Installation and service instructions

for contractors

Vitodens 200-W
Type B2HB, B2KB, 1.8 to 35 kW
Wall mounted gas condensing boiler
Natural gas and LPG version

For applicability, see the last page

VITODENS 200-W

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 may only be carried out by a registered gas fitter.
- Work on electrical equipment may 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
  - Ⓐ ÖNORM, EN, ÖVGW G K directives, ÖVGW-TRF and ÖVE
  - Ⓒⓗ 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.
- Wear suitable personal protective equipment when carrying out any work.

⚠ **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.

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Safety instructions (cont.)

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.

What to do if water escapes from the appliance

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

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

Condensate

⚠ **Danger**
Contact with condensate can be harmful to health.
Never let condensate touch your skin or eyes and do not swallow it.

Flue systems and combustion air

Ensure that flue systems are clear and cannot be sealed, for instance due to accumulation of condensate or other external causes.
Avoid continuous condensate disposal with a wind protector.
Ensure an adequate supply of combustion air.
Inform 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-sealable.

Extractors

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

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

Index

Index (cont.)

Information

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
1.	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 intended solely for installation and operation in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions. It is only designed for heating up heating water that is of potable water quality.

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

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

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Intended use (cont.)

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 will result 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

Vitodens 200-W, type B2HB, B2KB

Wall mounted gas condensing boiler with Inox-Radial heat exchanger and the following integrated components:
- Modulating MatriX cylinder burner for natural gas and LPG
- Hydraulics with 3-way diverter valve and variable speed high efficiency circulation pump
- Vitotronic 100 for constant temperature operation
- Integral diaphragm expansion vessel (10 l capacity)

The selected gas category in the delivered condition and the associated nominal gas pressure are given on the boiler type plate. The type plate also shows the other gas types and pressures with which the boiler can be operated. A conversion within the stated natural gas groups is not required. For conversion to LPG (without conversion kit), see "Commissioning, inspection and maintenance".

The Vitodens 200-W may generally only be delivered to countries listed 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.

Preparing for installation

Note
This boiler (IP rating: IP X4) is approved for installation in wet rooms inside safety zone 1, to DIN VDE 0100. Exposure to jets of water must be prevented.
For open flue operation, the boiler may only be operated with a splash cover.
Observe the IEEE Wiring Regulations (17th issue).

! **Please note**
To prevent appliance damage, connect all pipework free of load and torque stress.

Fig. 1

Ⓐ Condensate drain
Ⓑ Heating flow Ø 22 mm
Ⓒ DHW Ø 15 mm (gas condensing combi boiler)
  Cylinder flow G ¾ (gas condensing system boiler)
Ⓓ Gas connection R ½
Ⓔ Cold water Ø 15 mm (gas condensing combi boiler)
  Cylinder return G ¾ (gas condensing system boiler)

Ⓕ Heating return Ø 22 mm
Ⓖ Filling/draining
Ⓗ Retainer for cables
Ⓚ Tundish kit
Ⓛ Power supply area
Ⓜ Dimension for installation with DHW cylinder below the boiler

Rated heating output kW	Dim. a mm
13 and 19	132
26 to 35	156

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Preparing for installation (cont.)

1. Fit the pre-plumbing jig or wall mounting bracket from the installation accessories provided at the chosen installation location.

   📖 Installation instructions for pre-plumbing jig or installation accessories
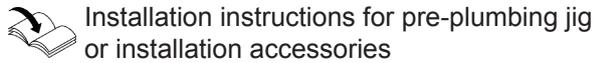
   Note
   The screws and rawl plugs provided are designed for concrete. For other construction materials, use fixing materials with sufficient load bearing capacity.

2. Prepare the water connections on the valves/fittings of the pre-plumbing jig.
   Thoroughly flush the heating system.

   Note
   To prevent dirt from entering the connections, do not remove the protective caps until you are about to fit the boiler.

   Note
   If an on-site expansion vessel also has to be installed: Install this expansion vessel in the heating flow, as the 3-way diverter valve is located in the heating return.

3. Prepare the gas connection according to TRGI or TRF [or local regulations].

4. Prepare the electrical connections.
   - The appliance is delivered fitted with an approx. 1.5 m long power cable. Fuse max. 16 A, 230 V, 50 Hz.
   - Accessory cables: 0.75 mm² flexible PVC cable with required number of cores for external connections.

Connection on the DHW side for gas condensing combi boiler

Cold water installation
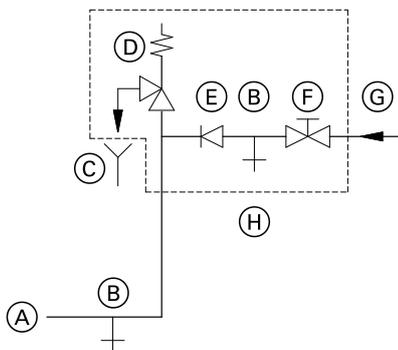
Fig. 2

Ⓐ Cold water connection, boiler
Ⓑ Drain
Ⓒ Visible discharge pipe outlet point (tundish)
Ⓓ Safety valve
Ⓔ Non-return valve
Ⓕ Shut-off valve
Ⓖ Cold water
Ⓗ Safety assembly

Safety assembly Ⓗ to 1999 Fittings Directive and EN 806 is required if the mains water supply pressure exceeds 10 bar (1.0 MPa), and no DHW pressure reducing valve is installed (to 1999 Fittings Directive). Only use a non-return valve or a combined shut-off and non-return valve in conjunction with a safety valve. If the safety valve is used, the cold water shut-off valve on the boiler must not be shut off.
Remove the toggle on the cold water shut-off valve (if installed) to prevent it being shut off manually.

Shock arrestor

If draw-off points that could cause pressure peaks (water hammer/shock) are connected to the same pipework as the boiler (such as pressure washers, washing machines or dishwashers), we would recommend the installation of a shock arrestor near the source of such pressure shocks.
ⒼⒷ: Fit a small domestic expansion vessel if water hammer occurs.

Mounting the boiler and making connections

Removing the front panel
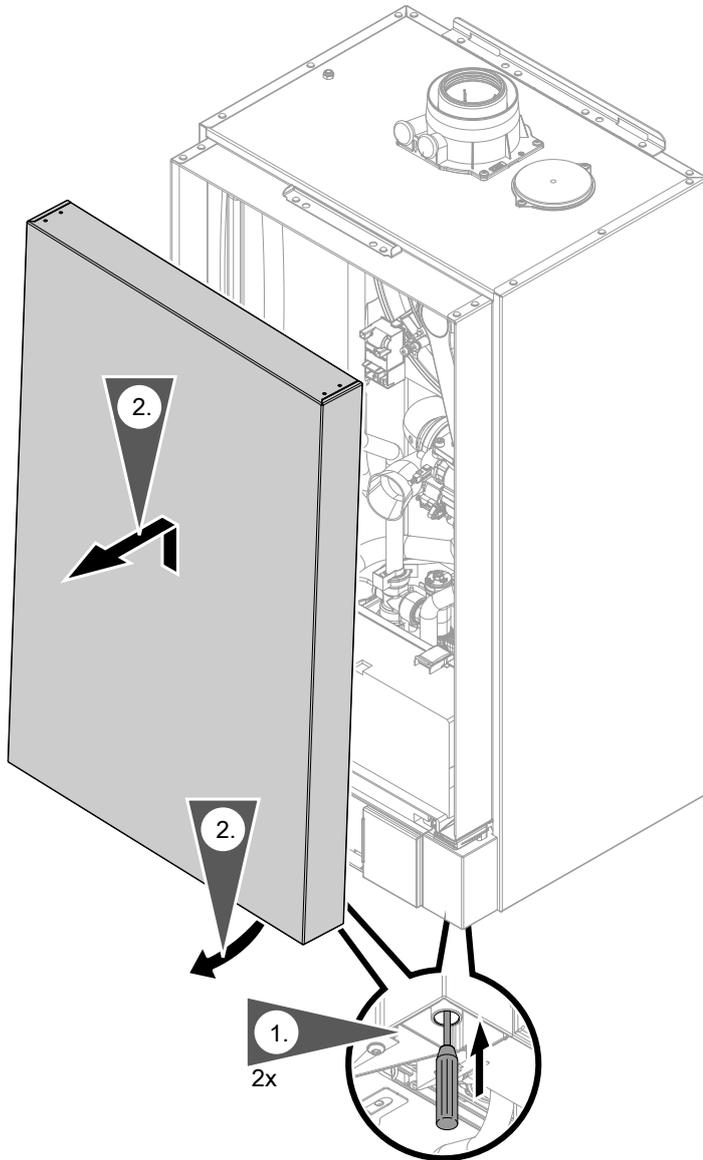
Fig. 3

1. Unlock the front panel on the underside (push in), using a screwdriver or similar tool.

2. Swivel the front panel forwards slightly and lift away upwards.

Mounting the boiler and making connections (cont.)
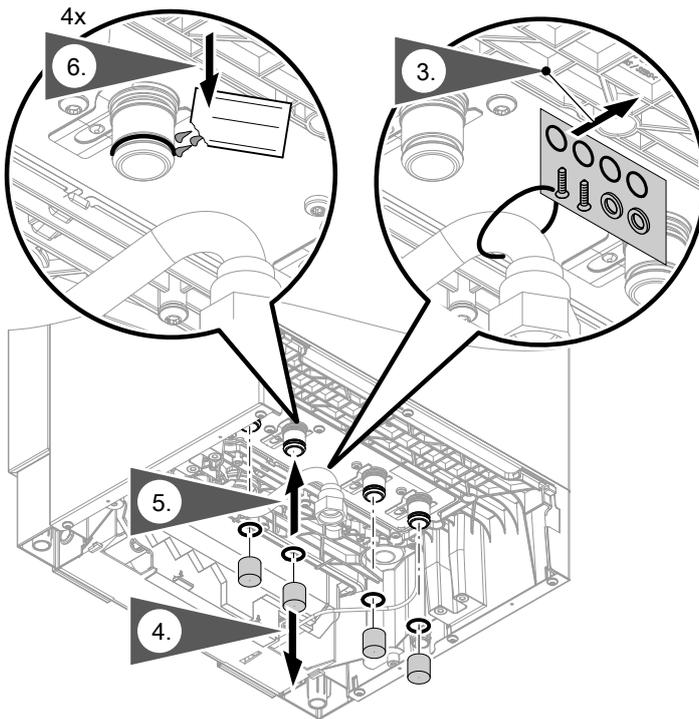
Fig. 4

3. Remove the installation kit from the gas pipe.

4. Remove the protective caps from the hydraulic connections and gas connection.

Note
Do not remove the protective caps until you are about to commence installation.

5. Fit the O-rings from the installation kit to the hydraulic connections.

6. Lubricate the O-rings with the valve grease supplied. Do not use any other agent.

Installation

Mounting the boiler and making connections (cont.)

Fitting the boiler to the pre-plumbing jig
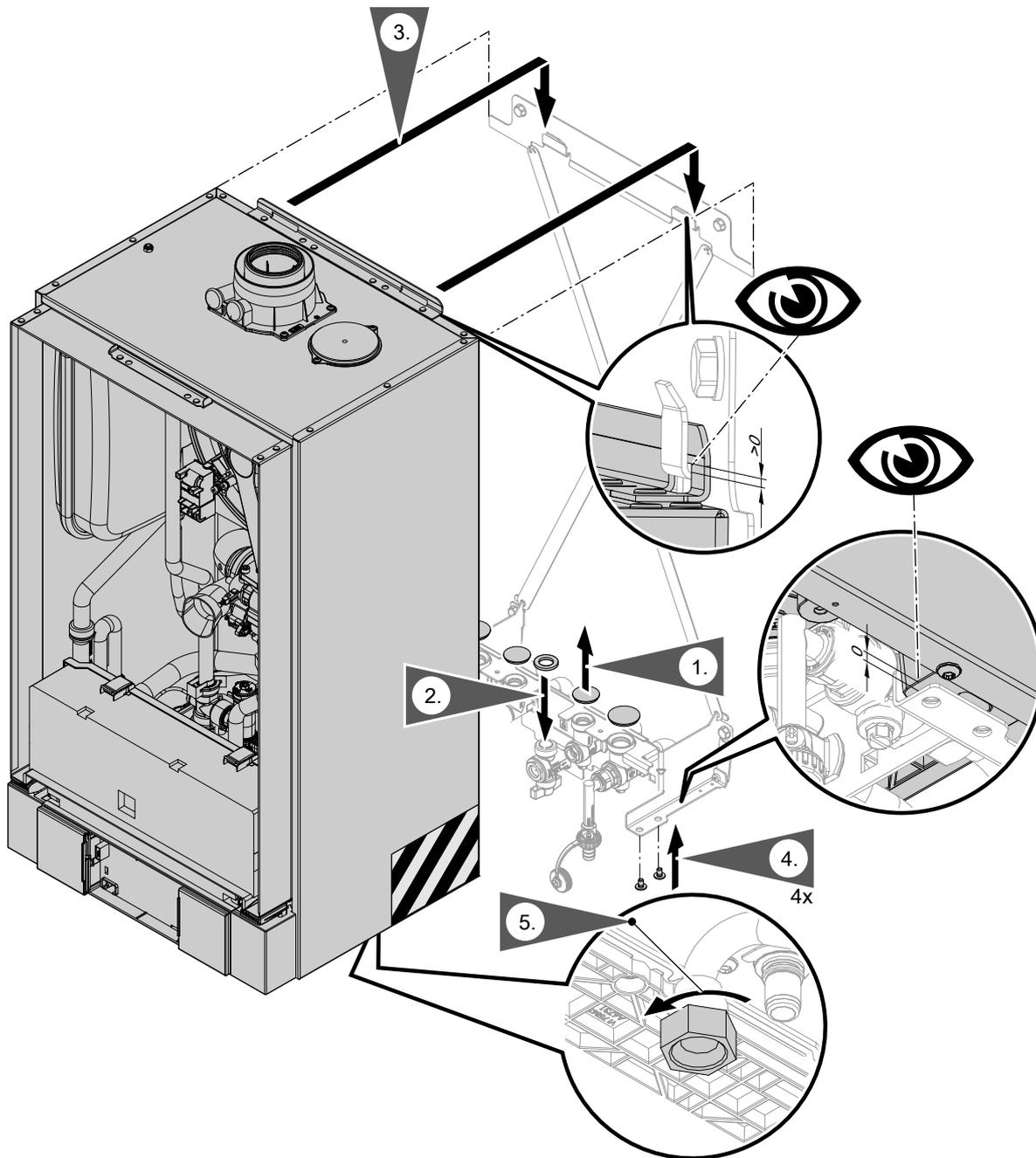
Fig. 5

Note
The diagram shows installation on a pre-plumbing jig for finished walls.

The boiler can be installed on the following accessories:
- *Pre-plumbing jig for unfinished walls*
- *Pre-plumbing jig for sub-mounting kit*
- *Mounting frame*
- *Self-supporting mounting frame*

Note
The fitting assembly bears the full weight of the boiler.

1. Remove the protective caps from the hydraulic connections and gas connection.

2. Take the flat gasket for the gas connection from the installation kit. Place the flat gasket on the gas shut-off valve or gas connector (pre-plumbing jig for sub-mounting kit).

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Mounting the boiler and making connections (cont.)

3. ⚠ **Danger**
Avoid injury to the hands.
Do not grip the boiler in the rear section of the side panels. Hatched area in the diagram.

Fitting the boiler:
- Align the boiler with the outer ends of the wall mounting bracket.
- Lower the boiler vertically into position.
- The supporting surface of the boiler must rest on the fitting assembly.

4. Take 4 screws from the installation kit and screw them into the fitting assembly from below.

! **Please note**
The screws must be inserted to fasten the boiler securely.

! **Please note**
Tighten screws enough to ensure the components do not suffer damage and will function correctly.
Never tighten the screws with a cordless screwdriver. The screws must be inserted to fasten the boiler securely.

Note
When correctly installed, the boiler will not rest on the hooks of the wall mounting bracket (see diagram).

5. Tighten the union nut on the gas pipe.

! **Please note**
Tighten screws enough to ensure the components do not suffer damage and will function correctly.

Installation

Mounting the boiler and making connections (cont.)

Connections on the heating water and DHW side

Connections on the heating water and DHW side
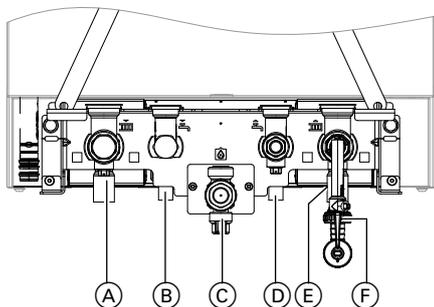
*Fig. 6   Diagram shows connections for gas con-
densing combi boiler*

Ⓐ Heating flow Ø 22 mm
Ⓑ DHW Ø 15 mm (gas condensing combi boiler)
   Cylinder flow G ¾ (gas condensing system boiler)
Ⓒ Gas connection R ½
Ⓓ Cold water Ø 15 mm (gas condensing combi
   boiler)
   Cylinder return G ¾ (gas condensing system
   boiler)
Ⓔ Heating return Ø 22 mm
Ⓕ Filling/draining
   Dimensions for connections in conjunction with the
   pre-plumbing jig (accessories)

If the connections have not been fitted previously,
make the connections on the heating water and DHW
side.

Flue gas connection

Note
- *The "System certificate" and "Skoberne GmbH flue
  system" labels enclosed with the technical documen-
  tation may only be used in conjunction with the
  Viessmann flue system made by Skoberne.*
- *During installation and positioning of the flue system,
  observe Building Regulations Part L and BS 5440
  [GB only].*

📖 **Connecting the balanced flue pipe**
   Flue system installation instructions

**Connecting several Vitodens to a shared flue sys-
tem**

If connecting several Vitodens to a shared flue system,
install a back draught safety device in each boiler.
- Multiple vertical connections:
  Back draught safety device available as separate
  accessory
- Flue gas cascade:
  Back draught safety device in standard delivery for
  the flue gas cascade (accessories)
Install the back draught safety device:

📖 Back draught safety device installation instruc-
   tions

Change control unit to operation with a shared flue
system:
- In the commissioning assistant, select the **"Multiple
  connections"** setting under **"Flue system"**
  or
- Set parameter/code 7E:1

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.
- Inspection port covers checked for secure and tight
  seating.
- Apertures for ensuring sufficient combustion air sup-
  ply are open and cannot be closed off.
- Applicable regulations on installing and commission-
  ing flue systems have been followed.

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Flue gas connection (cont.)

⚠ **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.
Prevent condensate drainage via a wind protector.

Condensate connection
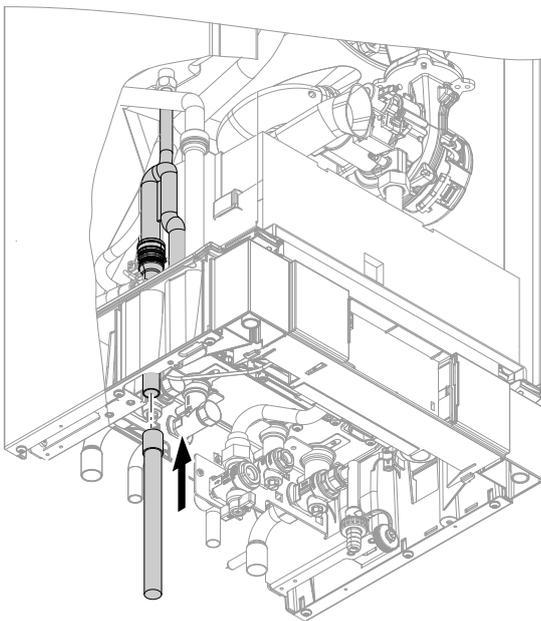
Fig. 7

1. Attach the supplied condensate hose to the trap.

2. ■ The condensate pipe is connected to the discharge pipe of the safety valve. The condensate hose supplied meets the temperature requirements that are part of the CE certification.
   ■ We recommend connecting the condensate pipe internally to the domestic waste water system, either directly or via a tundish.
   ■ If the condensate pipe is routed outside the building, use a pipe with min. ∅ 30 mm and protect the pipe from frost. Avoid long external pipe runs.

   ! **Please note**
   A frozen condensate pipe can result in faults and damage to the boiler.
   Always protect condensate pipes against frost.

   ■ Observe local building regulations.
   Connect condensate pipe Ⓐ to the public sewage system with a constant fall and a pipe vent.
   Observe local waste water regulations.

   Note
   Fill the trap with water before commissioning.

Gas connection
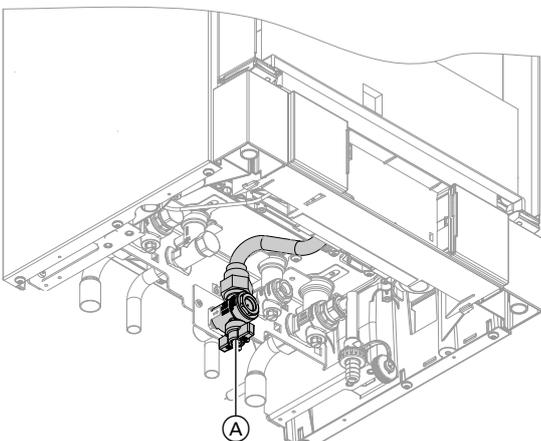
Fig. 8

1. If the gas connection has not been fitted previously, seal gas shut-off valve Ⓐ into the gas connection.

   Information on operation with LPG
   Install an external safety solenoid valve if the boiler is installed below ground level.

▶▶

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Installation sequence

Gas connection (cont.)

2. ⚠ **Danger**
Escaping gas leads to a risk of explosion.
Check all gas connections 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 residues of the leak detection agent after testing.

! **Please note**
Excessive test pressure will damage the boiler and the gas train.
Max. test pressure 150 mbar (15 kPa).
Where higher pressure is required for tightness tests, disconnect the boiler and the gas train from the main supply pipe (undo the fitting).

3. Purge the gas line.

📖 **Conversion to alternative gas types:**
See "Commissioning, inspection and maintenance".

Opening the control unit enclosure

! **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.

Installation

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Opening the control unit enclosure (cont.)

