiler water or flow temperature by 20 % when switching from operation with reduced room temperature to operation with standard room temperature. See example on page 174.	FA:0 to FA:50	Temperature increase adjustable from 0 to 50 %
Fb:60	Period for raising the set boiler water or set flow temperature (see coding address "FA") 60 min. See example on page 174.	Fb:0 to Fb:240	Period adjustable from 0 to 240 min.

[*1] *In the "Heating and DHW" program, party mode ends* ***automatically*** *when the system changes over to operation with standard room temperature.*

Gas condensing module

Service menu

Calling up the service menu

1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. Select required menu. See following diagram.

Exiting the service menu

1. Select **"Terminate service?"**
2. Select **"Yes"**.
3. Confirm with **OK**.

Note
The system exits the service level automatically after 30 min.

Service menu overview

Service	
Diagnosis	
	System
	Heating circuit 1 HC1
	Heating circuit 2 HC2
	Heating circuit 3 HC3
	DHW
	Brief scan
	Reset data
Actuator test	
Coding level 1	
Coding level 2	
Fault history	
Service functions	
	Subscriber check
	Service PIN
	Enter Vitocom PIN code
	Wireless
	Service indicator reset
	Filling
	Venting
	Max. heating output
	Reset fuel cell
Terminate service?	

Note
*Do **not** adjust menu point **"Multi boiler system"**. The menu point changes the function of the control unit to constant temperature control of a multi boiler system.*

Gas condensing module (cont.)

Diagnosis

Calling up operating data

Operating data can be called up in six areas. See **"Diagnosis"** in the service menu overview.
Operating data on heating circuits with mixer and solar can only be called up if the components are installed in the system.
For further information on operating data, see chapter "Brief scan".

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

Calling up operating data

1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Diagnosis"**
3. Select required group, e.g. **"General"**.

Resetting operating data

Saved operating data (e.g. hours run) can be reset to 0.
The value "Adjusted outside temp" is reset to the actual value.

1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Diagnosis"**
3. **"Reset data"**
4. Select required value (e.g. **"Burner starts"**) or **"All details"**.

Brief scan

In the brief scan, you can scan temperatures or call up software versions and connected components, for example.

1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Diagnosis"**
3. **"Brief scan"**.
4. Press **OK**.
   The display shows 9 lines with 6 fields each.

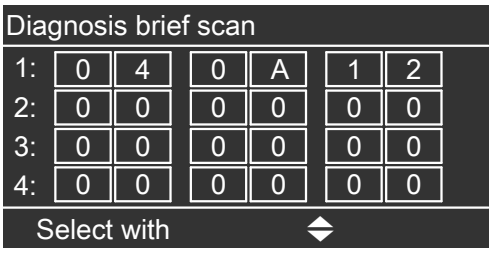

Fig. 87

For an explanation of the relevant values in the individual rows and fields, see the following table:

Row (brief scan)	Field					
	1	**2**	**3**	**4**	**5**	**6**
1:	System scheme 01 to 10		Software version Control unit		Software version Programming unit	
2:	0	0	Appliance version		Appliance ID CU-ID	
3:	0	0	Number of KM-BUS subscribers		0	
4:	Software version Burner control unit		Type Burner control unit		Burner control unit version	
5:	Internal details for calibration				Software version, AM1 extension	Software version, EA1 extension
6:	0	0	0	0	0	0
7:	LON Subnet address/system number		LON Node address		0	
8:	LON SBVT configuration	LON Software version, communication coprocessor	LON Software version, neuron chip		Number of LON subscribers	

Gas condensing module (cont.)

Row (brief scan)	Field					
	1	2	3	4	5	6
9:	**Heating circuit A1 (without mixer)**		**Heating circuit M2 (with mixer)**		**Heating circuit M3 (with mixer)**	
	Remote control 0: Without 1: Vitotrol 200-A 2: Vitotrol 300-A 3: Vitotrol 200-RF 4: Vitotrol 300-RF or Vitocomfort 200	Software version, remote control	Remote control 0: Without 1: Vitotrol 200-A 2: Vitotrol 300-A 3: Vitotrol 200-RF 4: Vitotrol 300-RF or Vitocomfort 200	Software version, remote control	Remote control 0: Without 1: Vitotrol 200-A 2: Vitotrol 300-A 3: Vitotrol 200-RF 4: Vitotrol 300-RF or Vitocomfort 200	Software version, remote control
10: (Only for KM-BUS circulation pumps)	**Internal circulation pump**		**Heating circuit pump, heating circuit M2**		**Heating circuit pump, heating circuit M3**	
	Variable speed pump 0: Without 1: Wilo 2: Grundfos	Software version, variable speed pump 0: No variable speed pump	0	0	0	0
11:	0	0	Software version Mixer extension, heating circuit M2 0: No mixer extension	0	Software version Mixer extension, heating circuit M3 0: No mixer extension	0

Checking outputs (actuator test)

1. Press **OK** and ☰: simultaneously for approx. 4 s. **2. "Actuator test"**

The following relay outputs can be controlled subject to the system equipment level:

Display		Explanation
All actuators	OFF	All actuators have been switched off.
Base load	ON	Burner operates at min. output. Internal pump is switched on.
Full load	ON	Burner operates at max. output. Internal pump is switched on.
Output, internal	ON	Internal output [20] enabled (internal circulation pump)
Output 21/28	ON	Internal output [21] enabled (cylinder loading pump)
Valve	Heating	Diverter valve set to heating mode
Valve	Centre	Diverter valve in central position (filling/draining)
Valve	DHW	Diverter valve set to DHW heating
Htg circ pump HC2	ON	Output for heating circuit pump enabled (extension heating circuit with mixer)
Mixer HC2	Open	Output for "Mixer open" enabled (extension heating circuit with mixer)
Mixer HC2	Close	Output for "Mixer close" enabled (extension heating circuit with mixer)
Htg circ pump HC3	ON	Output for heating circuit pump enabled (extension heating circuit with mixer)

Gas condensing module (cont.)

Display		Explanation
Mixer HC3	Open	Output for "Mixer open" enabled (extension heating circuit with mixer)
Mixer HC3	Close	Output for "Mixer close" enabled (extension heating circuit with mixer)
Outp. int. exten. H1	ON	Output at internal extension enabled
AM1 output 1	ON	Output A1 at AM1 extension enabled
AM1 output 2	ON	Output A2 at AM1 extension enabled
EA1 output 1	ON	Contact P - S at plug 157 of EA1 extension closed
System separation pump	ON	Output 173 on differential temperature controller CU 125 enabled

Fuel cell module

Calling up power generated

Operating instructions for Vitovalor 300-P

Calling up operating condition

Operating instructions for Vitovalor 300-P

Calling up grid monitoring parameters

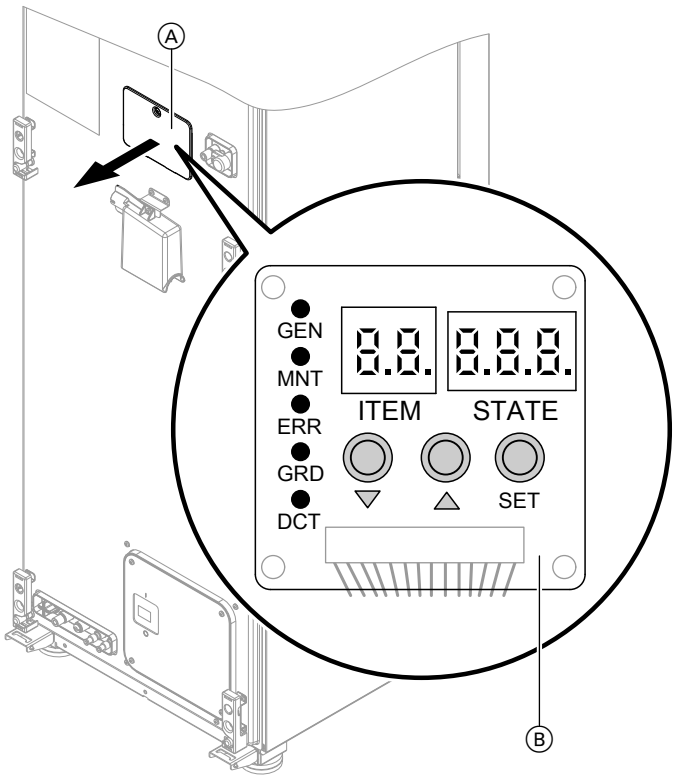

Fig. 88

1. Remove cover Ⓐ.

Fuel cell module (cont.)

2. On programming unit Ⓑ, select the required display (**81** to **85**) under **ITEM** using ▲/▼.
In displays **81** to **85**, the set value and the response time are shown alternately.
For an explanation of the displays, see the following table:

ITEM	Meaning	Set value	Response time
81	Min. voltage	184 V	200 s
82	Max. voltage	253 V	600 s
83	Max. voltage	264.5 V	200 ms
84	Min. frequency	47.5 Hz	200 ms
85	Max. frequency	51.5 Hz	200 ms

Resetting fuel cell module data

The following statistical data from the fuel cell module can be reset:
- Power generated
- CO2 reduction
- Gas consumption history

Extended menu
1. ☰
2. **"Service"**
3. **"Service functions"**
4. **"Reset fuel cell data"**

Fault display on gas condensing module

In the event of a fault, the red fault indicator Ⓐ flashes. In the display, **"⚠"** flashes and **"Fault"** is shown.

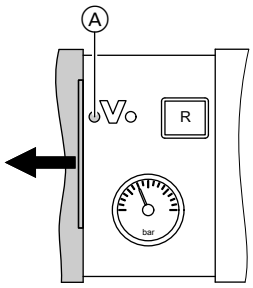

Fig. 89

1. **OK**
2. ▲/▼ for **"Auxiliary heating appliance"**
3. **OK** to call up the fault message.

For some faults, the type of fault is also displayed in plain text.
For an explanation of the fault code, see the following pages.

Acknowledging a fault

Follow the instructions on the display.

Note
- *The fault message is transferred to the standard menu.*
- *Any fault message facility connected will be switched off.*
- *If an acknowledged fault is not remedied, the fault message will be redisplayed the following day and the fault message facility restarted.*

Calling up acknowledged faults

In the standard menu, select **"Fault"**. Current faults will be listed.

Calling up fault codes from the fault memory (fault history)

The 10 most recent faults (including those remedied) are saved and can be called up.
Faults are sorted by date.

Service menu:
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Fault history"**
3. **"Display?"**

Delete fault history

Service menu:
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. **"Fault history"**
3. **"Delete?"**

Fault codes for gas condensing module

Fault code displayed	System characteristics	Cause	Measures
0F	Control mode	Service "0F" is only displayed in the fault history.	Service the appliance. ***Note*** *After servicing, set code "24:0".*
10	Regulates as if the outside temperature were 0 °C.	Short circuit, outside temperature sensor	Check outside temperature sensor (see page 126).
18	Regulates as if the outside temperature were 0 °C.	Lead break, outside temperature sensor	Check outside temperature sensor (see page 126).
19	Regulates as if the outside temperature were 0 °C.	Communication error, wireless outside temperature sensor	Check wireless connection. Place the wireless outside temperature sensor close to the gas condensing module. Forget outside temperature sensor, then pair again. Replace if necessary.

Fault codes for gas condensing module (cont.)

Fault code displayed	System characteristics	Cause	Measures
1A	Circulation pump for discharging buffer switches off about 90 seconds after switching on the control unit	Communication error on KM-BUS	Check KM-BUS connection to differential temperature controller.
1d	Flow rate not being monitored.	No communication with sensor	Check cables/leads and plugs.
1E	Flow rate not being monitored.	Flow sensor faulty	Replace sensor.
1F	Flow rate not being monitored.	Flow sensor faulty	Replace sensor.
20	Regulates without flow temperature sensor (low loss header).	Short circuit, system flow temperature sensor	Check low loss header sensor (see page 127)
28	Regulates without flow temperature sensor (low loss header)	Lead break, system flow temperature sensor	Check low loss header sensor (see page 127) If no low loss header sensor is connected, set code 52:0.
30	Burner blocked	Short circuit, boiler water temperature sensor	Check boiler water temperature sensor (see page 127)
38	Burner blocked	Lead break, boiler water temperature sensor	Check boiler water temperature sensor (see page 127)
40	Mixer being closed	Short circuit, flow temperature sensor, heating circuit 2 (with mixer)	Check flow temperature sensor
44	Mixer being closed	Short circuit, flow temperature sensor, heating circuit 3 (with mixer)	Check flow temperature sensor
48	Mixer being closed	Lead break, flow temperature sensor, heating circuit 2 (with mixer)	Check flow temperature sensor
4C	Mixer being closed	Lead break, flow temperature sensor, heating circuit 3 (with mixer)	Check flow temperature sensor
50	No DHW heating	Short circuit, cylinder temperature sensor	Check cylinder temperature sensor (see page 127)
51	No DHW heating	Short circuit, outlet temperature sensor	Check the outlet temperature sensor (see page 128)
58	No DHW heating	Lead break, cylinder temperature sensor	Check cylinder temperature sensor (see page 127)
59	No DHW heating	Lead break, outlet temperature sensor	Check the outlet temperature sensor (see page 128)
60	Fuel cell module shut down	Communication error with fuel cell	Check LON connection
61	Fuel cell module shut down	Fuel cell fault	Inform Viessmann Technical Services
7C	Circulation pump for discharging buffer stopped	Short circuit on return temperature sensor [17]	Check the return temperature sensor (see page 129)
7d	Circulation pump for discharging buffer stopped	Lead break on return temperature sensor [17]	Check the return temperature sensor (see page 129)
7E	Circulation pump for discharging buffer stopped	Short circuit on top buffer temperature sensor [9]A	Check top buffer temperature sensor (see page 130).

Fault codes for gas condensing module (cont.)

Fault code displayed	System characteristics	Cause	Measures
7F	Circulation pump for discharging buffer stopped	Lead break on top buffer temperature sensor 9A	Check top buffer temperature sensor (see page 130).
80	Circulation pump for discharging buffer stopped	Short circuit on bottom buffer temperature sensor 9B	Check bottom buffer temperature sensor (see page 130).
81	Circulation pump for discharging buffer stopped	Lead break on bottom buffer temperature sensor 9B	Check bottom buffer temperature sensor (see page 130).
A2	Emergency mode with insufficient system pressure	System pressure too low	Top up with water.
A3	Burner blocked	Flue gas temperature sensor incorrectly positioned	Fit flue gas temperature sensor correctly (see page 131).
A4	Control mode	Max. system pressure exceeded	Check the system pressure. Check the function and sizing of the expansion vessel. Vent the heating system. Coding address "0E" is set to "1" to document the fault. Must be manually reset to "0" after troubleshooting.
A7	Control mode as per delivered condition	Programming unit faulty	Replace the programming unit.
A8	Burner blocked. Venting program starts automatically.	Air in the internal circulation pump or minimum flow rate not achieved	Vent the system if the fault message persists.
A9	If a heating circuit with mixer is connected, the burner operates at its lower heating output. If only one heating circuit without mixer is connected, the burner is blocked.	Internal circulation pump blocked	Check circulation pump.
b0	Burner blocked	Short circuit, flue gas temperature sensor	Check the flue gas temperature sensor (see page 131).
b1	Control mode as per delivered condition	Communication error, programming unit	Check connections; replace programming unit if necessary.
b4	Regulates as if the outside temperature were 0 °C.	Internal fault	Replace control unit.
b5	Control mode as per delivered condition	Internal fault	Replace control unit.
b7	Burner blocked	Coding card fault	Plug in or replace the coding card.
b8	Burner blocked	Lead break, flue gas temperature sensor	Check the flue gas temperature sensor (see page 131).
bA	Mixer regulates to 20 °C flow temperature.	Communication error, mixer extension kit for heating circuit 2 (with mixer)	Check mixer extension kit connections and code.
bb	Mixer regulates to 20 °C flow temperature.	Communication error, mixer extension kit for heating circuit 3 (with mixer)	Check mixer extension kit connections and code.

Fault codes for gas condensing module (cont.)

Fault code displayed	System characteristics	Cause	Measures
bC	Control mode without remote control	Communication error, Vitotrol remote control, heating circuit 1 (without mixer)	Check connections, cable and coding address "A0" in group **"Heating circuit ..."**, and check remote control configuration (see page 175). For wireless remote controls: Check connection, place remote control close to the boiler.
bd	Control mode without remote control	Communication error, Vitotrol remote control, heating circuit 2 (with mixer)	Check connections, cable and coding address "A0" in group **"Heating circuit ..."**, and check remote control configuration (see page 175). For wireless remote controls: Check connection, place remote control close to the boiler.
bE	Control mode without remote control	Communication error, Vitotrol remote control, heating circuit 3 (with mixer)	Check connections, cable and coding address "A0" in group **"Heating circuit ..."**, and check remote control configuration (see page 175). For wireless remote controls: Check connection, place remote control close to the boiler.
bF	Control mode	Incorrect LON communication module	Replace LON communication module.
C1	Control mode	Communication error, EA1 extension	Check connections. Without extension EA1: Set code "5b:0" in **"General"** group.
C2	Control mode	Communication error, solar control module	Check solar control module.
C3	Control mode	Communication error, AM1 extension	Check connections. Without AM1 extension: Set code "32:0" in **"General"** group.
C4	Control mode	Communication error, OpenTherm extension	Check OpenTherm extension.
C5	Control mode, max. pump speed	Communication error, internal variable speed pump	Check setting of coding address "30" in the **"Boiler"/2** group.
C7	Control mode, max. pump speed	Communication error, external variable speed heating circuit pump, heating circuit 1 (without mixer)	Check coding address setting "E5" in **"Heating circuit"** group.
Cd	Control mode	Communication error, Vitocom 100, type GSM	Check connections and Vitocom 100 (see separate installation and service instructions). Without Vitocom 100: Set code "95:0" in **"General"** group.

Fault codes for gas condensing module (cont.)

Fault code displayed	System characteristics	Cause	Measures
CF	Control mode No communication via LON	Communication error, LON communication module	Check LON communication module and replace if required. If no LON communication module is installed, set code "76:0" in **"General"** group.
d6	Control mode	Input DE1 at EA1 extension reports a fault.	Remedy fault at appliance concerned.
d7	Control mode	Input DE2 at EA1 extension reports a fault.	Remedy fault at appliance concerned.
d8	Control mode	Input DE3 at EA1 extension reports a fault.	Remedy fault at appliance concerned.
dA	Control mode without room influence	Short circuit, room temperature sensor, heating circuit 1 (without mixer)	Check room temperature sensor, heating circuit 1.
db	Control mode without room influence	Short circuit, room temperature sensor, heating circuit 2 (with mixer)	Check room temperature sensor, heating circuit 2.
dC	Control mode without room influence	Short circuit, room temperature sensor, heating circuit 3 (with mixer)	Check room temperature sensor, heating circuit 3.
dd	Control mode without room influence	Lead break, room temperature sensor, heating circuit 1 (without mixer)	Check room temperature sensor, heating circuit 1 and remote control configuration (see page 175).
dE	Control mode without room influence	Lead break, room temperature sensor, heating circuit 2 (with mixer)	Check room temperature sensor, heating circuit 2 and remote control configuration (see page 175).
dF	Control mode without room influence	Lead break, room temperature sensor, heating circuit 3 (with mixer)	Check room temperature sensor, heating circuit 3 and remote control configuration (see page 175).
E0	Control mode	External LON subscriber error	Check connections and LON subscribers.
E1	Burner in a fault state	Ionisation current too high during calibration	Check gap between ionisation electrode and burner gauze assembly (see page 78). In open flue operation, prevent high levels of dust in the combustion air. Press reset **R**.
E2	Burner in a fault state	Heat transfer too low during calibration.	Ensure adequate heat transfer. Press reset **R**.
E3	Burner in a fault state	Heat transfer too low during calibration. Temperature limiter has shut down.	Ensure adequate heat transfer. Press reset **R**.
E4	Burner blocked	24 V power supply fault	Replace control unit.
E5	Burner blocked	Flame amplifier fault	Replace control unit.
E6	Burner blocked	System pressure too low	Top up with water.

Fault codes for gas condensing module (cont.)

