

Installation and service instructions

for contractors

VIESSMANN

Vitodens 100-W

Type **WB1C**, 6.5 to 35.0 kW

Wall mounted gas condensing boiler

Natural gas and LPG version

Gas Council no.: 41-819-20 - 22, 41-819-26 - 29

For applicability, see the last page



VITODENS 100-W



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 designed for qualified personnel.

- Work on gas equipment must only be carried out by a qualified gas fitter.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations

Observe the following when working on this system

- all legal instructions regarding the prevention of accidents,
- all legal instructions regarding environmental protection,
- the Code of Practice of relevant trade associations,

- all current safety regulations as defined by DIN, EN, DVGW, TRGI, TRF, VDE and all locally applicable standards,
- Gas Safety (Installation & Use) Regulations
 - the appropriate Building Regulation either the Building regulations, the Building Regulation (Scotland), Building Regulations (Northern Ireland),
 - the Water Fittings Regulation or Water Bylaws in Scotland,
 - the current I.E.E. Wiring Regulations.

If you smell gas



Danger

Escaping gas can lead to explosions which may result in serious injury.

- Never 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.
- Remove all people from the danger zone.
- Notify your gas or electricity supplier from outside the building.
- Shut off the electricity supply to the building from a safe place (outside the building).

Safety instructions (cont.)

If you smell flue gas



Danger

Flue gas can lead to life-threatening poisoning.

- Shut down the heating system.
- Ventilate the boiler room.
- Close all doors leading to the living space.

Working on the system

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



Please note

Electronic modules can be damaged by electro-static discharges.

Touch earthed objects, such as heating or water pipes, to discharge static loads.

Repair work



Please note

Repairing components which fulfil a safety function can compromise the safe operation of your heating system.

Replace faulty components only with original Viessmann spare parts.

Ancillary components, spare and wearing parts



Please note

Spare and wearing parts which have not been tested together with the heating system can compromise its function. Installing non-authorized components and non-approved modifications/conversion can compromise safety and may invalidate our warranty. For replacements, use only original spare parts from Viessmann or those which are approved by Viessmann.

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Product information

Vitodens 100-W, type WB1C

Preset for operation with natural gas. Conversion to LPG P requires a gas conversion kit.

Conversion for other countries

The Vitodens 100-W should generally only be delivered to those countries specified on the type plate. For deliveries to alternative countries, an approved contractor, on his own initiative, must arrange individual approval in accordance with the law of the country in question.

Product description

The Vitodens 100-W is available as a gas condensing boiler for the connection of one DHW cylinder and as a gas condensing combi boiler with an integral plate heat exchanger for DHW heating. For the connection of heating circuits and the DHW cylinder or the DHW line, see from page 9.

In the delivered condition, the Vitodens 100-W is set up for operation with constant boiler water temperature. By connecting an outside temperature sensor (accessory), the boiler can be operated in weather-compensated mode.

The following are integrated: one sealed unvented hydraulic system with 2 connections for heating flow and return, and 2 connections for cylinder heating (gas condensing boiler) or DHW heating (gas condensing combi boiler).

These boilers are only intended for installation in sealed unvented heating systems. Boilers for open vented heating systems are also available.

If the Vitodens 100-W is installed in an S plan or Y plan system, the DHW primary connections are not used and must be capped off.

The following components are integrated into the hydraulic system:

- Circulation pump
- 3-way diverter valve
- Safety valve
- Diaphragm expansion vessel
- Plate heat exchanger for DHW heating (gas condensing combi boiler)

DHW heating with DHW cylinder

If a Viessmann Vitocell is connected, a cylinder temperature sensor will issue the heat demand (accessory). The cylinder temperature sensor is connected to the boiler control unit. A 230 V cylinder temperature controller is not required. If a different DHW cylinder is connected, the cylinder temperature sensor (accessory) may also be used on this cylinder. Alternatively, a 230 V cylinder temperature controller should be connected via the cylinder demand junction box (part of the boiler standard delivery).