Fig. 9

Installation sequence
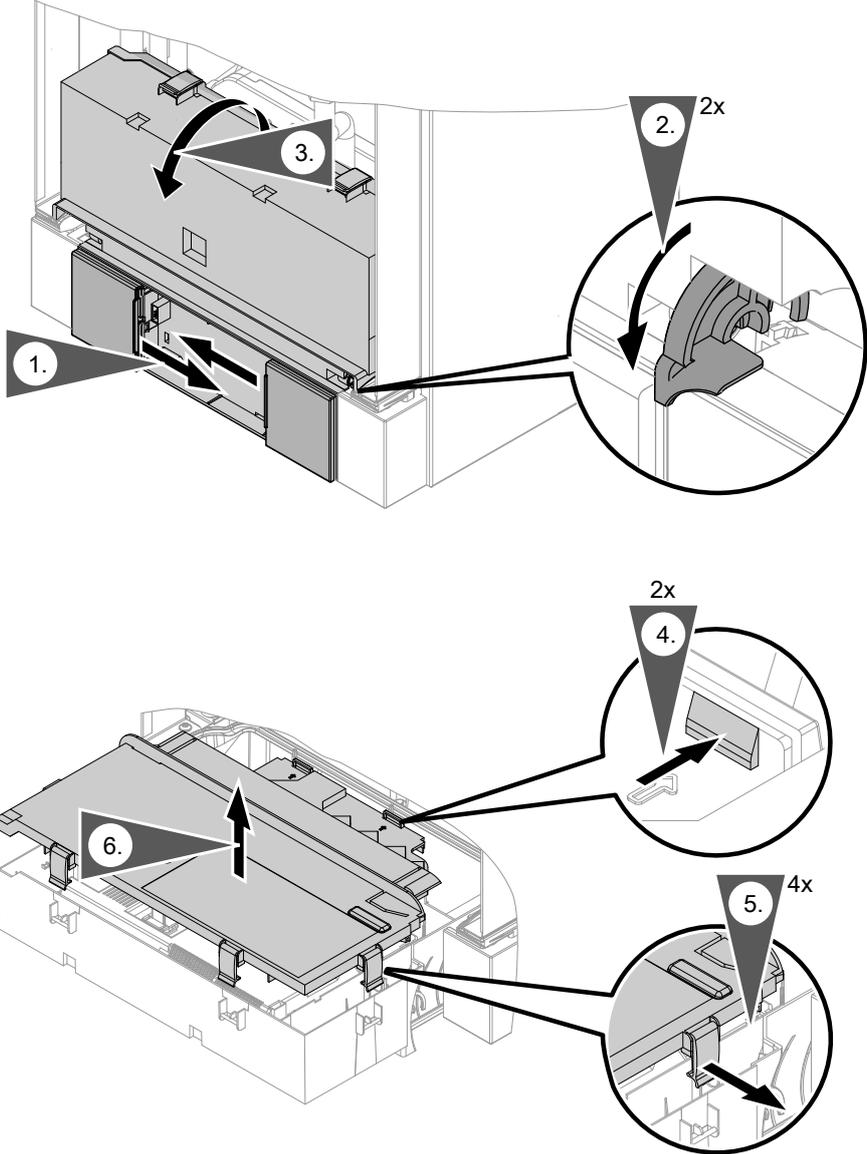
Electrical connections
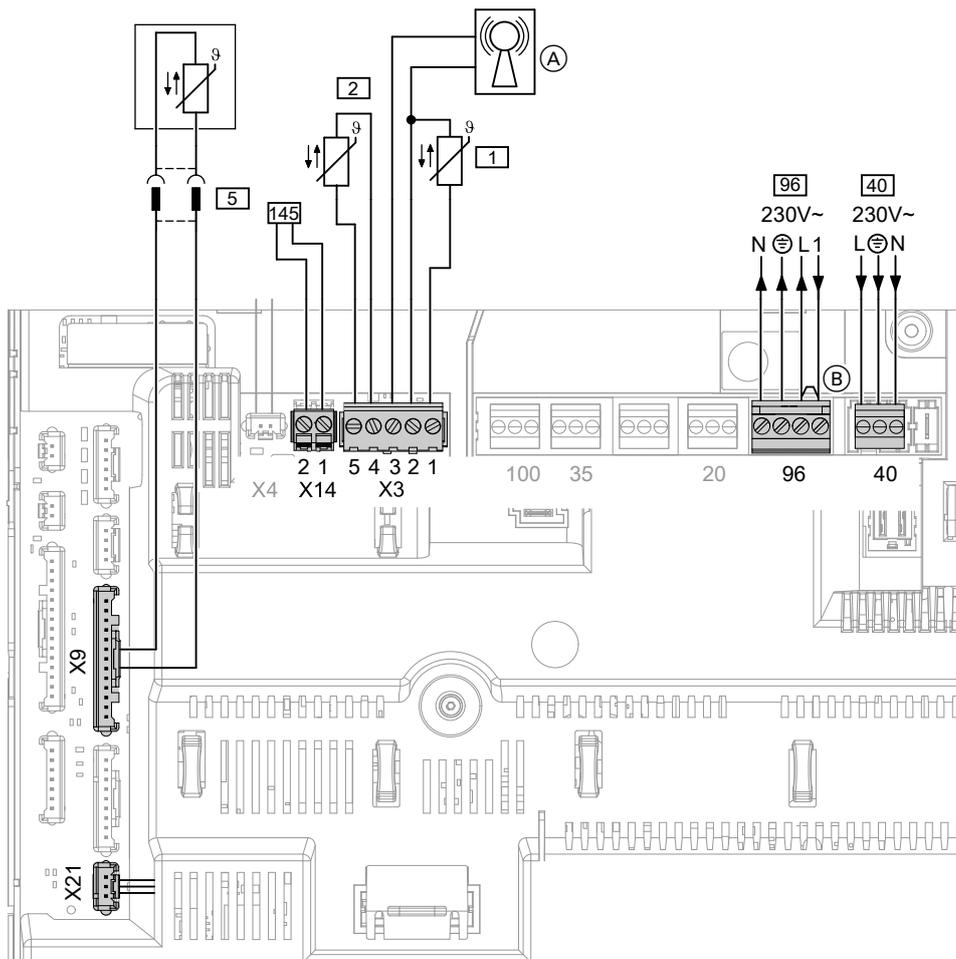
Fig. 10

(A) Radio clock receiver
(B) Jumper

Connections to 230 V~ plugs
40 Power supply
96 ■ Power supply for accessories
  ■ External demand/blocking
  ■ Room temperature controller (remove jumper (B) when making this connection):
    – Vitotrol 100, UTA
    – Vitotrol 100, UTDB
    – Vitotrol 100, UTDB-RF

Connections to LV plugs
X3 Plug X3 can be disconnected to facilitate installation.
  1 Outside temperature sensor
  2 Flow temperature sensor for low loss header (accessories)
X21 CO limiter (accessories)

5 Type B2HB:
  Cylinder temperature sensor (supplied with DHW cylinder connection set)
  Type B2KB:
  Comfort sensor (connected at the factory)
145 KM-BUS subscriber (accessories)
  To connect several accessories, see page 21.
  ■ Vitocom 100, type GSM
  ■ Solar control module, type SM1
  ■ Vitosolic
  ■ AM1 extension
  ■ EA1 extension
  ■ KM-BUS distributor

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

Electrical connections (cont.)

Routing connecting cables/leads
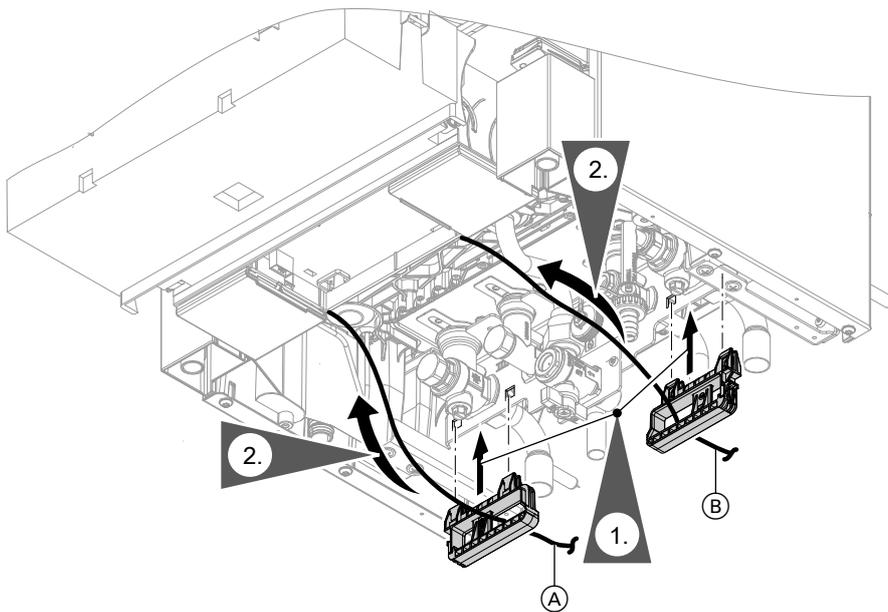
Fig. 11

Ⓐ LV leads
Ⓑ 230 V cables

1. Take the cable retainers from the installation kit and attach them to the fitting assembly.

2. Feed the cables through the cable retainers into the control unit enclosure.

Outside temperature sensor ☐1

Fitting location for outside temperature sensor

- North or north-westerly wall, 2 to 2.5 m above ground level; in 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

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 parameter/coding address "9b" in the **"General"/1** group. The boiler water temperature is limited by this set value and by the electronic maximum limit (coding address "06" in the **"Boiler"/2** group).

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

External demand via 0 – 10 V input

Connection at 0 – 10 V input at **EA1 extension**. Ensure DC separation between the earth conductor and the negative pole of the on-site power source.

0 to 1 V	No specification for set boiler water temperature
1 V	Set value 10 °C
10 V	Set value 100 °C
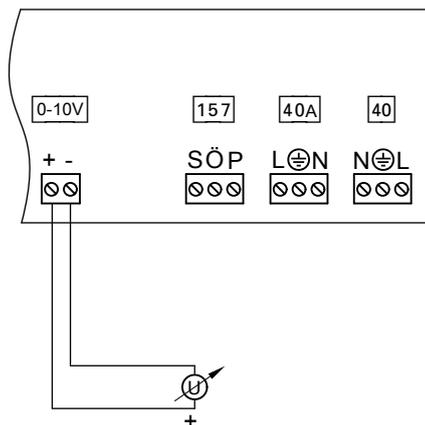
Fig. 12

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 parameter/code (see the following table "Parameters/codes").

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Electrical connections (cont.)

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

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

Power supply for accessories at plug 96 (230 V ~)

Where the boiler is sited in a wet room, accessories
outside the wet area must not be connected to the
power supply at the control unit. If the boiler is not
sited in a wet room, the power supply for accessories
can be connected at the control unit. This connection
is switched directly with the ON/OFF switch of the con-
trol unit.

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.)

Power supply 40

⚠️ **Danger**
Incorrectly executed electrical installations can result in injuries from electrical current and in appliance damage.

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with the following regulations:
- IEC 60364-4-41
- VDE regulations
- Connection conditions of the local power supply utility
- If the mains connection is made with a flexible power cable, it must be ensured that the live conductors are pulled taut before the earth conductor in the event of strain relief failure. The length of the earth conductor wire will depend on the design.

- Install an isolator in the power cable to provide omnipolar separation from the mains for all active conductors, corresponding to overvoltage category III (3 mm) for full isolation. This isolator must be fitted in the permanent electrical installation, in line with the 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.
- Max. fuse rating 16 A.

⚠️ **Danger**
The absence of component earthing can lead to serious injury from electric current if an electrical fault occurs.
The appliance and pipework must be connected to the equipotential bonding of the building.

Routing connecting cables/leads

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

Installation

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Closing the control unit enclosure and inserting the programming unit
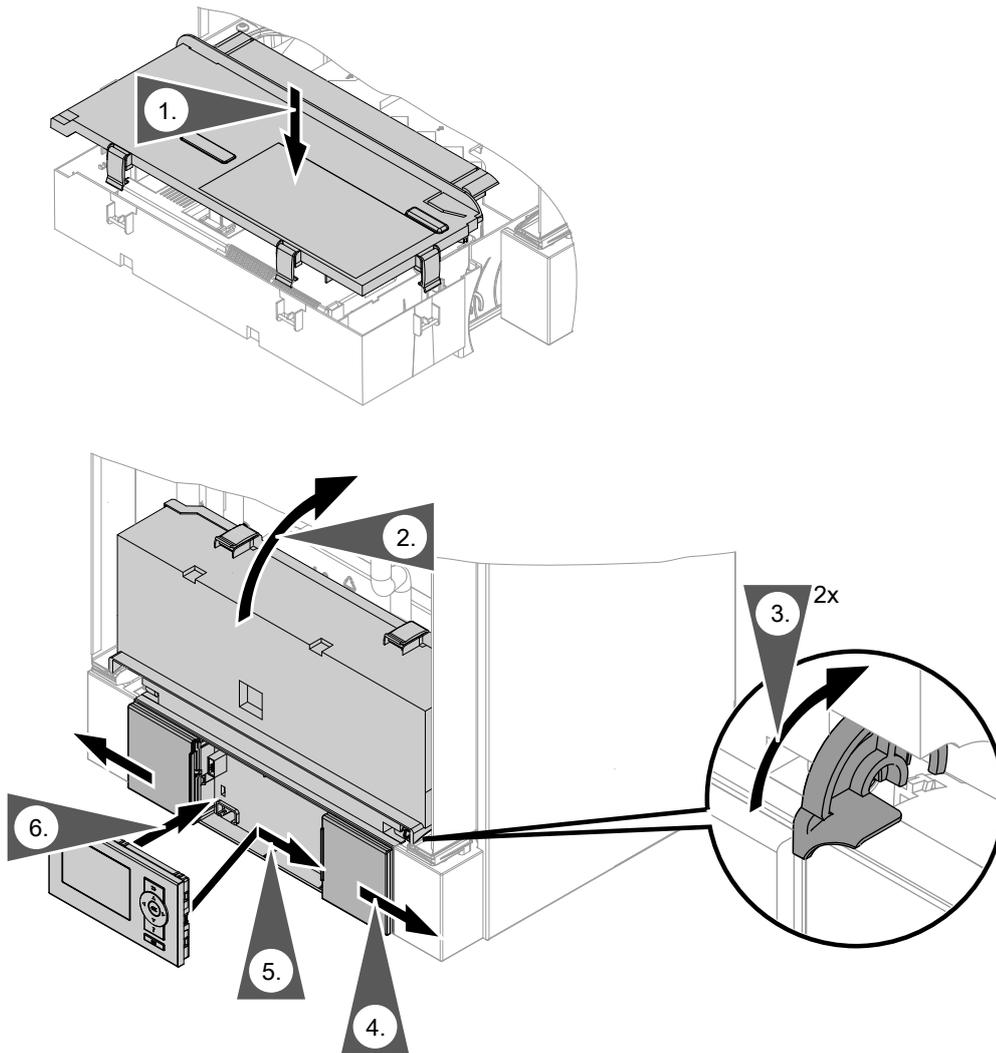
Fig. 13

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

⚙ ◉ 🔧 Steps - commissioning, inspection and maintenance

Commissioning steps
Inspection steps
Maintenance steps

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⚙ 👁 🔧 Filling the trap with water

Multi boiler system:
Fill the trap in the flue gas header with water as well.

Fig. 14

1. Remove supply hose Ⓐ.

2. Remove trap Ⓑ.

3. Fill trap Ⓑ with water.

4. Refit trap Ⓑ.

5. Reconnect supply hose Ⓐ.

Note
Never twist the inlet hose during assembly.

⚙ 👁 🔧 Filling the heating system

Fill water

According to EN 1717 with DIN 1988-100, as a heat transfer medium for DHW heating, the heating water must meet fluid category ≤ 3. This requirement is met if water of potable quality is used as heating water. For example, if additives are used, the additive manufacturer must specify which category the treated heating water comes under.

! **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.
- Special 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)

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⚙ ◎ 🔧 Filling the heating system (cont.)

Total heating output	Specific system volume		
kW	< 20 l/kW	≥ 20 l/kW to < 50 l/kW	≥ 50 l/kW
> 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)
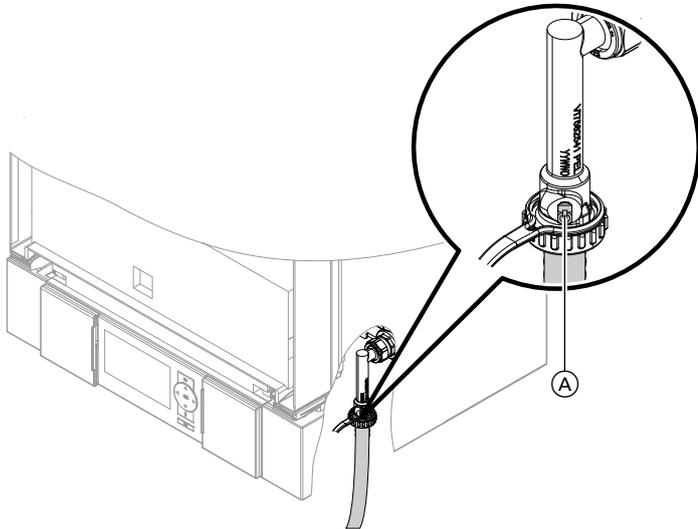
Fig. 15

1. Check the pre-charge pressure of the expansion vessel. See page 38.

2. Close the gas shut-off valve.

3. Fill the heating system via boiler drain & fill valve Ⓐ in the heating return (at the connection set or on site). Minimum system pressure > 1.0 bar (0.1 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. Then the system will be completely filled.

   Note
   Ensure that the safety valve does not respond when you are filling the system. If the flow rate through the safety valve becomes too high, water may enter the combustion chamber.

4. If the control unit was already on before filling:
   - Fit front panel (see page 28).
   - Switch ON the control unit.
   - Activate the filling function (see next chapter).
   - Switch OFF the control unit.
   - Remove the front panel.

5. Close boiler drain & fill valve Ⓐ.

Activating the filling function

Service menu
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. Select "④" and confirm with **OK**.
   "ON" flashes.

3. Activate the filling function with **OK**.
   "bF on" is shown constantly.
4. Ending filling function:
   press ⤺.

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

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⚙ ◉ 🔧 Venting the boiler
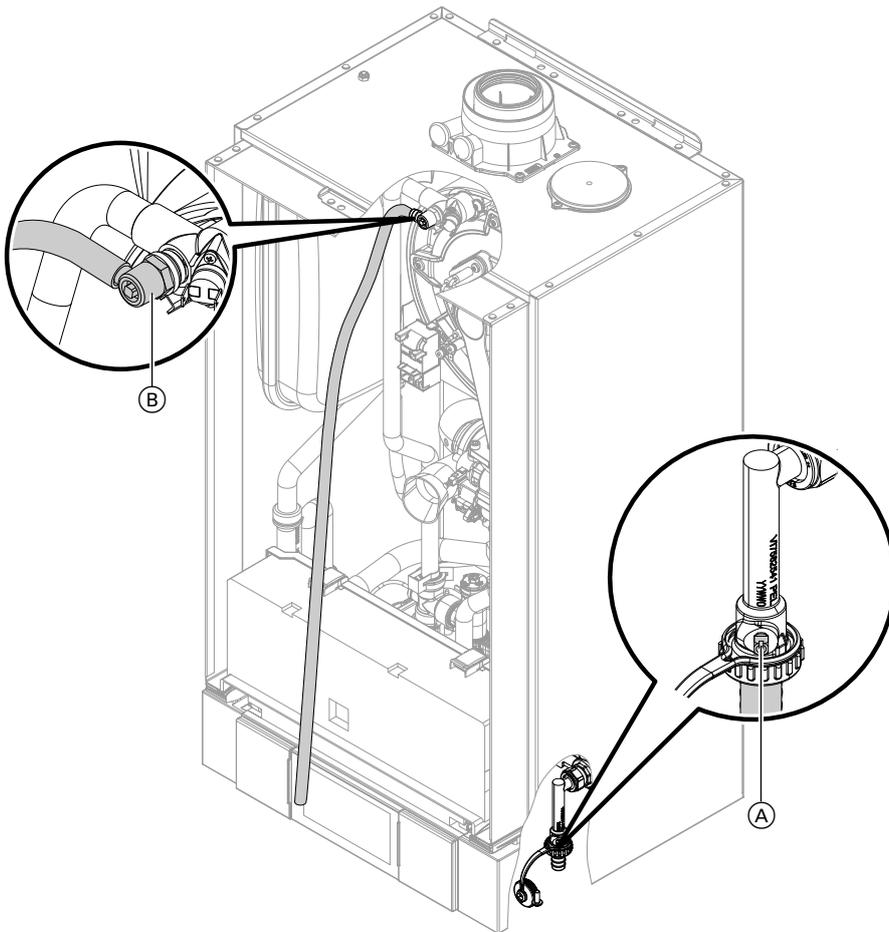
Fig. 16

1. *Note*
   Only carry out the following tasks with the control unit switched off.

   Close the shut-off valves on the heating water side.

2. Connect the supply hose to valve Ⓐ.

3. Push the drain hose (supplied inside the appliance) onto top valve Ⓑ and connect to a drain.

4. Open valves Ⓐ and Ⓑ and vent at mains pressure (purge) until no sound of escaping air can be heard and no more air bubbles are visible.

   Note
   Check the system pressure at the pressure gauge. Do not exceed 1.5 bar (0.15 MPa).

5. First close valve Ⓑ.

6. When the required operating pressure has been built, close valve Ⓐ. Open the shut-off valves on the heating water side.

7. Remove the drain hose from top valve Ⓑ again. Store the drain hose outside the boiler.

⚙ 👁 🔧 **Venting the boiler** (cont.)

Fitting the front panel
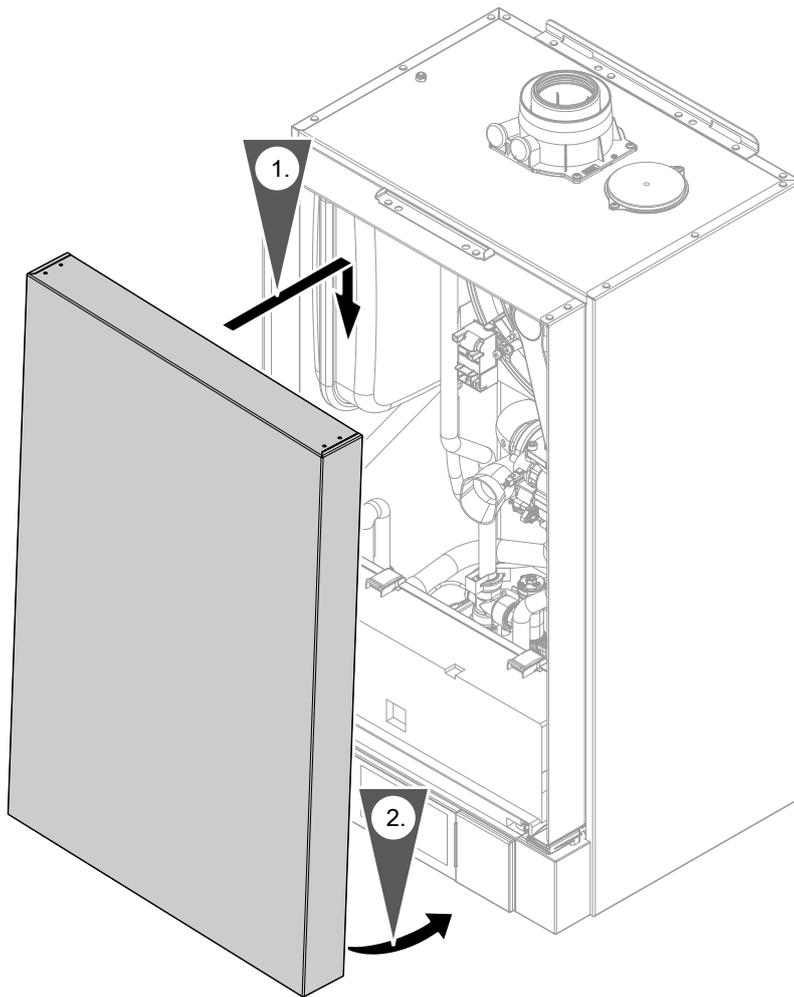
Fig. 17

Note
Hook the front panel into place. There should be an audible click.

⚙ 👁 🔧 **Switching on the power supply and the ON/OFF switch**

Information on automatic testing of the flue gas temperature sensor
The control unit automatically checks the function of the flue gas temperature sensor as soon as the power supply is switched on.
The display shows ***"A"***.
If the flue gas temperature sensor is positioned incorrectly, commissioning is cancelled and fault message A3 is displayed (see page 77).

⚙ 👁 🔧 **Venting the heating system**

1. Close the gas shut-off valve and switch the control unit ON.

⚙ ◉ 🔧 Venting the heating system (cont.)

2. Activate the venting program (see following steps).

Note
For function and sequence of the venting program, see page 108.

3. Adjust the system pressure.

4. Disconnect the supply hose from valve (A).

5. Open the gas shut-off valve.

Activating the venting function

Service menu
1. Press **OK** and ☰: simultaneously for approx. 4 s.
2. Select **"⑤"** with ▶ and confirm with **OK**.
   "ON" flashes.

3. Activate the venting function with **OK**.
   "EL on" is shown constantly.
4. Ending venting function:
   press ⏎.

⚙ ◉ 🔧 Checking the gas type

The boiler is equipped with an electronic combustion controller that adjusts the burner for optimum combustion in accordance with the prevailing gas quality.

- For operation with natural gas, no adjustment is therefore required across the entire Wobbe index range.
  The boiler can be operated within the Wobbe index range 9.5 to 15.2 kWh/m^3 (34.2 to 54.7 MJ/m^3).
- For operation with LPG, the burner must be converted (see following chapter).

1. Check with your gas supply utility regarding the gas type and Wobbe index.

2. Record the gas type in the report on page 113.

⚙ ◉ 🔧 Gas type conversion (only for operation with LPG)

1. Turn on the ON/OFF switch ⓪.

2. Select the gas type in coding address "82":
- Calling up code 2
- Call up **"General"** (weather-compensated control units)
  or
  Group 1 (constant temperature control unit).
- Select coding address "11" and set value "9". Confirm with **OK**. The display shows "11:0".
- Select coding address "82" and set value "1" (operation with LPG). Confirm with **OK**.
- Select coding address "11" and set value "0". Confirm with **OK**. The display shows "11:0".
- End service functions.

3. Affix label "G31" (supplied with the technical documentation) adjacent to the type plate on the cover panel.

⚙ ◉ 🔧 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.

Operation with LPG
Purge the LPG tank twice on commissioning or replacement. Vent the tank and gas connection line thoroughly after purging.

⚙ ◎ 🔧 Checking the static pressure and supply pressure (cont.)
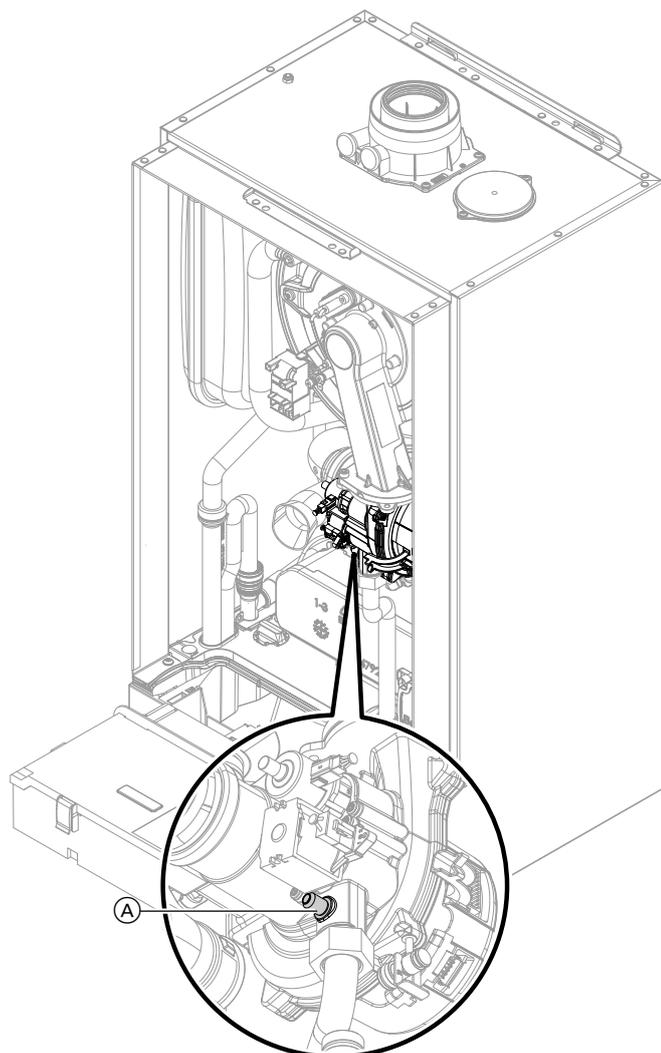
Fig. 18

1. Close the gas shut-off valve.

2. Remove the front panel (see page 10).

3. Undo screw Ⓐ inside test connector "IN" on the gas train but do not remove it, and connect the pressure gauge.

4. Open the gas shut-off valve.

5. Check the static pressure and record the actual value in the report on page 113.
   Set value: Max. 57.5 mbar (5.75 kPa).