Fault code displayed	System characteristics	Cause	Measures
E7	Burner in a fault state	Ionisation current too low during calibration	Check ionisation electrode: ▪ Distance to burner gauze assembly (see page 78) ▪ Electrode soiled ▪ Connecting cable and plug-in connections Check flue system; remove flue gas recirculation if required. Press reset **R**.
E8	Burner in a fault state	Ionisation current lies outside the permissible range	Check gas supply (gas pressure and gas flow switch), gas train and connecting cable. Check ionisation electrode: ▪ Distance to burner gauze assembly (see page 78) ▪ Electrode soiled Press reset **R**.
EA	Burner in a fault state	Ionisation current outside permissible range during calibration (excessive deviation from previous level)	Check flue system; remove flue gas recirculation if required. In open flue operation, prevent high levels of dust in the combustion air. Press reset **R**. Following several unsuccessful reset attempts, replace the coding card and press reset **R**.
Eb	Burner in a fault state	Repeated flame loss during calibration	Check gap between ionisation electrode and burner gauze assembly (see page 78). Check flue system; remove flue gas recirculation if required. Press reset **R**.
EC	Burner in a fault state	Parameter error during calibration	Press reset **R** or replace coding card and press reset **R**.
Ed	Burner in a fault state	Internal fault	Replace control unit.
EE	Burner in a fault state	Flame signal at burner start not present or insufficient.	Check gas supply (gas pressure and gas flow switch). Check gas train. Check ionisation electrode and connecting cable. Check ignition: ▪ Connecting leads to ignition module and ignition electrode ▪ Ignition electrode gap and soiling (see page 78). Check condensate drain. Press reset **R**.

Fault codes for gas condensing module (cont.)

Fault code displayed	System characteristics	Cause	Measures
EF	Burner in a fault state	Flame is lost immediately after it has built (during safety time).	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode (replace if necessary): ▪ Distance to burner gauze assembly (see page 78) ▪ Electrode soiled Press reset **R**.
F0	Burner blocked	Internal fault	Replace control unit.
F1	Burner in a fault state	Flue gas temperature limiter has responded.	Check heating system fill level. Vent the system. Press reset **R** after flue system has cooled down.
F2	Burner in a fault state	Temperature limiter has responded.	Check heating system fill level. Check circulation pump. Vent the system. Check temperature limiter and connecting cables. Press reset **R**.
F3	Burner in a fault state	Flame signal is already present at burner start.	Check ionisation electrode and connecting cable. Press reset **R**.
F7	Burner blocked	Short circuit or lead break, water pressure sensor	Check the water pressure sensor and lead.
F8	Burner in a fault state	Fuel valve closes too late.	Check gas train. Check both control paths. Press reset **R**.
F9	Burner in a fault state	Fan speed too low during burner start	Check fan, fan connecting cables and power supply to fan; check fan control. Press reset **R**.
FA	Burner in a fault state	Fan idle state not reached	Check fan, fan connecting cables and fan control. Press reset **R**.
FC	Burner in a fault state	Gas train faulty, faulty modulation valve control or flue gas path blocked	Check gas train. Check flue system. Press reset **R**.
Fd	Burner in a fault state and additional fault b7 is displayed.	Coding card missing.	Insert coding card. Press reset **R**. Replace control unit if fault persists.
Fd	Burner in a fault state	Burner control unit fault	Check ignition electrodes and connecting cables. Check whether a strong interference (EMC) field exists near the appliance. Press reset **R**. Replace control unit if fault persists.

Fault codes for gas condensing module (cont.)

Fault code displayed	System characteristics	Cause	Measures
FE	Burner blocked or in a fault state	Coding card or main PCB faulty, or incorrect coding card	Press reset **R**. If the fault persists, check the coding card and replace coding card or control unit.
FF	Burner blocked or in a fault state	Internal fault or reset button **R** blocked.	Restart the appliance. Replace the control unit if the appliance will not restart.

Note
*If subscriber faults occur, **"Subscriber fault ..."** is displayed.*

Fault display, fuel cell module

In the event of a fault, the red fault indicator Ⓐ flashes. In the display, **"⚠"** flashes and **"Fault"** is shown.

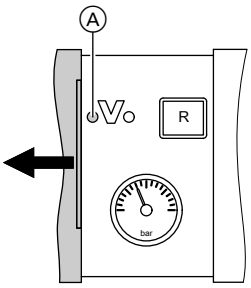

Fig. 90

1. **OK**
2. ▲/▼ for **"fuel cell"**
3. **OK** to call up the fault message.

For some faults, the type of fault is also displayed in plain text.
For an explanation of the fault code, see the following pages.

Acknowledging fault

Follow the instructions on the display.

Note
- *The fault message is transferred to the standard menu.*
- *Any fault message facility connected will be switched off.*
- *If an acknowledged fault is not remedied, the fault message will be redisplayed the following day and the fault message facility restarted.*

Calling up acknowledged faults

In the standard menu, select **"Fault"**. Current faults will be listed.

Calling up fault codes from the fault memory (fault history)

The 10 most recent faults (including those remedied) are saved and can be called up.
Faults are sorted by date.

Service menu:
1. Press **OK** and ☰: simultaneously for approx. 4 s.
2. **"Fault history"**
3. **"Display?"**

Delete fault history

Service menu:
1. Press **OK** and ☰: simultaneously for approx. 4 s.
2. **"Fault history"**
3. **"Delete?"**

Fault display, fuel cell module (cont.)

Fault messages

Fault code	System characteristics	Cause of fault	Remedy
20F1		Insufficient distilled water.	Top up distilled water (commissioning mode 3).
42F0		Insufficient heating water in fuel cell circuit.	Top up heating water.
A8F0	No power generation	Gas supply interrupted	Check gas supply.
Other fault messages			Inform Viessmann Technical Services.

Repairs (gas condensing module)

Putting the control unit into the service position

If required for commissioning and servicing, the control unit can be put into a different position.

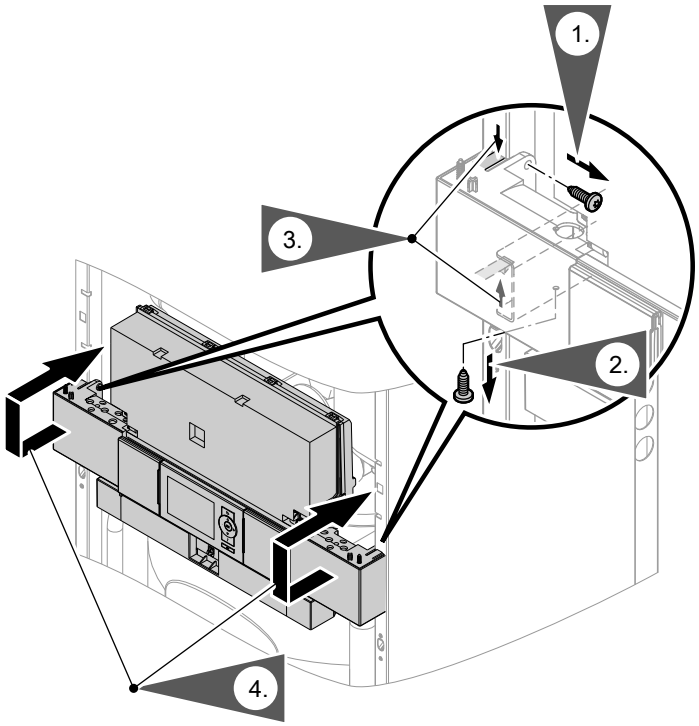

Fig. 91

Draining the system on the heating water and DHW sides

Only when necessary for repair work.

Repairs (gas condensing module) (cont.)

Draining gas condensing module on the heating water side

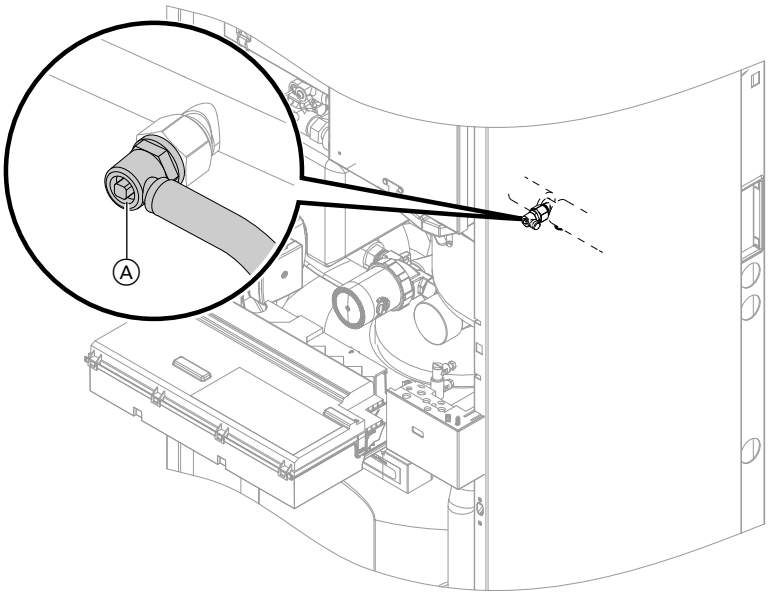

Fig. 92

1. Shut off the connections on the heating water side.
2. Attach a hose to drain valve Ⓐ and connect to a drain.
3. Open drain valve Ⓐ.

Draining the heating water buffer cylinder

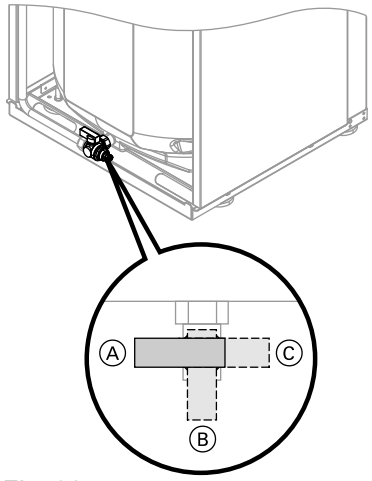

Fig. 93

1. Check that the fuel cell module is switched off.
2. Connect the hose to the drain valve and route it into a suitable container or drain outlet.
3. Turn the lever on the drain valve to position Ⓒ.

Note
This will not drain the process circuit of the fuel cell module. See page 81.

Repairs (gas condensing module) (cont.)

Draining the fuel cell module on the heating water side

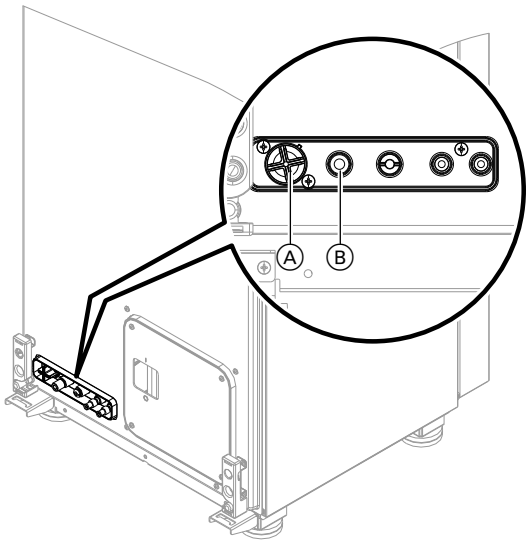

Fig. 94

1. If these have not yet been actioned: Set service mode (see page 75).

   Note
   The cooling process on the fuel cell module lasts approximately 90 min.

   Please note
   If this waiting time is not observed, there is a risk of scalding and damage to the appliance.

2. Place a shallow container of sufficient size (min. 5 l) below drain port Ⓐ.
3. Unscrew the filter from drain port Ⓐ.
4. Undo screw Ⓑ approx. 1.5 turns.

Draining the system on the DHW side

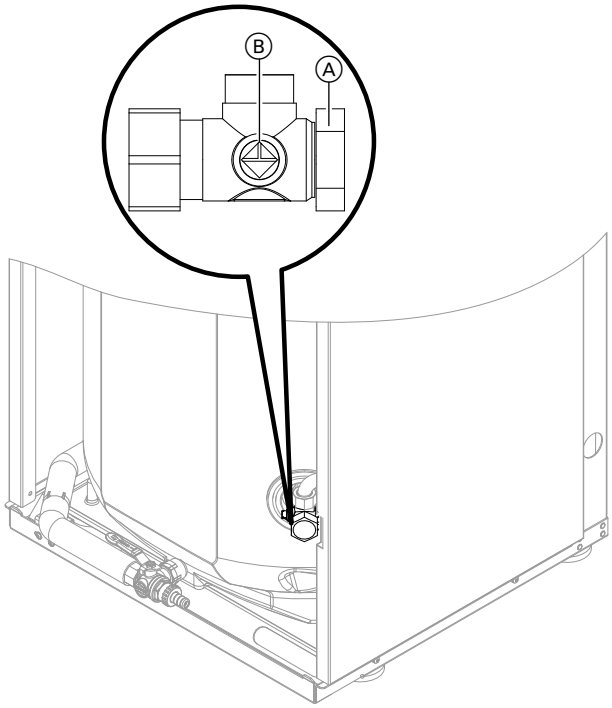

Fig. 95

1. Shut off the cold water connection.

Repairs (gas condensing module) (cont.)

2. To vent, open a draw-off point in the domestic system.
3. Undo the cap at connection Ⓐ.
4. Attach a hose to connection Ⓐ and connect to a drain.
5. Turn quadrant Ⓑ to the correct position.

Checking the outside temperature sensor

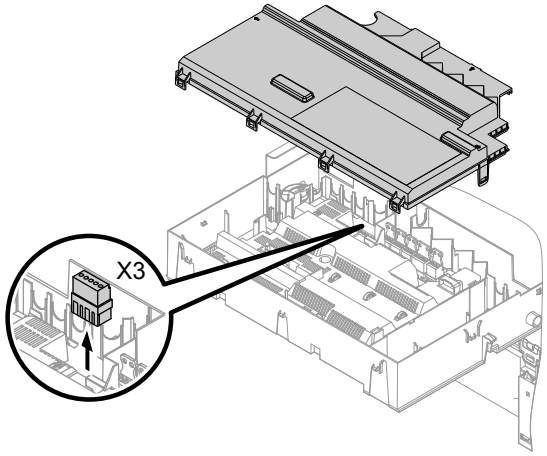

Fig. 96

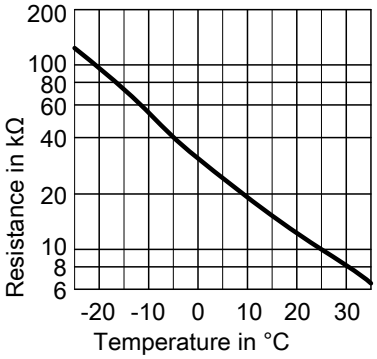

Fig. 97 Sensor type: NTC 10 kΩ

1. Pull plug "X3" from the control unit.
2. Test the resistance of the outside temperature sensor across terminals "X3.1" and "X3.2" on the disconnected plug and compare it with the curve.
3. Where actual values deviate severely from the curve values, disconnect the wires at the sensor and repeat the test on the sensor itself.
4. Depending on the result, replace the lead or the outside temperature sensor.

Repairs (gas condensing module) (cont.)

Checking the boiler water temperature sensor, cylinder temperature sensor or flow temperature sensor of low loss header

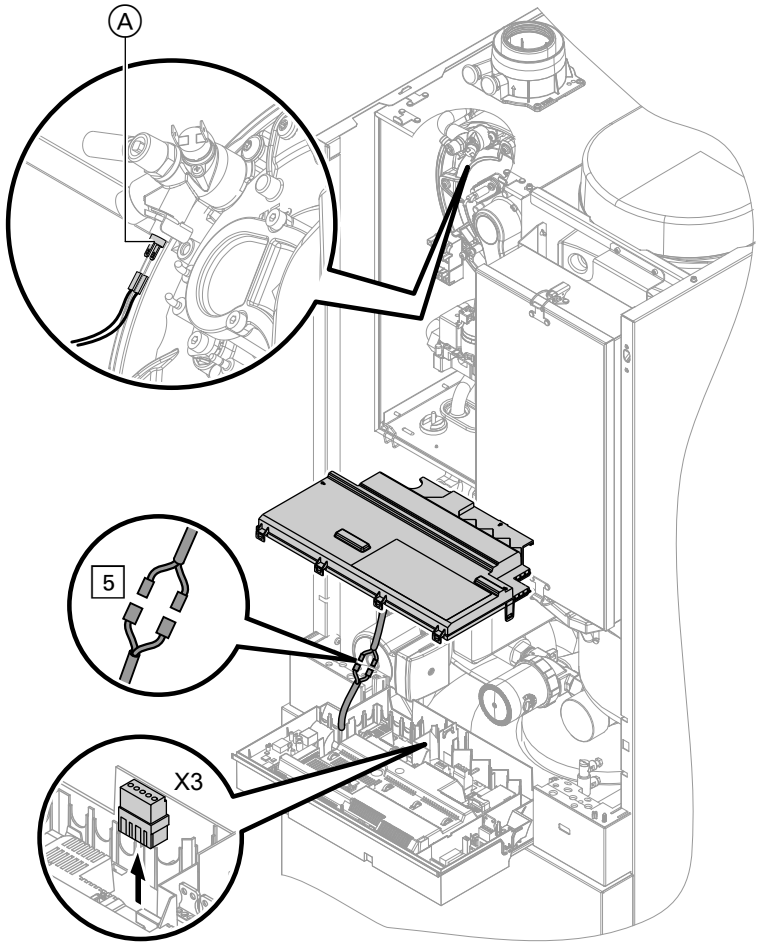

Fig. 98

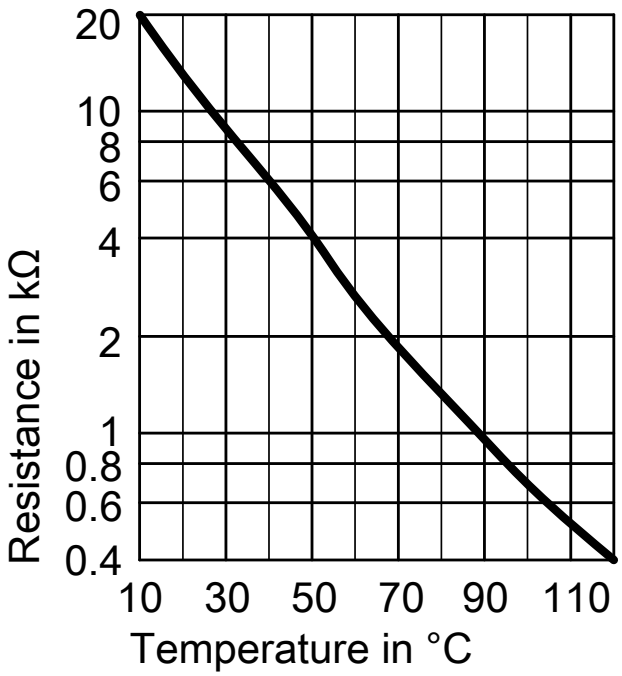

Fig. 99 Sensor type: NTC 10 kΩ

1. ▪ **Boiler water temperature sensor**
   Pull off leads from boiler water temperature sensor Ⓐ and check resistance.
   ▪ **Cylinder temperature sensor**
   Pull plug [5] from the cable harness at the control unit and check resistance.
   ▪ **Flow temperature sensor**
   Pull plug "X3" at the control unit and check resistance across terminals "X3.4" and "X3.5".

2. Compare the sensor resistance with the curve.

3. In the event of severe deviation replace the sensor.

⚠ **Danger**
The boiler water temperature sensor is directly immersed in the heating water (risk of scalding).
Drain the boiler on the heating water side before replacing the sensor.

Repairs (gas condensing module) (cont.)