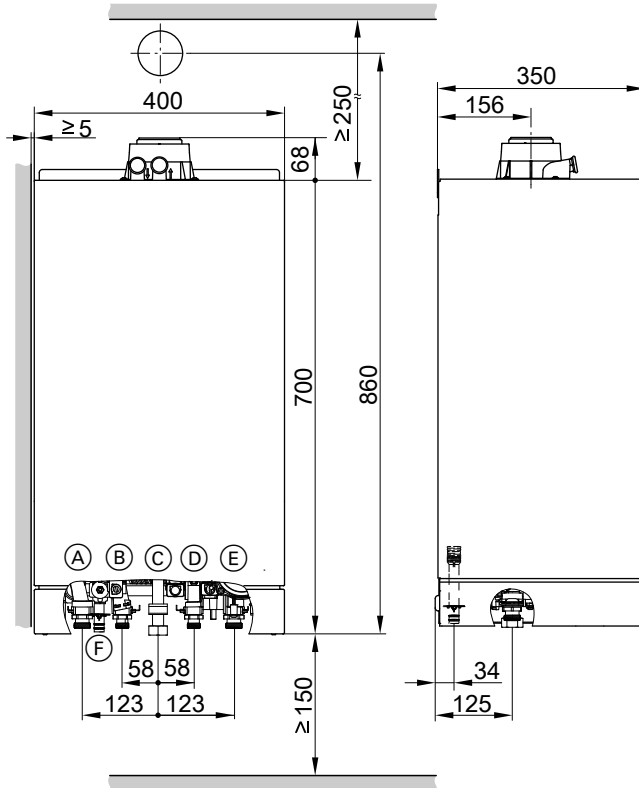
Connection of accessories

Cylinder temperature sensor, outside temperature sensor and time switch are connected to the control unit with low voltage.

Preparing for installation

Preparing the boiler installation

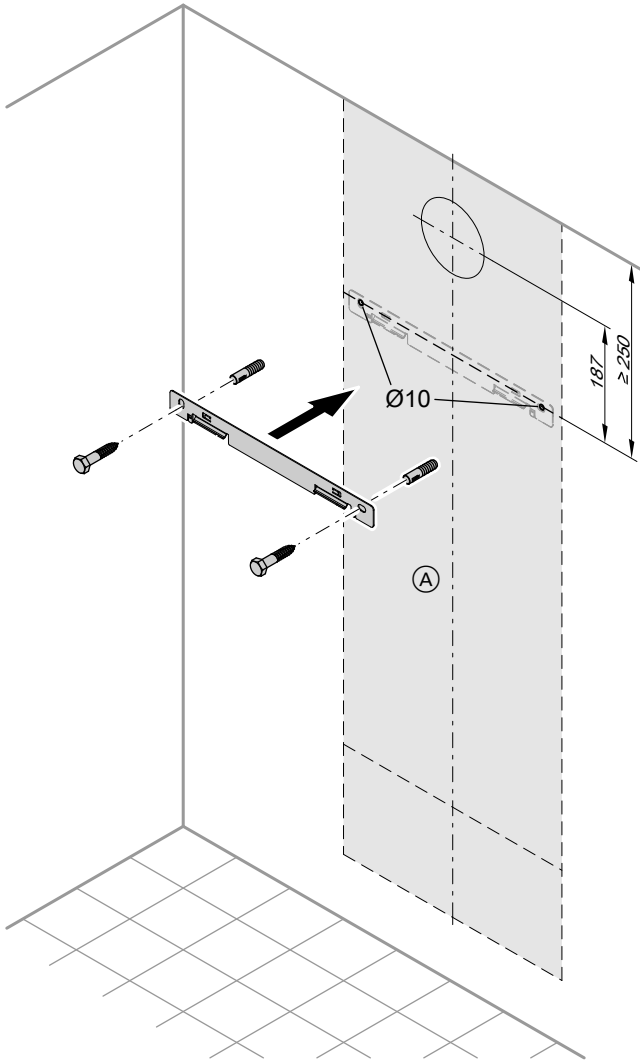
Dimensions and connections



- (A) Heating flow
 - (B) Gas condensing boiler:
Cylinder flow
 - (C) Gas connection
 - (D) Gas condensing boiler:
Cylinder return
 - (E) Heating return
 - (F) Condensate drain/safety valve
drain: Plastic hose \varnothing 22 mm
- Gas condensing combi boiler:
Domestic hot water
- Gas condensing combi boiler:
Cold water

Preparing for installation (cont.)

Fitting the wall mounting bracket



Ⓐ Vitodens installation template

Preparing for installation (cont.)

1. Position the supplied installation template on the wall.
2. Mark out the rawl plug holes.
3. Drill \varnothing 10 mm holes and insert the rawl plugs supplied.
4. Fit wall mounting bracket with screws supplied.