6. Switch on mains voltage and start the boiler.

   Note
   During commissioning, the boiler can enter a fault state because of airlocks in the gas line. Fault EE is displayed. After approx. 5 s, press reset button R to reset the burner.

7. Check the supply (flow) pressure.

   Set value:
   ■ Natural gas: 20 mbar (2 kPa)
   ■ LPG: 50 mbar (5 kPa)

   Note
   Use a suitable measuring device with a resolution of at least 0.1 mbar (0.01 kPa) to check the supply pressure.

8. Record the actual value in the report on page 113.
   Implement measures as indicated in the table below.

9. Shut down the boiler, close the gas shut-off valve and remove the pressure gauge. Close test connector Ⓐ with the screw.

10. 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 Ⓐ.

11. Fit front panel (see page 28).

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⚙ ◉ 🔧 Checking the static pressure and supply pressure (cont.)

Supply pressure (flow pressure)		Measures
For natural gas	**For LPG**	
Below 17 mbar (1.7 kPa)	Below 42.5 mbar (4.25 kPa)	Do not commission the boiler. Notify the gas supply utility or LPG supplier.
17 to 25 mbar (1.7 to 2.5 kPa)	42.5 to 57.5 mbar (4.25 to 5.75 kPa)	Start the boiler.
Above 25 mbar (2.5 kPa)	Above 57.5 mbar (5.75 kPa)	Install a separate gas pressure governor upstream of the system and set the flow pressure to 20 mbar (2.0 kPa) for natural gas or 50 mbar (5.0 kPa) for LPG. Notify the gas supply utility or LPG supplier.

⚙ ◉ 🔧 Function sequence and possible faults

	Display		**Action**
Control unit issues a heat demand	No →		Increase set value and ensure heat is drawn off.
↓ Yes			
Fan starts	No →	Fan starts 4 times for approx. 50 s, followed by fault F9	Check the fan, fan connecting cables, power to the fan and fan control.
↓ Yes			
Ignition	No →	Fault 81/EE	Check ignition module (control voltage 230 V across plugs "X2.1" and "X2.2"). Check the gas supply.
↓ Yes			
Gas train opens	No →	Fault 80/EE	Check the gas train (control voltage 230 V~); check the gas supply pressure.
↓ Yes			
Ionisation current builds Symbol ▶	No →	Fault 82/EE	Check setting for ionisation electrode. Purge the gas line.
↓ Yes			
Burner in operation	No →	Shuts down below the set boiler water temperature and restarts immediately.	Check the flue system for tightness (flue gas recirculation); check the gas flow pressure.

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▶▶

⚙ ◎ 🔧 Function sequence and possible faults (cont.)

Automatic calibration of the combustion controller ↓ Yes	Yes → No →	
Automatic calibration of the combustion controller	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 (parameter/coding address 82, gas train setting). Check flue system; remove flue gas recirculation if required. Press reset button **R**.
	Fault 85/E1/E7/E9/EA	See chapter "Fault messages"

⚙ ◎ 🔧 Setting the max. heating output

A limit can be set on the maximum heating output for **heating mode**. The limit is set via the modulation range. The upper limit of the max. adjustable heating output is set by the boiler coding card.

Service menu
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. Select **"③"** with ▶ and confirm with **OK**.
   A value flashes on the display (e.g. **"85"**) and **"▷"** appears. In the delivered condition, this value represents 100 % of rated heating output.
3. Select required value and confirm with **OK**.

⚙ ◎ 🔧 Tightness test on balanced flue system (annular gap check)
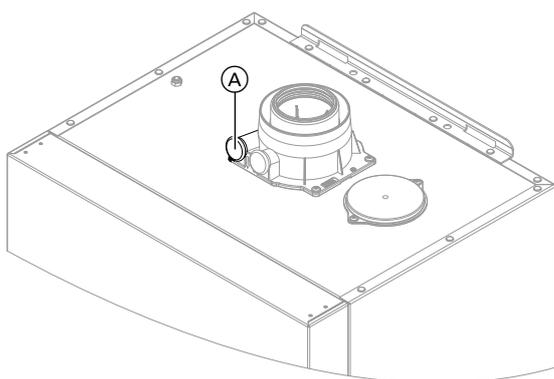
Fig. 19

Ⓐ Combustion air aperture

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.

⚙ ◉ 🔧 **Tightness test on balanced flue system (annular…** (cont.)

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.

⚙ ◉ 🔧 **Removing the burner**

! **Please note**
Escaping flue gas poses a risk to health.
Only for multiple connections to a flue system or multi boiler systems with a flue gas cascade:
Shut down all connected boilers.
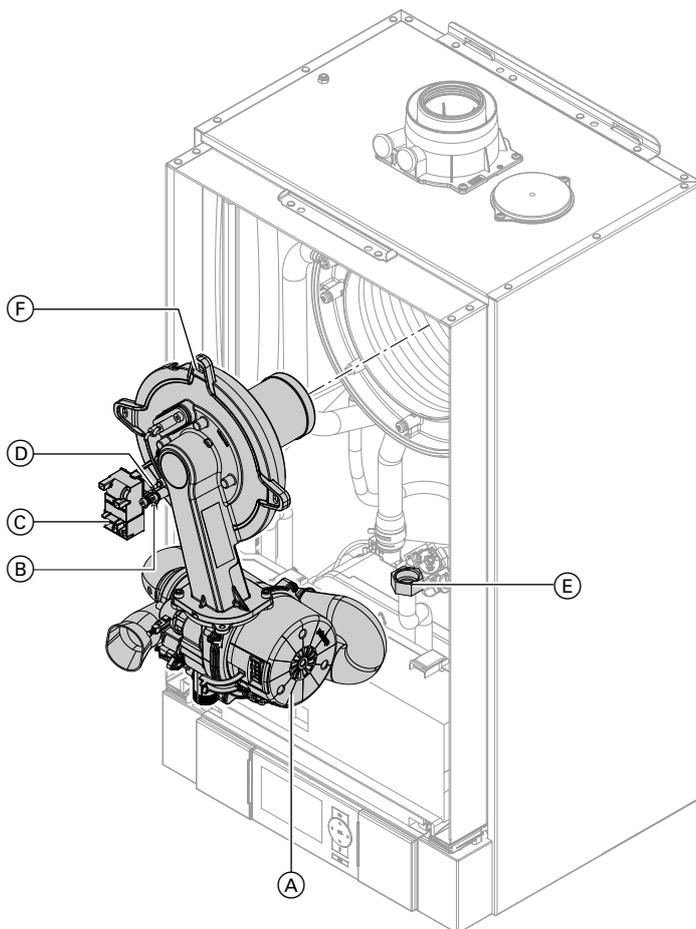
Fig. 20

1. Turn off the ON/OFF switch on the control unit and the power supply.

2. Close the gas shut-off valve and safeguard against reopening.

3. Remove the front panel (see page 10).

4. Disconnect the cables from fan motor Ⓐ, earth tab Ⓑ, ignition unit Ⓒ and ionisation electrode Ⓓ.

5. Undo gas supply pipe fitting Ⓔ.

6. Undo 4 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

Check burner gasket Ⓐ and burner gauze assembly Ⓔ for possible damage and replace if required.
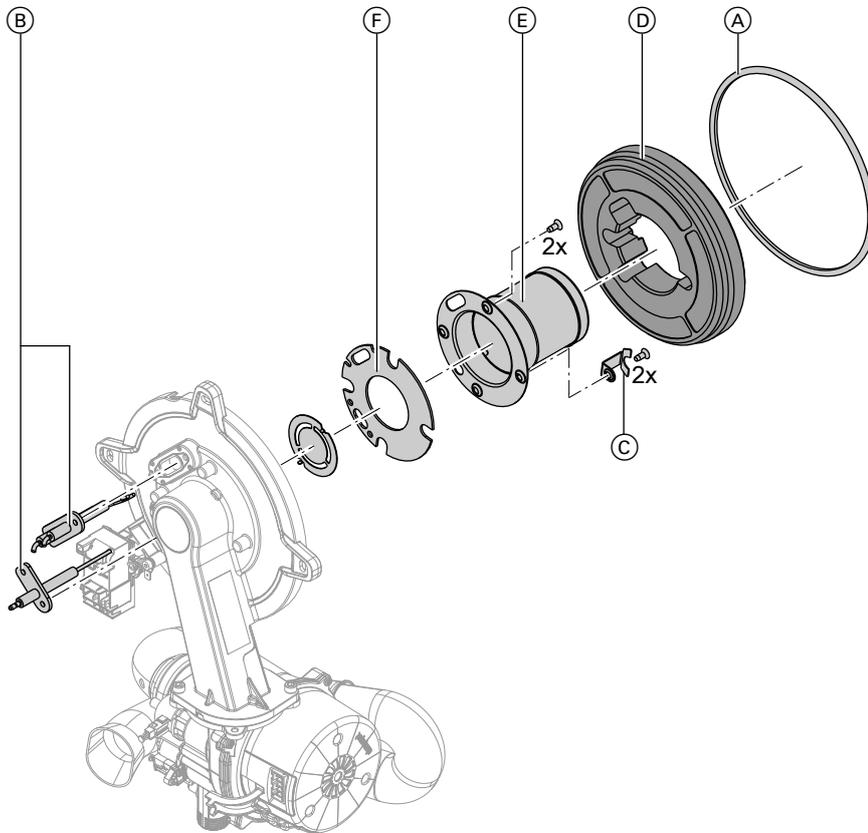
Fig. 21

1. Remove electrodes Ⓑ.

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

3. Undo 2 Torx screws and remove burner gauze assembly Ⓔ with gasket Ⓕ.

4. Insert new burner gauze assembly Ⓔ with new gasket Ⓕ and secure.

   !   **Please note**
   Tighten screws enough
   to ensure the components do not suffer damage and will function correctly.

5. Fit thermal insulation ring Ⓓ.

6. Fit electrodes Ⓑ.

   !   **Please note**
   Tighten screws enough
   to ensure the components do not suffer damage and will function correctly.

⚙ ◉ 🔧 Checking and adjusting the ignition and ionisation electrodes
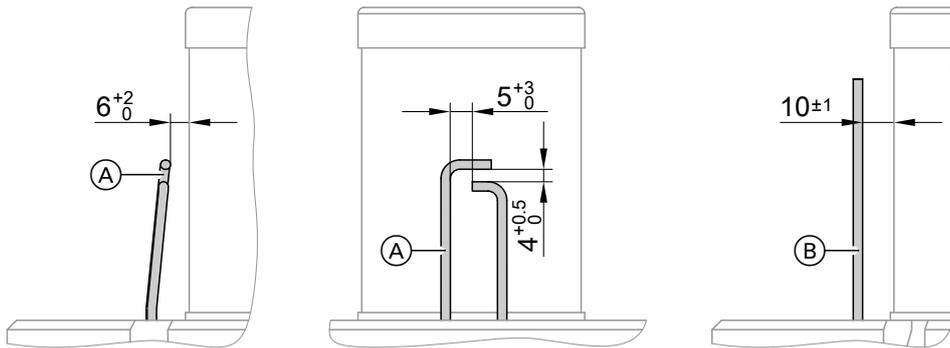
Fig. 22

(A) Ignition electrodes
(B) Ionisation electrode

1. Check the electrodes for wear and contamination.

2. Clean the electrodes with a small brush (not 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 and gaskets and adjust them as required.

> **!** **Please note**
> Tighten screws enough
> to ensure the components do not suffer damage and will function correctly.

⚙ ◉ 🔧 Checking the back draught safety device

Only for multiple connections to a flue system or multi boiler systems with a flue gas cascade.
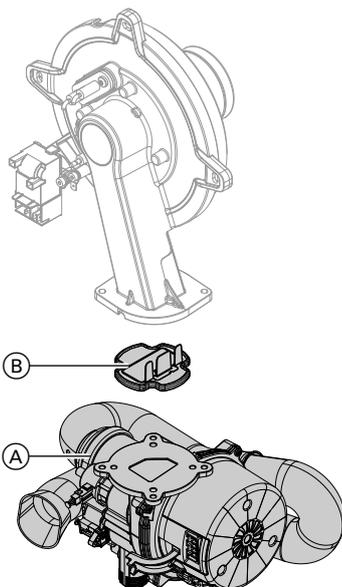
Fig. 23

1. Undo 2 screws and remove fan (A).

2. Remove back draught safety device (B).

3. Check the damper and gasket for dirt and damage. Replace if necessary.

4. Refit back draught safety device (B).

5. Refit fan (A) and secure with 2 screws.

> **!** **Please note**
> Tighten screws enough
> to ensure the components do not suffer damage and will function correctly.

⚙ 👁 🔧 Cleaning the heating surfaces

! **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 heating surfaces.

! **Please note**
Brushing can cause deposits to become lodged in the gaps between the coils.
Never use brushes to clean the heating surfaces.
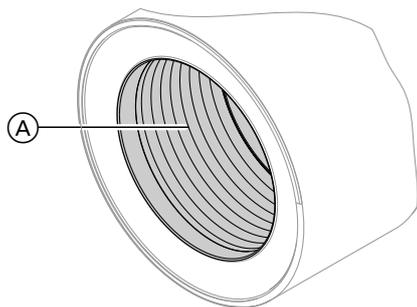
Note
Discolouration on the heat exchanger surface is a normal sign of use. It has no bearing on the function and service life of the heat exchanger.
The use of chemical cleaning agents is not required.

Fig. 24

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 the condensate drain and cleaning the trap

Multi boiler system:
Clean the trap in the flue gas header as well.
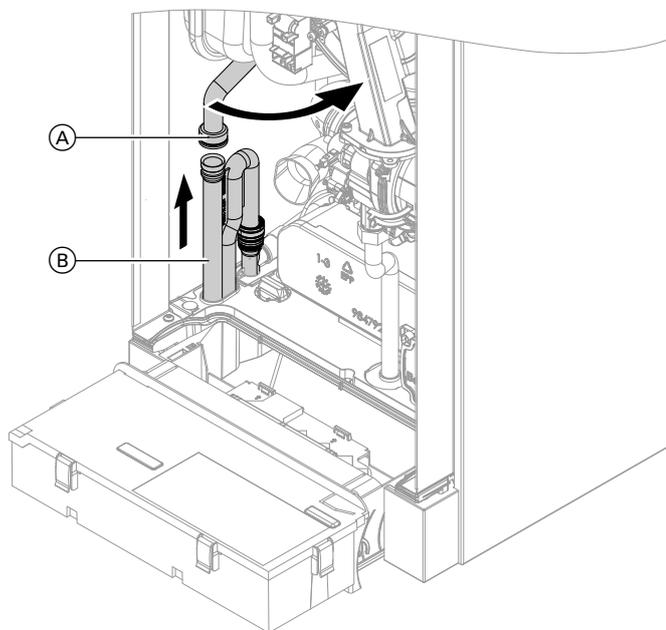
Fig. 25

1. Check at the trap that the condensate can drain freely.

2. Remove supply hose Ⓐ.

3. Remove trap Ⓑ.

4. Clean trap Ⓑ.

5. Fill trap Ⓑ with water.

6. Refit trap Ⓑ.

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⚙ ◉ 🔧 Checking the condensate drain and cleaning the… (cont.)

7. Reconnect supply hose Ⓐ.

Note
Never twist the inlet hose during assembly.

⚙ ◉ 🔧 Installing the burner
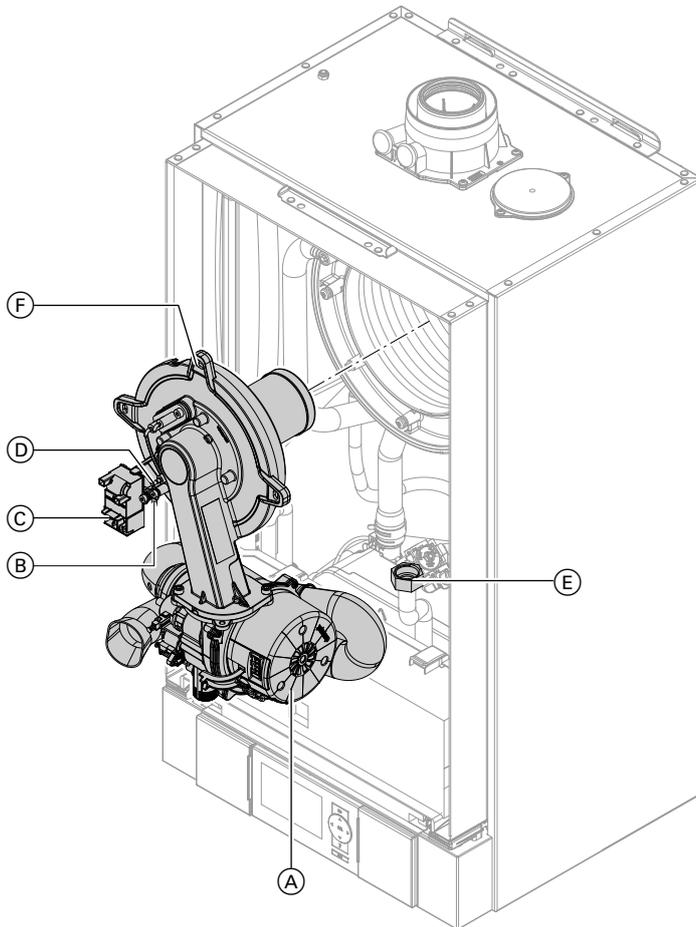
Fig. 26

1. Insert the burner and tighten screws Ⓕ diagonally.

> **!** **Please note**
> Tighten screws enough
> to ensure the components do not suffer
> damage and will function correctly.

2. Fit gas supply pipe Ⓔ with a new gasket.

3. Check the gas connections for tightness.

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

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

⚙ ◉ 🔧 Checking the neutralising system (if installed)

Checking the flow limiter (only for gas condensing combi boiler)
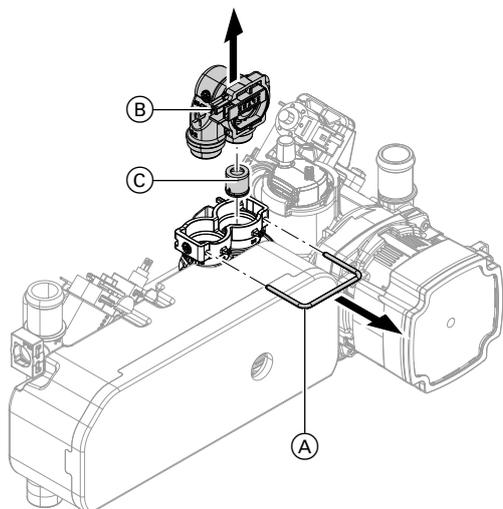
Fig. 27

1. Drain the boiler on the DHW side.

2. Pull off spring clip Ⓐ.

3. Remove flow sensor Ⓑ.

4. Check flow limiter Ⓒ, replace and reinsert if scaled up or damaged.

5. Mount flow sensor Ⓑ with new gaskets.

Flow limiter

Serial no. (type plate)	Flow rate l/min	Colour
7570789	10	Blue
7570791	12	Red
7570793	14	Pink

Checking the expansion vessel 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".

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 all gas equipment for tightness at 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.

⚙ 👁 🔧 Fitting the front panel

⚙ 👁 🔧 Checking the combustion quality

The electronic combustion controller automatically ensures optimum combustion quality. During commissioning/maintenance, only the combustion values need to be checked. To do this, test the CO content and CO_2 or O_2 content, and record these in the report on page 113. For a description of the electronic combustion controller functions, see page 110.

Note
Operate the appliance with uncontaminated combustion air to prevent operating faults and damage.

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 the lower and upper heating output respectively:
  − 7.5 to 9.5 % for natural gas H
  − 8.8 to 11.1 % for LPG P
■ The O_2 content must be between 4.0 and 7.6 % for all gas types.

If the actual CO, CO_2 or O_2 contents lie outside their respective ranges, proceed as follows:
■ Check the balanced flue system for tightness; see page 32.
■ Check the ionisation electrode and connecting cable; see page 35.

Note
During commissioning, the combustion controller carries out an automatic calibration. Allow approx. 30 s after the burner has started before testing the emissions.
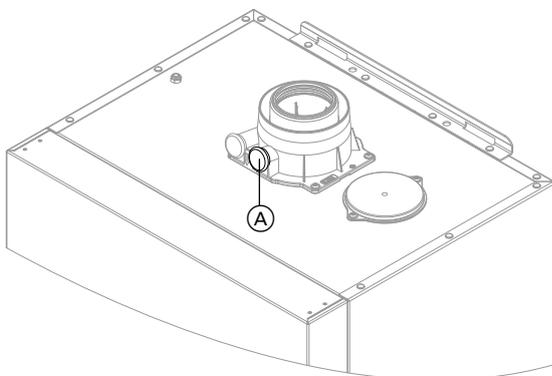
Fig. 28

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.

3. Set the lower heating output (see page 40).

4. Check the CO_2 or O_2 content. If the value varies by more than 1 % (CO_2) or 1.5 % (O_2) from the ranges given above, carry out the steps on page 39.

5. Enter the actual value into the report.

6. Set the upper heating output (see page 40).

▶▶

⚙ ⊙ 🔧 Checking the combustion quality (cont.)

7. Check the CO_2 or O_2 content. If the value varies by more than 1 % (CO_2) or 1.5 % (O_2) from the ranges given above, carry out the steps on page 39.

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

9. Enter the actual value into the report.

Selecting higher/lower heating output

Service menu
1. Press **OK** and ☰ simultaneously for approx. 4 s.
2. Select **"▱"** with ▶ and confirm with **OK**.
   The display shows **"I"** and **"ON"** flashes.
3. Selecting the lower heating output:
   press **OK**, **"ON"** will be displayed constantly.

4. Selecting the upper heating output:
   press ⤺.
5. Select **"2"** with ▶, **"ON"** flashes.
6. Press **OK**, **"ON"** will be displayed constantly.
7. Ending output selection:
   press ⤺.

⚙ ⊙ 🔧 Checking the flue system for unrestricted flow and tightness

⚙ ⊙ 🔧 Checking the external LPG safety valve (if installed)

⚙ ⊙ 🔧 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. See 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 42.

⚙ ⊙ 🔧 Calling up and resetting service messages

The red fault indicator flashes when the limits set in coding addresses "21" and "23" have been reached (coding address in group 2).

The red fault indicator flashes when the limits set in coding address "21" and "23" have been reached. (Coding address in Group 2)

Display

The specified hours run or the specified time interval with calendar symbol **"📅"** (subject to setting) and **"🔧"**

Acknowledging a service

Press **OK**.

Service the appliance.

Note
An acknowledged service message that has not been reset reappears after 7 days.

After maintenance has been carried out, reset the codes

Reset code "24:1" in group 2 to "24:0".

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

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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.

Codes

Calling up coding level 1

Codes that are not assigned, due to the heating system equipment level or the setting of other codes, are not displayed.

The codes are divided into groups
1: **"General"**
2: **"Boiler"**
3: **"DHW"**
4: **"Solar"**
5: **"Heating circuit 1"**
6: **"All codes std device"**
   In this group, all coding addresses are displayed in ascending order.
7: **"Standard setting"**

Calling up code 1

Service menu:
1. Press **OK** and ≡: simultaneously for approx. 4 s.
2. Select **"①"** with ▶ for coding level 1 and confirm with **OK**.

3. **"I"** flashes on the display for the coding addresses in group 1.
4. Select the group of the required coding address with ▲/▼ and confirm with **OK**.
5. Select coding address with ▲/▼.
6. Set value according to the following tables with ▲/▼ and confirm with **OK**.

Resetting all codes to their delivered condition

Select **"7"** with ▶ and confirm with **OK**.
When **"⊬"** flashes, confirm with **OK**.

Note
This also resets codes at coding level 2.

Group 1

Select "1" (see page 42).

Coding

Coding in the delivered condition		Possible change	
System design			
00:1	One heating circuit without mixer A1 (heating circuit 1), without DHW heating	00:2	One heating circuit without mixer A1 (heating circuit 1), with DHW heating (code is set automatically)
General			
51:0	System with low loss header: The internal circulation pump always starts when there is a heat demand.	51:1	System with low loss header: The internal circulation pump is only started when there is a heat demand if the burner is running. The circulation pump stops when the run-on time ends.
		51:2	System with heating water buffer cylinder: The internal circulation pump is only started when there is a heat demand if the burner is running. The circulation pump stops when the run-on time ends.