Checking the outlet temperature sensor

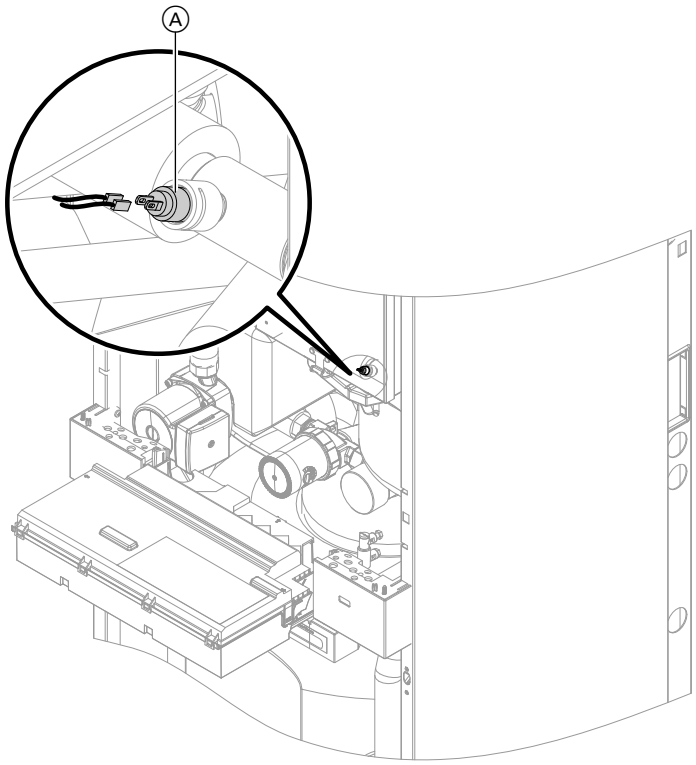

Fig. 100

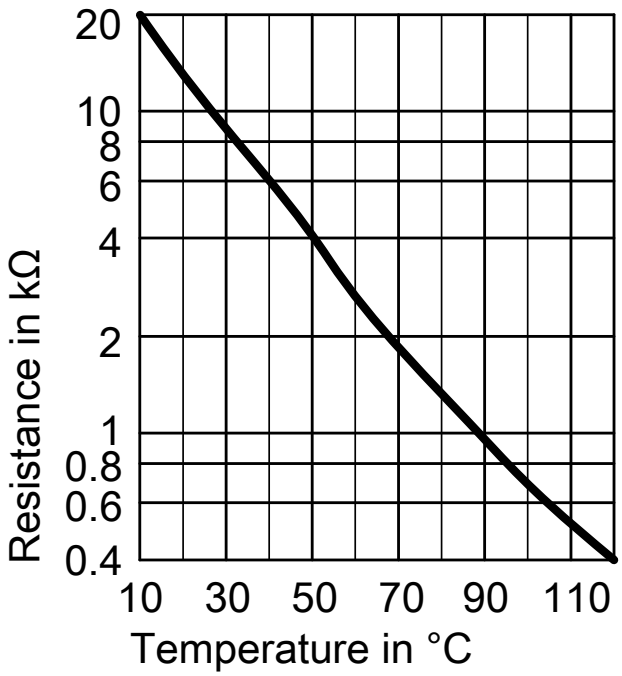

Fig. 101 Sensor type: NTC 10 kΩ

1. Pull leads from outlet temperature sensor Ⓐ.
2. Check sensor resistance and compare it to the curve.
3. In the event of severe deviation replace the sensor.

⚠ **Danger**
The outlet temperature sensor is directly immersed in the DHW (risk of scalding). Drain the DHW side of the boiler before replacing the sensor.

Repairs (gas condensing module) (cont.)

Checking the return temperature sensor

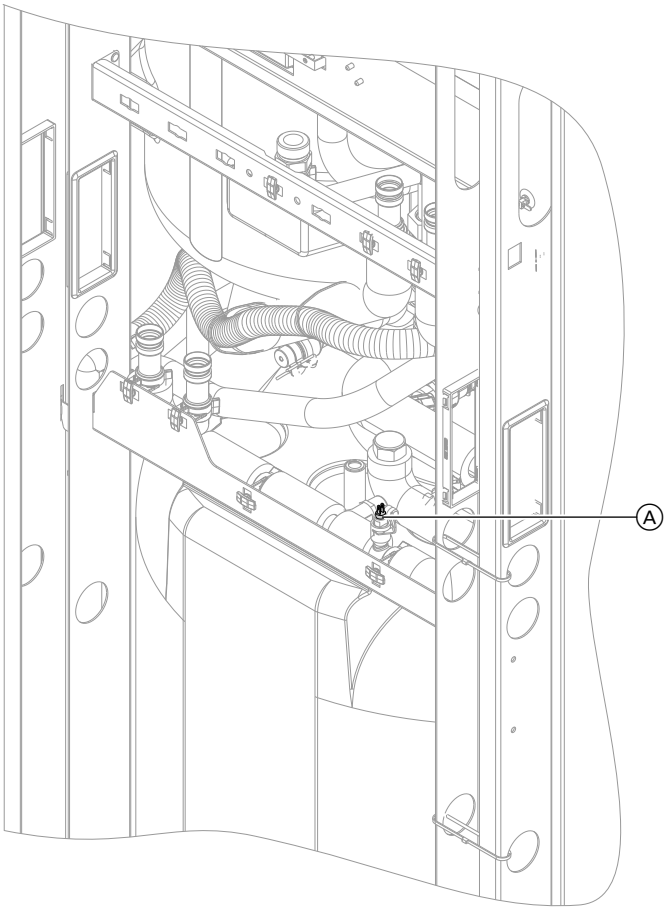

Fig. 102

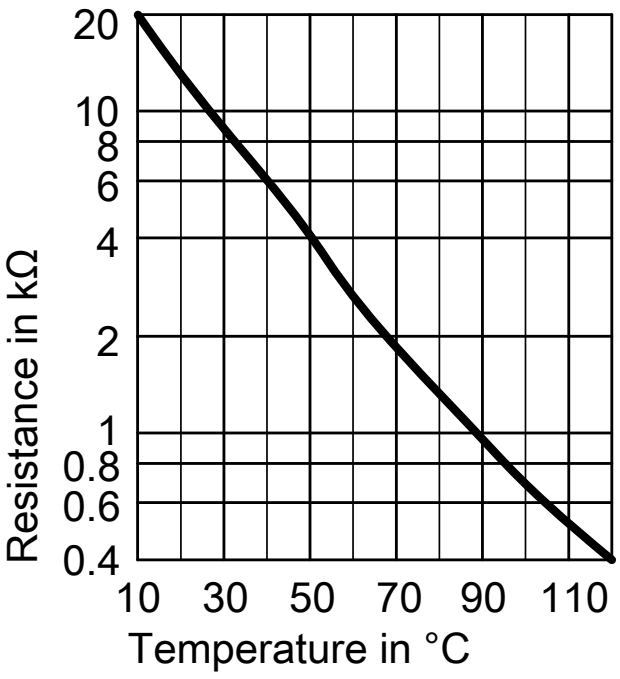

Fig. 103 Sensor type: NTC 10 kΩ

1. Pull leads from return temperature sensor Ⓐ.
2. Check sensor resistance and compare it to the curve.
3. In the event of severe deviation replace the sensor.

Danger
The return temperature sensor is in direct contact with the heating water (risk of scalding).
Drain the boiler on the heating water side before replacing the sensor.

Repairs (gas condensing module) (cont.)

Checking the buffer temperature sensor

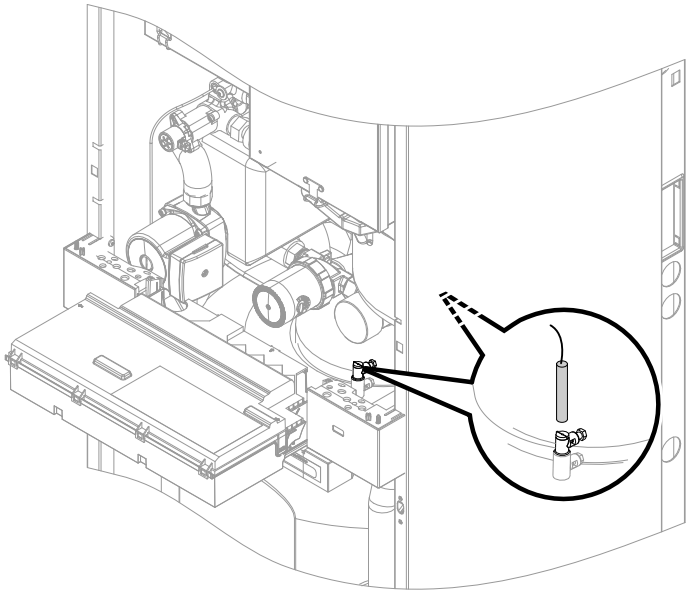

Fig. 104

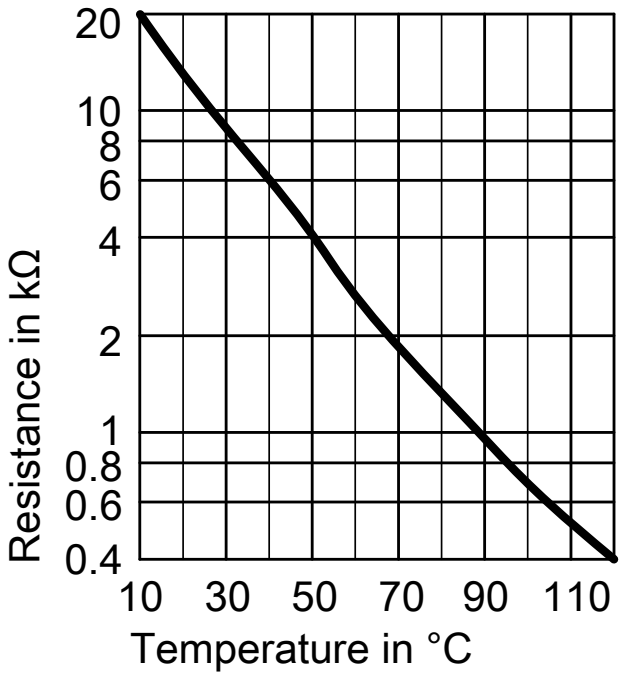

Fig. 105 Sensor type: NTC 10 kΩ

1. Pull plug 9A or 9B from the differential temperature controller.
2. Check sensor resistance and compare it to the curve.
3. In the event of severe deviation replace the sensor.

Checking the plate heat exchanger

Note
During and after removal, small amounts of water may trickle from the plate heat exchanger.

Repairs (gas condensing module) (cont.)

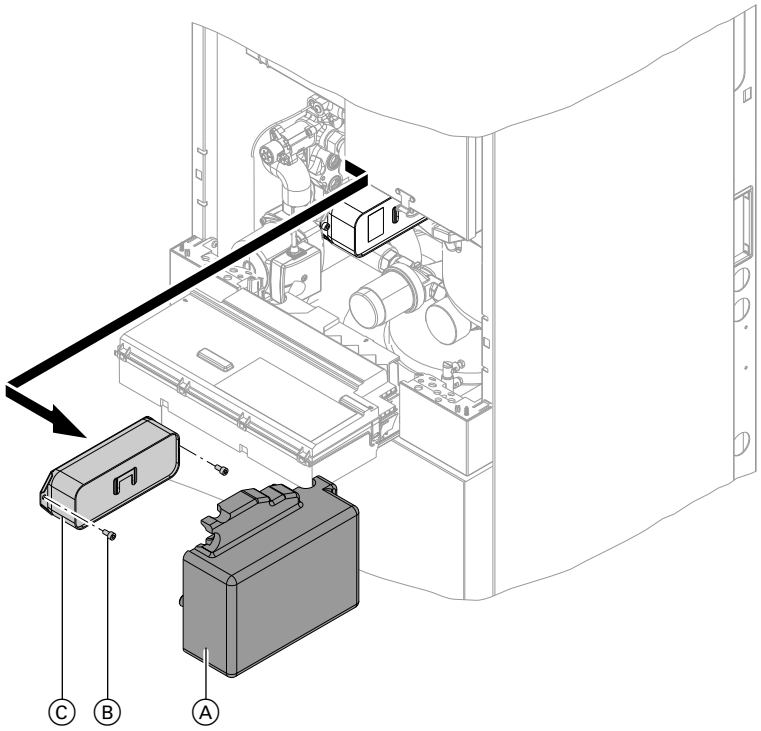

Fig. 106

1. Shut off and drain the boiler on the heating water and DHW sides.
2. Release side fasteners and pivot control unit forward.
3. Remove the trap (see page 57).
4. Extract thermal insulation Ⓐ and remove it.
5. Undo two screws Ⓑ and remove plate heat exchanger Ⓒ by pulling forwards.
6. Check the connections on the heating water and DHW side for soiling and scaling; if required, replace the plate heat exchanger.
7. Install in reverse order using new gaskets.

Checking the flue gas temperature sensor

The flue gas temperature sensor locks out the boiler if the permissible flue gas temperature is exceeded. Reset the interlock after the flue system has cooled down by pressing reset **R**.

Repairs (gas condensing module) (cont.)

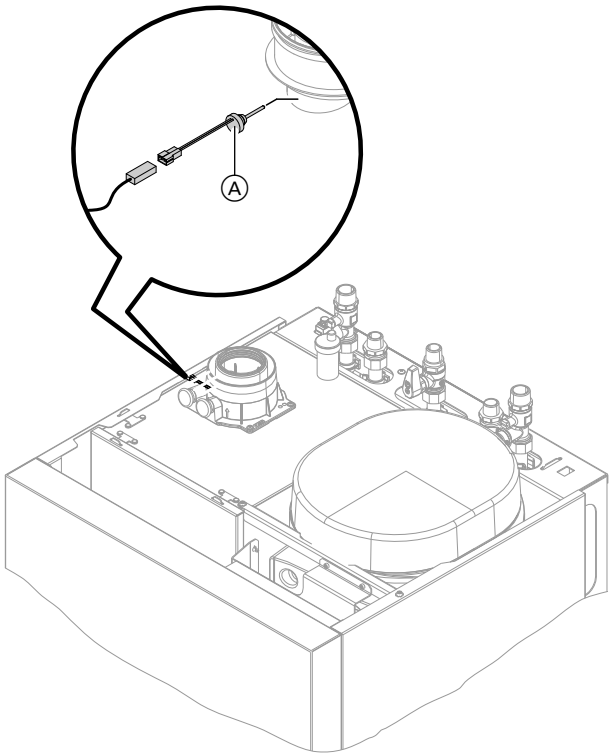

Fig. 107

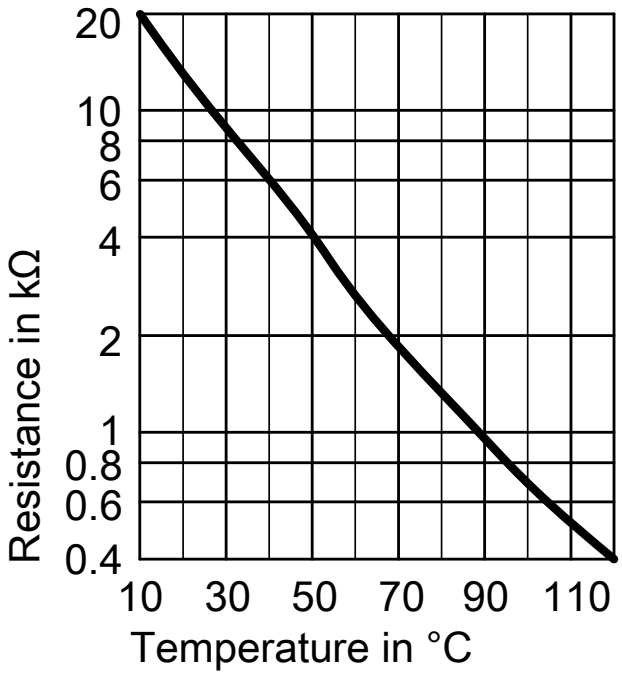

Fig. 108 Sensor type: NTC 10 kΩ

1. Pull leads from flue gas temperature sensor Ⓐ.
2. Check sensor resistance and compare it to the curve.
3. In the event of severe deviation replace the sensor.

Fault "A3" during commissioning

During commissioning, the control unit checks whether the flue gas temperature sensor is correctly positioned. If the flue gas temperature sensor is not positioned correctly, commissioning is cancelled and fault message A3 is displayed.

1. Check whether the flue gas temperature sensor is correctly inserted. See previous diagram.
2. If necessary, correct the position of the flue gas temperature sensor or replace faulty flue gas temperature sensor.

Repairs (gas condensing module) (cont.)

3. Press reset button **R** and repeat commissioning. The check is repeated until it is completed successfully.

Checking the temperature limiter

If the burner control unit cannot be reset after a fault shutdown although the boiler water temperature is below approx. 75 °C, check the following:

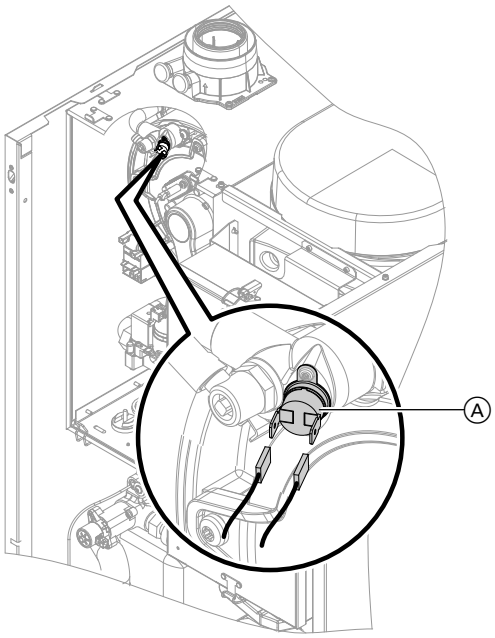

Fig. 109

1. Pull leads from temperature limiter Ⓐ.
2. Check continuity of the temperature limiter with a multimeter.
3. Remove faulty temperature limiter.
4. Coat the new temperature limiter with heat conducting paste and install it.
5. After commissioning, press reset **R** on the control unit.

Repairs (gas condensing module) (cont.)

Checking the fuse/MCB

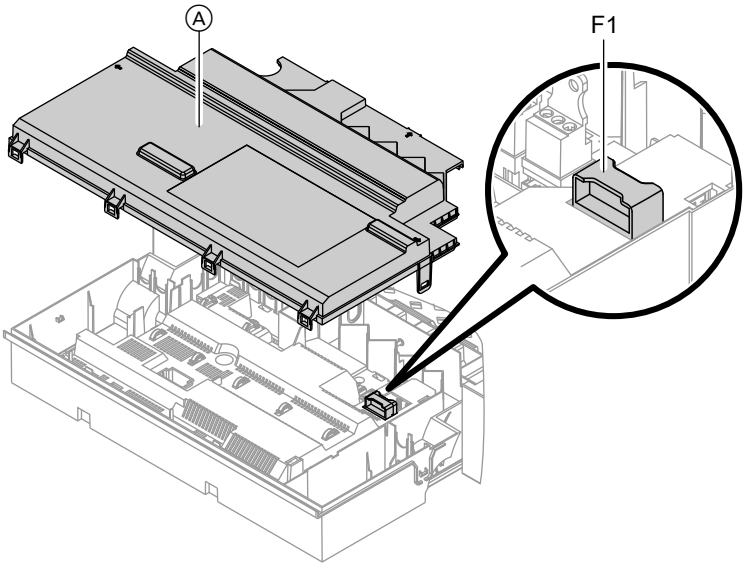

Fig. 110

1. Switch off the power supply.
2. Release the side closures and pivot the control unit down.
3. Remove cover Ⓐ.
4. Check fuse F1 (see connection and wiring diagram).

Mixer extension kit

Checking the setting of rotary selector S1

The rotary selector on the PCB of the extension kit defines the assignment to the relevant heating circuit.

Heating circuit	Rotary selector S1 setting
Heating circuit with mixer M2 (heating circuit 2)	2 
Heating circuit with mixer M3 (heating circuit 3)	4 

Checking the rotational direction of the mixer motor

After being switched on, the boiler implements a self-test. During this, the mixer is opened and closed again.

Note
The mixer motor can also be started via the actuator test (see chapter "Checking outputs").

Observe the rotational direction of the mixer motor during its self-test.
Then manually set the mixer back to "Open".
The flow temperature sensor must now capture a higher temperature. If the temperature drops, either the motor is turning in the wrong direction or the mixer insert is incorrectly fitted.

Mixer installation instructions

Changing the rotational direction of the mixer motor (if required)

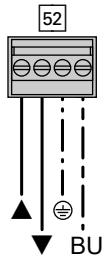

Fig. 111

1. Remove the upper casing cover of the extension kit.

Danger
An electric shock can be life-threatening. Before opening the boiler, disconnect it from the mains voltage, e.g. at the fuse or mains isolator.

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Repairs (gas condensing module) (cont.)