Fit installation aid or mounting frame



Installation aid or mounting frame installation instructions

Preparing the connections



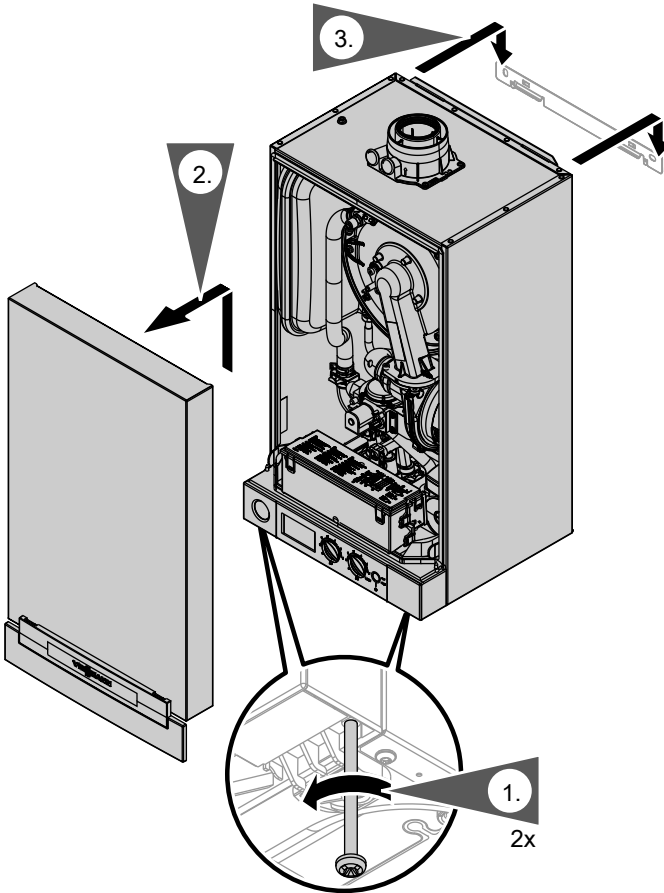
Please note

To prevent equipment damage, install all pipework free of load and torque stresses.

1. Prepare the water connections. Flush the heating system.
2. Prepare the gas connection.
3. Prepare the electrical connections.
 - Power cable NYM-J 3 x 1.5 mm².
 - Accessory cables:
NYM-O 2-core min. 0.5 mm².

Fitting the boiler and making connections

Removing the front panel and mounting the boiler



1. Undo screws at the bottom of the boiler; do not remove completely.

2. Remove front panel.

3. Hook the boiler into the wall mounting bracket.

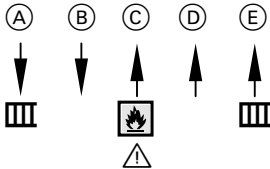
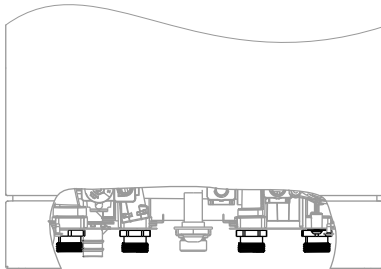
Fitting the boiler and making connections (cont.)

Making connections on the water side

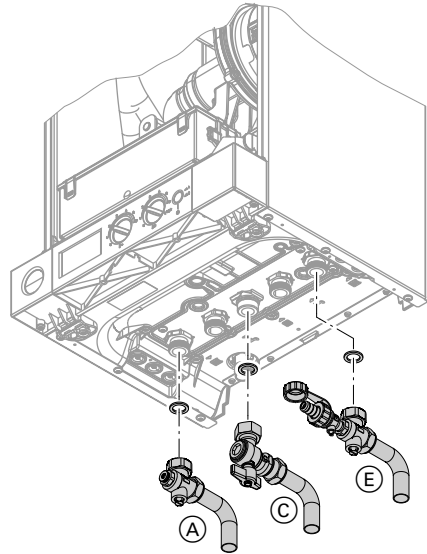


For fittings on the heating water side and DHW side, see separate installation instructions.

Gas condensing boiler

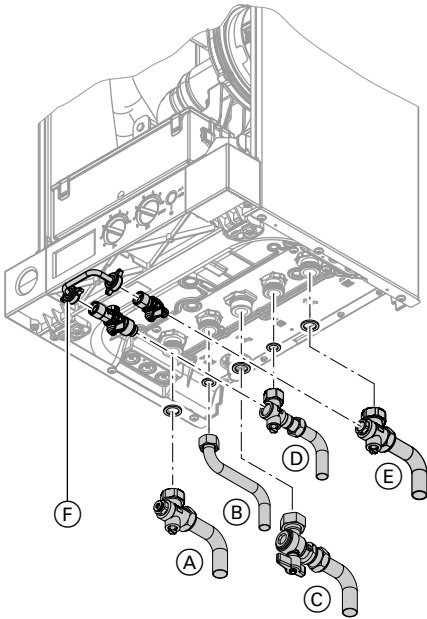


- (A) Heating flow
- (B) Gas condensing boiler:
Cylinder flow
Gas condensing combi boiler:
Domestic hot water
- (C) Gas connection
- (D) Gas condensing boiler:
Cylinder return
Gas condensing combi boiler:
Cold water
- (E) Heating return