Coding level 1 (cont.)

Coding in the delivered condition		Possible change	
Lock out controls			
8F:0	Operation enabled in standard menu and extended menu. ***Note*** *The relevant code is only activated when you exit the service menu.*	8F:1	Operation locked out in standard menu **and** extended menu. Emissions test mode can be activated.
		8F:2	Operation enabled in standard menu, but locked out in extended menu. Emissions test mode can be activated.
Set flow temperature for external demand			
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)

Group 2

Coding

Coding in the delivered condition		Possible change	
Single/multi-boiler system			
01:1	Never adjust		
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 step ≙ 100 h
Service interval in months			
23:0	No time set for burner service interval	23:1 to 23:24	Time 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/filling program inactive	2F:1	Venting program active
		2F:2	Filling program active

Group 3

Codes

Codes

Coding

Coding in the delivered condition		Possible change	
Set DHW temperature reheating suppression			
67:40	For solar DHW heating: Set DHW temperature 40 °C. Reheating is suppressed above the selected set temperature (boiler only starts as backup if the rise in the cylinder temperature is too low). Cannot be adjusted on gas condensing combi boilers.	67:0 to 67:95	Set DHW temperature adjustable from 0 to 95 °C (limited by boiler-specific parameters)

Group 4

Select "4" (see page 42).

Note
The solar group is only displayed if a solar control module, type SM1, is connected.

Coding

Coding in the delivered condition		Possible change	
Speed control solar circuit pump			
02:...	Data dependent on the software version of solar control module SM1	02:0	Solar circuit pump is not speed-controlled
		02:1	With wave packet control function Never adjust
		02:2	Solar circuit pump is speed-controlled with PWM control
Maximum cylinder temperature			
08:60	Set DHW temperature (maximum cylinder temperature) 60 °C.	08:10 to 08:90	Set DHW temperature adjustable from 10 to 90 °C.
Stagnation time reduction			
0A:5	Temperature differential for stagnation time reduction (reduction in the speed of the solar circuit pump to protect system components and heat transfer medium) 5 K.	0A:0	Stagnation time reduction not active.
		0A:1 to 0A:40	Temperature differential adjustable from 1 to 40 K.
Flow rate solar circuit			
0F:70	Solar circuit flow rate at the maximum pump speed 7 l/min.	0F:1 to 0F:255	Flow rate adjustable from 0.1 to 25.5 l/min, 1 step ≙ 0.1 l/min.

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Coding level 1 (cont.)

Extended solar control functions

Coding in the delivered condition		Possible change	
20:0	No extended control function enabled	20:1	Auxiliary function for DHW heating
		20:2	Differential temperature control 2.
		20:3	Differential temperature control 2 and auxiliary function.
		20:4	Differential temperature control 2 for central heating backup.
		20:5	Thermostat function
		20:6	Thermostat function and auxiliary function
		20:7	Solar heating via external heat exchanger without additional temperature sensor
		20:8	Solar heating via external heat exchanger with additional temperature sensor
		20:9	Solar heating of 2 DHW cylinders

Group 5

Coding

Coding in the delivered condition		Possible change	
Min. flow temperature heating circuit			
C5:20	Electronic minimum flow temperature limit 20 °C (only for weather-compensated control units)	C5:1 to C5:127	Minimum limit adjustable from 1 to 127 °C (limited by boiler-specific parameters)
Max. flow temperature heating circuit			
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)
Pump control in "Only DHW"			
F6:25	In "Only DHW" operating mode, the internal circulation pump is permanently on.	F6:0	In "Only DHW" operating mode, the internal circulation pump is permanently off.
		F6:1 to F6:24	In "Only DHW" operating mode, the internal circulation pump is started 1 to 24 times per day for 10 min each time.
Pump control in "Standby mode"			
F7:25	In "Standby mode", the internal circulation pump is permanently on.	F7:0	In "Standby mode", the internal circulation pump is permanently off
		F7:1 to F7:24	In "Standby mode", the internal circulation pump is started 1 to 24 times per day for 10 min each time.

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Codes

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.

The codes are divided into groups
1: **"General"**
2: **"Boiler"**
3: **"DHW"**
4: **"Solar"**
5: **"Heating circuit 1"**
6: **"All codes std device"**
   In this group, all coding addresses are displayed in ascending order.
7: **"Standard setting"**

Calling up code 2

Service menu:
1. Press **OK** and ☰: simultaneously for approx. 4 s.
2. Press **OK** and ↰ simultaneously for approx. 4 s.

3. Select **"②"** with ▶ for coding level 2 and confirm with **OK**.
4. **"I"** flashes on the display for the coding addresses in group 1.
5. Select the group of the required coding address with ▲/▼ and confirm with **OK**.
6. Select coding address with ▲/▼.
7. Set value according to the following tables with ▲/▼ and confirm with **OK**.

Resetting all codes to their delivered condition

Select **"7"** with ▶ and confirm with **OK**.
When **"⊬"** flashes, confirm with **OK**.

Note
This also resets the codes at coding level 1.

Group 1

Select "1" (see page 46).

Coding

Coding in the delivered condition		Possible change	
00:1	One heating circuit without mixer A1 (heating circuit 1), without DHW heating	00:2	One heating circuit without mixer A1 (heating circuit 1), with DHW heating (code is set automatically)
11:0	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
25:0	Without outside temperature sensor	25:1	With outside temperature sensor (automatic recognition).
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	Function of output A1: DHW circulation pump
		33:2	Function of output A1: Circulation pump for cylinder heating
34:0	Function of output A2 at AM1 extension: DHW circulation pump	34:1	Function of output A2: Heating circuit pump
		34:2	Function of output A2: 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	Function of output 157: Feed pump
		36:2	Function of output 157: DHW circulation pump

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Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
3A:0	Function of input DE1 at EA1 extension: Not assigned	3A:1	Function of input DE1: Operating program changeover
		3A:2	Function of input DE1: External demand with set flow temperature. Set flow temperature setting: Coding address 9b. Internal circulation pump function: Coding address 3F.
		3A:3	Function of input DE1: External blocking. Function of internal circulation pump: Coding address 3E
		3A:4	Function of input DE1: External blocking with fault message input Function of internal circulation pump: Coding address 3E
		3A:5	Function of input DE1: Fault message input
		3A:6	Function of input DE1: Brief operation of the DHW circulation pump (pushbutton function). DHW circulation pump runtime setting: Coding address 3d
3b:0	Function of input DE2 at EA1 extension: Not assigned	3b:1	Function of input DE2: Operating program changeover
		3b:2	Function of input DE2: External demand with set flow temperature. Set flow temperature setting: Coding address 9b. Internal circulation pump function: Coding address 3F.
		3b:3	Function of input DE2: External blocking. Function of internal circulation pump: Coding address 3E
		3b:4	Function of input DE2: External blocking with fault message input Function of internal circulation pump: Coding address 3E
		3b:5	Function of input DE2: Fault message input
		3b:6	Function of input DE2: Brief operation of the DHW circulation pump (pushbutton function). DHW circulation pump runtime setting: Coding address 3d
3C:0	Function of input DE3 at EA1 extension: Not assigned	3C:1	Function of input DE3: Operating program changeover
		3C:2	Function of input DE3: External demand with set flow temperature. Set flow temperature setting: Coding address 9b. Internal circulation pump function: Coding address 3F.

▶▶

Codes

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
		3C:3	Function of input DE3: External blocking. Function of internal circulation pump: Coding address 3E
		3C:4	Function of input DE3: External blocking with fault message input Function of internal circulation pump: Coding address 3E
		3C:5	Function of input DE3: Fault message input
		3C:6	Function of input DE3: Brief operation of the DHW circulation pump (pushbutton function). DHW circulation pump runtime setting: Coding address 3d
3d:5	DHW circulation pump runtime for brief operation: 5 min	3d:1 to 3d:60	DHW circulation pump runtime adjustable from 1 to 60 min
3E:0	Internal circulation pump remains in control mode at "External blocking" signal.	3E:1	Internal circulation pump stops at "External blocking" signal.
		3E:2	Internal circulation pump starts at "External blocking" signal.
3F:0	Internal circulation pump remains in control mode at "External demand" signal.	3F:1	Internal circulation pump stops at "External demand" signal.
		3F:2	Internal circulation pump starts at "External demand" signal.
4b:0	Function of input 96: Room temperature controller (Vitotrol 100). Only for constant temperature control units.	4b:1	External demand
		4b:2	External blocking
51:0	System with low loss header: The internal circulation pump always starts when there is a heat demand.	51:1	System with low loss header: The internal circulation pump is only started when there is a heat demand if the burner is running. The circulation pump stops when the run-on time ends.
		51:2	System with heating water buffer cylinder: The internal circulation pump is only started when there is a heat demand if the burner is running. The circulation pump stops when the run-on time ends.
52:0	Without flow temperature sensor for low loss header	52:1	With flow temperature sensor for low loss header (automatic recognition).
53:1	Function of terminal 28 of internal extension: DHW circulation pump	53:0	Function of terminal 28: Central fault
		53:2	Function of terminal 28: External heating circuit pump (heating circuit 1)
		53:3	Function of terminal 28: External circulation pump for cylinder heating
54:0	Without solar thermal system	54:1	With Vitosolic 100 (automatic recognition).

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Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
		54:2	With Vitosolic 200 (automatic recognition).
		54:3	No function
		54:4	With solar control module SM1 with auxiliary function, e.g. central heating backup (automatic recognition)
6E:50	No display correction for outside temperature.	6E:0 to 6E:49	Display correction –5 K to –0.1 K
		6E:51 to 6E:100	Display correction +0.1 K to +5 K
76:0	Never adjust		
7E:0	One boiler connected to the flue system (single connection)	7E:1	Several boilers connected to one shared flue system (multiple connections)
80:6	A fault message is issued if a fault is present for at least 30 s.	80:0	Immediate fault message
		80:2 to 80:199	Minimum fault duration until fault message occurs, adjustable from 10 s 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	Never adjust		
88:0	Temperature displayed in °C (Celsius)	88:1	Temperature displayed in °F (Fahrenheit)
8A:175	Never adjust		
8F:0	All controls active	8F:1	All controls disabled
		8F:2	Only standard settings can be controlled
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 (low values) or slowly (high values) when the outside temperature changes; 1 step ≙ 10 min
93:...	Never adjust		
94:0	Without OpenTherm extension	94:1	With OpenTherm extension (automatic recognition)
95:0	Without Vitocom 100 communication interface, type GSM	95:1	With Vitocom 100 communication interface, type GSM (automatic recognition)
96:...	Minimum burner output dependent on the specifications of the boiler coding card	96:... to 96:100	Minimum burner output adjustable from ... to 100 % of the rated heating output
99:0	Never adjust		

▶▶

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
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)

Group 2

Select "2" (see page 46).

Coding

Coding in the delivered condition		Possible change	
01:1	Never adjust		
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 the boiler load and taking into account a threshold value (specified by boiler coding card)
06:...	Maximum limit of the boiler water temperature, specified in °C by boiler coding card	06:20 to 06:...	Maximum limit of boiler water temperature within the ranges specified by the boiler
0d:0	Never adjust		
0E:0	Never adjust		
10:...	Threshold for burner shutdown (only if code 04:2 is set)	10:5 to 10:100	Threshold adjustable from 5 to 100 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 step ≙ 100 h
23:0	No time set for burner service interval	23:1 to 23:24	Time interval adjustable from 1 to 24 months
24:0	**"Service"** not shown on the display	24:1	**"Service"** is shown on the display (address is automatically set and must be manually reset after a service has been carried out)
28:0	No burner interval ignition	28:1 to 28:24	Time interval adjustable from 1 h to 24 h. The burner is force-started for 30 s each time.
2F:0	Venting program/filling program inactive	2F:1	Venting program active
		2F:2	Filling program active
30:1	Internal variable speed circulation pump (set automatically).	30:0	Internal circulation pump not speed-controlled (e.g. temporarily for service)

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Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
31:...	Set speed of the internal circulation pump when operated as boiler circuit pump in %, specified by the boiler coding card	31:0 to 31:100	Set speed adjustable from 0 to 100 %
38:0	Burner control unit status: Operational (no fault)	38:≠0	Burner control unit status: Fault
49:0	No CO limiter installed. Must be set if the CO limiter is to be connected and automatically activated.	49:1	CO limiter with sensor monitoring and fault message active. Is set automatically during commissioning if the CO limiter is connected.
		49:2	CO limiter active If the CO limit is exceeded: ▪ CO limiter sounds an alarm ▪ Alarm signal is not transmitted to the control unit ▪ The burner is not switched off ▪ No fault message to the control unit

Group 3

Select "3" (see page 46).

Note
Coding addresses 05, 09, 19 and 1A can only be set for gas condensing system boilers.

Coding

Coding in the delivered condition		Possible change	
05:0	No DHW cylinder	05:1	One mono mode DHW cylinder
		05:2	One mono mode DHW cylinder
		05:3	One dual mode DHW cylinder
		05:4	Vitocell 100-W, type CVUC-A
		05:5	Do not adjust
		05:6	Vitocell 100-W, 100-B, type CVB, 300 l
		05:7	Vitocell 100-W, 100-B, type CVB, 400 l
		05:8	Vitocell 100-W, 100-B, type CVB, 500 l
		05:9	Vitocell 140-E, type SEIA, 400 l
		05:10	Vitocell 140-E, type SEIA, 600 l
		05:11	Vitocell 140-E, type SEIA, 750 l
		05:12	Vitocell 140-E, type SEIA, 950 l
		05:13	Vitocell 160-E, type SESA, 750 l
		05:14	Vitocell 160-E, type SESA, 950 l
		05:15	Vitocell 340-M, type SVKA, 750 l
		05:16	Vitocell 340-M, type SVKA, 950 l
		05:17	Vitocell 360-M, type SVSA, 750 l
		05:18	Vitocell 360-M, type SVSA, 950 l

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
09:15	DHW cylinder ambient temperature 15 °C	09:1 to 09:40	DHW cylinder ambient temperature adjustable from 1 to 40 °C
19:30	Lower threshold of temperature stratification 30 °C	19:5 to 19:40	Lower threshold of temperature stratification adjustable from 5 to 40 °C
1A:70	Lower threshold of temperature stratification 70 °C	1A:65 to 1A:100	Lower threshold of temperature stratification adjustable from 65 to 100 °C
56:0	Set DHW temperature adjustable from 10 to 60 °C	56:1	Set DHW temperature adjustable from 10 to above 60 °C **Note** *Max. value subject to boiler coding card.* *Observe the maximum permissible DHW temperature.*
57:0	Never adjust		
58:0	Without auxiliary function for DHW heating Only for gas condensing system boilers	58:10 to 58:60	Input of a second set DHW temperature, adjustable from 10 to 60 °C (observe coding addresses "56" and "63")
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
5b:0	DHW cylinder directly connected to the boiler	5b:1	DHW cylinder connected downstream of the low loss header
5E:0	Circulation pump for cylinder heating remains in control mode at "External blocking" signal.	5E:1	Circulation pump for cylinder heating stops at "External blocking" signal.
		5E:2	Circulation pump for cylinder heating starts at "External blocking" signal.
5F:0	Circulation pump for cylinder heating remains in control mode at "External demand" signal.	5F:1	Circulation pump for cylinder heating stops at "External demand" signal.
		5F:2	Circulation pump for cylinder heating starts at "External demand" signal.
60:20	During DHW heating, the boiler water temperature is max. 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
63:0	Without auxiliary function for DHW heating	63:1	Auxiliary function: 1 x daily
		63:2 to 63:14	Every 2 days to every 14 days
		63:15	2 x daily
65:...	Information on the type of diverter valve (never adjust; specified by the boiler coding card)		

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Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
66:0	Diverter valve moves according to operating mode.	66:1	Diverter valve is permanently in the heating position.
67:40	For solar DHW heating: Set DHW temperature 40 °C. Reheating is suppressed above the selected set temperature (boiler only starts as backup if the rise in the cylinder temperature is too low).	67:0 to 67:95	Set DHW temperature adjustable from 0 to 95 °C (limited by boiler-specific parameters)
6C:100	Set speed of internal circulation pump for DHW heating 100 %	6C:0 to 6C:100	Set speed adjustable from 0 to 100 %
6d:0	Draw-off function inactive (only for gas condensing combi boilers)	6d:1 to 6d:15	Draw-off function with a runtime of 1 to 15 min
6F:...	Max. heating output for DHW heating in %; specified by the boiler coding card	6F:0 to 6F:100	Max. heating output for DHW heating adjustable from min. heating output to 100 %

Group 4

Select "4" (see page 46).

Note
The solar group is only displayed if a solar control module, type SM1, is connected.

Coding

Coding in the delivered condition		Possible change	
00:8	Start temperature differential for solar circuit pump 8 K.	00:2 to 00:30	Start temperature differential adjustable from 2 to 30 K.
01:4	Stop temperature differential for solar circuit pump 4 K.	01:1 to 01:29	Stop temperature differential adjustable from 1 to 29 K.
02:0	Solar circuit pump is not speed-controlled.	02:1	Solar circuit pump is speed-controlled with wave packet control.
		02:2	Solar circuit pump is speed-controlled with PWM control.
03:10	Temperature differential for the start of the speed control 10 K.	03:5 to 03:20	Temperature differential adjustable from 5 to 20 K.
04:4	Controller amplification of speed control 4 %/K.	04:1 to 04:10	Controller amplification adjustable from 1 to 10 %/K.
05:10	Min. speed of the solar circuit pump 10 % of the max. speed.	05:2 to 05:100	Min. speed of solar circuit pump adjustable from 2 to 100 %.
06:75	Max. speed of the solar circuit pump 75 % of the max. possible speed.	06:1 to 06:100	Max. speed of solar circuit pump adjustable from 1 to 100 %.
07:0	Interval function of solar circuit pump switched off.	07:1	Interval function of solar circuit pump switched on.

Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
			To capture the collector temperature more accurately, the solar circuit pump periodically starts for a short duration.
08:60	Set DHW temperature (maximum cylinder temperature) 60 °C.	08:10 to 08:90	Set DHW temperature adjustable from 10 to 90 °C.
09:130	Maximum collector temperature (to protect system components) 130 °C.	09:20 to 09:200	Temperature adjustable from 20 to 200 °C.
0A:5	Temperature differential for stagnation time reduction (reduction in the speed of the solar circuit pump to protect system components and heat transfer medium) 5 K.	0A:0	Stagnation time reduction is inactive.
		0A:1 to 0A:40	Temperature differential adjustable from 1 to 40 K.
0b:0	Frost protection function for solar circuit switched off.	0b:1	Frost protection function for solar circuit switched on (not required with Viessmann heat transfer medium).
0C:1	Delta T monitoring switched on. No flow rate captured in the solar circuit, or flow rate too low.	0C:0	Delta T monitoring switched off.
0d:1	Night-time DHW circulation monitoring switched on. Unintentional flow in the solar circuit is captured (e.g. at night).	0d:0	Night-time DHW circulation monitoring switched off.
0E:1	Heat statement in conjunction with Viessmann heat transfer medium.	0E:2	Never adjust
		0E:0	No heat statement
0F:70	Solar circuit flow rate at max. pump speed 7 l/min.	0F:1 to 0F:255	Flow rate adjustable from 0.1 to 25.5 l/min. 1 step ≜ 0.1 l/min
10:0	Target temperature control switched off (see coding address "11").	10:1	Target temperature control switched on.
11:50	Set solar DHW temperature 50 °C. ■ Target temperature control switched on (code "10:1"): Temperature at which the solar heated water is to be stratified into the DHW cylinder. ■ If code "20:9" (heating of two DHW cylinders) is set: When one DHW cylinder reaches its set DHW temperature, the second DHW cylinder is heated.	11:10 to 11:90	The set solar DHW temperature is adjustable from 10 to 90 °C.
12:10	Minimum collector temperature (minimum start temperature for the solar circuit pump) 10 °C.	12:0	No minimum limit active.
		12:1 to 12:90	Minimum collector temperature adjustable from 1 to 90 °C.
20:0	No extended control function active.	20:1	Additional function for DHW heating.
		20:2	Differential temperature control 2.
		20:3	Differential temperature control 2 and auxiliary function.

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Coding level 2 (cont.)

Coding in the delivered condition		Possible change	
		20:4	Differential temperature control 2 for central heating backup.
		20:5	Thermostat function.
		20:6	Thermostat function and auxiliary function.
		20:7	Solar heating via external heat exchanger without additional temperature sensor.
		20:8	Solar heating via external heat exchanger with additional temperature sensor.
		20:9	Solar heating of two DHW cylinders.
22:8	Start temperature differential with central heating backup (code "20:4" must be set) 8 K.	22:2 to 22:30	Start temperature differential adjustable from 2 to 30 K.
23:4	Stop temperature differential with central heating backup (code "20:4" must be set) 4 K.	23:2 to 23:30	Stop temperature differential adjustable from 1 to 29 K.
24:40	Start temperature for thermostat function (code "20:5" or "20:6" must be selected) 40 °C.	24:0 to 24:100	Start temperature for thermostat function adjustable from 0 to 100 K.
25:50	Stop temperature for thermostat function (code "20:5" or "20:6" must be selected) 50 °C.	25:0 to 25:100	Stop temperature for thermostat function adjustable from 0 to 100 K.
26:1	Priority for DHW cylinder 1 **with** cyclical heating. (Code "20:9" must be set).	26:0	Priority for DHW cylinder 1 **without** cyclical heating.
		26:2	Priority for DHW cylinder 2 **without** cyclical heating.
		26:3	Priority for DHW cylinder 2 **with** cyclical heating.
		26:4	Cyclical heating without priority for either DHW cylinder.
27:15	Cyclical heating time 15 min. Once the DHW cylinder with priority is heated up, the DHW cylinder without priority is heated for a maximum duration equal to the set cyclical heating time.	27:5 to 27:60	Cyclical heating time is adjustable from 5 to 60 min.
28:3	Cyclical pause time 3 min. After the set cyclical heating time for the DHW cylinder without priority has expired, the rise in collector temperature is captured during the cyclical pause time.	28:1 to 28:60	Cyclical pause time adjustable from 1 to 60 min.

Group 5

Select "5" (see page 46).

Coding level 2 (cont.)

Coding

Coding in the delivered condition		Possible change	
C5:20	Electronic minimum flow temperature limit 20 °C	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 set to 74 °C	C6:10 to C6:127	Maximum limit adjustable from 10 to 127 °C (limited by boiler-specific parameters)
d6:0	Heating circuit pump remains in control mode at "External blocking" signal	d6:1	Heating circuit pump stops at "External blocking" signal (subject to coding addresses 3A, 3b and 3C)
		d6:2	Heating circuit pump starts at "External blocking" signal (subject to coding addresses 3A, 3b and 3C)
d7:0	Heating circuit pump remains in control mode at "External demand" signal	d7:1	Heating circuit pump stops at "External demand" signal (depending on coding addresses "3A", "3b" and "3C")
		d7:2	Heating circuit pump starts at "External demand" signal (depending on coding addresses "3A", "3b" and "3C")
F5:12	Run-on time of the internal circulation pump in heating mode: 12 min	F5:0	No run-on time for the internal circulation pump
		F5:1 to F5:20	Run-on time of the internal circulation pump adjustable from 1 to 20 min
F6:25	In "Only DHW" operating mode, the internal circulation pump is permanently on (only for constant temperature control units)	F6:0	In "Only DHW" operating mode, the internal circulation pump is permanently off
		F6:1 to F6:24	In "Only DHW" operating mode, the internal circulation pump is started 1 to 24 times per day for 10 min each time.
F7:25	In "Standby mode", the internal circulation pump is permanently on (only for constant temperature control units)	F7:0	In "Standby mode", the internal circulation pump is permanently off
		F7:1 to F7:24	In "Standby mode", the internal circulation pump is started 1 to 24 times per day for 10 min each time.

Service menu

Calling up the service menu

1. Press **OK** and ▤! simultaneously for approx. 4 s.
   "⚲" flashes on the display.
2. Select required function. See following pages.

Exiting the service menu

1. Select **"Serv"** ⑦ with ▶.
2. Confirm with **OK**.
   "OFF" flashes.
3. Confirm with **OK**.

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

Diagnosis

Operating data

Calling up operating data

- Operating data can be called up in the **"i"** menu.
- For further information on operating data, see chapter "Brief scan".

Calling up operating data

Service menu:
1. Press **OK** and ▤! simultaneously for approx. 4 s.
2. Select the required information with ▲/▼.

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

Resetting operating data

Saved operating data (e.g. hours run) can be reset to **"0"**.

Service menu:
1. Press **OK** and ▤! simultaneously for approx. 4 s.
2. Select the required information with ▲/▼.
3. Confirm with **OK**, **"⊬"** flashes.
4. Confirm with **OK**, the value is reset.

Brief scan

Service menu:
1. Press **OK** and ▤! simultaneously for approx. 4 s.
   "⚲" flashes on the display.
2. Confirm with **OK**.

3. Select the required scan with ▲/▼. For example, **"A"** for "Max. output" (see following table):
4. Confirm selected scan with **OK**.