2. At plug 52, swap the cores at terminals "▲" and "▼".
3. Refit the casing cover.

Check flow temperature sensor

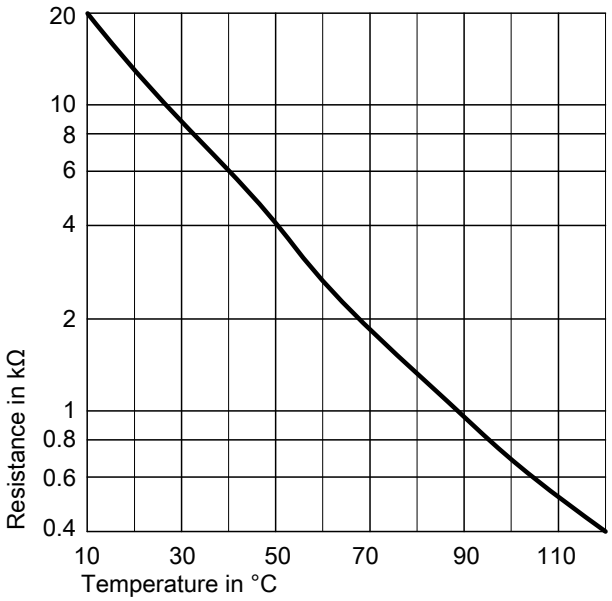

Fig. 112 Sensor type: NTC 10 kΩ

1. Disconnect plug 2 (flow temperature sensor).
2. Check the sensor resistance and compare it to the curve.
   In the event of severe deviation replace the sensor.

Checking the Vitotronic 200-H (accessories)

The Vitotronic 200-H is connected to the control unit via the LON cable. To test the connection, carry out a subscriber check at the boiler control unit (see page 74).

Repairs (gas condensing module) (cont.)

Overview of assemblies

The following details are required when ordering parts:
- Serial no. (see type plate Ⓐ)
- Assembly (from this parts list)
- Position number of the individual part within the assembly (from this parts list)

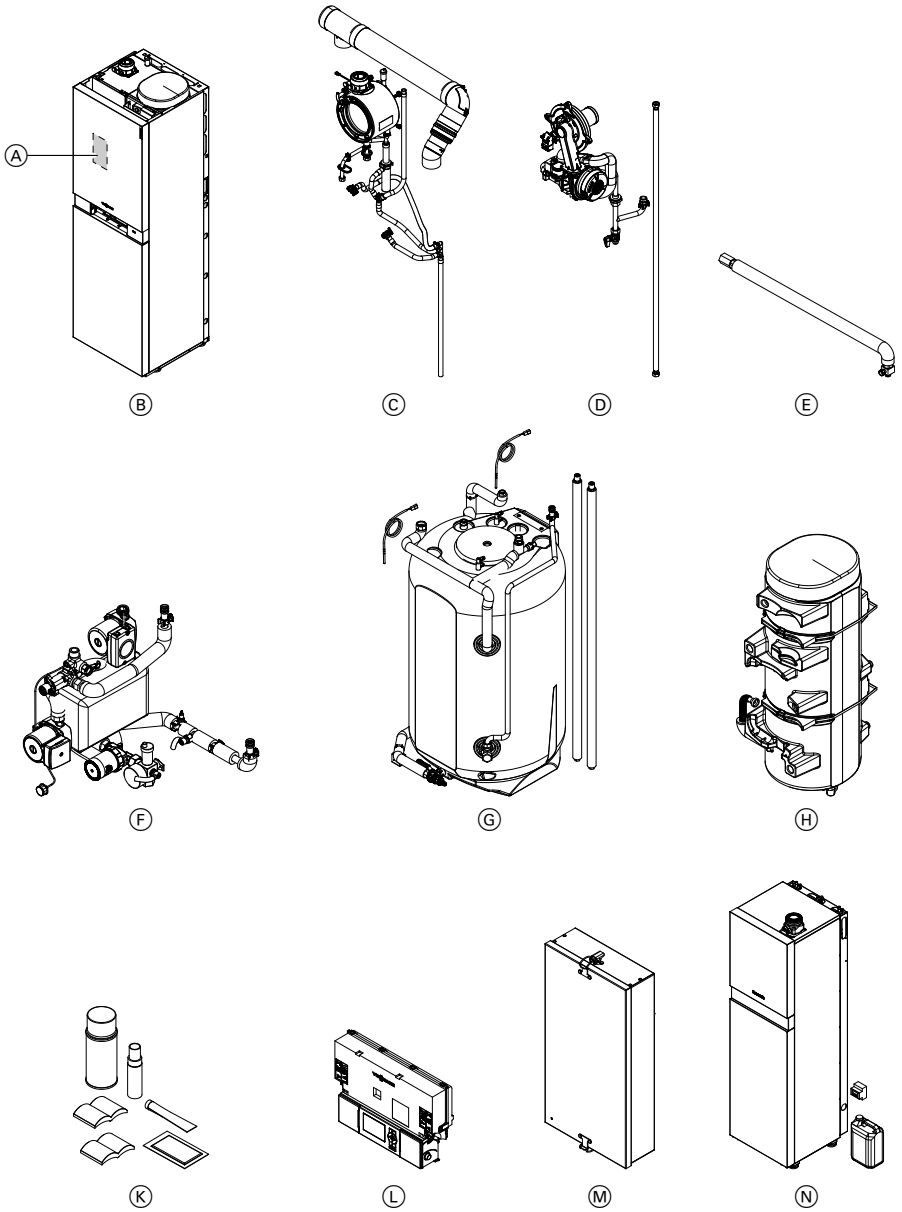

Fig. 113

Ⓐ Type plate
Ⓑ Casing
Ⓒ Heat cell
Ⓓ Burner
Ⓔ External connection
Ⓕ Heat cell hydraulics
Ⓖ Buffer cylinder
Ⓗ DHW cylinder
Ⓚ Miscellaneous
Ⓛ Vitovalor VBC 132 control unit
Ⓜ Vitovalor VUC 170 control unit
Ⓝ Fuel cell

Casing assembly

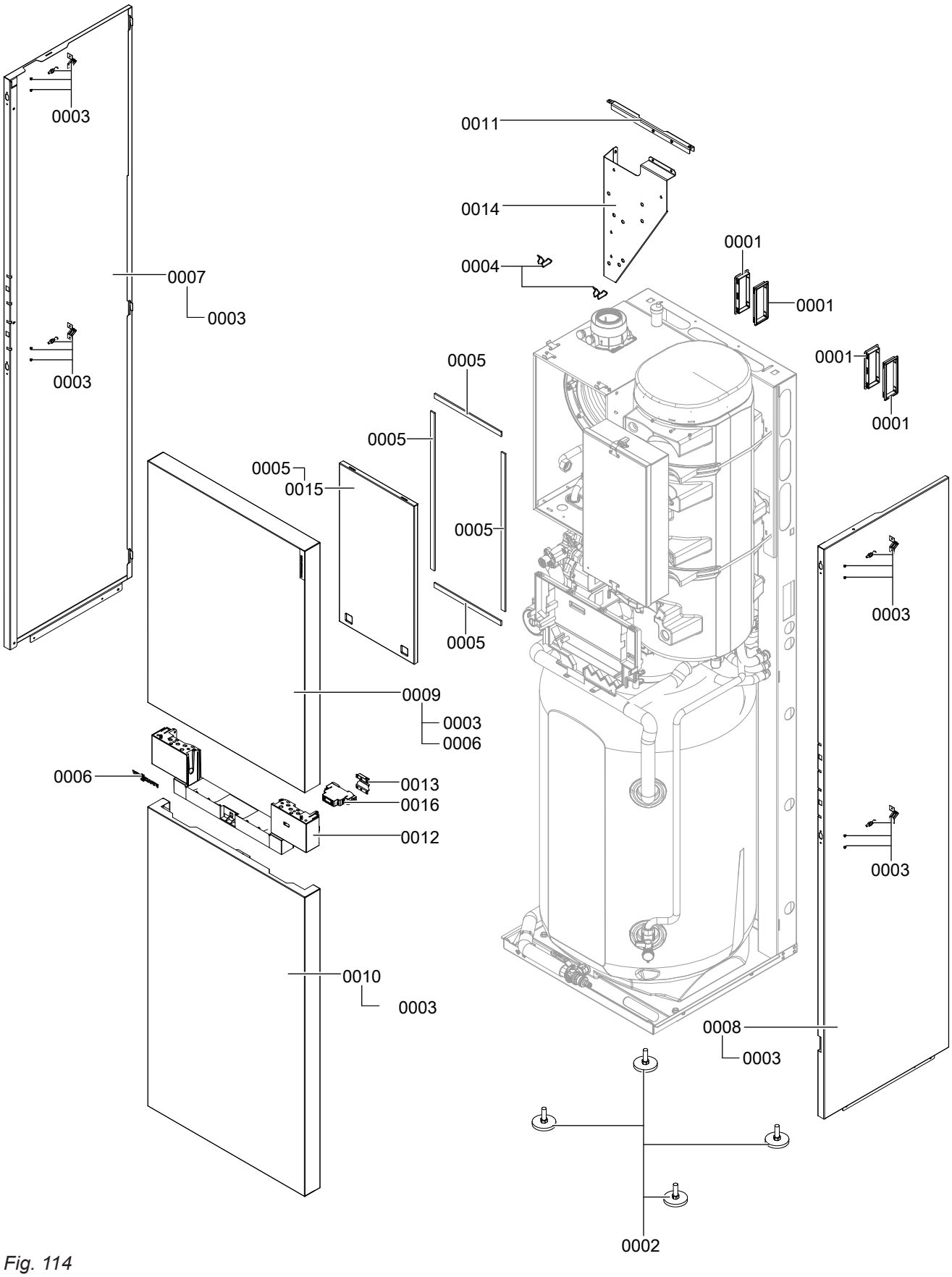

Fig. 114

Casing assembly (cont.)

Pos.	Part
0001	Edge protector
0002	Adjustable foot
0003	Location stud (2 pce)
0004	Toggle fastener set (4 pce)
0005	Profiled seal 15 l = 520
0006	Viessmann logo
0007	Side panel, left PLB
0008	Side panel, right PLB
0009	Front panel, top PLB
0010	Front panel, bottom PLB
0011	Retainer for side panel, right PLB
0012	Control unit support
0013	AC meter mounting plate
0014	Mounting plate for process control unit
0015	Cover panel with gaskets
0016	AC meter ALD1 32A

Heat cell assembly

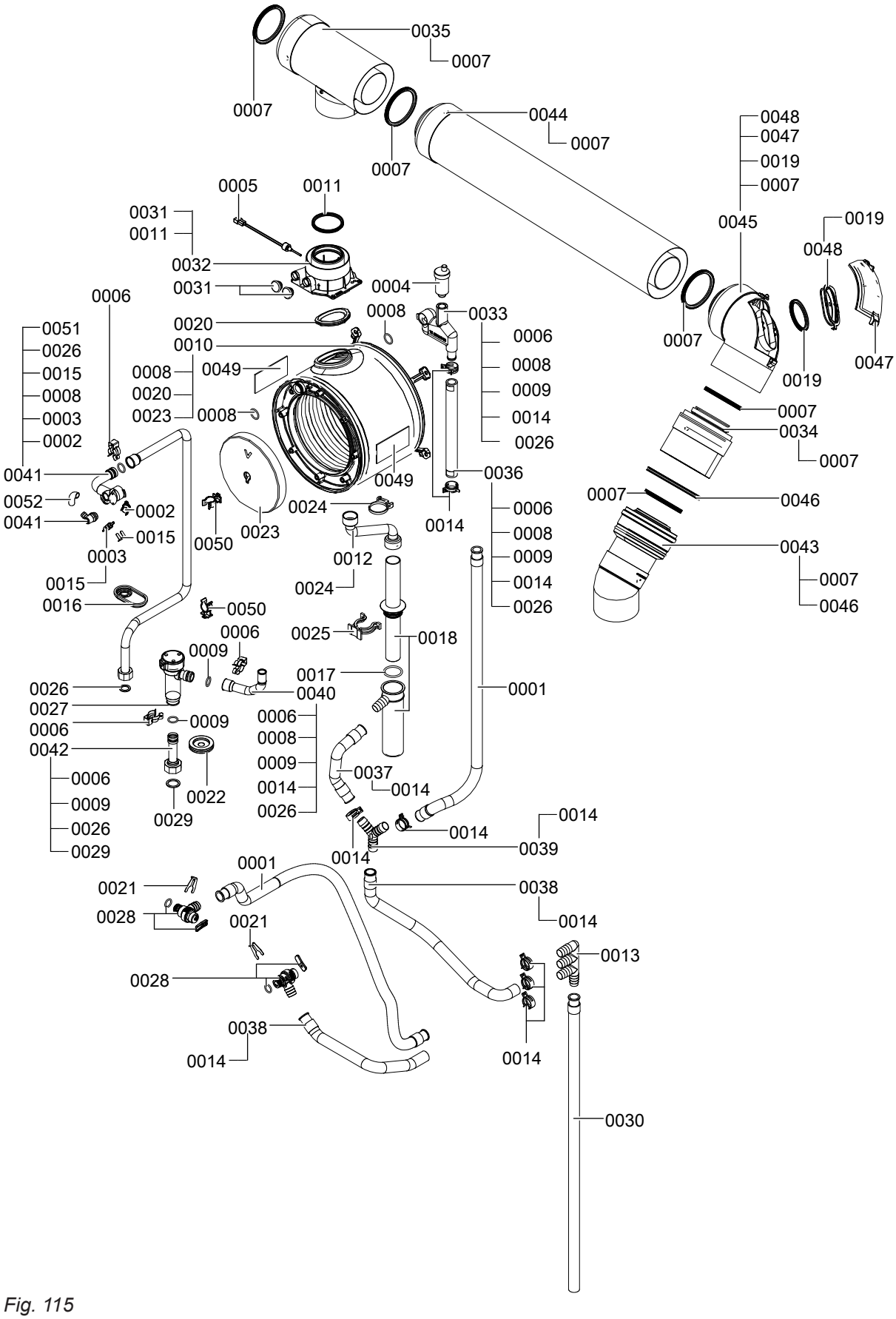

Fig. 115

Heat cell assembly (cont.)

Pos.	Part
0001	Condensate hose
0002	Thermal circuit breaker
0003	Temperature sensor
0004	Quick-action air vent valve G 3/8
0005	Flue gas temperature sensor
0006	Plug-in connector retainer (2 pce)
0007	Flue gasket ∅ 80 Viton
0008	O-ring 20.63 x 2.62 (5 pce)
0009	O-ring 17.86 x 2.62 (5 pce)
0010	Heat exchanger
0011	Gasket DN 60
0012	Condensate hose
0013	Condensate receiver
0014	Spring clip DN 25 (5 pce)
0015	Clip ∅ 8 (5 pce)
0016	Diaphragm grommet (5 pce)
0017	O-ring 35.4 x 3.59 (5 pce)
0018	Trap
0019	Lip seal ∅ 60
0020	Flue gasket
0021	Clip ∅ 18 (5 pce)
0022	Membrane diaphragm grommet DG36/14
0023	Thermal insulation block
0024	Hose clip 34 - 37.4
0025	Spring clip, condensate drain
0026	Gasket A 17 x 24 x 2 (5 pce)
0027	Flow sensor
0028	Safety valve 3 bar
0029	Gasket A 23 x 30 x 2 (5 pce)
0030	Condensate hose
0031	Plug for boiler flue connection
0032	Boiler flue connection ∅ 60/100 anthracite
0033	Connection piece
0034	Balanced flue pipe ∅ 80/125 l = 250
0035	Tee ∅ 60/100 – ∅ 80/125
0036	Profile hose HE
0037	Corrugated hose 19 x 290
0038	Corrugated hose 19 x 400
0039	Y hose connector YS19
0040	HR adaptor pipe HE
0041	HF connection pipe HE
0042	HR connection pipe flow sensor
0043	Bend 45° ∅ 60/100 – ∅ 80/125
0044	Balanced flue pipe ∅ 80/125 l = 1000
0045	Balanced flue inspection 87° bend ∅ 80/125

Heat cell assembly (cont.)

Pos.	Part
0046	Ventilation air gasket DN 125
0047	Inspection bend cover with gasket ∅ 80/125
0048	Inspection cover internal bend ∅ 60
0049	Felt strip 100 x 50 x 2 (2 pce)
0050	Pipe clip ∅ 18
0051	Air vent valve G 3/8
0052	Hose 10 x 1.5 x 1500

Heat cell assembly

Burner assembly

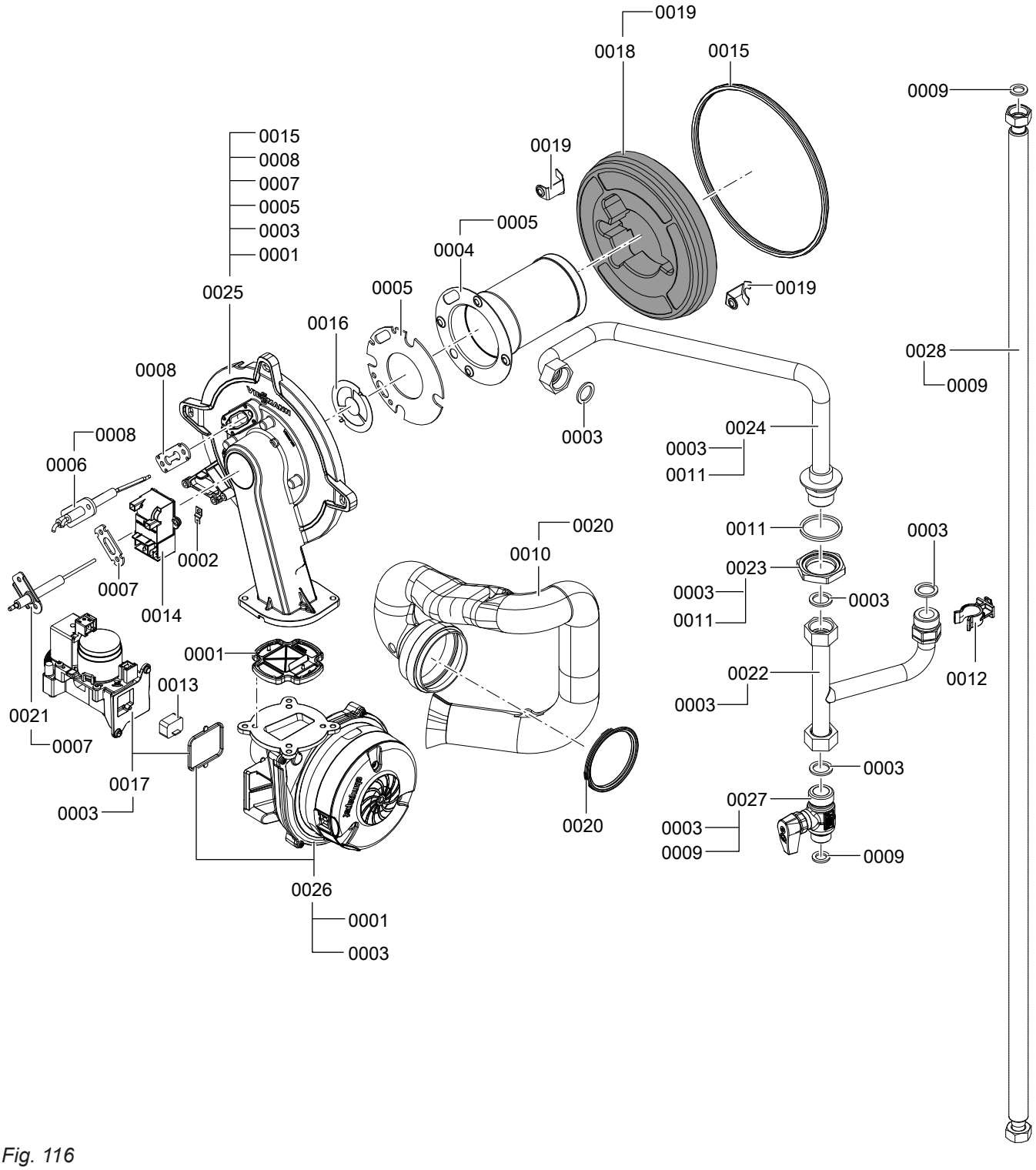

Fig. 116

Burner assembly (cont.)