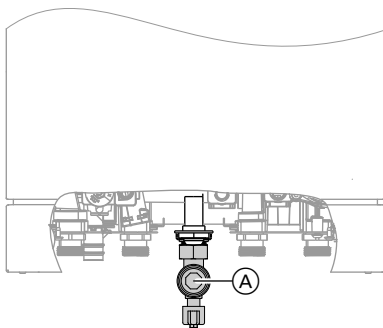
Fitting the boiler and making connections (cont.)

Gas condensing combi boiler



Ⓕ Filling loop

Gas connection



1. Connect gas shut-off valve to connection Ⓕ.

Fitting the boiler and making connections (cont.)

2. Carry out a tightness test.

Note

For the tightness test, use only suitable and approved leak detection agents (EN 14291) and devices.

Leak detection agents with unsuitable constituents (e.g. nitrites, sulphides) can lead to material damage.

Remove residues of the leak detection agent after testing.

**Please note**

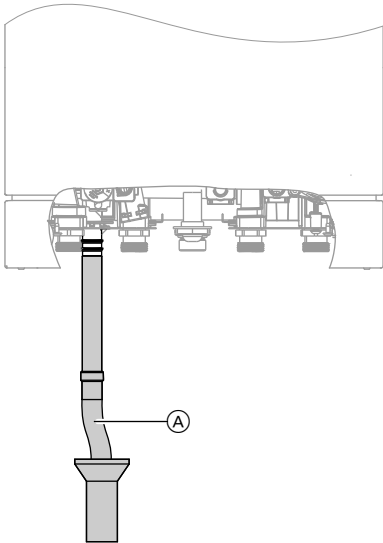
Excessive test pressure may damage the boiler and the gas valve.

Max. test pressure 150 mbar. Where higher pressure is required for tightness tests, separate the boiler and the gas valves from the gas supply pipe (undo the fitting).

3. Purge the gas line.

Fitting the boiler and making connections (cont.)

Connection, safety valve and condensate drain



- 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.
- Connecting the condensate pipe internally to the domestic waste water system, either directly or via a tundish or washing machine trap, is recommended.

- If the condensate pipe is routed outside the building, use a pipe of at least \varnothing 30 mm and insulate it against frost. Avoid long outdoor pipework.



Please note

Frozen condensate pipes can result in faults and damage to the boiler. Always insulate condensate pipes against frost.

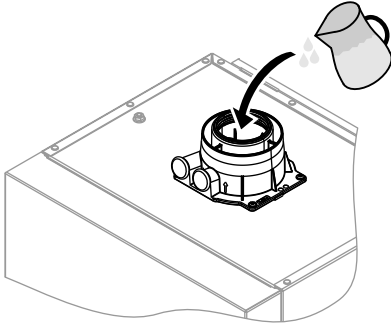
- Observe local building regulations. Connect the condensate pipe (A) with a constant fall and a pipe vent to the public sewage system. Observe the local waste water regulations.

Note

Fill the siphon with water before commissioning.

Fitting the boiler and making connections (cont.)

Filling the siphon with water



Fill the flue outlet with a minimum of 0.3 l of water.

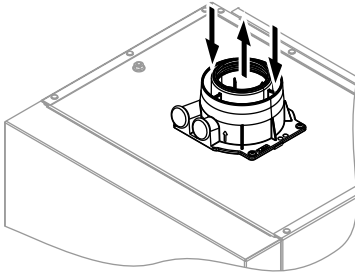


Please note

At commissioning, flue gas may be emitted from the condensate drain.

Fill the siphon with water before commissioning.