For explanations of individual scans, see the following table:

Brief scan	Shown on display					
🔾	🔾	🔾	🔾	🔾	🔾	
0		System scheme	Software version Control unit			Software version Programming unit
1			Adjusted outside temperature			
3			Set boiler water temperature			
4			Common demand temperature			
5			Set cylinder temperature			
6		Number of KM-BUS subscribers		Number of LON subscribers		

Brief scan (cont.)

Brief scan	Shown on display				
7	SNVT configuration 0: Auto 1: Tool	Software version Communication coprocessor		Software version LON communication module	
8		Subnet address/system number		Node address	
9		Burner control unit type		Appliance type	
A	Diverter valve status 1: Heating 2: Central position 3: DHW heating	Flow switch status 0: OFF 1: Active	Max. heating output in %		
b		Boiler coding card (hexadecimal)			
C		Version Appliance		Version Burner control unit	
d				Variable speed pump 1: Wilo 2: Grundfos 3: Ascoli	Software version Variable speed pump 0: No variable speed pump
E ①	Software version Solar control module, type SM1	Software version Burner control unit			
F ①	Code 53 setting	Internal details for calibration			
AM1 extension					
F ②	Software version	Output A1 configuration (value corresponds to code 33 setting)	Output A1 switching state 0: OFF 1: ON	Output A2 configuration (value corresponds to code 34 setting)	Output A2 switching state 0: OFF 1: ON
EA1 extension					
F ③	Output 157 configuration (value corresponds to code 36 setting in group 1 **"General"**)	Output 157 switching state 0: OFF 1: ON	Input DE1 switching state 0: Open 1: Closed	Input DE2 switching state 0: Open 1: Closed	Input DE3 switching state 0: Open 1: Closed
F ④	Software version		External hook-up 0 - 10 V Display in %		

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Brief scan (cont.)

Brief scan	Shown on display				
▯	▯	▯	▯	▯	▯
	Solar control module SM1				
F ⑤	Stagnation time of the solar thermal system in h				
F ⑥	Night-time DHW circulation, solar thermal system (number)				
F ⑦	Monitoring of differential temperature, solar thermal system				
F ⑧				Reheating suppression 0: Inactive 1: Active	Output 22 switching state 0: OFF 1: ON
	OpenTherm extension (if installed)				
F ⑨	Software version	DHW heating status	External hook-up 0 - 10 V Display in %		

Checking outputs (actuator test)

1. Press **OK** and ▤ simultaneously for approx. 4 s.
   "⌕" flashes on the display.
2. Select **"⊐"** with ▶ and confirm with **OK**.
3. Select required actuator (output) with ▲/▼ (see following table):
4. Confirm selected actuator with **OK**.
   The display shows the number for the activated actuator and **"ON"**.

The following actuators (relay outputs) can be controlled subject to system design:

Display	Explanation
0	All actuators are off
1	Burner operates at minimum output; internal pump starts
2	Burner operates at maximum output; internal pump starts
3	Internal output 20 (int. pump) is active
4	Diverter valve set to heating mode
5	Diverter valve in central position (filling/draining)
6	Diverter valve set to DHW heating
10	Internal extension output active
15	Solar circuit pump output 24 on solar control module SM1 active
16	Solar circuit pump output on solar control module SM1 switched to minimum speed
17	Solar circuit pump output on solar control module SM1 switched to maximum speed
18	Output 22 on solar control module SM1 active
19	Contact P - S at plug 157 of EA1 extension closed
20	Output A1 at AM1 extension active
21	Output A2 at AM1 extension active
22	Internal output 28 active

Troubleshooting

Fault display

Constant temperature control unit

In the event of a fault, red fault indicator Ⓐ flashes. The 2-digit fault code and (subject to the type of fault) "⚠" or "♨" flash on the programming unit display.
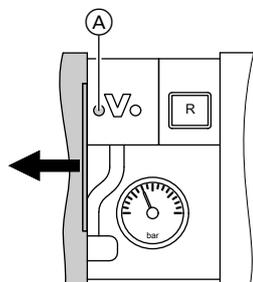

Fig. 29

Other current faults can be displayed with ▲/▼. For an explanation of the fault codes, see the following pages.

Fig. 30   Example: Fault message "50"

Acknowledging a fault

Press **OK**. The default display reappears on the display screen.

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

Hold down **OK** for approx. 4 s.
The 10 most recent faults (including those remedied) are saved and can be called up.

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.

1. Press **OK** and ☰ simultaneously for approx. 4 s.

2. Select "⚠" and enable fault history with **OK**.

3. Select fault messages with ▲/▼.

Deleting the fault history

While the list is displayed, press **OK** until ✕ flashes. Confirm with **OK**.

Fault codes

Fault code displayed	System characteristics	Cause	Measures
10	Regulates as if the outside temperature were 0 °C.	Short circuit, outside temperature sensor	Check outside temperature sensor (see page 73)
18	Regulates as if the outside temperature were 0 °C.	Lead break, outside temperature sensor	Check outside temperature sensor (see page 73)
19	Regulates as if the outside temperature were 0 °C.	Communication interruption, wireless outside temperature sensor	Check wireless connection (place wireless outside temperature sensor close to the wireless base station). Forget outside temperature sensor, then pair again. 📖 Wireless base station installation and service instructions Replace wireless outside temperature sensor.

Diagnosis

Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
20	Regulates without flow temperature sensor (low loss header).	Short circuit, flow temperature sensor	Check low loss header sensor (see page 74)
28	Regulates without flow temperature sensor (low loss header).	Lead break, flow temperature sensor	Check low loss header sensor (see page 74). If no low loss header sensor is connected, set code 52:0.
30	Burner blocked	Short circuit, boiler water temperature sensor	Check the boiler water temperature sensor (see page 74).
38	Burner blocked	Lead break, boiler water temperature sensor	Check the boiler water temperature sensor (see page 74).
50	Type B2HB only: No DHW heating by the boiler	Short circuit, cylinder temperature sensor or comfort sensor	Check cylinder temperature sensor (see page 74) or comfort sensor (see page 75)
51	No DHW heating by the boiler	Short circuit, outlet temperature sensor	Check the sensor (see page 75).
58	Type B2HB only: No DHW heating by the boiler	Lead break, cylinder temperature sensor or comfort sensor	Check cylinder temperature sensor (see page 74) or comfort sensor (see page 75).
59	No DHW heating by the boiler	Lead break, outlet temperature sensor	Check the sensor (see page 75).
70	Burner blocked	Gas pressure switch prevents burner start.	▪ Check gas supply (gas pressure). ▪ If installed: Check gas pressure switch for correct function. If necessary, disconnect plug 111 from the control unit and check whether the burner starts.
71	Burner blocked	Mains voltage too low	Check the power supply.
73	Burner blocked	Feedback input from internal H1 extension prevents burner start.	Check that internal H1 extension and any devices connected to it are correctly connected and working properly (internal: Plug 53/96 power interruption)
74	Burner blocked or in a fault state	Temperature limiter earth fault	Check temperature limiter, connecting cables and plug-in connection for contact to earthed components. Remove contact if necessary. Press reset button **R**.
75	Burner blocked or in a fault state	Internal H1/H2 extension earth fault	Check internal H1/H2 extension, connecting cables and plug-in connection for contact to earthed components. Remove contact if necessary. Press reset button **R**.
76	Burner blocked or in a fault state	Gas pressure switch earth fault	Check gas pressure switch, connecting cables and plug-in connection for contact to earthed components. Remove contact if necessary. Press reset button **R**.

Diagnosis

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Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
80	Burner in a fault state	Insufficient gas supply	Test static gas pressure and gas flow pressure. Check that on-site gas line and gas flow switch are correctly sized. ***Note*** *If the building pressure regulator has a leak, you may notice rising pressure when the burner is idle. The gas flow switch may respond if the system is restarted.*
81	Burner in a fault state	No ignition spark	Check connecting cables and leads from ignition module and ignition electrode (see page 35). Check for a voltage of 230 V~ at plug 54 on the ignition module during the ignition phase. Check whether the ignition electrode insulation is damaged.
82	Burner in a fault state	Flame signal is not present or insufficient at burner start.	Check the ionisation electrode and connecting lead (see page 35). Check plug-in connections for loose contacts. ***Note*** *Deposits on the electrodes indicate foreign bodies in the ventilation air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).*
83	Burner in a fault state	Flame signal is already present at burner start.	Check system for condensate backup. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* Check ionisation and ignition electrode for damage and earth faults (e.g. contact with the thermal insulation ring). Check connecting cables from ionisation and ignition electrode. Replace control unit if fault is permanent. Press reset button **R**.

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Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
84	Burner in a fault state	CO limit within appliance exceeded	Check entire flue gas path for the following: ▪ Flue gas recirculation ▪ Leaks ▪ Flue gas back pressure caused by water pocket (if flue system fall is insufficient) ▪ Constrictions ▪ Blockages Repair flue system if necessary. Press reset button **R**.
85	Burner in a fault state	Gas supply insufficient during calibration	Test static gas pressure and gas flow pressure. Check that on-site gas line and gas flow switch are correctly sized. Visually inspect gas train inlet and strainer on the inlet side for contamination. *Note* *Contamination from a brazed gas line, for example, can block up the gas train strainer on the inlet side.* Press reset button **R**.
90	Control mode	Short circuit, temperature sensor 7	Check sensor 7 on solar control module.
91	Control mode	Short circuit, temperature sensor 10	Check sensor 10 on solar control module.
92	No solar DHW heating	Short circuit, collector temperature sensor	Check temperature sensor 6 on solar control module or sensor on the Vitosolic.
93	Control mode	Short circuit, collector return temperature sensor	Check temperature sensor at terminal S3 on the Vitosolic 100.
94	No solar DHW heating	Short circuit, cylinder temperature sensor	Check temperature sensor 5 on solar control module or sensor on the Vitosolic.
95	Burner blocked	CO limit exceeded	⚠ **Danger** An increased concentration of carbon monoxide can cause potentially fatal carbon monoxide poisoning. Observe the safety instructions at the beginning of this manual. Determine the cause of the increased CO level. Remedy the fault. Press **Test** on the CO limiter. The alarm is switched off. The burner starts again once the CO level is below the CO limit.

▶▶

Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
96	Burner blocked	CO limiter sensor fault	Replace the CO limiter. If the system is to be temporarily operated without a CO limiter: ▪ Disconnect plug X21 from the control unit. ▪ Set parameter 49:0.
98	Control mode	Lead break, temperature sensor 7	Check sensor 7 on solar control module.
99	Control mode	Lead break, temperature sensor 10	Check sensor 10 on solar control module.
9A	No solar DHW heating	Lead break, collector temperature sensor	Check temperature sensor 6 on solar control module or sensor on the Vitosolic.
9b	Control mode	Lead break, collector return temperature sensor	Check temperature sensor at terminal S3 on the Vitosolic 100.
9C	No solar DHW heating	Lead break, cylinder temperature sensor	Check temperature sensor 5 on solar control module or sensor on the Vitosolic.
9E	Control mode	No or inadequate flow rate in collector circuit, or temperature limiter has responded.	Check solar circuit pump and solar circuit. Acknowledge fault message.
9F	Control mode	Solar control module or Vitosolic fault	Replace solar control module or Vitosolic
A3	Burner blocked.	Flue gas temperature sensor incorrectly positioned.	Fit flue gas temperature sensor correctly (see page 76).
A7	Control mode as per delivered condition	Programming unit faulty	Replace the programming unit.
A9	Burner blocked.	Internal circulation pump blocked	Check circulation pump.
B0	Burner in a fault state	Short circuit, flue gas temperature sensor	Check flue gas temperature sensor and connecting lead.
b1	Control mode as per delivered condition	Communication error, programming unit	Check connections; replace programming unit if necessary.
b5	Control mode as per delivered condition	Internal fault	Replace control unit.
b7	Burner blocked	Boiler coding card fault	Plug in boiler coding card or replace if faulty.
B8	Burner in a fault state	Lead break, flue gas temperature sensor	Check flue gas temperature sensor and connecting lead.
bF	Control mode	Incorrect LON communication module	LON communication module.
C1	Control mode	Communication error, EA1 extension	Check connections.
C2	Control mode	Communication error, solar control module or Vitosolic	Check solar control module or Vitosolic
C3	Control mode	Communication error, AM1 extension	Check connections.

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Diagnosis

Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
C4	Control mode	Communication error, OpenTherm extension	Check OpenTherm extension.
C5	Control mode, max. pump speed	Communication error, internal variable speed pump	Check the setting of coding address "30" in the **"Boiler"** group (weather-compensated control units) or in group 2 (constant temperature control units).
Cd	Control mode	Communication error Vitocom 100, type GSM (KM-BUS)	Check Vitocom 100, type GSM connections and coding address "95" in the **"General"** group (weather-compensated control units) or in group 1 (constant temperature control units).
CF	Control mode	Communication error, LON communication module	Replace LON communication module.
d3	Burner in a fault state or blocked.	Communication error, fan unit	Check the connecting cable to the fan unit. Press reset button **R**. If the fault recurs, replace the fan unit.
d4	Control mode Burner is operating with a limited modulation range.	No air flow detected in fan unit.	Check the mass flow sensor at the fan unit. Check the flue system for flue gas back pressure.
d5	Burner in a fault state.	Fan blocked	Press reset button **R**. Check free movement of the impeller. Replace the fan unit if required.
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 fault at EA1 extension	Remedy fault at appliance concerned.
E0	Control mode	External LON subscriber error	Check connections and LON subscribers.

Diagnosis

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Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
E1	Burner in a fault state	Ionisation current too high during calibration	Check gap between ionisation electrode and burner gauze assembly (see page 35). Check whether there is a lot of dust in the ventilation air (e.g. from construction work). *Note* *Deposits on the electrodes indicate foreign bodies in the ventilation air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney). If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.*
E2	Burner in a fault state	No calibration as flow rate too low	Ensure adequate heat transfer. Press reset button **R**.
E3	Burner in a fault state	Heat transfer too low during calibration Temperature limiter has shut down.	Ensure adequate heat transfer. Check circulation pump for faults, scale or blockages. Press reset button **R**.
E4	Burner blocked	24 V power supply fault	Replace control unit.
E5	Burner blocked or in a fault state	Flame amplifier fault	Press reset button **R**. Replace control unit if fault is permanent.
E7	Burner in a fault state	Ionisation current too low during calibration	Check the ionisation electrode and connecting lead (see page 35). Check plug-in connections for loose contacts. Check flue system; remove flue gas recirculation if required. Press reset button **R**. *Note* *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney). If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.*

Diagnosis

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Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
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 the allocation of the gas type. Check ionisation electrode for the following: ▪ Distance to burner gauze assembly (see page 35) ▪ Contamination on electrode Press reset button **R**.
E9	Burner in a fault state	Repeated flame loss during calibration	Check the ionisation electrode and connecting lead (see page 35). Check plug-in connections for loose contacts. Check flue system; remove flue gas recirculation if required. Check system for condensate backup. Visually inspect gas train inlet and strainer on the inlet side for contamination. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* ***Note*** *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.* Press reset button **R**.

Diagnosis

►►

Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
EA	Burner in a fault state	Ionisation current too low during calibration. Difference compared to previous value not plausible.	Check ionisation electrode and connecting cable. Check plug-in connections for loose contacts. Check whether there is a lot of dust in the ventilation air (e.g. from construction work). Check flue system; remove flue gas recirculation if required. Check system for condensate backup. *Note* *To prevent water damage, detach fan unit before removing the burner.* Replace coding card if fault is permanent. *Note* *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.* Press reset button **R**.

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Diagnosis

Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
Eb	Burner in a fault state	Process fault: Shutdown during calibration.	▪ Check system for condensate backup. *Note* *To prevent water damage, detach fan unit before removing the burner.* Remove the condensate backup. Press reset button **R**. ▪ Check the gas supply pressure. Check gas train strainer on the inlet side for contamination. ▪ Check ionisation electrode for contamination. Check gap between ionisation electrode and burner gauze assembly (see page 35). Press reset button **R**. ▪ Check flue system; remove flue gas recirculation if required. Press reset button **R**. ▪ Check that internal H1 extension and any devices connected to it are correctly connected and working properly (internal: Plug 53/96 power interruption) ▪ Check the connecting cable to the fan unit. Check impeller for ease of operation.
EC	Burner in a fault state	Parameter error during calibration	Press reset button **R**. or Replace boiler coding card and press reset button **R**.
Ed	Burner in a fault state	Internal fault at control unit	Press reset button **R**. Replace control unit if fault is permanent.
EE	Burner in a fault state	Flame signal is not present or insufficient at burner start.	▪ Check gas supply (gas pressure and gas flow switch). ▪ Check gas train. ▪ Check system for condensate backup. *Note* *To prevent water damage, detach fan unit before removing the burner.* ▪ Check ionisation electrode and connecting cable. Check ignition: ▪ Connecting cables to ignition module and ignition electrode ▪ Ignition electrode gap and contamination (see page 35). ▪ Check ignition electrode for broken insulation. Press reset button **R**.

Diagnosis

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Fault codes (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 for the following: ▪ Distance to burner gauze assembly (see page 35) ▪ Contamination on electrode Press reset button **R**.
F0	Burner blocked or in a fault state	Internal fault	Press reset button **R**. Replace control unit if fault is permanent.
F1	Burner in a fault state	Flue gas temperature limiter has responded.	Check heating system fill level. Vent the system. Press reset button **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 button **R**.
F3	Burner in a fault state	Flame signal is already present at burner start.	Check ionisation electrode and connecting cable. Check system for condensate backup. *Note* *To prevent water damage, detach fan unit before removing the burner.* Press reset button **R**.
F8	Burner in a fault state	Fuel valve or modulation valve will not close.	Check the gas train and replace if required. Press reset button **R**.
F9	Burner in a fault state	Fan speed too low	Check fan, fan connecting cables and fan power supply. Press reset button **R**.
FA	Burner in a fault state	Fan idle state or set speed not reached	Check fan, check connecting cables to fan. Press reset button **R**.
Fb	Burner in a fault state	Flame loss in the stabilisation or operating phase	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode for the following: ▪ Distance to burner gauze assembly (see page 35) ▪ Contamination on electrode Press reset button **R**.

Diagnosis

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Fault codes (cont.)

Fault code displayed	System characteristics	Cause	Measures
FC	Burner in a fault state	Gas train faulty, modulation valve control faulty or flue gas path blocked	Check connecting cables to the gas train for damage. Check gas train. Check flue system for blockages or constrictions. Press reset button **R**.
Fd	Burner in a fault state	Burner control unit fault	Check ignition electrode, ionisation electrode and connecting cables. Check whether a strong interference (EMC) field exists near the appliance. Press reset button **R**. If the fault occurs sporadically, replace the coding card. Replace control unit if fault is permanent.
FE	Burner blocked or in a fault state	EEPROM error, PCB	Press reset button **R**. Replace control unit if fault persists.
FE	Burner in a fault state and additional fault B7 is displayed.	Boiler coding card missing.	Insert the boiler coding card. Press reset button **R**. Replace control unit if fault persists.
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.

Repairs

! **Please note**
Residual water will escape when the boiler or one of the following components is fitted or removed:
- Water-filled pipework
- Circulation pumps
- Plate heat exchanger
- Components fitted in the heating water or DHW circuit

Water ingress can result in damage to other components.

Protect the following components against ingress of water:
- Control unit (in particular in the service position)
- Electrical components
- Plug-in connections
- Cables and leads

Shutting down the boiler

1. Switch off the power supply.

2. Shut off the gas supply.

Diagnosis

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Repairs (cont.)

3. If the boiler needs to be removed:
- Disconnect the balanced flue system.
- Drain the boiler on the heating water and DHW sides.
- Disconnect the on-site cables/leads.

Removing the boiler for servicing
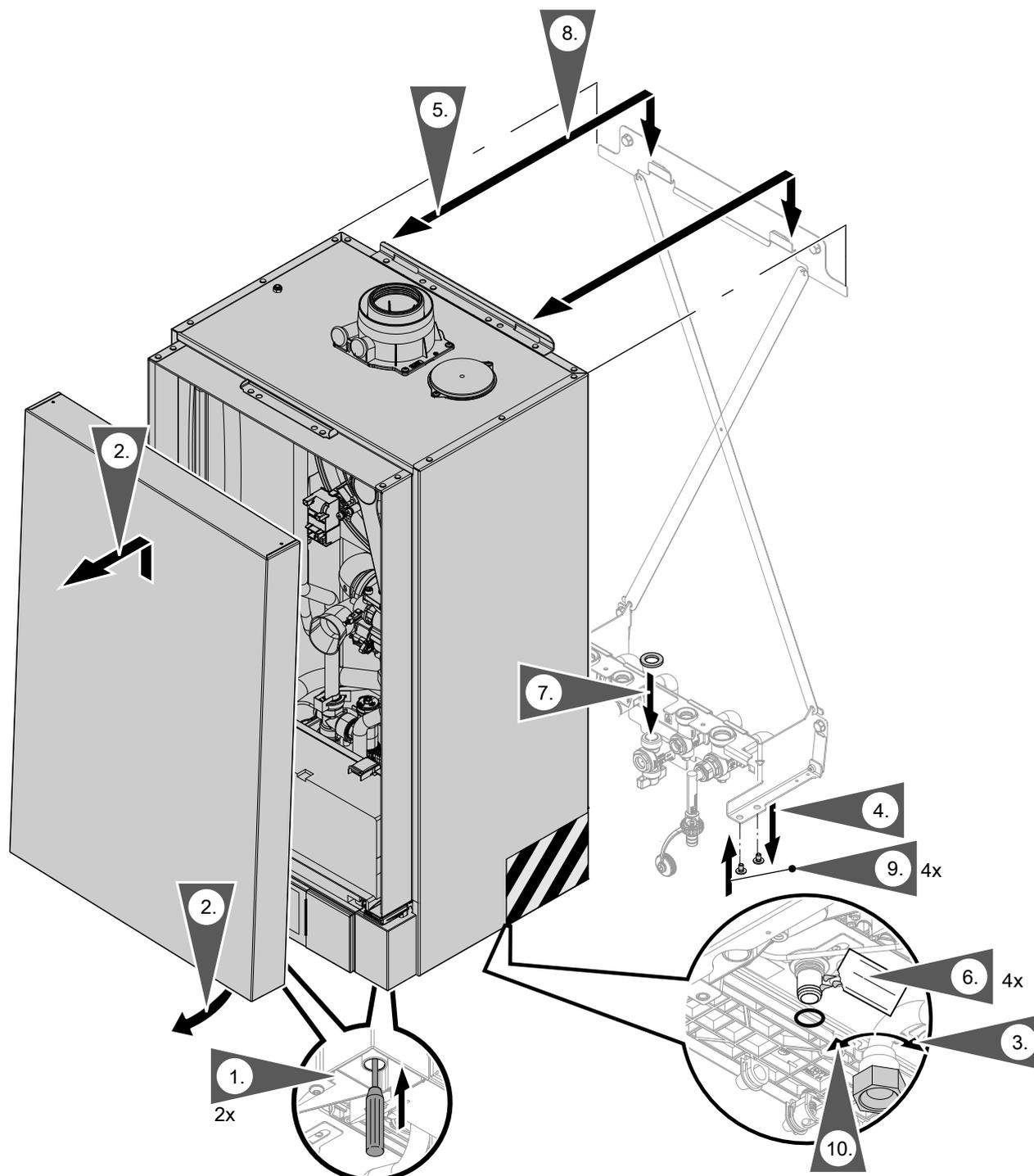
Fig. 31

1. Unlock the front panel on the underside (push in) using a screwdriver.

2. Swivel the front panel forwards slightly and lift away upwards.

3. Loosen the union nut on the gas pipe.

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Repairs (cont.)

4. Remove the 4 screws from the fitting assembly.

5. Raise the boiler so that the connections are separated and remove from the wall.

6. Before mounting the boiler, insert new O-rings. Lubricate the O-rings with the valve grease supplied.

7. Insert new flat gasket for the gas shut-off valve.

8. ⚠ **Danger**
Avoid injury to the hands.
Do not grip the boiler underneath at the back.

Fitting the boiler:
- Position the boiler centrally in front of the wall mounting bracket. Use the outer ends of the wall mounting bracket to line up the boiler.
- Lower the boiler vertically into position.
- The supporting surface of the boiler must rest on the fitting assembly.

9. Insert 4 screws into the fitting assembly from below.

> **!** **Please note**
> Tighten screws enough
> to ensure the components do not suffer damage and will function correctly.
> **Never** tighten the screws with a cordless screwdriver.

10. Tighten the union nut on the gas pipe.

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

Checking the outside temperature sensor
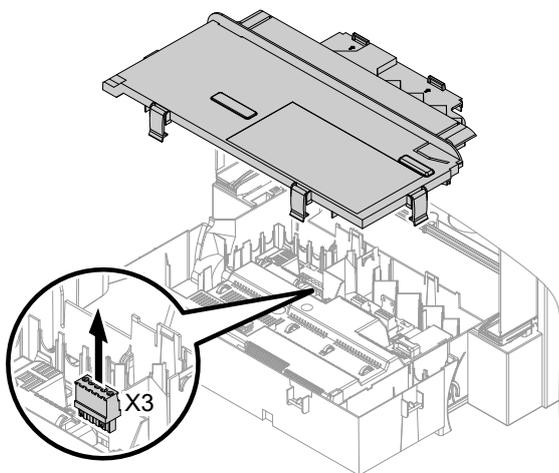
Fig. 32

1. Disconnect 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.
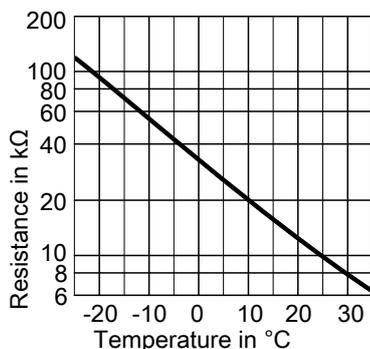
Fig. 33   Sensor type: NTC 10 kΩ

3. In the event of severe deviation from the curve, 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.

Diagnosis

Repairs (cont.)