Pos.	Part
0001	Diaphragm back draught safety device
0002	Blade terminal (10 pce)
0003	Gasket A 17 x 24 x 2 (5 pce)
0004	Cylinder burner gauze assembly
0005	Burner gauze assembly gasket
0006	Ignition electrode
0007	Gasket, ionisation electrode (5 pce)
0008	Gasket, ignition electrode (5 pce)
0009	Gasket A 11.5 x 18.5 x 2 (5 pce)
0010	Venturi extension
0011	Seal ring 38 x 44 x 3 (5 pce)
0012	Pipe clip ∅ 18/1.5
0013	Gas nozzle 04 grey
0014	Ignition unit
0015	Burner gasket ∅ 187
0016	Mixture restrictor
0017	Gas train CES10
0018	Thermal insulation ring
0019	Mounting plate, thermal insulation ring (2 pce)
0020	Gasket DN 65
0021	Ionisation electrode
0022	Gas supply pipe
0023	Locknut M 32 x 1.5
0024	Gas pipe
0025	Burner door
0026	Radial fan NRG118/660UPM
0027	Straight-through gas valve G 3/4 – G 1/2
0028	Gas pipes

Heat cell hydraulic assembly

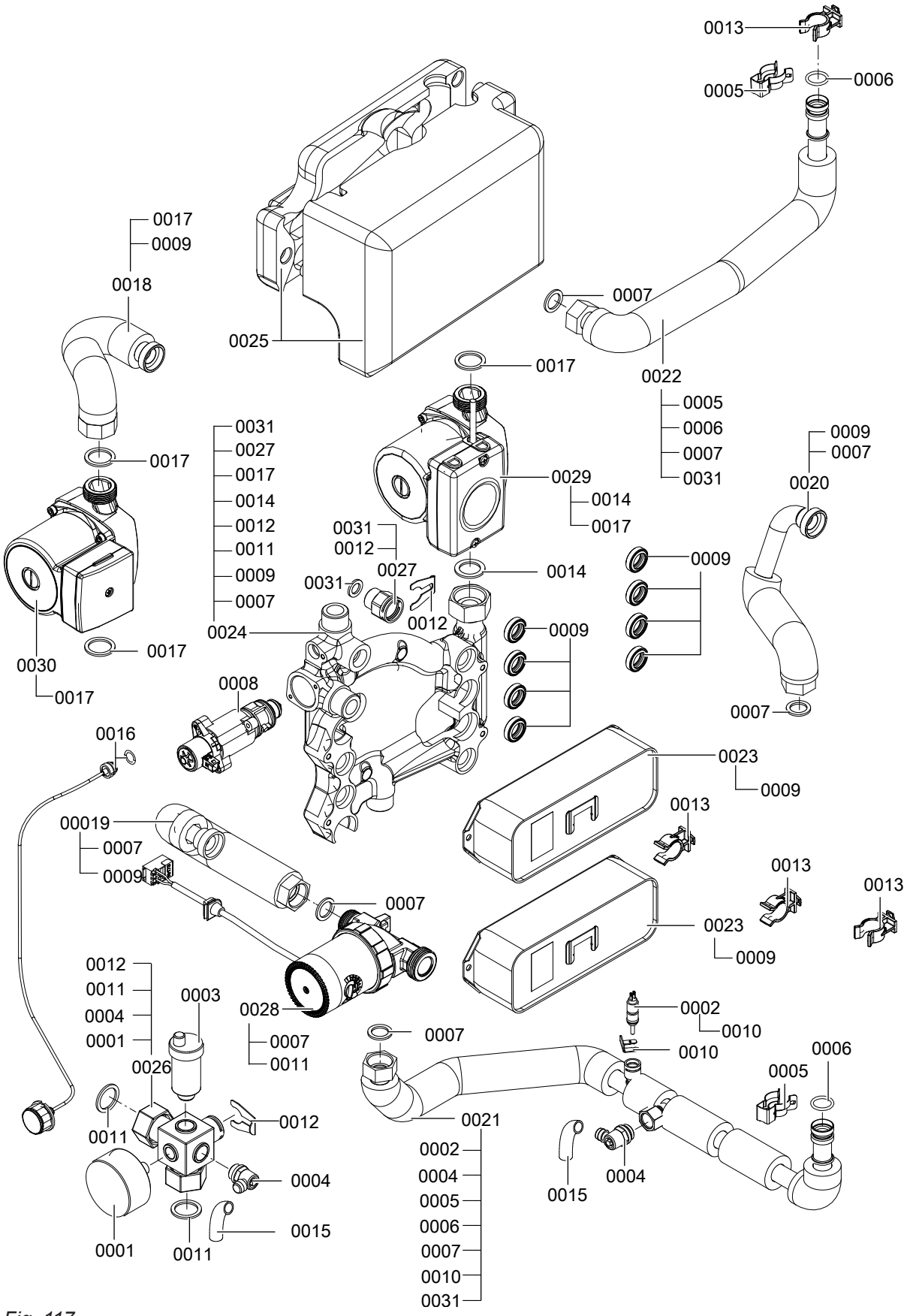

Fig. 117

Heat cell hydraulic assembly (cont.)

Pos.	Part
0001	Pressure gauge 0 to 4 bar
0002	Temperature sensor
0003	Quick-action air vent valve G 3/8
0004	Air vent valve G 3/8
0005	Pipe clips (2 pce)
0006	O-ring 17.86 x 2.62 (5 pce)
0007	Gasket A 17 x 24 x 2 (5 pce)
0008	Valve insert
0009	Profile gasket (4 pce)
0010	Clip ∅ 8 (5 pce)
0011	Gasket 23 x 30 x 2 (5 pce)
0012	Clip ∅ 18 (5 pce)
0013	Pipe clip ∅ 18/1.5
0014	Gasket set G 1 (5 pce)
0015	Hose 10 x 1.5 x 1500
0016	Pressure gauge
0017	Gasket A 23 x 30 x 2 (5 pce)
0018	Corrugated connection pipe, DHW pre-heating
0019	Corrugated connection pipe, cold water, buffer cylinder
0020	Connection pipe, DHW buffer cylinder
0021	Connection pipe, heating water flow
0022	Connection pipe, heating water return
0023	Plate heat exchanger
0024	Aquablock
0025	Aquablock thermal insulation
0026	Fitting cube
0027	Safety valve female connection
0028	System separation pump ecocirc E1
0029	Heating circuit pump VIUPM2 15-70 KM CIL2 6h
0030	Cylinder loading pump VIUP 15-30 CIL2 3H PPS
0031	Gasket A 11.5 x 18.5 x 2 (5 pce)

External connection assembly

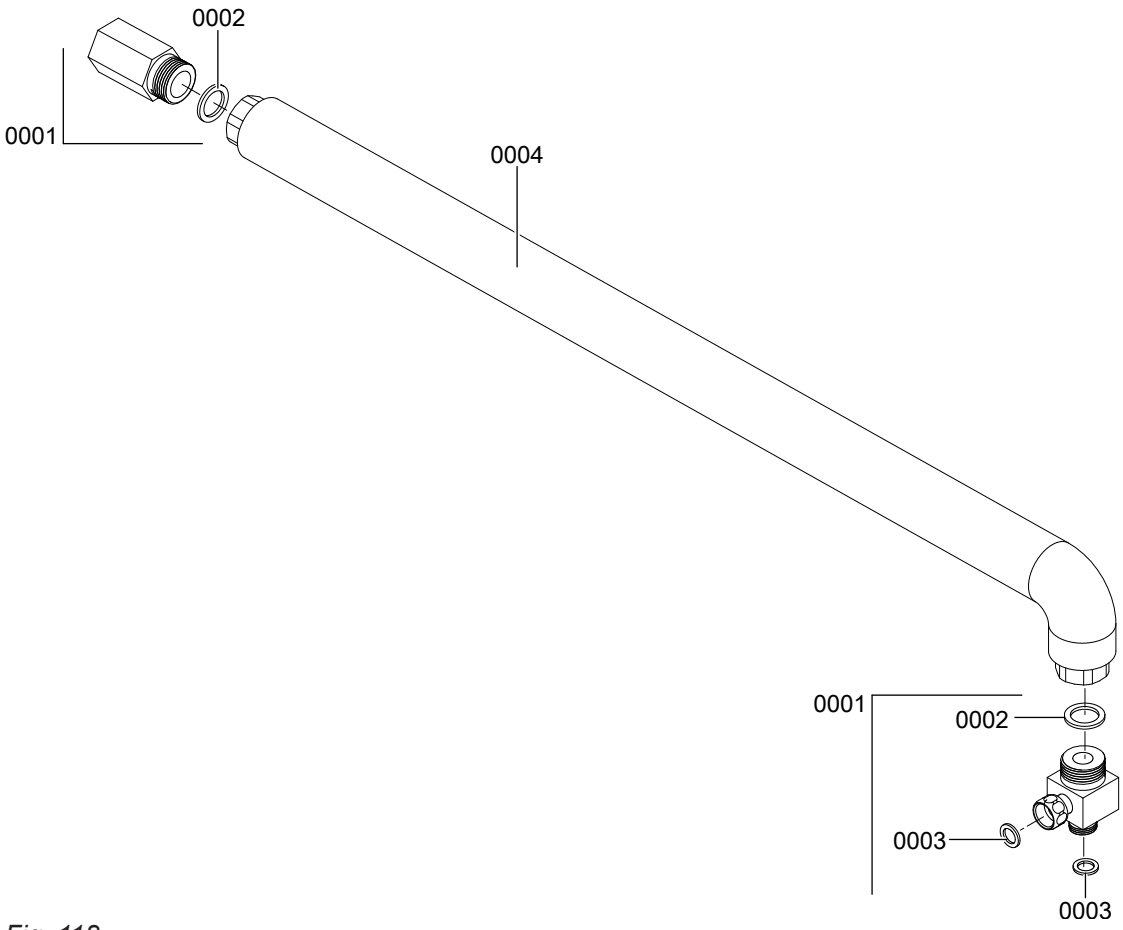

Fig. 118

External connection assembly (cont.)

Pos.	Part
0001	Tee
0002	Gasket A 17 x 24 x 2 (5 pce)
0003	Gasket A 10 x 15 x 1.5 (5 pce)
0004	Corrugated pipe, back, heat exchanger

Buffer cylinder assembly

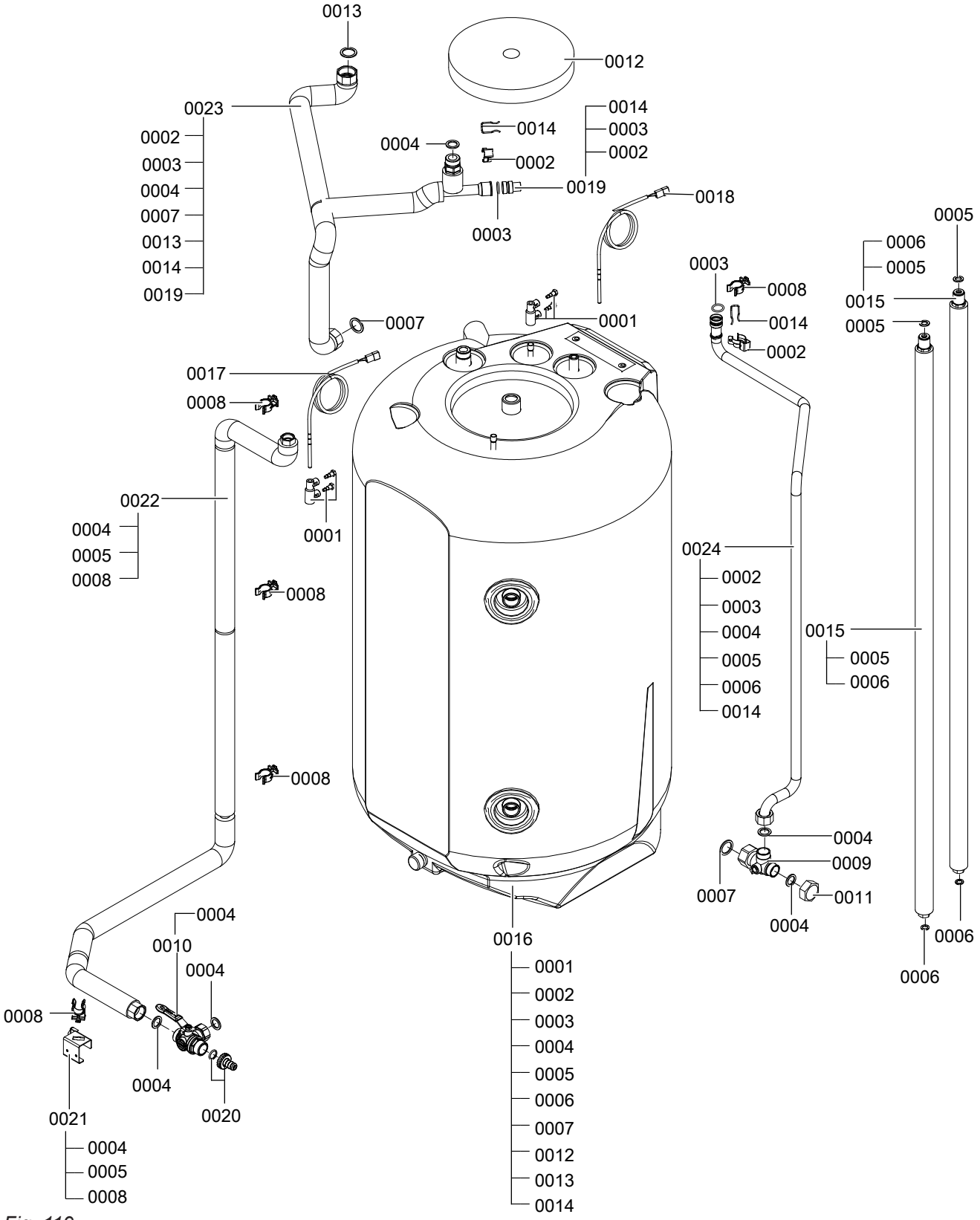

Fig. 119

Buffer cylinder assembly (cont.)

Pos.	Part
0001	Sensor retainer
0002	Plug-in connector retainer (2 pce)
0003	O-ring 17.86 x 2.62 (5 pce)
0004	Gasket A 17 x 24 x 2 (5 pce)
0005	Gasket A 11.5 x 18.5 x 2 (5 pce)
0006	Gasket A 10 x 15 x 1.5 (5 pce)
0007	Gasket 23 x 30 x 2 (5 pce)
0008	Pipe clip ∅ 18/1.5
0009	Right-angle shut-off valve, central draw-off
0010	Shut-off elbow G 3/4 AG - G 3/4
0011	Cap G 3/4
0012	Insulation
0013	Gasket A 23 x 30 x 2 (5 pce)
0014	Wire clip (5 pce)
0015	Flow/return pipe
0016	Cylinder
0017	Cylinder temperature sensor NTC L= 2000 blue
0018	Cylinder temperature sensor NTC L= 1750 red
0019	Push-fit connector plug
0020	Hose nozzle 1/2 with union nut G 3/4
0021	Mounting plate, corrugated pipe
0022	Corrugated connection pipe, buffer cylinder
0023	Connection pipe
0024	Connection pipe, cold water feed

DHW cylinder assembly

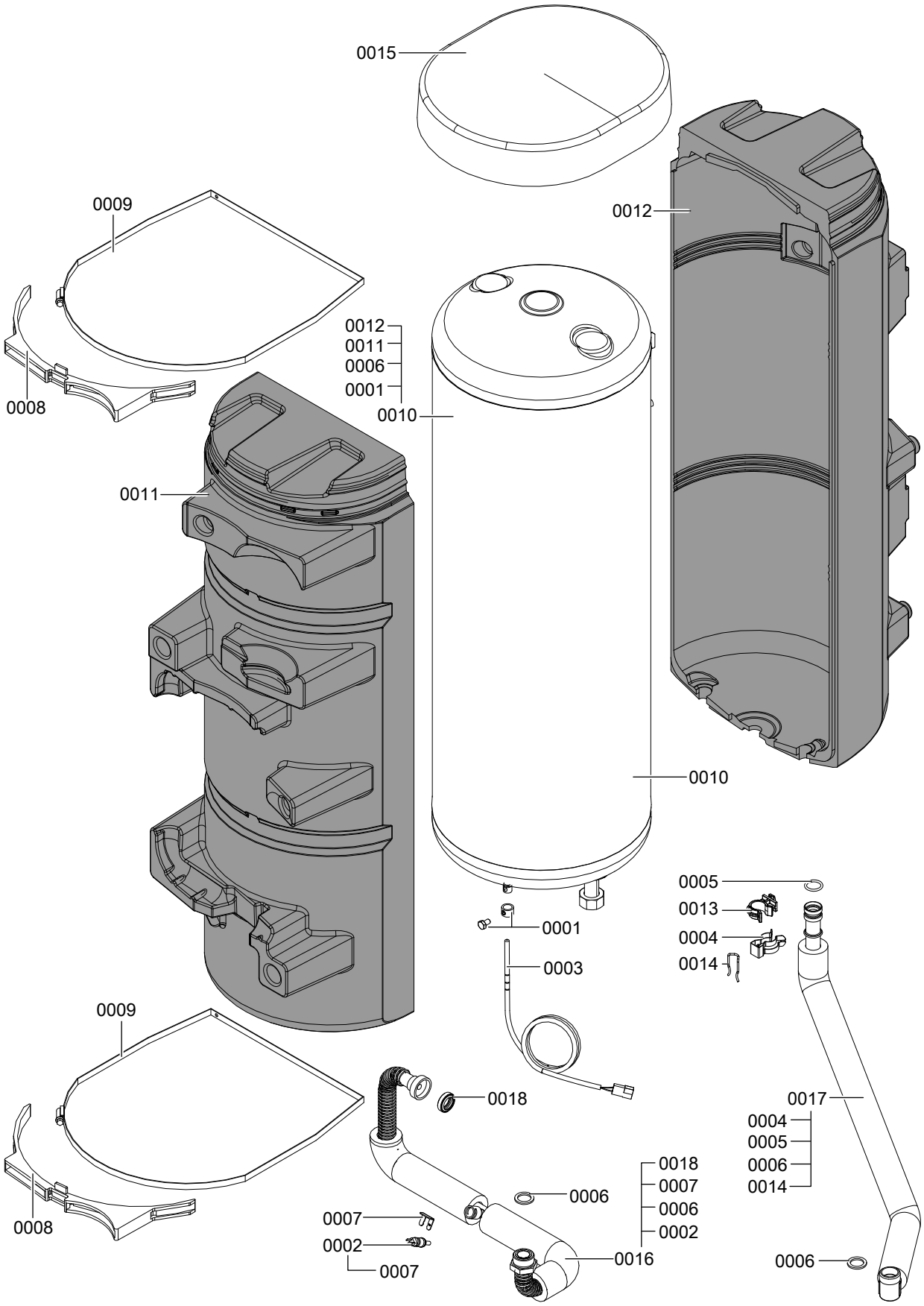

Fig. 120

DHW cylinder assembly (cont.)