Checking the boiler water temperature sensor, cylinder temperature sensor or flow temperature sensor for low loss header
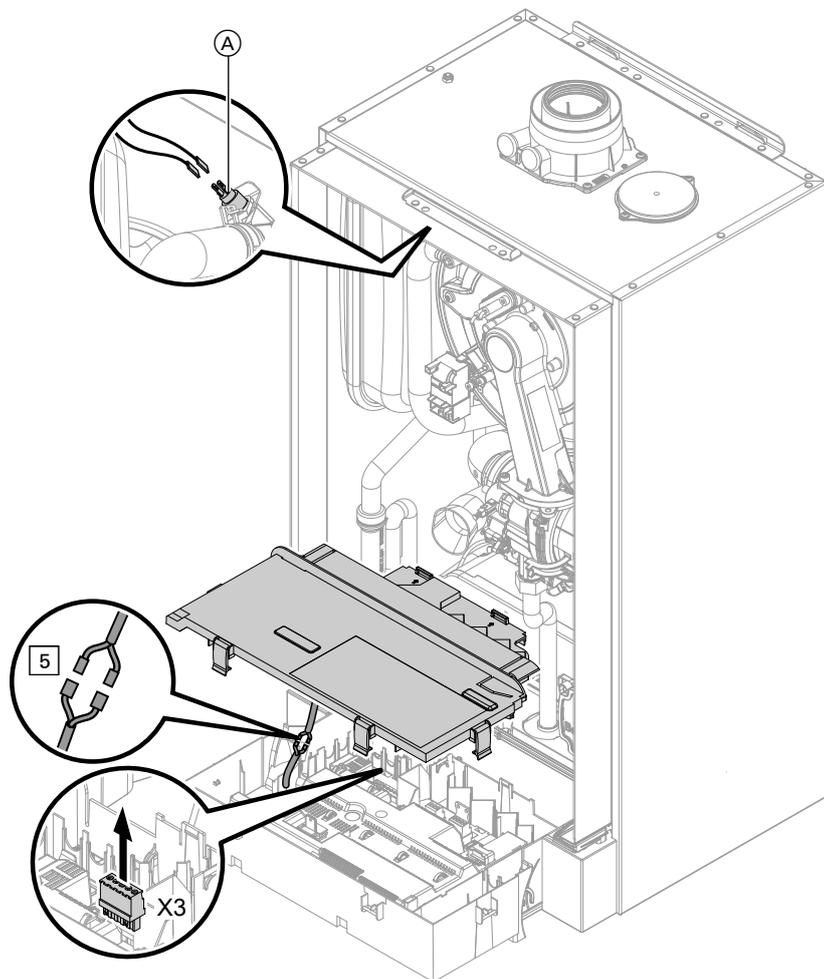
Fig. 34
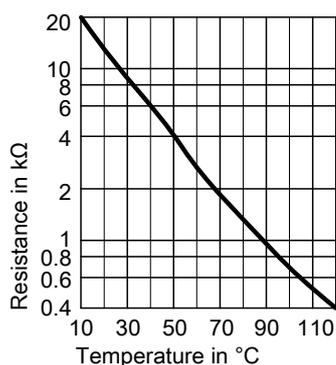
Fig. 35   Sensor type: NTC 10 kΩ

1. ■ **Boiler water temperature sensor**
    Disconnect leads from boiler water temperature sensor Ⓐ and check the resistance.
    ■ **Cylinder temperature sensor**
    Disconnect plug 5 from the cable harness at the control unit and check the resistance.
    ■ **Flow temperature sensor, low loss header**
    Disconnect plug "X3" at the control unit and check the resistance across terminals "X3.4" and "X3.5".

2. Check the sensor resistance and compare it 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.

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Repairs (cont.)

Checking the outlet temperature sensor or comfort sensor (only for gas condensing combi boilers)

Fig. 36

Fig. 37   Sensor type: NTC 10 kΩ
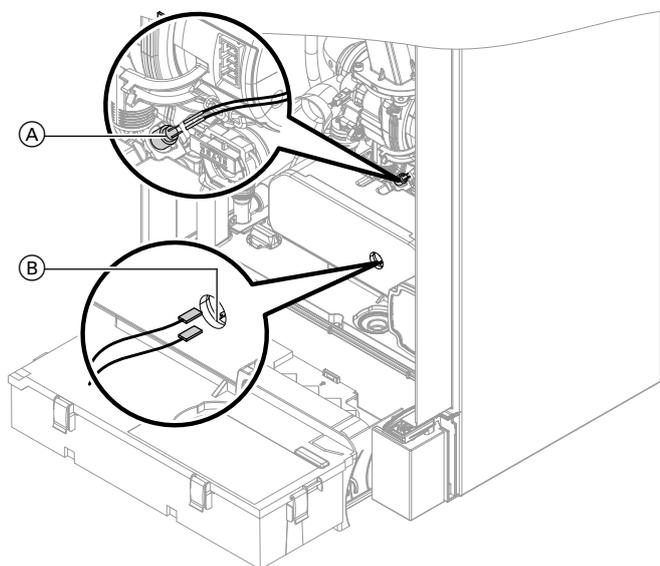
1. Disconnect the leads from outlet temperature sensor Ⓐ or comfort sensor Ⓑ.

2. Check sensor resistance and compare it to the curve.

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

   Note
   Water may leak out when replacing the outlet temperature sensor. Close the cold water shut-off valve. Drain the DHW line and the plate heat exchanger (on the DHW side).

Diagnosis

Repairs (cont.)

Checking the plate heat exchanger
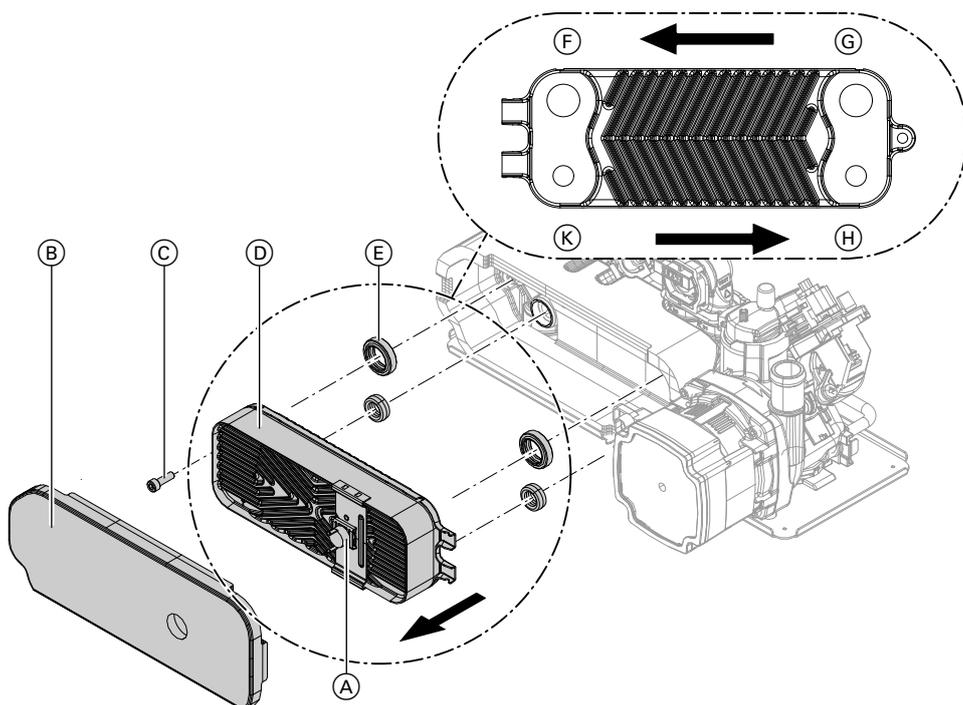
Fig. 38

F Heating water return
G Heating water flow

H DHW
K Cold water

1. Shut off and drain the boiler on the heating water and DHW sides.

2. Disconnect the leads from temperature sensor Ⓐ.

3. Remove thermal insulation Ⓑ from the plate heat exchanger.

4. Undo screw Ⓒ and remove plate heat exchanger Ⓓ.

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

5. Remove gaskets Ⓔ and dispose of them.

6. Check connections on the DHW side for scaling. If necessary, clean or replace the plate heat exchanger.

7. Check connections on the heating water side for soiling. If necessary, clean or replace the plate heat exchanger.

8. Install plate heat exchanger in reverse order using new gaskets Ⓔ.

   Note
   During installation, ensure the connections are positioned and the gaskets seated correctly.

   ! **Please note**
   Tighten screw enough
   to ensure the components do not suffer damage and will function correctly.

Checking the flue gas temperature sensor

The flue gas temperature sensor locks out the boiler if the permissible flue gas temperature is exceeded. After the flue system has cooled down, press reset button **R** to cancel the lock.

Repairs (cont.)
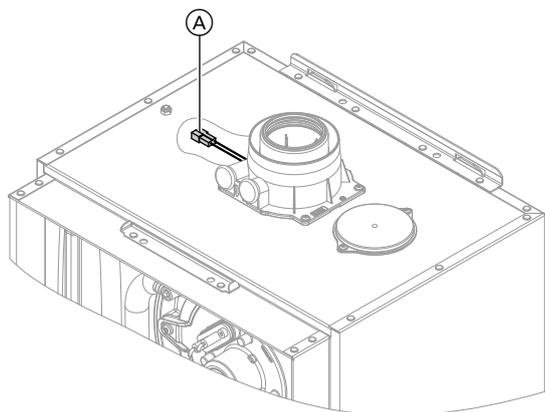
Fig. 39
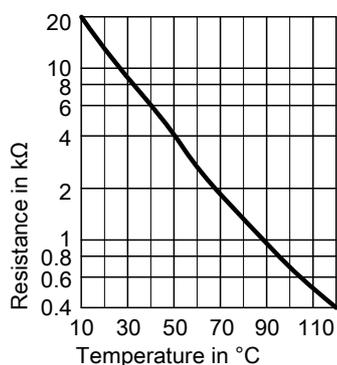
Fig. 40   Sensor type: NTC 10 kΩ

1. Disconnect the leads from flue gas temperature sensor (A).

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.

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:

Diagnosis

Repairs (cont.)
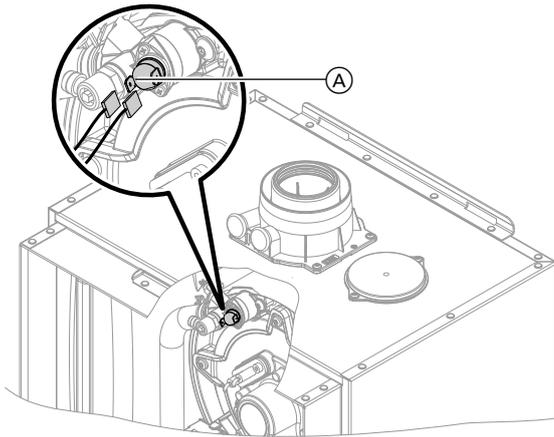
Fig. 41

1. Disconnect the 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 button **R** on the control unit.

Checking the fuse
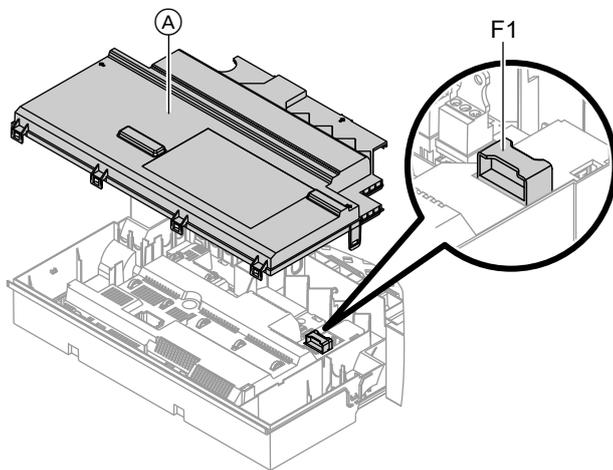
Fig. 42

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).

⚠ **Danger**
Incorrect or improperly fitted fuses can lead to an increased risk of fire.
- Insert fuses without using any force. Position fuses correctly.
- Only use structurally identical types with the specified response characteristics.

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Repairs (cont.)

Parts lists

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)

Overview of assemblies (cont.)

Serial no. 7570787, 7570788, 7570790, 7570792
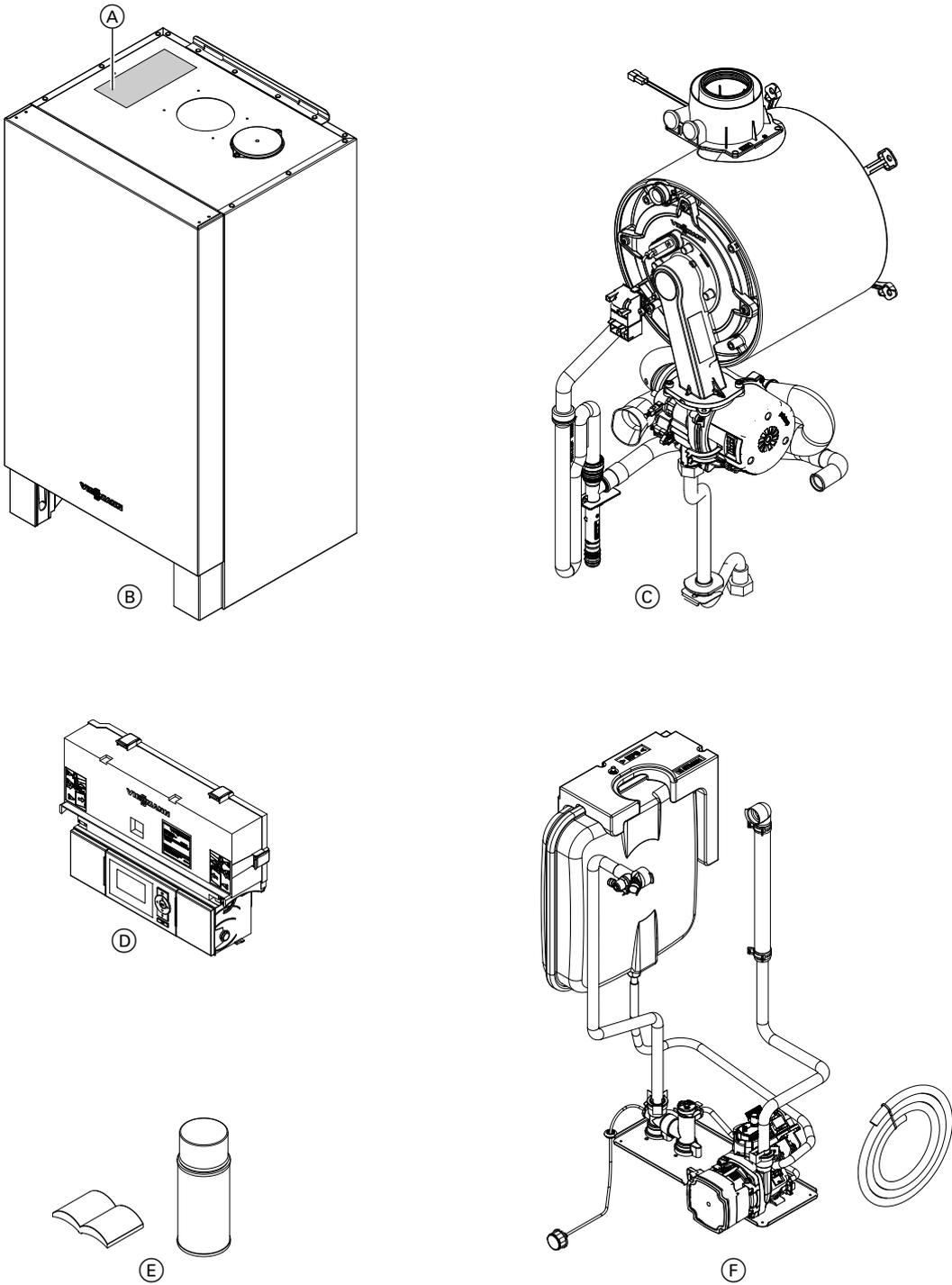
Fig. 43

Ⓐ Type plate
Ⓑ Casing assembly
Ⓒ Heat cell assembly
with burner

Ⓓ Control unit assembly
Ⓔ Miscellaneous
Ⓕ Hydraulic assembly
with Aqua-plate

Overview of assemblies (cont.)

Serial no. 7570789, 7570791, 7570793
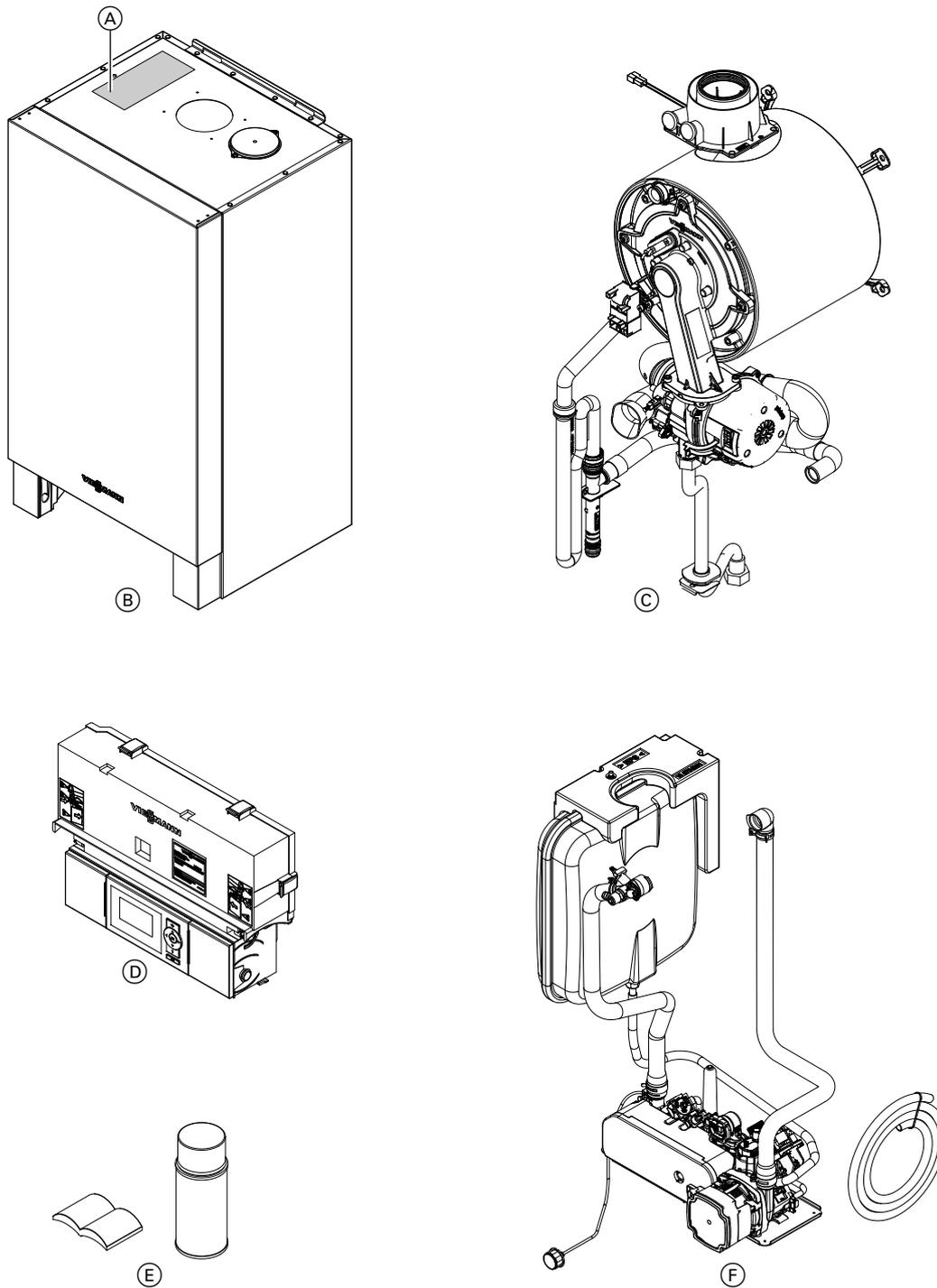
Fig. 44

Ⓐ Type plate
Ⓑ Casing assembly
Ⓒ Heat cell assembly
with burner

Ⓓ Control unit assembly
Ⓔ Miscellaneous
Ⓕ Hydraulic assembly
with Aqua-plate

Overview of assemblies (cont.)

Components

▶▶

Casing assembly

Fig. 45

5792013
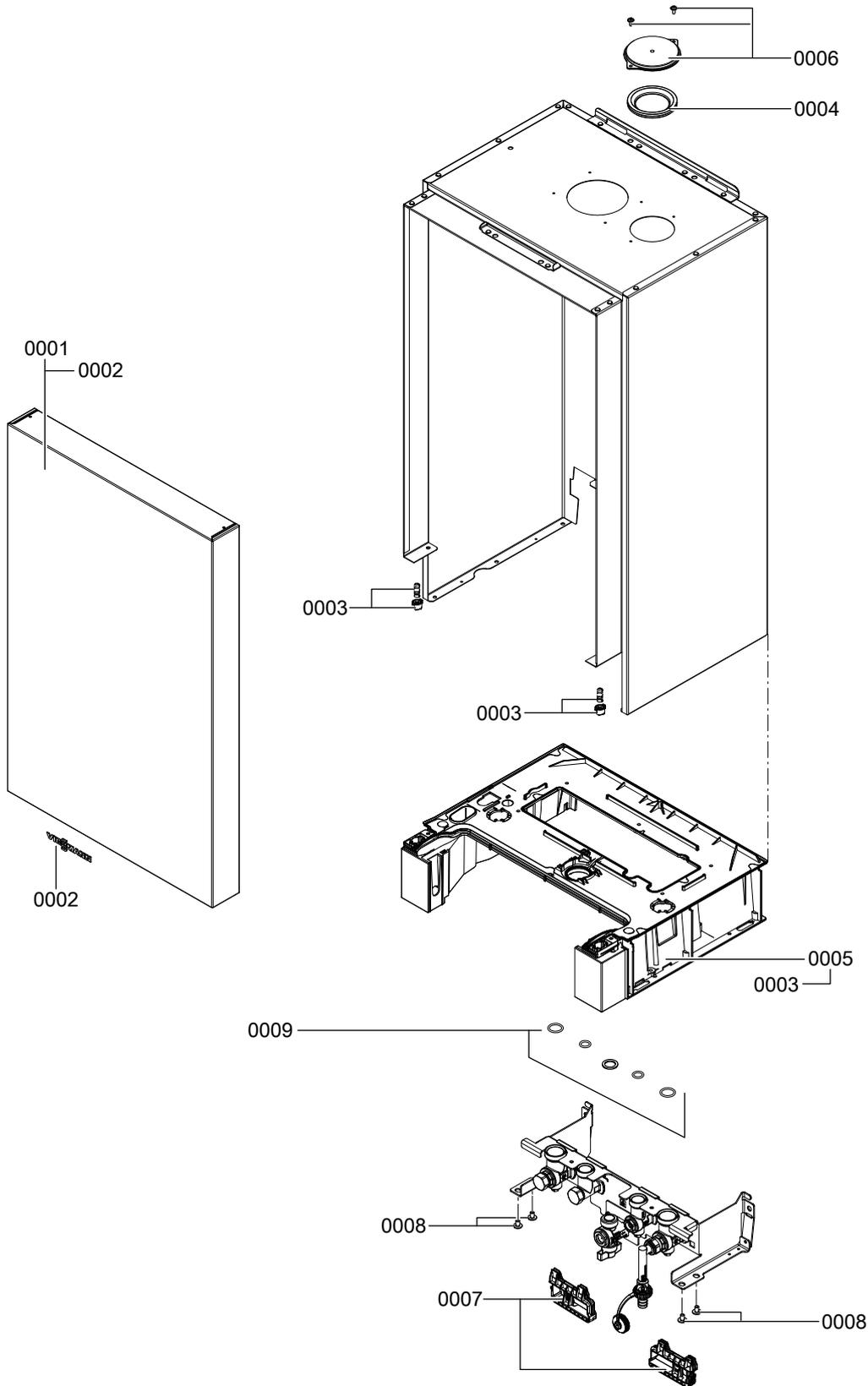
Casing assembly (cont.)

Pos.	Part
0001	Front panel
0002	Viessmann logo
0003	Locking elements
0004	Diaphragm grommet DN 60
0005	Air box floor
0006	Cover
0007	Cable holders, fitting assembly
0008	Screws, air box floor, fitting assembly (set)
0009	O-rings (set)

Heat cell assembly

0003

0005

0001

0002

0002
0003

0016

0004

0015

0006
— 0004
— 0007
— 0015
— 0016

0016

0007

0019

0018

0008

0013

0009

0012
— 0013

0011

0014

0010

0013

0017

Fig. 46

Components

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Heat cell assembly (cont.)