Pos.	Part
0001	Strain relief
0002	Temperature sensor
0003	Cylinder temperature sensor NTC l = 500
0004	Plug-in connector retainer (2 pce)
0005	O-ring 17.86 x 2.62 (5 pce)
0006	Gasket A 17 x 24 x 2 (5 pce)
0007	Clip ∅ 8 (5 pce)
0008	Protective profile
0009	Hose clip ∅ 340-360 x 9 perforated
0010	Cylinder with thermal insulation
0011	Cylinder insulation EPS, front
0012	Cylinder insulation EPS, back
0013	Pipe clip ∅ 18
0014	Wire clip (5 pce)
0015	Cap, anthracite, DHW cylinder
0016	Corrugated connection pipe, DHW cylinder
0017	Connection pipe, DHW drain
0018	Profile gasket (4 pce)

Miscellaneous assembly

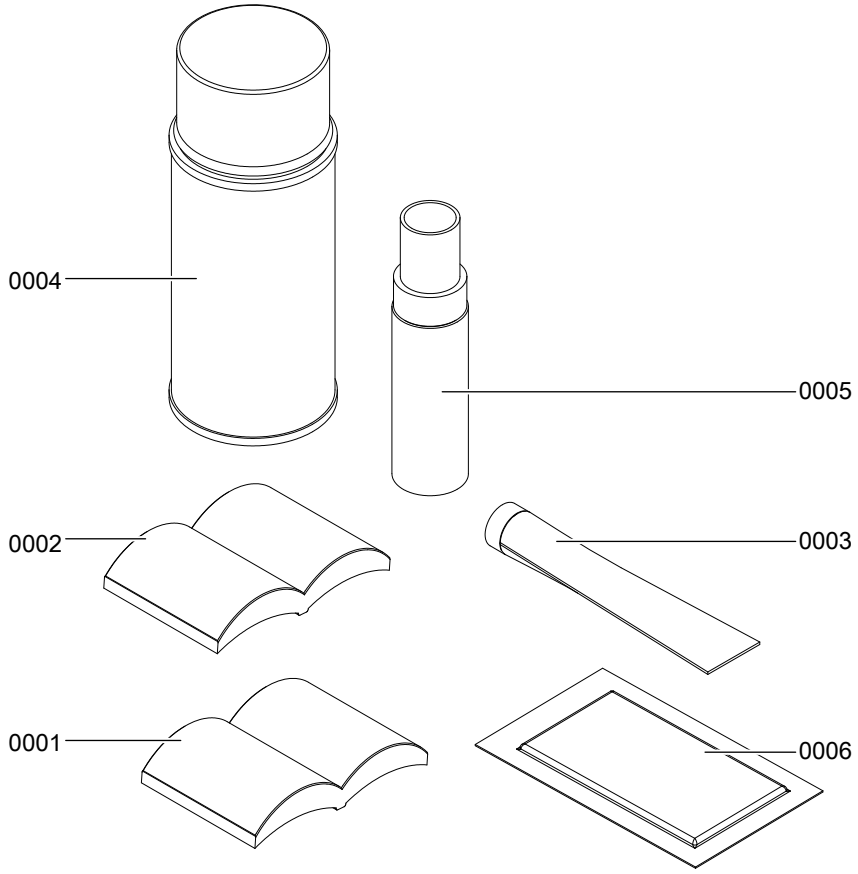

Fig. 121

Miscellaneous assembly (cont.)

Pos.	Part
0001	Operating instructions
0002	Installation and service instructions
0003	Heat conducting paste
0004	Touch-up spray paint, Vitosilver, 150 ml can
0005	Touch-up paint stick, Vitosilver
0006	Special grease

Vitovalor VBC 132 control unit assembly

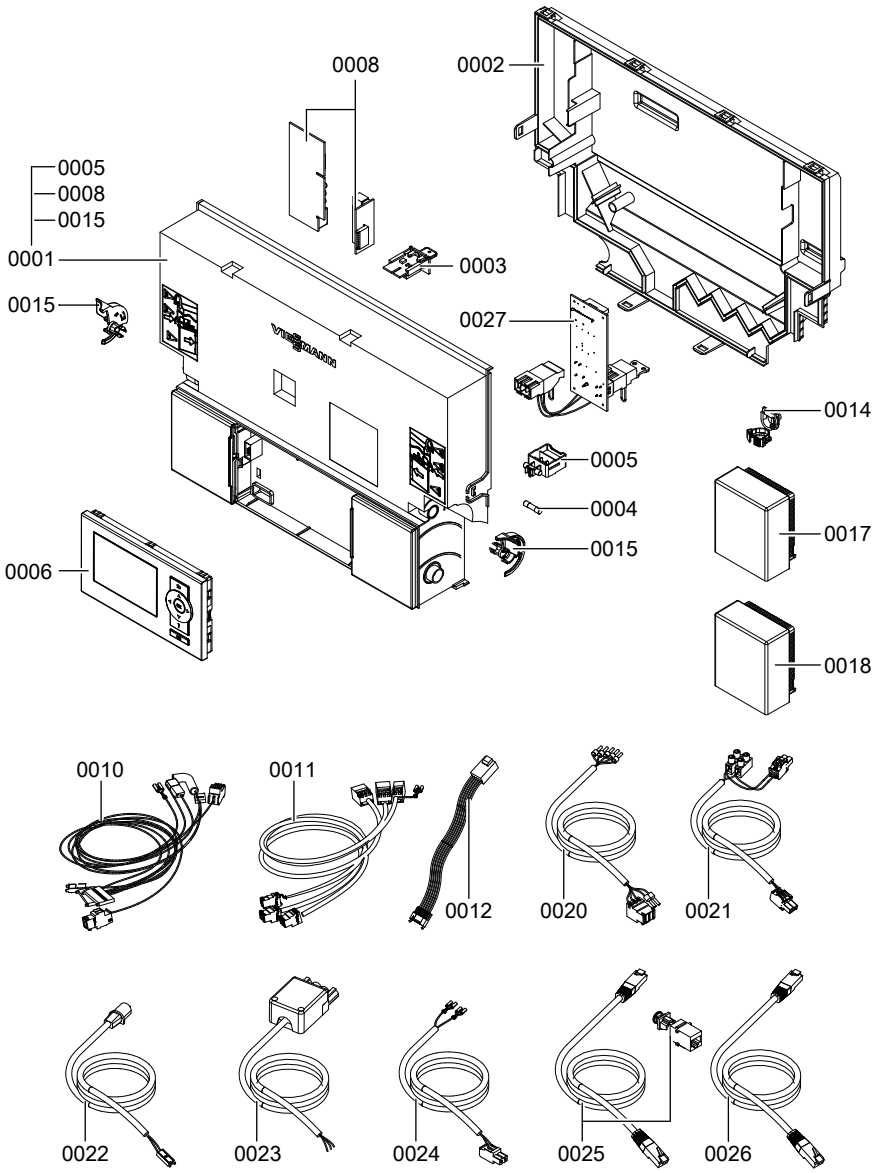

Fig. 122

Vitovalor VBC 132 control unit assembly (cont.)

Pos.	Part
0001	Control unit VBC132-D21.0xx
0002	Casing back panel
0003	Coding card 2681:02F2
0004	Fuse, 6.3 A (slow), 250 V (10 pce)
0005	Locking handle
0006	Programming unit
0008	PCB IU100-B30
0010	Cable harness X8/X9/ion
0011	Cable harness 100/35/54/earth
0012	Cable harness, Molex stepper motor
0014	Cable tie (10 pce)
0015	Locking bolts, left and right
0017	Wireless outside temperature sensor
0018	Outside temperature sensor NTC
0020	Connecting cable D5
0021	Connecting cable 145 KM-BUS internal
0022	KM-BUS connecting cable 145
0023	Connecting cable, meter
0024	Lead, return temperature sensor 17
0025	LAN coupling with cable
0026	Patch cable 2 m
0027	Internal H1 extension

Vitovalor VUC 170 control unit assembly

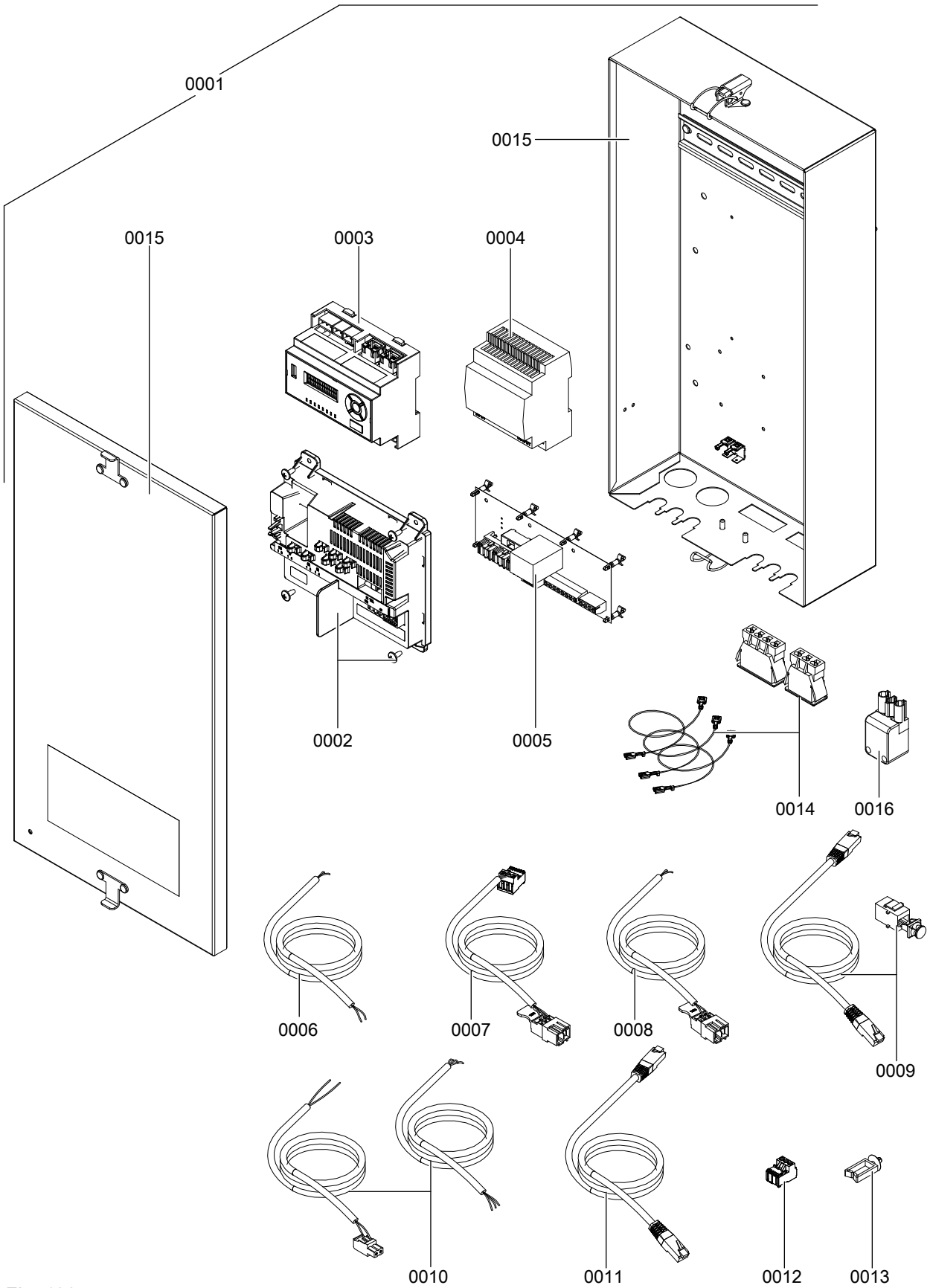

Fig. 123

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Vitovalor VUC 170 control unit assembly (cont.)

Pos.	Part
0001	Control unit VUC170-A10.0xx
0002	Process controller CU125-A40 (differential temperature regulator)
0003	Base module, Vitocom 300, type LAN3
0004	Power supply unit, accessories
0005	PCB, distribution board with fuse
0006	Power cable, power supply unit
0007	Lead, 40/156
0008	Lead, 40
0009	LAN coupling with lead, 2 m
0010	Connecting cable EM 300
0011	LON cable, 7 m
0012	Plug 40
0013	Cable clip WS-3-01 (5 pce)
0014	Individual Vitovalor cables
0015	Control unit enclosure
0016	Power supply plug, fuel cell

Fuel cell assembly

Parts not shown	
0009	PCB IU100-B30

Fuel cell assembly (cont.)

Fuel cell assembly (cont.)

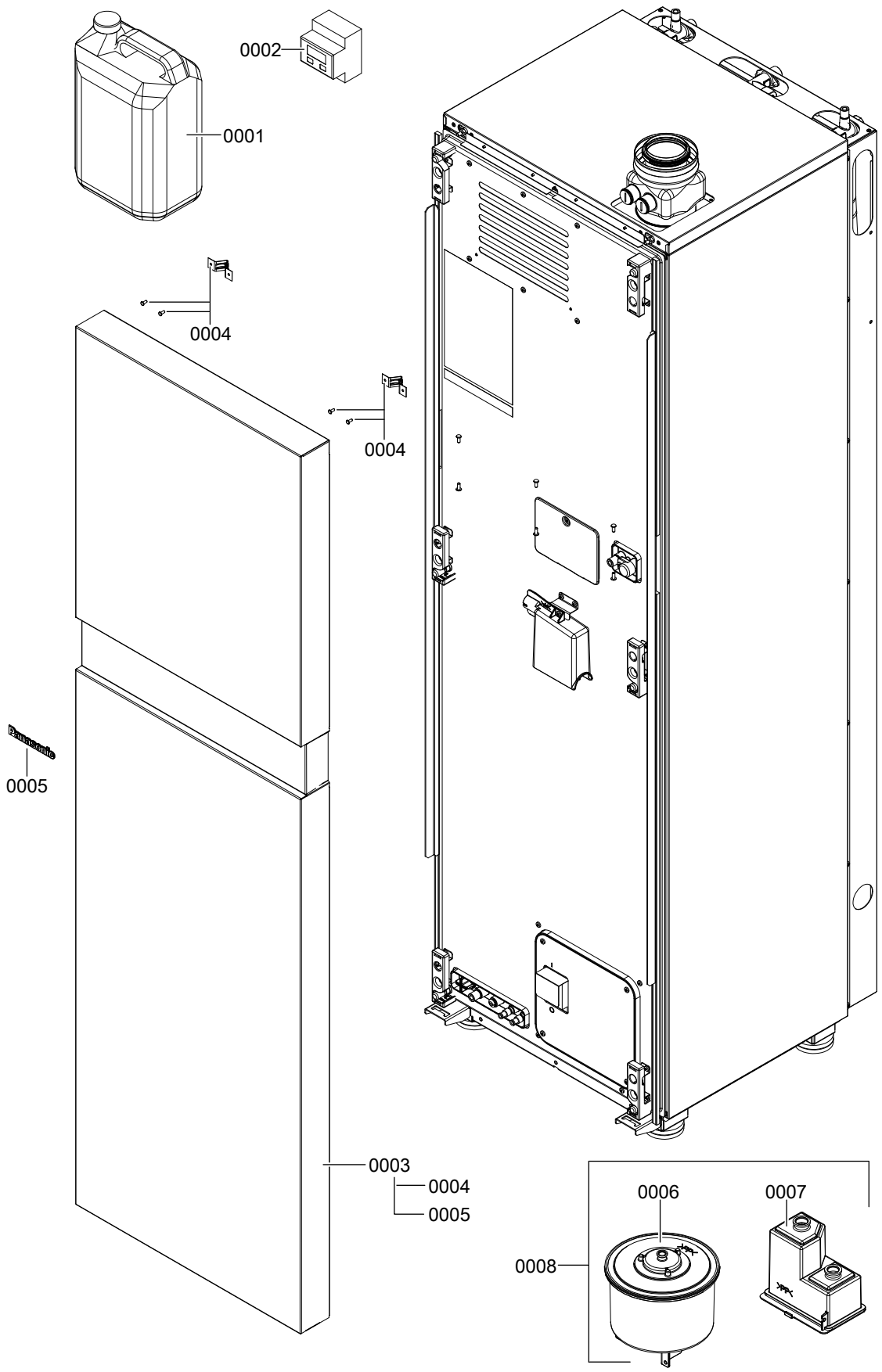

Fig. 124

Fuel cell assembly (cont.)

Pos.	Part
0001	Distilled water 5 l
0002	4-pole 3-phase meter with M-Bus (not for GB)
0003	Front panel, fuel cell
0004	Location stud (2 pce)
0005	Panasonic logo
0006	Distilled water filter element
0007	Air filter
0008	Bi-annual maintenance pack

Control unit

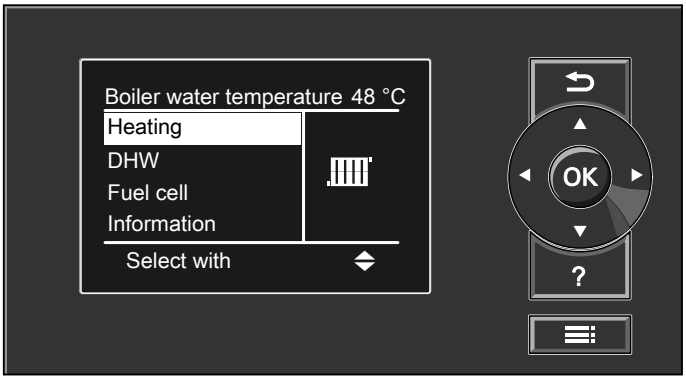

Fig. 125

Heating mode

The control unit determines a set boiler water temperature subject to outside temperature or room temperature (if a room temperature-dependent remote control is connected) and to the slope/level of the heating curve.
The determined set boiler water temperature is transferred to the burner control unit. From the set and actual boiler water temperatures, the burner control unit calculates the modulation level and regulates the burner accordingly.

The electronic temperature limiter inside the burner control unit limits the boiler water temperature.

Heating the DHW loading cylinder from cold

The heating circuit pump is switched ON and the 3-way diverter valve will be changed over, if the cylinder temperature sensor captures a temperature lower than the defaulted set value.

- The cylinder loading pump is switched ON if the boiler water temperature ≥ set cylinder temperature.
- The burner is switched ON if the boiler water temperature ≤ set cylinder temperature, and the cylinder loading pump is switched ON when the required boiler water temperature is reached.

The loading cylinder is heated up to the set cylinder temperature. Heating stops when the specified temperature has been reached at the cylinder temperature sensor.
After loading has stopped, the cylinder loading pump and the 3-way diverter valve remain on for a further 30 s.

Operating the fuel cell module

The fuel cell module is switched to power generation according to the heat-up condition of the integral heating water buffer cylinder and the energy manager defaults. Heating energy generated during operation is directed to the heating water buffer cylinder.
If the energy manager is enabled, the fuel cell module starts to best meet the power demand. Start times will depend, among other things, on the consumption pattern in the household mains.

If the energy manager is disabled, the fuel cell module starts solely on the basis of heat demand.
The regeneration phase of the fuel cell module commences after expiry of the daily maximum runtime.
The fuel cell module process allows just one starting procedure for power generation in any 24 hour period.

If the maximum return temperature on the fuel cell module has been reached, the module shuts down.

Reheating when DHW is drawn off

When DHW is drawn off, cold water enters the lower section of the loading cylinder.

Control unit (cont.)

The heating circuit pump is switched ON and the 3-way diverter valve is changed over, if the cylinder temperature sensor captures a temperature lower than the defaulted set value.

- The cylinder loading pump is switched ON if the boiler water temperature ≥ set cylinder temperature.
- The burner is switched ON if the boiler water temperature ≤ set cylinder temperature, and the cylinder loading pump is switched ON when the required boiler water temperature is reached.

DHW is regulated to the set temperature via the outlet temperature sensor.
After the draw off process has ended the loading cylinder continues to be heated up, until the set DHW temperature has been reached at the cylinder temperature sensor.
The cylinder loading pump and the 3-way diverter valve remain ON for a further 30 s.

Boosting DHW heating

This function is activated by specifying a second set DHW temperature via coding address 58 in group **"DHW"** and activating the fourth DHW phase for DHW heating.

Heating is boosted during the periods selected in this time phase.

Internal H1 extension (standard delivery)

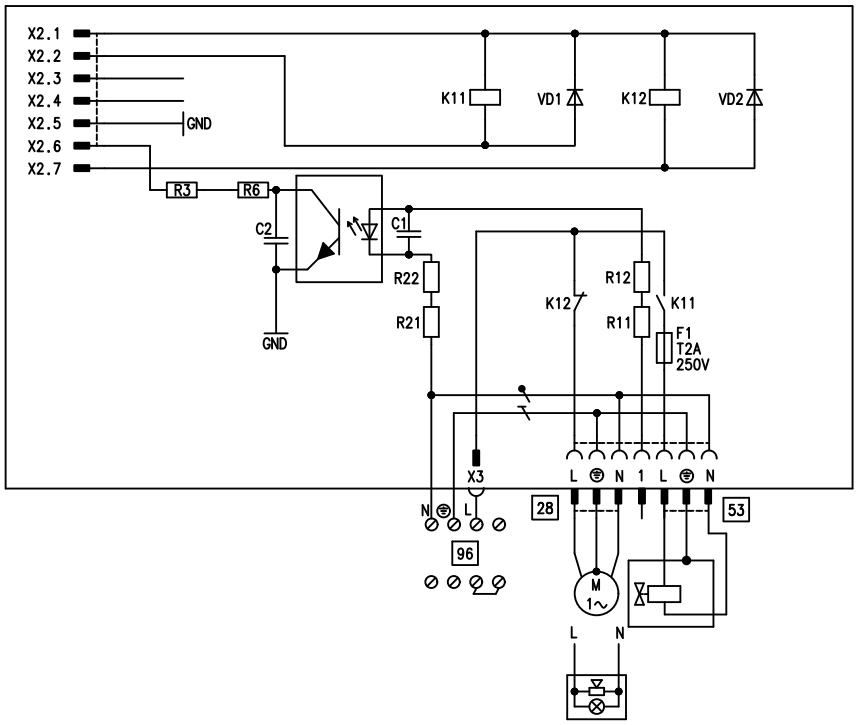

Fig. 126

The internal extension is integrated into the control unit casing. The internal cylinder loading pump is connected to relay output 28.

An external safety valve can be linked to connection 53.

Internal H2 extension (accessories)

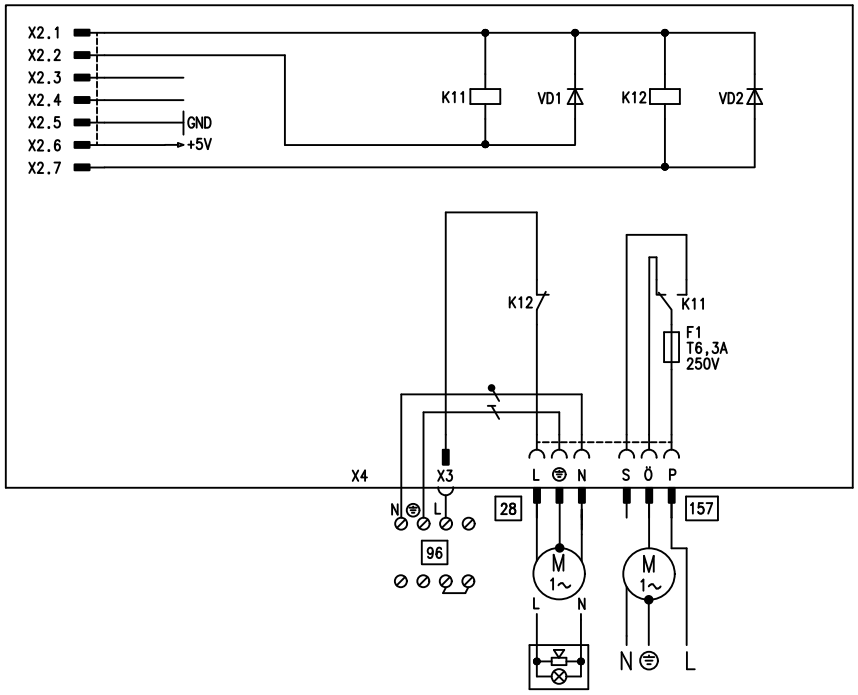

Fig. 127

The internal extension can be installed in the control unit enclosure in place of internal H1 extension. Connect the internal cylinder loading pump to relay output 28.

An extractor fan can be switched off via connection 157 when the burner starts.

External extensions (accessories)

AM1 extension

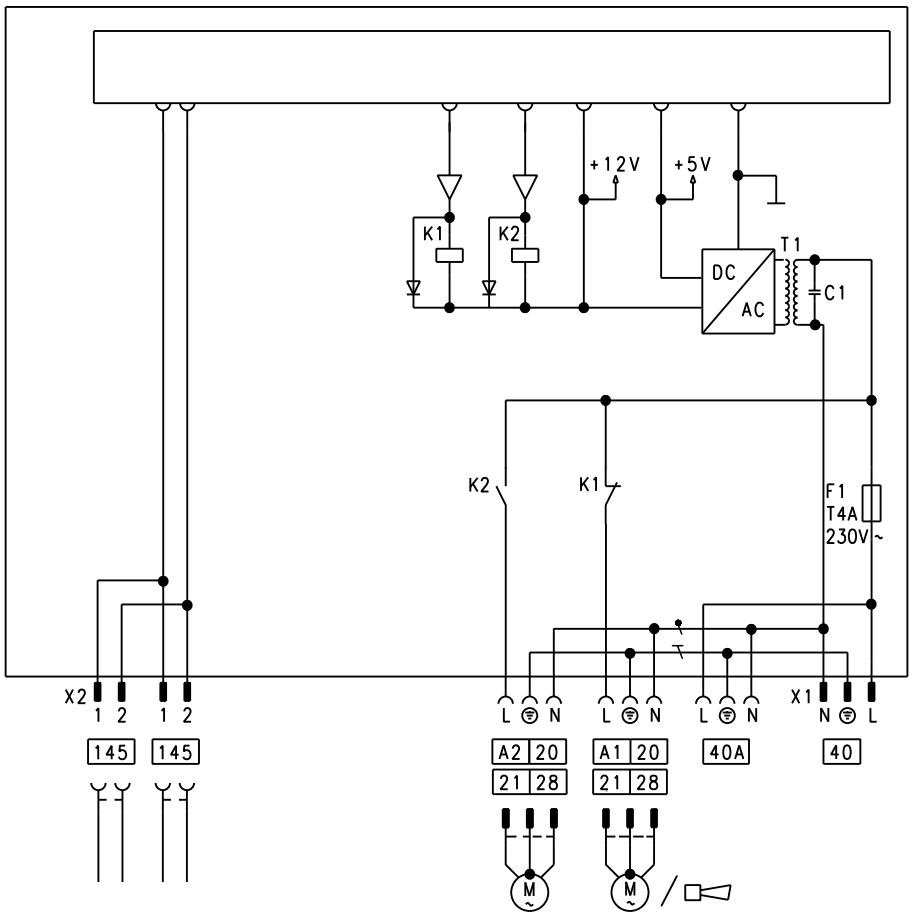

Fig. 128

A1 Circulation pump
A2 Circulation pump
40 Power supply
40 A Power supply for additional accessories
145 KM BUS

Functions

One of the following circulation pumps can be connected to each of the connections A1 and A2:
- Heating circuit pump for heating circuit without mixer
- Circulation pump for cylinder heating
- DHW circulation pump
  Connect DHW circulation pumps with standalone functions directly to the 230 V~ supply.

Select the output functions via the codes on the boiler control unit.

Function assignment

Function	Code ("General" group)	
	Output A1	Output A2
DHW circulation pump 28	33:0	34:0 (delivered condition)
Heating circuit pump 20	33:1 (delivered condition)	34:1
Circulation pump for cylinder heating 21	33:2	34:2

5775 636 GB

External extensions (accessories) (cont.)

EA1 extension

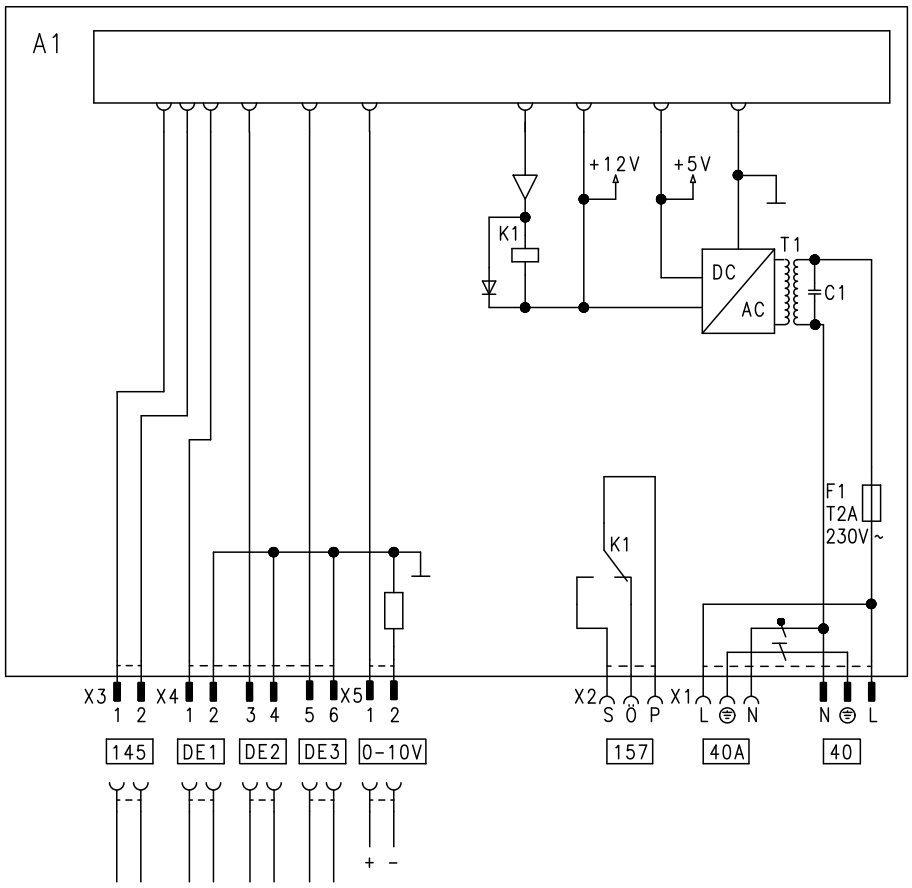

Fig. 129

F1 MCB/fuse
DE1 Digital input 1
DE2 Digital input 2
DE3 Digital input 3
0–10V 0 – 10 V input
40 Power supply
40 A Power supply for additional accessories
157 Central fault message/feed pump/DHW circulation pump (potential-free)
Connect DHW circulation pumps with stand-alone functions directly to the 230 V~ supply.
145 KM BUS

Digital data inputs DE1 to DE3

Alternatively, the following functions can be connected:
- External operating program changeover for each heating circuit
- External blocking
- External blocking with fault message input
- External demand with minimum boiler water temperature
- Fault message input
- Brief operation of the DHW circulation pump

External contacts must be potential-free. When making the connection, adhere to the requirements of protection class II: 8.0 mm air and creep paths and 2.0 mm insulation thickness against 'live' components.

Input function assignment

Select the input functions via the codes in the **"General"** group at the boiler control unit:
- DE1: Coding address 3A
- DE2: Coding address 3b
- DE3: Coding address 3C

Assigning the operating program changeover function to the heating circuits

Select the operating program changeover function for the respective heating circuit via coding address d8 in the **"Heating circuit"** group at the boiler control unit:
- Changeover via input DE1: Code d8:1
- Changeover via input DE2: Code d8:2
- Changeover via input DE3: Code d8:3

The effect of the operating program changeover is selected via coding address d5 in the **"Heating circuit"** group.

External extensions (accessories) (cont.)

The duration of the changeover is set via coding address F2 in the **"Heating circuit"** group.

Effect of external blocking function on the pumps

The effect on the internal circulation pump is selected in coding address 3E in the **"General"** group.
The effect on the relevant heating circuit pump is selected in coding address d6 in the **"Heating circuit"** group.
The effect on a circulation pump for cylinder heating is selected in coding address 5E in the **"DHW"** group.

Effect of the external demand function on the pumps

The effect on the internal circulation pump is selected in coding address 3F in the **"General"** group.
The effect on the relevant heating circuit pump is selected in coding address d7 in the **"Heating circuit"** group.
The effect on a circulation pump for cylinder heating is selected in coding address 5F in the **"DHW"** group.

DHW circulation pump runtime for brief operation

The DHW circulation pump is started by closing the contact at DE1, DE2 or DE3 by means of a pushbutton. The runtime is adjusted via coding address "3d" in the **"General"** group.

Analogue input 0 – 10 V

The 0 – 10 V hook-up provides an additional set boiler water temperature:

0 – 1 V is taken as "no set boiler water temperature default".
1 V ≙ Set value 10 °C
10 V ≙ Set value 100 °C
Ensure DC separation between the earth conductor and the negative pole of the on-site power source.

Output 157

The following functions can be connected to output 157:
- Feed pump to substation
  or
- DHW circulation pump
  or
- Fault message facility

Information regarding the feed pump
Function only possible in conjunction with a heating circuit control unit connected via LON.

Information on DHW circulation pumps
Connect DHW circulation pumps with standalone functions directly to the 230 V~ supply.

Function assignment

Select the function of output 157 via coding address "36" in the **"General"** group at the boiler control unit.

Control functions

External operating program changeover

The "External operating program changeover" function is implemented via the EA1 extension. There are 3 inputs available at the EA1 extension (DE1 to DE3).

The function is selected via the following coding addresses in the **"General"** group:

Heating program changeover	Code
Input DE1	3A:1
Input DE2	3b:1
Input DE3	3C:1

Select the operating program changeover function for the respective heating circuit at the boiler control unit, via coding address "d8" in the **"Heating circuit"** group:

5775 636 GB

Control functions (cont.)

Heating program changeover	Code
Changeover via input DE1	d8:1
Changeover via input DE2	d8:2
Changeover via input DE3	d8:3

You can select the direction of the operating program changeover in coding address "d5" in the **"Heating circuit"** group:

Heating program changeover	Code
Changeover towards "Continually reduced" or "Continuous standby mode" (subject to the selected set value)	d5:0
Changeover towards "Continuous heating mode"	d5:1

The duration of the operating program changeover is set in coding address "F2" in the **"Heating circuit"** group:

Heating program changeover	Code
No operating program changeover	F2:0
Duration of the operating program changeover 1 to 12 hours	F2:1 to F2:12

The operating program changeover stays enabled for as long as the contact remains closed, but at least as long as the duration selected in coding address "F2".

External blocking

The functions "External blocking" and "External blocking and fault message input" are implemented via the EA1 extension. There are 3 inputs available at the EA1 extension (DE1 to DE3).

The function is selected via the following coding addresses in the **"General"** group:

External blocking	Code
Input DE1	3A:3
Input DE2	3b:3
Input DE3	3C:3

External blocking and fault message input	Code
Input DE1	3A:4
Input DE2	3b:4
Input DE3	3C:4

The effect on the internal circulation pump is selected in coding address "3E" in the **"General"** group.

The effect on the relevant heating circuit pump is selected in coding address "d6" in the **"Heating circuit"** group.

External demand

The "External demand" function is implemented via the EA1 extension. There are 3 inputs available at the EA1 extension (DE1 to DE3).

The function is selected via the following coding addresses in the **"General"** group:

Control functions (cont.)

External demand	Code
Input DE1	3A:2
Input DE2	3b:2
Input DE3	3C:2

The effect on the internal circulation pump is selected in coding address "3F" in the **"General"** group.
The effect on the relevant heating circuit pump is selected in coding address "d7" in the **"Heating circuit"** group.

The set minimum boiler water temperature for external demand is selected in coding address "9b" in the **"General"** group.

Venting program

During the venting program, the circulation pump will be alternately switched on and off for 30 s over a period of 20 min.
The diverter valve alternates between heating and DHW heating for a given time. The burner is switched off during the venting program.

Activating the venting program: See "Venting the heating system".

Fill program

In the delivered condition, the diverter valve is set to its central position, enabling the system to be filled completely. After the control unit has been switched on, the diverter valve no longer goes into its central position. Afterwards, the diverter valve can be moved into the central position via the fill function (see "Filling the heating system"). In this position, the control unit can be switched off and the system can be filled completely.

Filling with the control unit switched on

If the system is to be filled with the control unit switched on, the diverter valve is moved to its central position in the fill program, and the pump starts.
When the function is enabled, the burner shuts down.
The program automatically becomes inactive after 20 min.

Screed drying

When activating screed drying, observe the information provided by the screed manufacturer.
When screed drying is activated, the heating circuit pump for the heating circuit with mixer starts and the flow temperature is maintained in accordance with the selected profile. On completion (30 days), the heating circuit with mixer is regulated automatically according to the set parameters.

Note
Temperature profile 6 ends after 21 days.

Observe EN 1264. The report to be provided by the heating contractor must contain the following details regarding heat-up:

- Heat-up data with respective flow temperatures
- Max. flow temperature achieved
- Operating state and outside temperature during handover

Various temperature profiles can be set via coding address "F1" in the **"Heating circuit"** group.
The function continues after power failure or after the control unit has been switched off. "Heating and DHW" is started when screed drying is finished or if code "F1:0" is set manually.

Control functions (cont.)

Temperature profile 1: (EN 1264-4) code "F1:1"

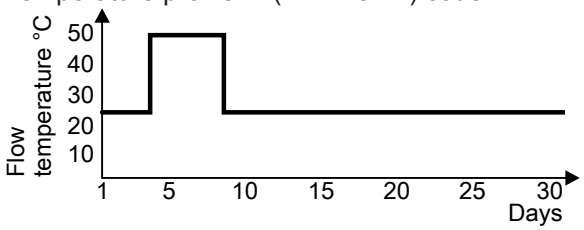

Fig. 130

Temperature profile 2: (ZV parquet and flooring technology) code "F1:2"

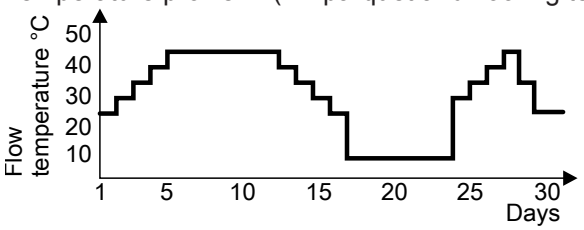

Fig. 131

Temperature profile 3: Code "F1:3"

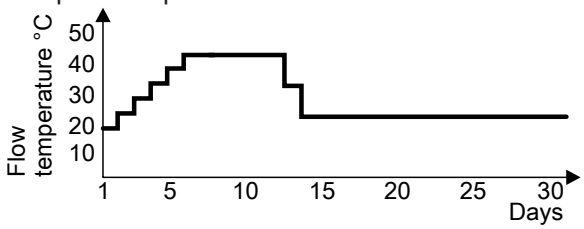

Fig. 132

Temperature profile 4: Code "F1:4"

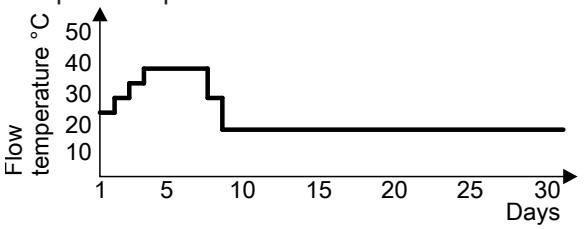

Fig. 133

Temperature profile 5: Code "F1:5"

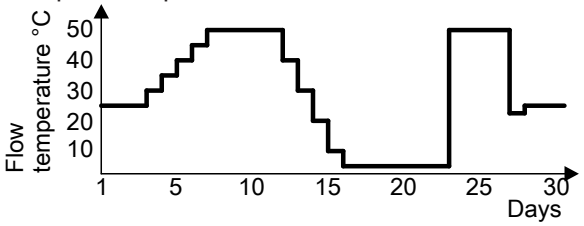

Fig. 134

Control functions (cont.)

Temperature profile 6: Code "F1:6"

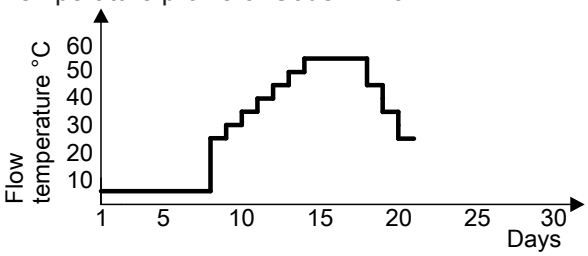

Fig. 135 Ends after 21 days

Temperature profile 7: Code "F1:15"

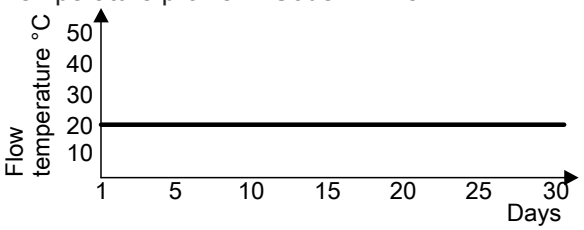

Fig. 136

Raising the reduced room temperature

During operation at reduced room temperature, the reduced set room temperature can be automatically raised subject to the outside temperature. The temperature is raised in accordance with the selected heating curve, and no higher than the set standard room temperature.

The outside temperature limits for the start and end of temperature raising can be set in coding addresses "F8" and "F9" in the **"Heating circuit"** group.

Control functions (cont.)