Pos.	Part
0001	Boiler flue connection
0002	Boiler flue connection plug
0003	Gasket DN 60
0004	Flue gasket
0005	Flue gas temperature sensor
0006	Heat exchanger
0007	Thermal insulation block
0008	Condensate hose
0009	Trap
0010	Tee connector
0011	Corrugated hose 19 x 400 bend/ferrule
0012	Gas supply pipe
0013	Gasket A 17 x 24 x 2 (5 pce)
0014	Clip Ø 24
0015	Heat exchanger mounting bracket (set)
0016	O-ring 20.63 x 2.62 (5 pce)
0017	Corrugated hose 19 x 800 with ferrule/bend
0018	Door screws (set)
0019	MatriX cylinder burner

MatriX cylinder burner assembly
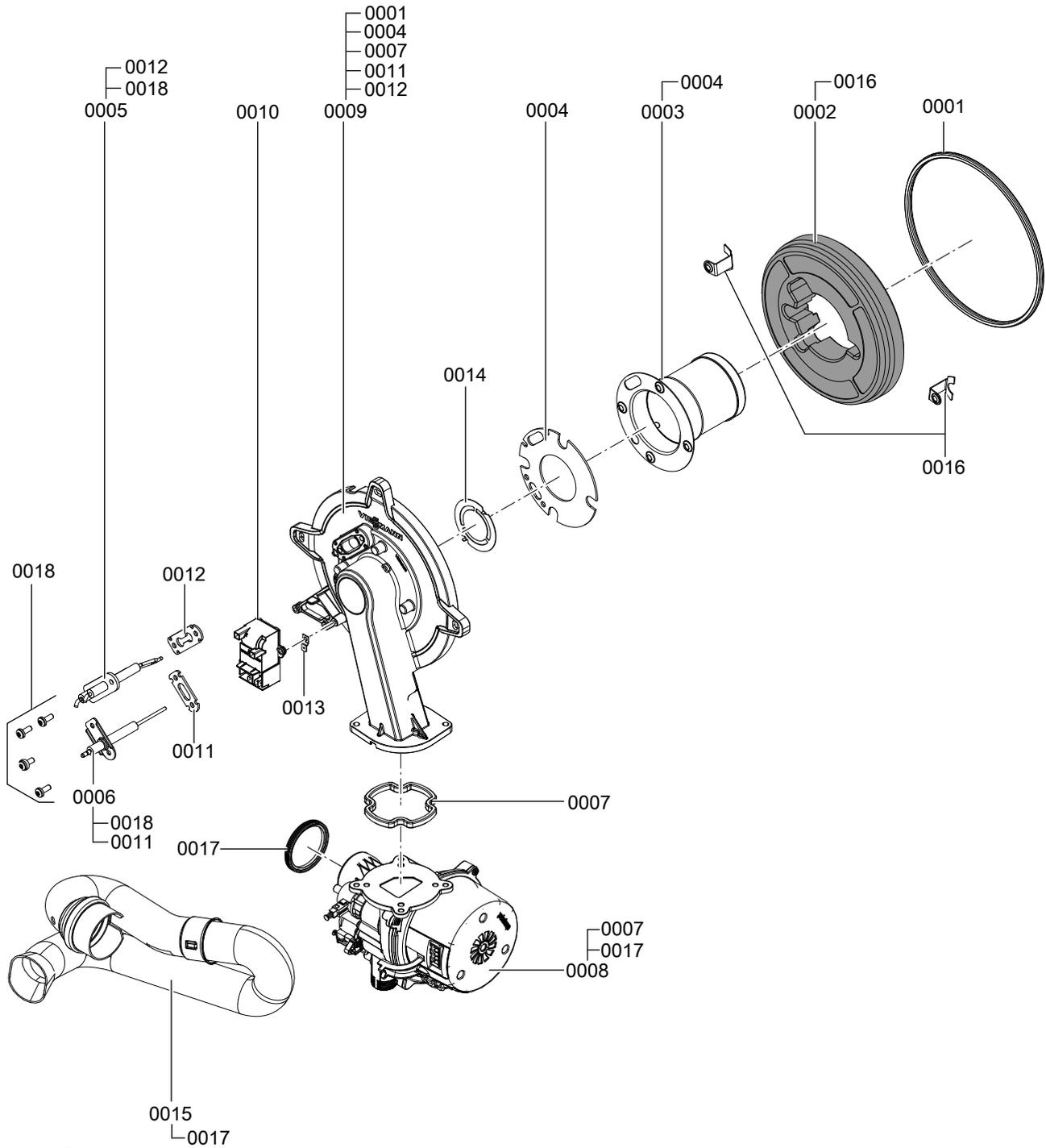
Fig. 47

MatriX cylinder burner assembly (cont.)

Pos.	Part
0001	Burner gasket (wearing part)
0002	Thermal insulation ring
0003	Cylinder burner gauze assembly
0004	Burner gauze assembly gasket
0005	Ignition electrode (wearing part)
0006	Ionisation electrode (wearing part)
0007	Gasket, burner door flange (wearing part)
0008	Radial fan
0009	Burner door
0010	Ignition unit
0011	Gasket, ionisation electrode (5 pce)
0012	Gasket, ignition electrode (5 pce)
0013	Blade terminal (10 pce)
0014	Mixture restrictor
0015	Venturi extension
0016	Mounting plate, thermal insulation ring (2 pce)
0017	Gasket DN 50
0018	Fixing screws

Components

Hydraulic assembly

Serial no. 7570787, 7570788, 7570790, 7570792

Fig. 48

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Hydraulic assembly (cont.)

Pos.	Part
0001	Diaphragm expansion vessel 10 l
0002	Support for diaphragm expansion vessel
0003	Connection line, diaphragm expansion vessel 3/8 x 60
0004	Clip Ø 8 (5 pce)
0005	Gasket A 10 x 15 x 1.5 (5 pce)
0006	Thermal circuit breaker
0007	Temperature sensor
0008	Air vent valve G 3/8
0009	Connection pipe HV (heating flow)
0010	Pipe, HR (heating return)
0011	Profile hose HR (heating return)
0012	Connection elbow HR (heating return)
0013	Hose 10 x 1.5 x 1500
0014	O-ring 20.63 x 2.62 (5 pce)
0015	Diaphragm grommet, pressure gauge
0016	Pipe clip
0017	Pressure gauge
0018	Push-fit connector gasket set (5 pce)
0019	Circular seal washer 8 x 2 (5 pce)
0020	Clip Ø 10 (5 pce)
0021	Safety valve, 3 bar
0022	Spring clip DN 25 (5 pce)
0023	System boiler hydraulics (see system boiler hydraulic assembly)

Components

Hydraulic assembly (cont.)

Serial no. 7570789, 7570791, 7570793

Fig. 49

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Hydraulic assembly (cont.)

Pos.	Part
0001	Diaphragm expansion vessel 10 l
0002	Support for diaphragm expansion vessel
0003	Connection line, diaphragm expansion vessel 3/8 x 60
0004	Clip Ø 8 (5 pce)
0005	Gasket A 10 x 15 x 1.5 (5 pce)
0006	Thermal circuit breaker
0007	Temperature sensor
0008	Air vent valve G 3/8
0009	Profile hose HV (heating flow)
0010	Profile hose HR WT (heating return heat exchanger)
0011	Connection elbow HR (heating return)
0012	Hose 10 x 1.5 x 1500
0013	O-ring 20.63 x 2.62 (5 pce)
0014	Diaphragm grommet, pressure gauge
0015	Pressure gauge
0016	Circular seal washer 8 x 2 (5 pce)
0017	Clip Ø 10 (5 pce)
0018	Safety valve
0019	Spring clip DN 25 (5 pce)
0020	Spring clip DN 30
0021	Connection elbow HV (heating flow)
0022	Combi boiler hydraulics (see combi boiler hydraulic assembly)

Hydraulic assembly, system boiler

Fig. 50

Components

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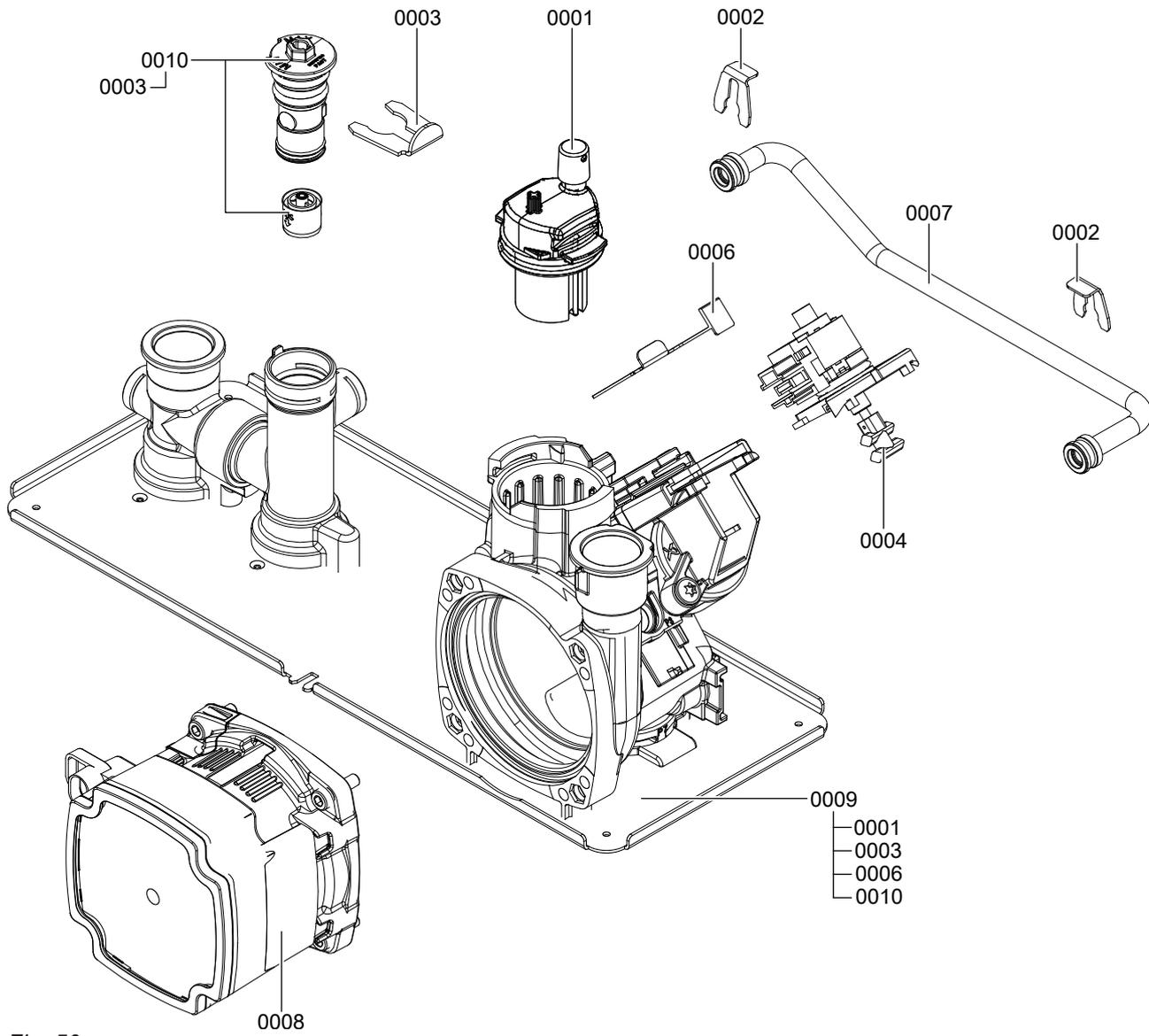
Hydraulic assembly, system boiler (cont.)

Pos.	Part
0001	Air vent valve
0002	Clip Ø 8 (5 pce)
0003	Clip Ø 16 (5 pce)
0004	Stepper motor
0006	Clip Ø 16
0007	Bypass line
0008	Circulation pump UPM3 15-75 KM
0009	Hydraulic assembly, system boiler
0010	Bypass controller with overflow valve

Components

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▶▶

Hydraulic assembly, combi boiler

Fig. 51

Components
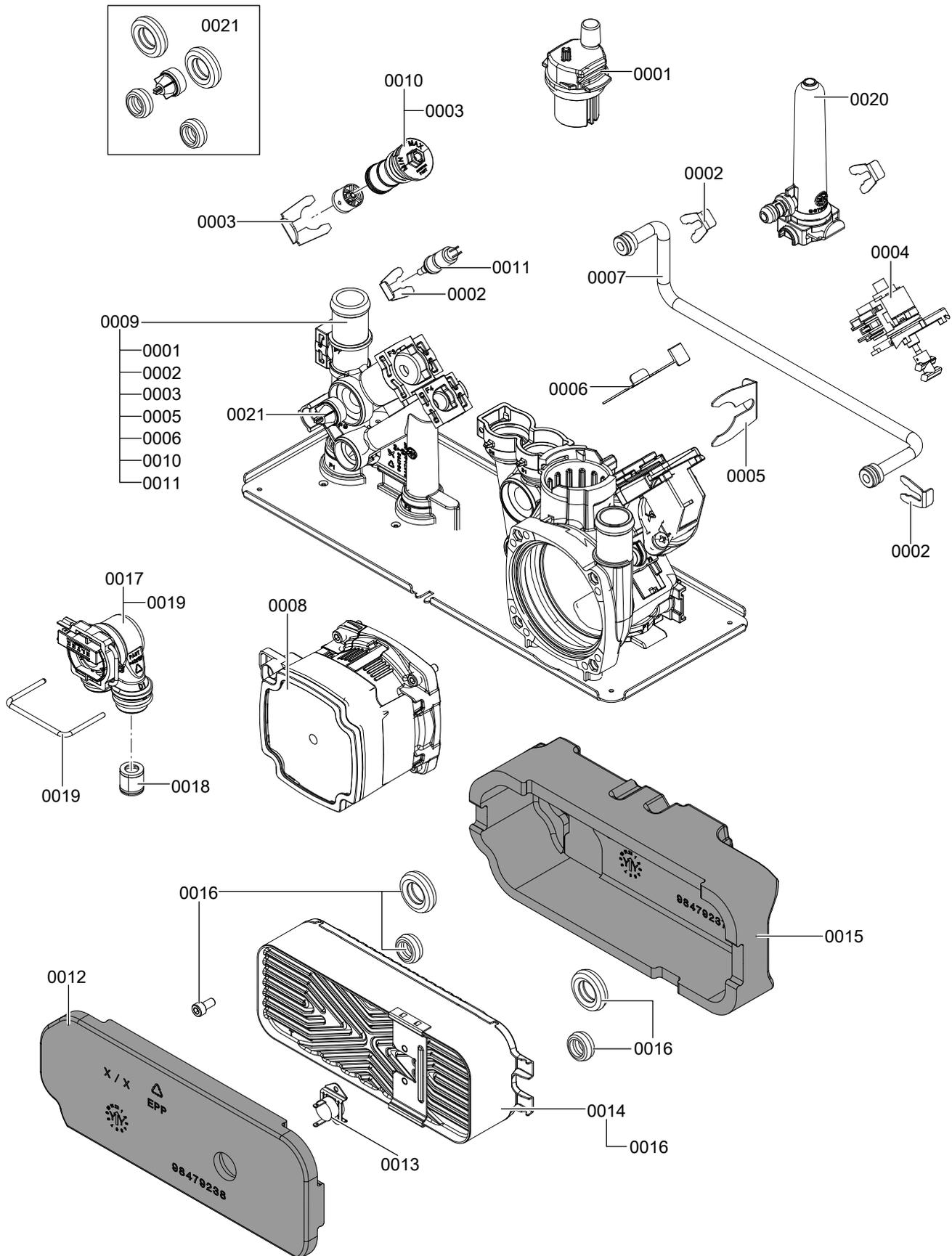
Hydraulic assembly, combi boiler (cont.)

Pos.	Part
0001	Air vent valve
0002	Clip Ø 8 (5 pce)
0003	Clip Ø 16 (5 pce)
0004	Stepper motor
0006	Clip Ø 16
0007	Bypass line
0008	Circulation pump UPM3 15-75 KM
0009	Hydraulic assembly, combi boiler
0010	Bypass controller
0011	Temperature sensor
0012	Plate heat exchanger insulation board
0013	Temperature sensor NTC
0014	Plate heat exchanger
0015	Plate heat exchanger insulation shell
0016	Gaskets for plate heat exchanger and screw
0017	Flow sensor
0018	Flow limiter
0019	Clip 50
0020	Expansion vessel
0021	Non-return valve

Components

Control unit assembly
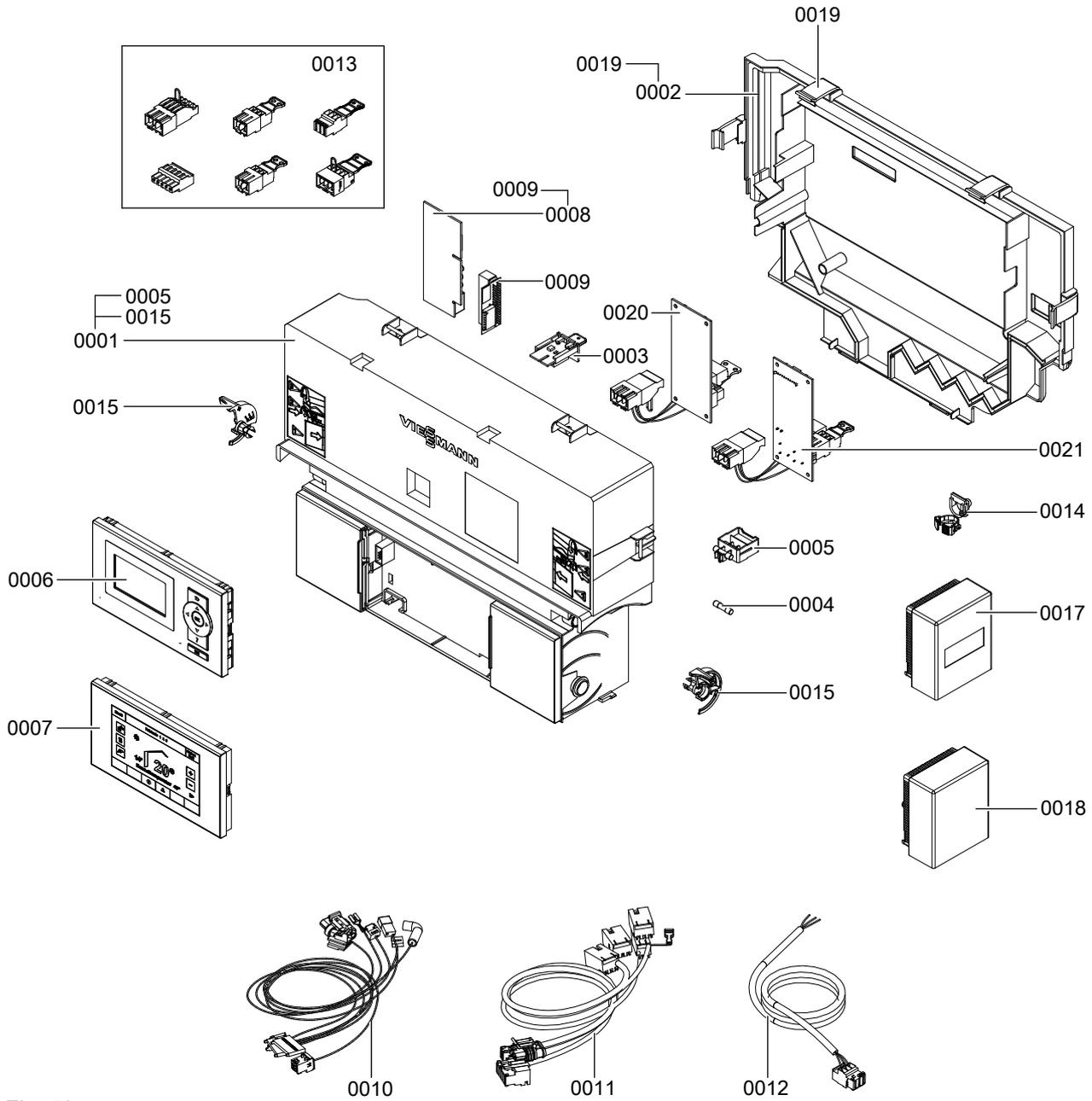
Fig. 52

Control unit assembly (cont.)

Pos.	Part
0001	Control unit VBC138-A10.0xx
0002	Casing back panel
0003	Coding card
0004	Fuse 6.3 A (slow), 250 V (10 pce)
0005	Fuse holder 6.3 A (slow)
0006	Vitotronic 100 HC2B programming unit
0007	Vitotronic 200 HO2B programming unit
0008	LON communication module
0009	PCB adaptor
0010	Cable harness X8/X9/Ion/145/stepper motor
0011	Cable harness 35/100/20/54
0012	Power cable
0013	Mating plug
0014	Cable ties (10 pce)
0015	Locking bolts, left and right
0017	Wireless outside temperature sensor
0018	Outside temperature sensor NTC
0019	Catch, back panel
0020	Internal H1 extension
0021	Internal H2 extension

Miscellaneous assembly

0001
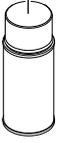
0002

0003
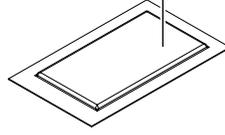
0004
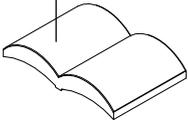
0007

0010
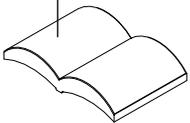
0012

Fig. 53

Miscellaneous assembly (cont.)

Pos.	Part
0001	Touch-up spray paint, white, 150 ml can
0002	Touch-up paint stick, white
0003	Special grease
0004	Installation and service instructions (HO2B)
0007	Operating instructions (HO2B)
0010	Operating instructions (HC2B)
0012	Installation and service instructions (HC2B)

Components

Parts lists

Ordering individual parts for accessories

Please affix accessory labels with part numbers here.
Please state the relevant part no. when ordering individual parts.
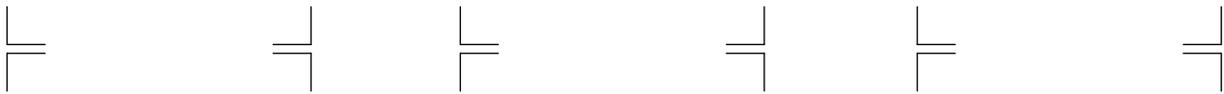
Constant temperature control unit
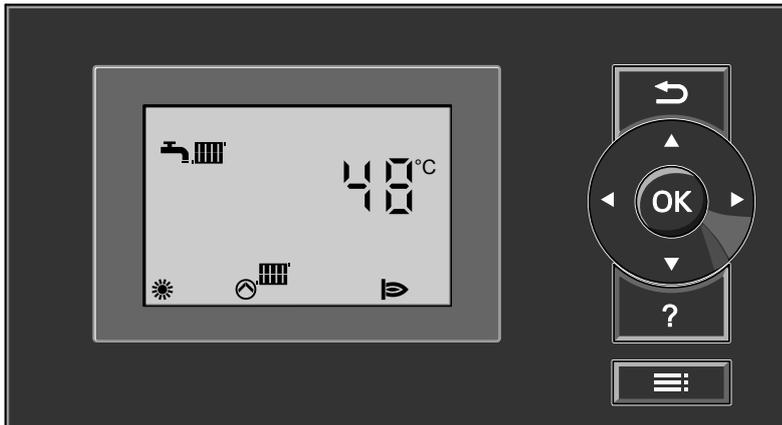
Fig. 54

Heating mode

The selected set boiler water temperature will be maintained when a demand is being raised by the room thermostat and the heating program is set to DHW and central heating "⊞⌐".
The boiler water temperature will be maintained at the default frost protection temperature when there is no demand.

The electronic temperature limiter inside the burner control unit limits the boiler water temperature.
Flow temperature setting range: 20 to 74 °C.

DHW heating with gas condensing combi boiler

If the flow switch detects that DHW is being drawn off (> 3 l/min), the burner, circulation pump and 3-way valve are started or changed over. The burner modulates to reach the DHW outlet temperature and is limited on the boiler side by the temperature limiter.

DHW heating with gas condensing boiler

The burner, the circulation pump and the 3-way valve are started or changed over if the cylinder temperature lies 2.5 K below the set cylinder temperature.

In the delivered condition, the set boiler water temperature is 20 K above the set DHW temperature (adjustable via coding address "60" in group **"DHW"** (weather-compensated control units) or group 3 (constant temperature control units). The burner will be switched off and the circulation pump run-on time will begin, if the actual cylinder temperature exceeds the set cylinder temperature by 2.5 K.