Example using the settings in the delivered condition

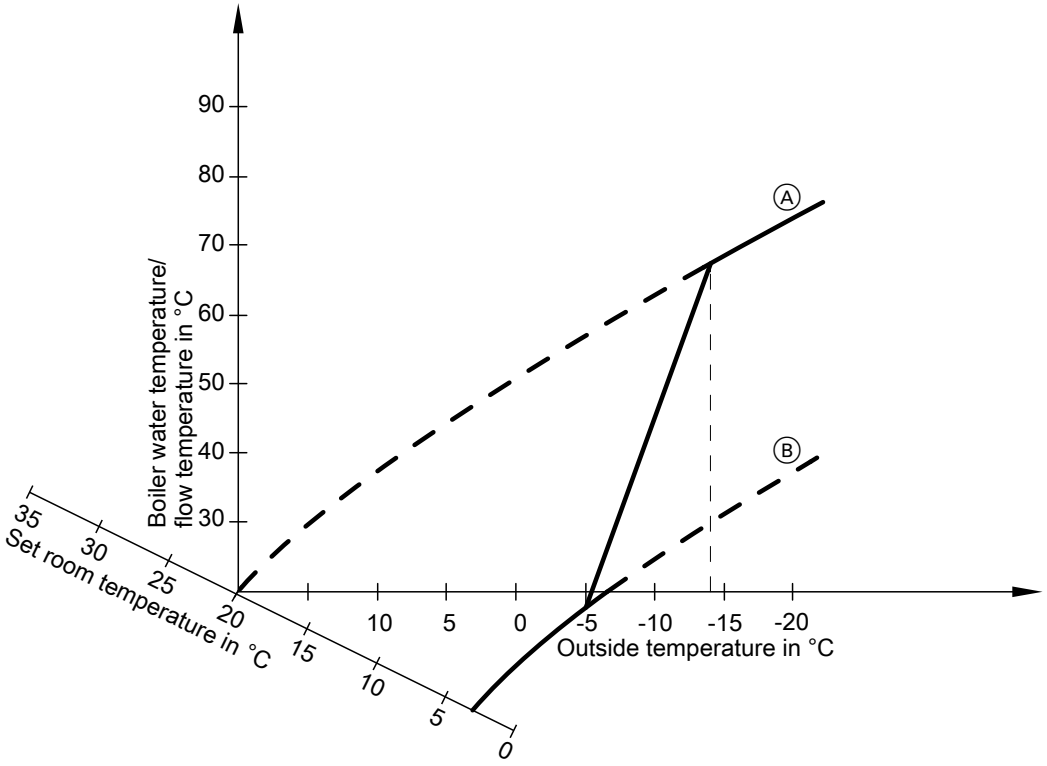

Fig. 137

Ⓐ Heating curve for operation with standard room temperature
Ⓑ Heating curve for operation with reduced room temperature

Reducing the heat-up time

During the transition from operation with reduced room temperature to operation with standard room temperature, the boiler water or flow temperature is raised in accordance with the selected heating curve. The boiler water or flow temperature increase can be automatically raised.

The value and duration for the additional increase of the set boiler water or flow temperature is selected in coding addresses "FA" and "Fb" in the **"Heating circuit"** group.

Control functions (cont.)

Example using the settings in the delivered condition

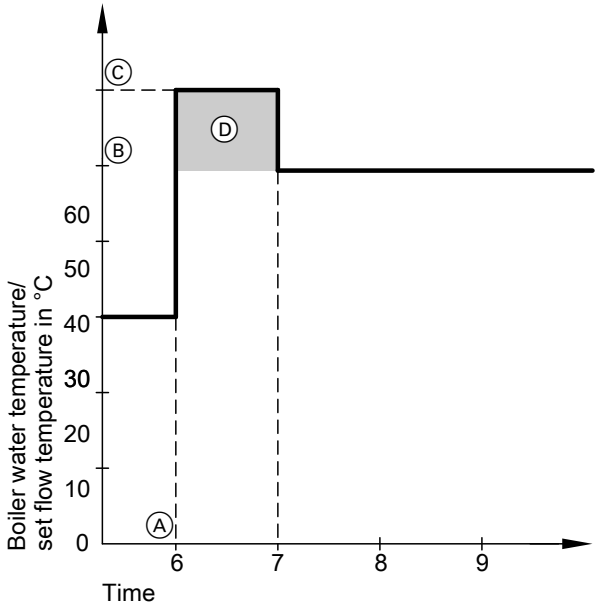

Fig. 138

Ⓐ Start of operation with standard room temperature
Ⓑ Set boiler water or flow temperature in accordance with the selected heating curve
Ⓒ Set boiler water or flow temperature in accordance with coding address "FA":
50 °C + 20 % = 60 °C
Ⓓ Duration of operation with raised set boiler water or flow temperature in accordance with coding address "Fb":
60 min

Assigning heating circuits to the remote control

The heating circuit assignment must be configured when commissioning the Vitotrol.

Heating circuit	Vitotrol configuration	
	200-A/200-RF	300-A/300-RF
The remote control affects the heating circuit without mixer A1.	H 1	HC 1
The remote control affects the heating circuit with mixer M2.	H 2	HC 2
The remote control affects the heating circuit with mixer M3.	H 3	HC 3

- One heating circuit can be assigned to the Vitotrol 200A/200 RF.
- Up to three heating circuits can be assigned to the Vitotrol 300A/300 RF.
- Up to 2 remote control units can be connected to the control unit.
- If the assignment of a heating circuit is later cancelled, reset coding address A0 for this heating circuit to 0 (fault message bC, bd, bE).

Electronic control unit on the peak load boiler

The electronic combustion controller utilises the physical correlation between the level of the ionisation current and the air ratio λ. The maximum ionisation current is achieved at an air ratio of 1 for all gas qualities. The ionisation signal is evaluated by the combustion controller and the air ratio is adjusted to a value between λ=1.24 and 1.44. This range provides for an optimum combustion quality. The gas train regulates the required amount of gas subject to gas quality.

To check the combustion quality, the CO_2 content or the O_2 content of the flue gas is measured. The prevailing air ratio is determined using the actual values. The correlation between CO_2 or O_2 content and air ratio λ is shown in the following table.

Air ratio λ– CO_2/O_2 content

Air ratio λ	O_2 content (%)	CO_2 content (%)
1.20	3.8	9.6
1.24	4.4	9.2
1.27	4.9	9.0
1.30	5.3	8.7
1.34	**5.7**	**8.5**
1.37	6.1	8.3
1.40	6.5	8.1
1.44	6.9	7.8
1.48	7.3	7.6

To achieve optimum combustion control, the system regularly carries out an automatic self-calibration; also after power failures (shutdown). For this, the combustion is briefly regulated to maximum ionisation current (corresponding to air ratio λ=1). Self-calibration takes place shortly after the burner starts and last for about 5 s. During calibration, higher than normal CO emissions may occur briefly.

Connection diagram, internal (gas condensing module)

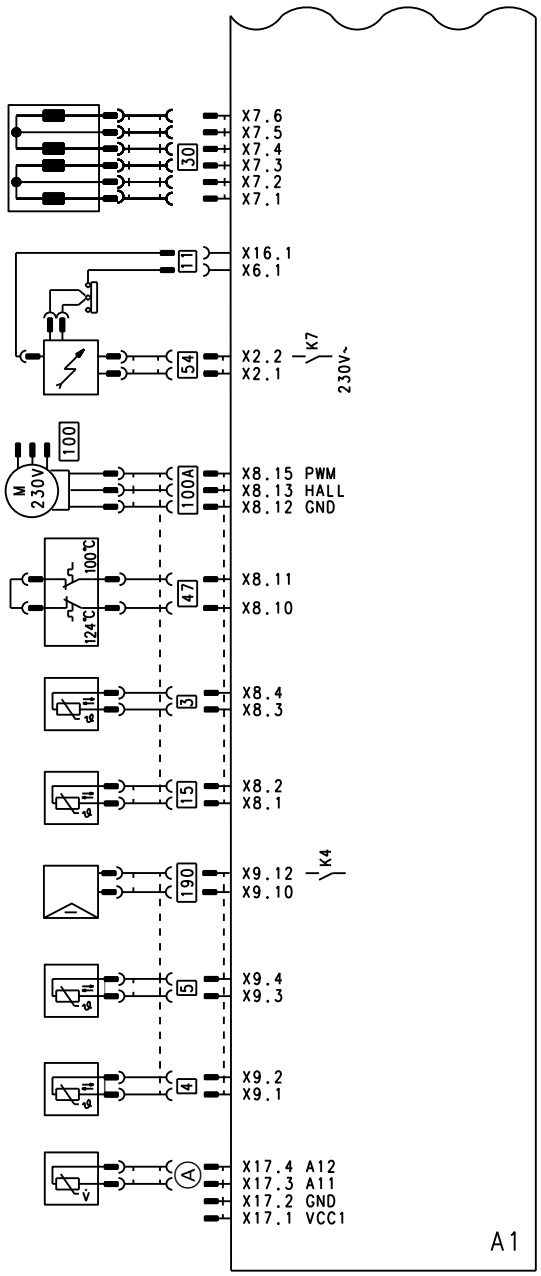

Fig. 139

A1 Main PCB
X... Electrical interfaces
3 Boiler water temperature sensor
4 Outlet temperature sensor
5 Cylinder temperature sensor (plug on cable harness)
11 Ionisation electrode
15 Flue gas temperature sensor
30 Stepper motor for diverter valve
47 Thermal circuit breaker
54 Ignition unit
100 Fan motor
100A Fan motor control
190 Modulation coil
Ⓐ Flow sensor

Connection diagram, external (gas condensing module)

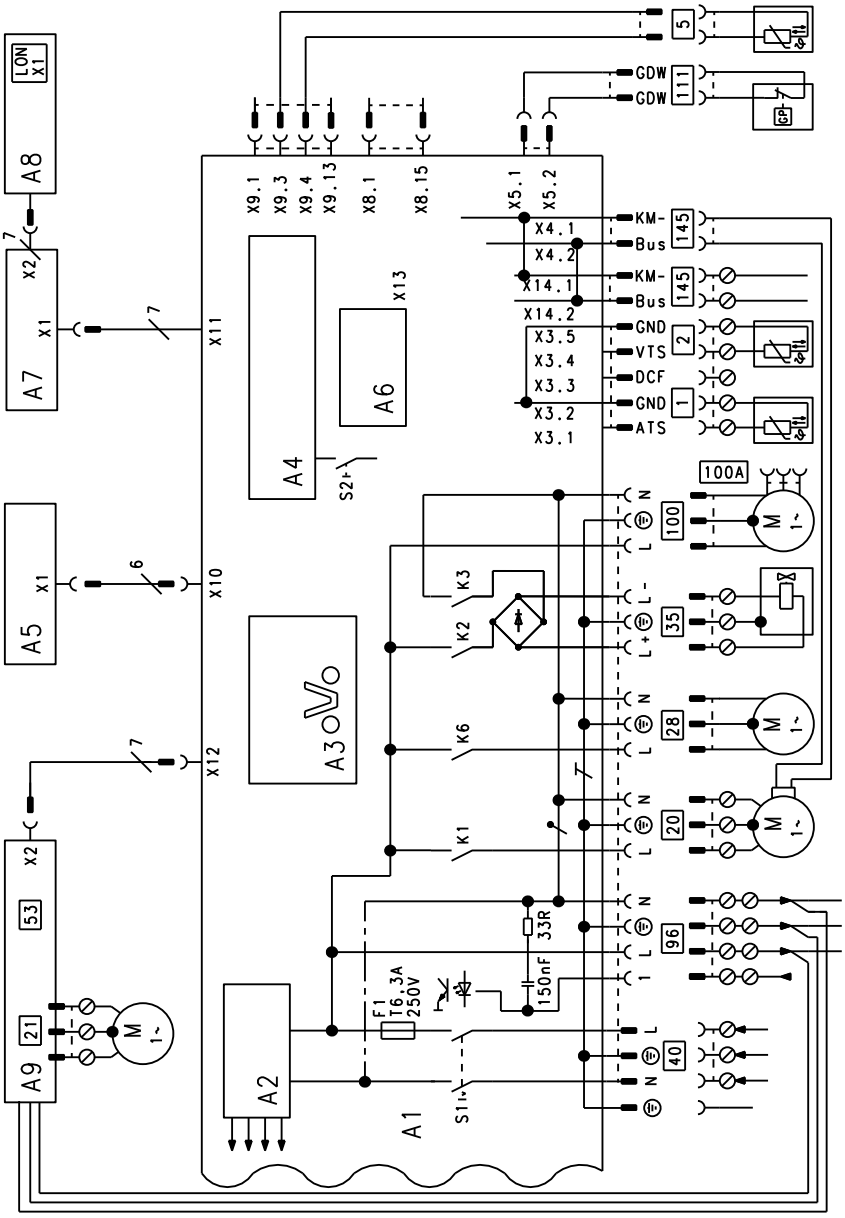

Fig. 140

A1 Main PCB
A2 Switching mode power supply
A3 Optolink
A4 Burner control unit
A5 Programming unit
A6 Coding card
A7 Connection adaptor
A8 LON communication module (accessories)
A9 Internal H1 extension (standard delivery) or H2 (accessories)
S1 ON/OFF switch
S2 Reset button
X... Electrical interfaces
[1] Outside temperature sensor
[2] Flow temperature sensor, low loss header
[5] Cylinder temperature sensor (plug on cable harness)
[20] Internal circulation pump
[21] Cylinder loading pump
[28] DHW circulation pump or heating circuit pump for heating circuit without mixer
[35] Gas solenoid valve
[40] Power supply
[96] Switched power outlet
[100] Fan motor
[100]A Fan motor control
[111] Gas pressure switch
[145] KM-BUS

Differential temperature controller

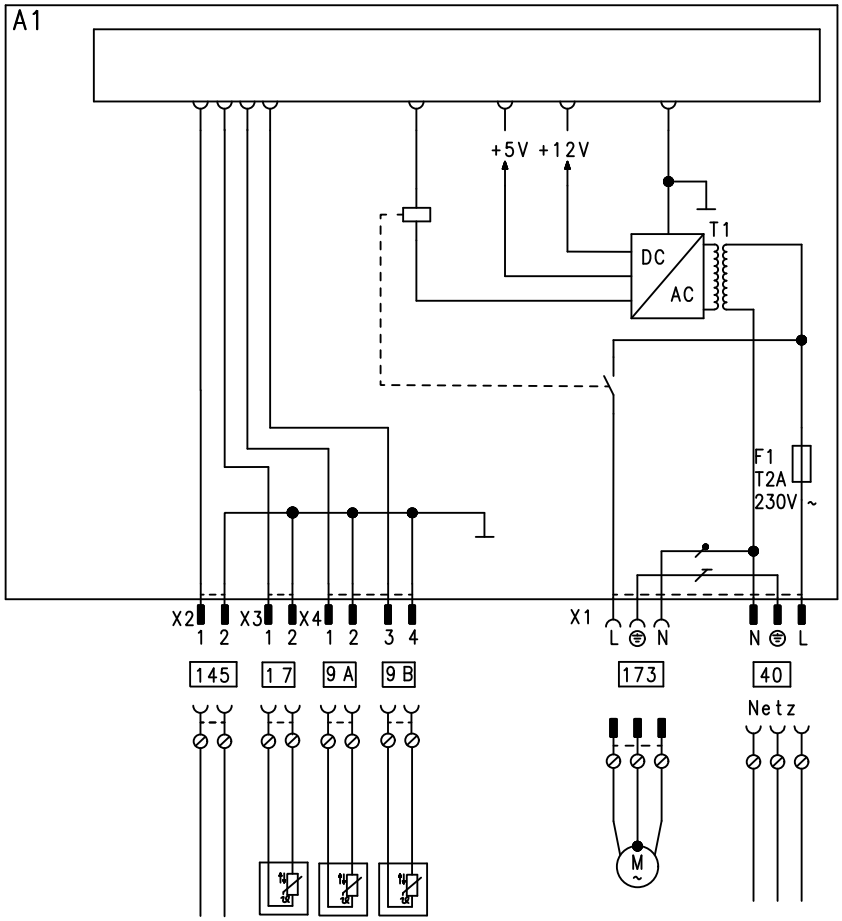

Fig. 141

A1 Main PCB
X... Electrical interfaces
9 A Buffer temperature sensor, top
9 B Buffer temperature sensor, bottom
17 Return temperature sensor
40 Power supply
145 KM-BUS
173 Circulation pump for buffer discharge

Commissioning/service reports

Settings and test values		Set value	Commissioning	Maintenance/ service
	Date **Signature**			
Type of fuel cell ☐ FC-V75CF1HD ☐ FC-V75FS1AD				
Tick type.				
Static pressure	*mbar* *kPa*	≤ 57.5 ≤ 5.75		
Supply pressure (flow pressure)				
☐ for natural gas E ☐ for natural gas LL	*mbar* *kPa*	17.4-25 1.74-2.5		
Tick gas type.				
Carbon dioxide content CO_2 For natural gas				
▪ At lower heating output	*% by vol.*	7.5-9.5		
▪ At upper heating output	*% by vol.*	7.5-9.5		
Oxygen content O_2				
▪ At lower heating output	*% by vol.*	4.0-7.6		
▪ At upper heating output	*% by vol.*	4.0-7.6		
Carbon monoxide content CO				
▪ At lower heating output	*ppm*	< 1000		
▪ At upper heating output	*ppm*	< 1000		
Fuel cell module				
▪ Electrical output	W	750		
▪ Power generated	kWh			
▪ Amount of gas consumed	m^3			
▪ Hours run	h			
▪ Distilled water filter replaced				
▪ Air filter replaced				

Specification

Rated voltage	230 V
Rated frequency	50 Hz
Rated current	6 A
Protection class	I
IP rating	IP 20 to EN 60529
Permissible ambient temperature	
▪ Operation	+3 to +35 °C
▪ Storage and transport	–20 to +65 °C
Setting, electronic temperature limiter	82 °C
Setting, temperature limiter	100 °C (fixed)
Backup fuse (power supply)	max. 16 A

Rated heating output range		**Gas condensing boiler**	**Fuel cell module**
at T_F/T_R 50/30 °C	**kW**		**1.0**
– Fuel cell module in standby	**kW**	**8.0 - 19**	
– Fuel cell module in operation	**kW**	**5.5 - 19**	
Rated heating output range for DHW heating	kW	6.9 - 29.3	–
Rated heating input range	kW	7.2 - 30.5	2.0
Output (el.)	W	–	750
Power consumption			
In the delivered condition	W	80	–
Maximum	W	150	1250
Standby	W	5	10
Supply values relative to the max. load			
▪ Natural gas E	m^3/h	3.23	0.22
▪ Natural gas LL	m^3/h	3.75	0.25
Heating water buffer cylinder capacity	l	170	–
DHW cylinder capacity	l	46	–
Product ID		CE-0085CP0028	

Note
The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).

Final decommissioning and disposal

Viessmann products can be recycled. Components and substances from the system are not part of ordinary household waste.
For decommissioning the system, isolate the system from the power supply and allow components to cool down where appropriate.
All components must be disposed of correctly.

Declaration of conformity

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, declare as sole responsible body that the product **Vitovalor 300-P**, **type C3TB** complies with the following standards:

DIN 4753
EN 483
EN 625
EN 677
EN 806
EN 12 897
EN 13 203-4
EN 15 502–1
EN 15 502-2-1
EN 50 465
EN 55 014
EN 60 335–1
EN 60 335-2-102
EN 61 000-3-2
EN 61 000-3-3
VDE AR-N-4105

In accordance with the following Directives, this product is designated **CE-0085**:

811/2013
813/2013
2004/108/EC
2006/95/EC
2009/125/EC
2009/142/EC
2010/30/EU

Allendorf, 04 January 2016

Viessmann Werke GmbH & Co. KG

Authorised signatory Manfred Sommer

Manufacturer's certificate according to the 1st BImSchV [Germany]

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, confirm that the product **Vitovalor 300-P**, **type C3TB** complies with the NO_x limits specified by the 1st BImSchV, paragraph 6 [Germany].

Allendorf, 04 January 2016

Viessmann Werke GmbH & Co. KG

Authorised signatory Manfred Sommer

Keyword index

Keyword index (cont.)

Keyword index (cont.)

Applicability

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