Function description

Internal H1 extension
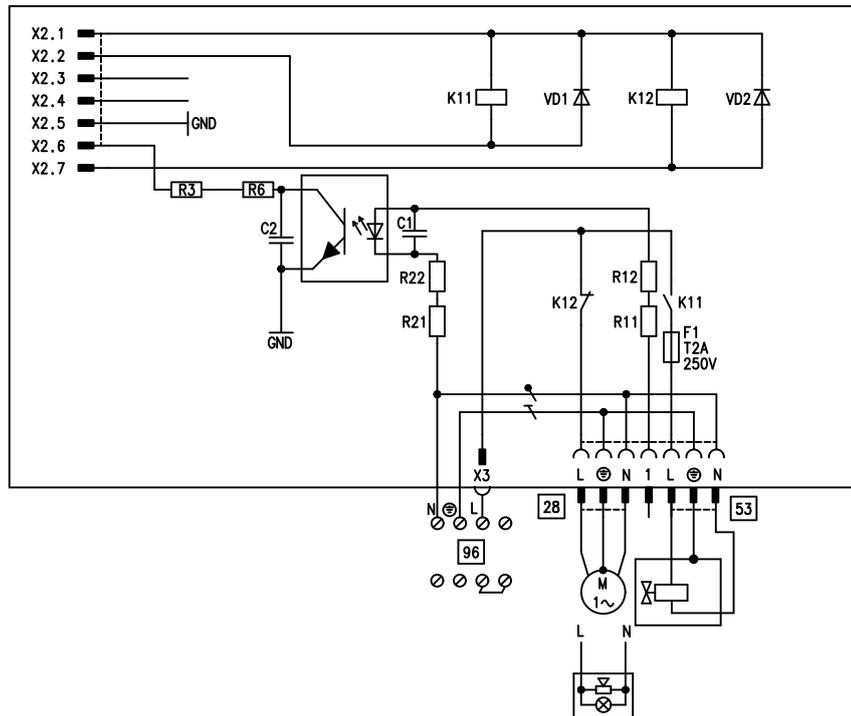
Fig. 55

The internal extension is integrated into the control unit enclosure. The following alternative functions can be connected to relay output 28. The function is assigned via parameter/coding address "53" in the **"General"** group:

- Central fault message (parameter/code "53:0")
- DHW circulation pump (parameter/code "53:1") (only for weather-compensated operation)
  Connect DHW circulation pumps with standalone functions directly to the 230 V ~ supply.

- Heating circuit pump for heating circuit without mixer (parameter/code "53:2")
- Circulation pump for cylinder heating (parameter/ code "53:3")

An external safety valve can be linked to connection 53.

Internal extensions (accessories) (cont.)

Internal H2 extension
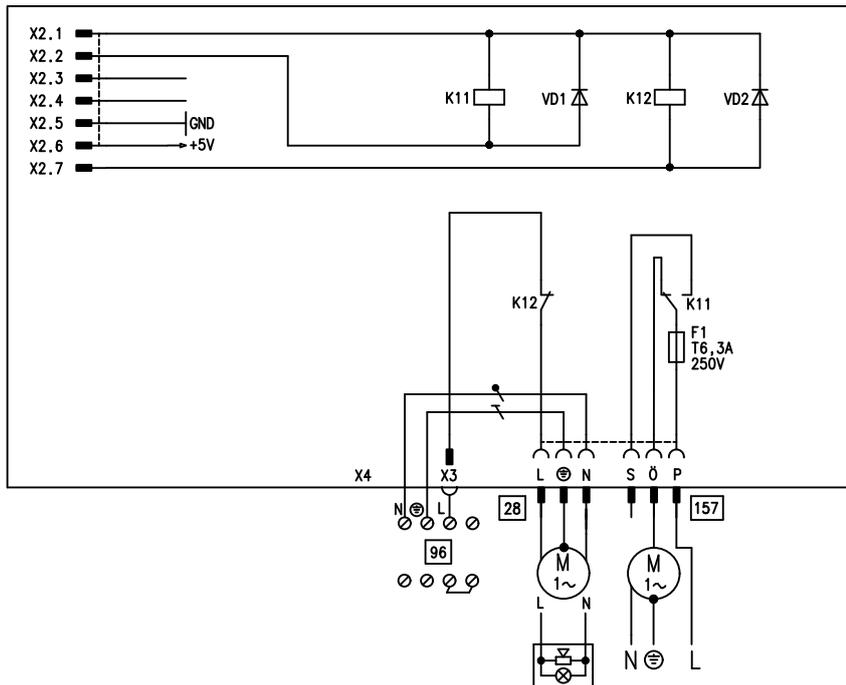
Fig. 56

The internal extension is integrated into the control unit enclosure. The following alternative functions can be connected to relay output 28. The function is assigned via parameter/coding address "53" in the **"General"** group:

- Central fault message (parameter/code "53:0")
- DHW circulation pump (parameter/code "53:1") (only for weather-compensated operation)
  Connect DHW circulation pumps with standalone functions directly to the 230 V ~ supply.

- Heating circuit pump for heating circuit without mixer (parameter/code "53:2")
- Circulation pump for cylinder heating (parameter/code "53:3")

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

External extensions (accessories)

AM1 extension
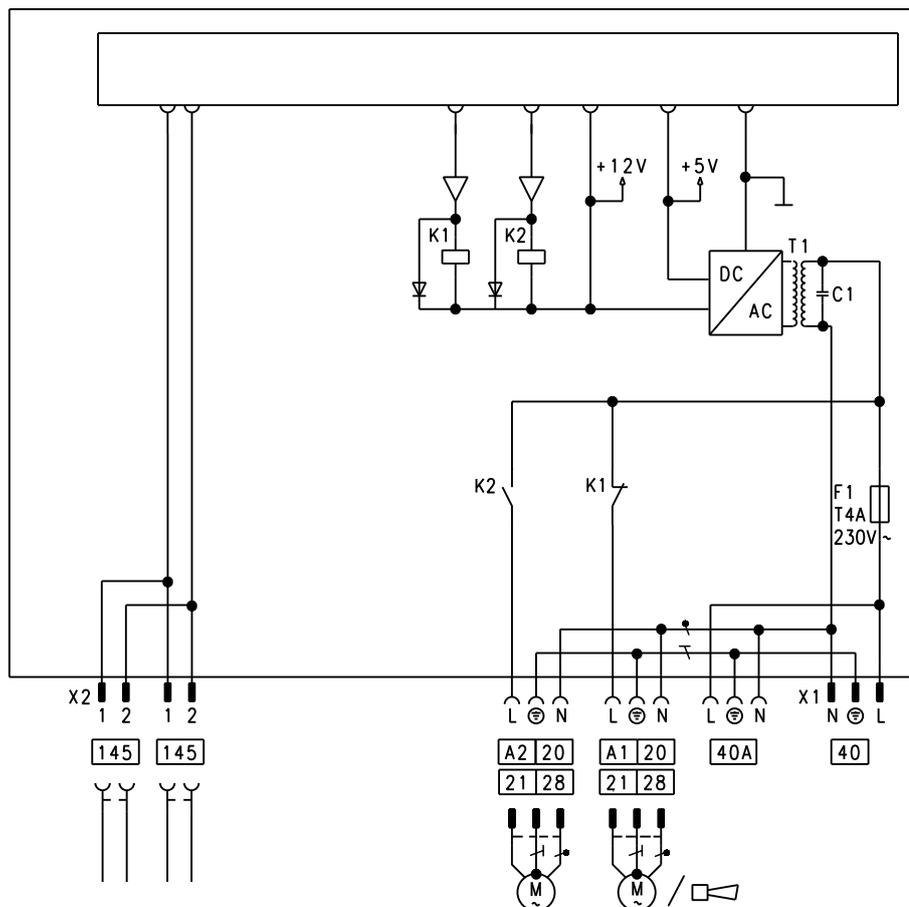
Fig. 57

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 connections A1 and A2:
- Heating circuit pump for heating circuit without mixer
- Circulation pump for cylinder heating
- DHW circulation pump (only for weather-compensated control units)
  Connect DHW circulation pumps with standalone functions directly to the 230 V ~ supply.

Select the output functions via parameter changes/codes at the boiler control unit.

Function assignment

Function	Parameter/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

External extensions (accessories) (cont.)

EA1 extension

Fig. 58

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

Digital data inputs DE1 to DE3

The following functions can alternatively 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 floating. When connecting external contacts, observe the requirements of protection class II: 8.0 mm air and creep path or 2.0 mm insulation thickness to live parts.

Input function assignment

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

Assigning the operating program changeover function to the heating circuits

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

External extensions (accessories) (cont.)

The effect of the operating program changeover is selected via parameter/coding address d5 in the **"Heating circuit"** group.
The duration of the changeover is set via parameter/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 via parameter/coding address 3E in the **"General"** group.
The effect on the relevant heating circuit pump is selected via parameter/coding address d6 in the **"Heating circuit"** group.
The effect on a circulation pump for cylinder heating is selected via parameter/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 via parameter/coding address 3F in the **"General"** group.
The effect on the relevant heating circuit pump is selected via parameter/coding address d7 in the **"Heating circuit"** group.
The effect on a circulation pump for cylinder heating is selected via parameter/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 set via parameter/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 specification for set boiler water temperature".
1 V   ≙ Set value 10 °C
10 V   ≙ Set value 100 °C
Ensure galvanic 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 group 1 **"General"**:

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 via coding address "d8" in group 5 **"Heating circuit"** at the boiler control unit:

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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

External blocking

The functions "External blocking" and "External blocking with 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 group 1 **"General"**:

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:

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 group 1 **"General"**.
The effect on the relevant heating circuit pump is selected in coding address "d7" in group 5 **"Heating circuit"**.

The set minimum boiler water temperature for external demand is selected in coding address "9b" in group 1 **"General"**.

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".

Function description

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.

Electronic combustion control unit

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. Thereafter, the electronic gas valve regulates the required gas volume subject to the prevailing 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 with the measured values. The relationship between the CO_2 or O_2 content and air ratio λ is illustrated in the following table.

Air ratio λ– CO_2/O_2 content

Air ratio λ	O_2 content (%)	CO_2 content (%) for natural gas E	CO_2 content (%) for natural gas LL	CO_2 content (%) for LPG P
1.20	3.8	9.6	9.2	11.3
1.24	4.4	9.2	9.1	10.9
1.27	4.9	9.0	8.9	10.6
1.30	5.3	8.7	8.6	10.3
1.34	**5.7**	**8.5**	**8.4**	**10.0**
1.37	6.1	8.3	8.2	9.8
1.40	6.5	8.1	8.0	9.6
1.44	6.9	7.8	7.7	9.3
1.48	7.3	7.6	7.5	9.0

To achieve an optimum combustion control, the system regularly carries out an automatic self-calibration; also after a power failure (shutdown). For this, the combustion is briefly regulated to max. ionisation current (corresponding to air ratio λ=1). Automatic calibration is carried out shortly after the burner start and lasts approx. 5 s. During calibration, higher than normal CO emissions may occur briefly.

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Connection and wiring diagram – internal connections
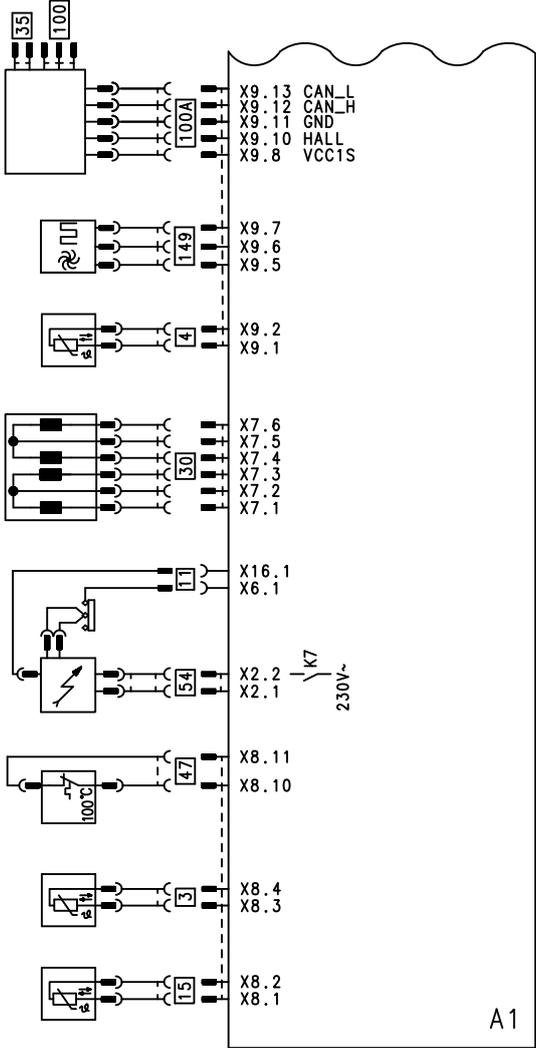
Fig. 59

A1	Main PCB	35	Gas solenoid valve
X...	Electrical interface	47	Temperature limiter
3	Boiler water temperature sensor	54	Ignition unit
4	Type B2KB only:	100	Fan motor
	Outlet temperature sensor	100 A	Fan motor control
11	Ionisation electrode	149	Type B2KB only:
15	Flue gas temperature sensor		Flow switch
30	Stepper motor for diverter valve		

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Connection and wiring diagrams

Connection and wiring diagram – external connections
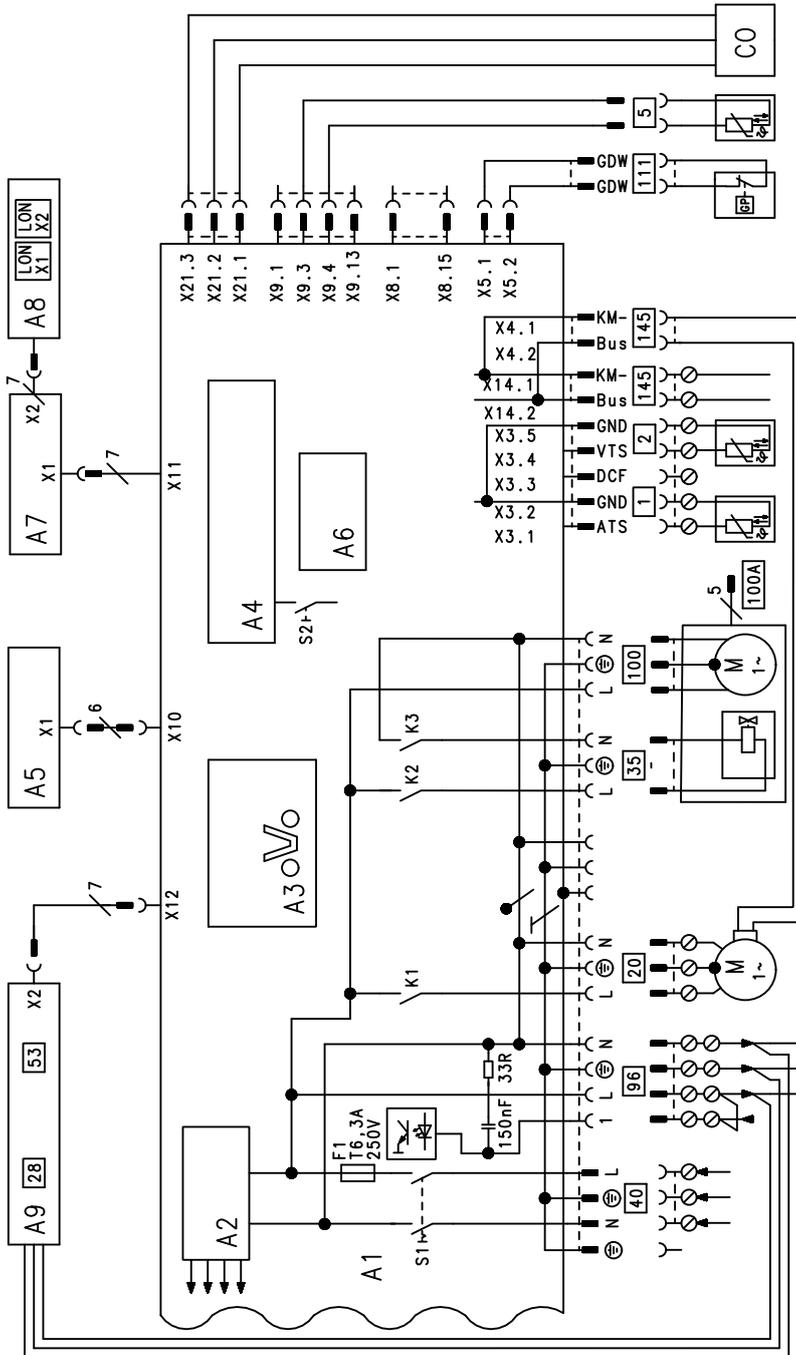
Fig. 60

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 (only for Vitotronic 200)
A9   Internal H1 or H2 extension
S1   ON/OFF switch
S2   Reset button
X...   Electrical interface
[1]   Outside temperature sensor

[2]   Flow temperature sensor, low loss header
[5]   Cylinder temperature sensor (type B2HB)
       or
       Comfort sensor (type B2KB)
       (plug on the cable harness)
[20]   Internal circulation pump
[35]   Gas solenoid valve
[40]   Power supply
[96]   Power supply for accessories and Vitotrol 100
[100] Fan motor
[100] A Fan motor control
[111] Gas pressure switch
[145] KM-BUS
CO   CO limiter

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Commissioning/service reports

Settings and test values		Set value	Commissioning	Maintenance/service
	Date **Signature**			
Static pressure	*mbar* *kPa*	≤ 57.5 ≤ 5.75		
Supply pressure (flow pressure)				
☐ for natural gas E	*mbar* *kPa*	17-25 1.70-2.5		
☐ for natural gas LL	*mbar* *kPa*	17-25 1.70-2.5		
☐ for LPG	*mbar* *kPa*	42.5-57.5 4.25-5.75		
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		
For LPG				
▪ At lower heating output	*% by vol.*	8.8-11.1		
▪ At upper heating output	*% by vol.*	8.8-11.1		
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		

Appendix

Specification

Gas condensing system boiler (type B2HB)

Rated heating output range (to EN 15502-1)					
T_F/T_R = 50/30 °C (P(50/30))	kW	1.9 - 19	2.6 - 26	1.8 (3.5)[1] - 30	1.8 (3.5)[1] - 35
T_F/T_R = 80/60 °C (Pn(80/60))	kW	1.7 - 17.6	2.4 - 24.1	1.6 (3.2)[1] - 28.0	1.6 (3.2)[1] - 32.5
Rated heating output for DHW heating	kW	1.7 - 17.2	2.4 - 23.7	1.6 (3.2)[1] - 30.0	1.6 (3.2)[1] - 31.7
Rated heat input (Qn)	kW	1.8 - 17.9	2.5 - 24.7	1.7 (3.3)[1] - 28.5	1.7 (3.3)[1] - 33.0
Product ID		CE-0085CN0050			
IP rating		IP X4 to EN 60529			
Protection class		I			
NO$_X$	Class	6	6	6	6
Gas supply pressure					
Natural gas	kPa	20	20	20	20
	mbar	2	2	2	2
LPG	mbar	50	50	50	50
	kPa	5	5	5	5
Max. permissible gas supply pressure[2]					
Natural gas	mbar	25.0	25.0	25.0	25.0
	kPa	2.5	2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5	57.5
	kPa	5.75	5.75	5.75	5.75
Rated voltage	V	230			
Rated frequency	Hz	50			
Rated current	A	6			
Backup fuse (power supply)	A	16			
Power consumption					
▪ In the delivered condition	W	42	65	82	95
▪ Max.	W	86	95	105	110
Permissible ambient temperature					
▪ During operation	°C	0 to +40			
▪ During storage and transport	°C	-20 to +65			
Electronic temperature limiter setting (TN)	°C	82			
Temperature limiter setting (fixed)	°C	100			
Weight	kg	36.6	39.2	41.0	41.0
Permiss. operating pressure (PMS)	bar	3	3	3	3
	MPa	0.3	0.3	0.3	0.3
Dimensions					
Length	mm	375	375	375	375
Width	mm	450	450	450	450
Height	mm	800	800	800	800
Gas connection	R	½	½	½	½
Flue gas connection	Ø mm	60	60	60	60
Ventilation air connection	Ø mm	100	100	100	100

[1] Only when operating with LPG P

[2] If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.

Specification (cont.)

Rated heating output range (to EN 15502-1)					
T_F/T_R = 50/30 °C (P(50/30))	kW	1.9 - 19	2.6 - 26	1.8 (3.5)[1] - 30	1.8 (3.5)[1] - 35
T_F/T_R = 80/60 °C (Pn(80/60))	kW	1.7 - 17.6	2.4 - 24.1	1.6 (3.2)[1] - 28.0	1.6 (3.2)[1] - 32.5
Connection values relative to max. load With gas					
Natural gas H	m³/h	1.89	2.61	3.02	3.49
LPG P	kg/h	1.40	1.93	2.23	2.58
Flue gas values					
▪ Mass flow rate (for DHW heating)	g/s	9	12	14	16
▪ Temperature (for DHW heating)	°C	67	68	71	75
▪ Max. temperature	°C	120	120	120	120

Gas condensing combi boiler (type B2KB)

Rated heating output range (to EN 15502-1)				
T_F/T_R = 50/30 °C (P(50/30))	kW	2.6 - 26	1.8 (3.5)[1] - 30	1.8 (3.5)[1] - 35
T_F/T_R = 80/60 °C (Pn(80/60))	kW	2.4 - 24.1	1.6 (3.2)[1] - 28.0	1.6 (3.2)[1] - 32.5
Rated heating output for DHW heating	kW	2.4 - 29.3	1.6 (3.2)[1] - 30.0	1.6 (3.2)[1] - 33.5
Rated heat input (Qn)	kW	2.5 - 30.5	1.7 (3.3)[1] - 31.3	1.7 (3.3)[1] - 34.9
Product ID		CE-0085CN0050		
IP rating		IP X4 to EN 60529		
Protection class		I		
NO$_X$	Class	6	6	6
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permissible gas supply pressure[3]				
Natural gas	mbar	25.0	25.0	25.0
	kPa	2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5
	kPa	5.75	5.75	5.75
Rated voltage	V	230		
Rated frequency	Hz	50		
Rated current	A	6		
Backup fuse (power supply)	A	16		
Power consumption				
▪ In the delivered condition	W	65	82	95
▪ Max.	W	108	119	123
Permissible ambient temperature				
▪ During operation	°C	0 to +40		

[1] Only when operating with LPG P

[3] If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.

▶▶

Service

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Specification (cont.)

Rated heating output range (to EN 15502-1)				
T_F/T_R = 50/30 °C (P(50/30))	kW	2.6 - 26	1.8 (3.5)[*1] - 30	1.8 (3.5)[*1] - 35
T_F/T_R = 80/60 °C (Pn(80/60))	kW	2.4 - 24.1	1.6 (3.2)[*1] - 28.0	1.6 (3.2)[*1] - 32.5
▪ During storage and transport	°C	-20 to +65		
Electronic temperature limiter setting (TN)	°C	82		
Temperature limiter setting (fixed)	°C	100		
Weight	kg	40.0	41.6	41.6
Permiss. operating pressure (PMS)	bar	3	3	3
	MPa	0.3	0.3	0.3
DHW heating				
Permiss. operating pressure (PMW)	bar	10	10	10
	MPa	1.0	1.0	1.0
Specific flow rate (D)	l/min	13.9	15.3	15.9
Max. DHW temperature	°C	57	57	57
Comfort factor	Stars	3	3	3
Dimensions				
Length	mm	375	375	375
Width	mm	450	450	450
Height	mm	800	800	800
Gas connection	R	½	½	½
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Connection values relative to max. load With gas				
Natural gas H	m³/h	3.23	3.31	3.69
LPG P	kg/h	2.38	2.45	2.73
Flue gas values				
▪ Mass flow rate (for DHW heating)	g/s	15	15	17
▪ Temperature (for DHW heating)	°C	68	73	77
▪ Max. temperature	°C	120	120	120

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).

*1 Only when operating with LPG P

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.

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Declaration of conformity

Vitodens 200-W, type B2HB and B2KB

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, declare as sole responsible body that the named product complies with the provisions of the following directives and regulations:

92/42/EEC	Efficiency Directive
2009/142/EC	Gas Appliances Directive[*4]
2016/426/EU	Gas Appliances Regulation[*5]
2014/30/EU	EMC Directive
2014/35/EU	Low Voltage Directive
2009/125/EC	Ecodesign Framework Directive
2010/30/EU	Energy Consumption Labelling Framework Directive
811/2013	EU Regulation "Energy Efficiency Label"
813/2013	EU Regulation "Energy Efficiency Requirements"

Applied standards:
DIN 4753: 2011-11
EN 15502-1: 2012 + A1: 2015
EN 15502-2-1: 2012[*4]
EN 15502-2-1: 2012 + A1: 2016[*5]
EN 55014-1: 2006 + A1: 2009 + A2: 2011
EN 55014-2: 2015
EN 60335-1: 2012 + AC: 2014
EN 60335-2-102: 2006 + A1: 2010
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 62233: 2008 + Corrigendum 1: 2008-11

In accordance with the listed directives, this product is designated with **C€-0085**.

Allendorf, 1 July 2017   Viessmann Werke GmbH & Co. KG

Authorised signatory Reiner Jansen
Head of Strategic Quality Management

Manufacturer's declaration

This product meets the requirements of the Efficiency Directive (92/42/EEC) for **condensing boilers**.

Manufacturer's declaration

This product meets the requirements of the Efficiency Directive (92/42/EEC) for **condensing boilers**.

*4 *Valid until 20/04/2018*
*5 *Valid from 21/04/2018*

Keyword index

Applicability