Flue and ventilation air connection

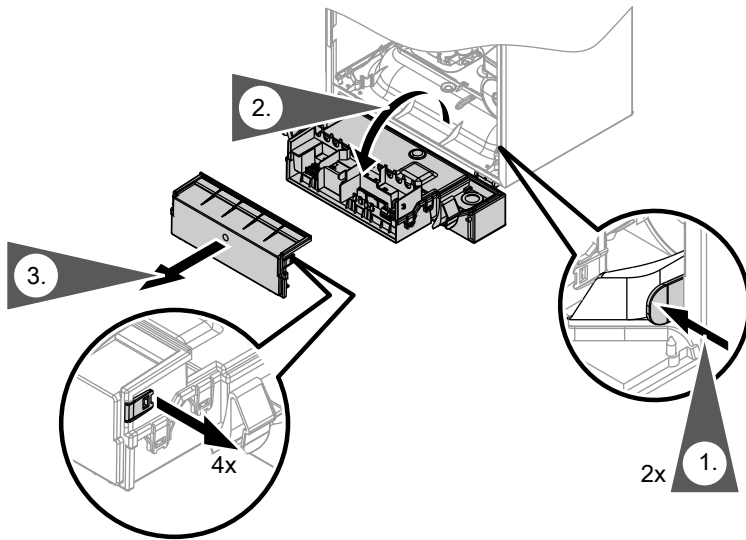


Connect the balanced flue. During installation and positioning of the flue system, observe building regulations part L and BS 5440.



Flue system installation instructions.

Opening the control unit casing

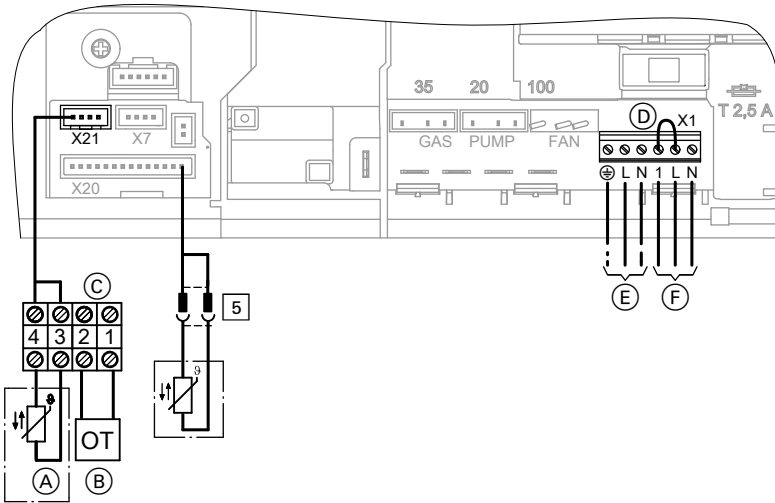




Please note

Electronic assemblies can be damaged by electrostatic discharge.

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

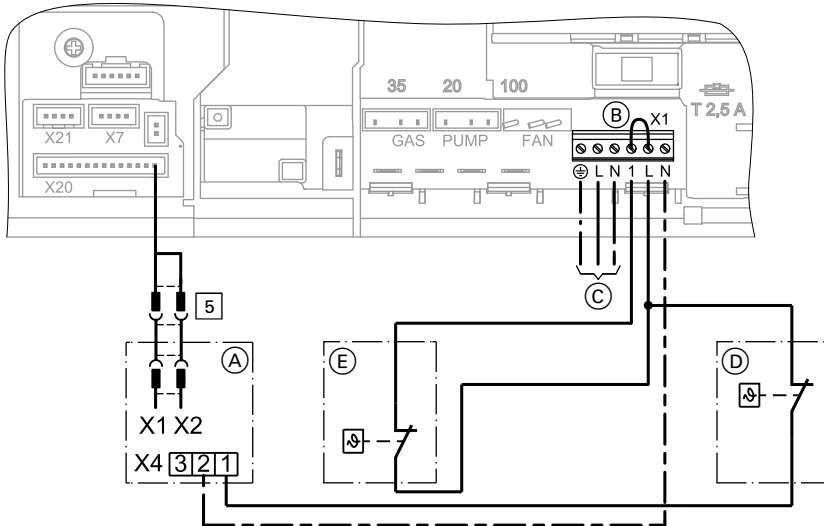
Electrical connections



- 5 Gas condensing boiler:
- In the case of Viessmann DHW cylinders: Cylinder temperature sensor (plug on the cable harness outside the control unit)
 - In the case of alternative DHW cylinders compliant with the G3 Directive: Cylinder demand junction box (for connection of a cylinder temperature controller and a 2-way shut-off valve)
 - Without DHW cylinder: For operation without a DHW cylinder, set rotary selector "🔧" to "0".
- A Only for weather-compensated mode: Outside temperature sensor (accessory)
- B OpenTherm device
- C Connecting cable (accessory)
- D Jumper
- E Power supply (230 V, 50 Hz). See page 21.
- F Vitotrol 100 or on-site room temperature controller (230 V switched input)
Remove jumper D when making this connection.
-  Separate installation instructions
-  **Information on connecting accessories**
For this connection, observe the separate installation instructions provided with the accessories.

Electrical connections (cont.)

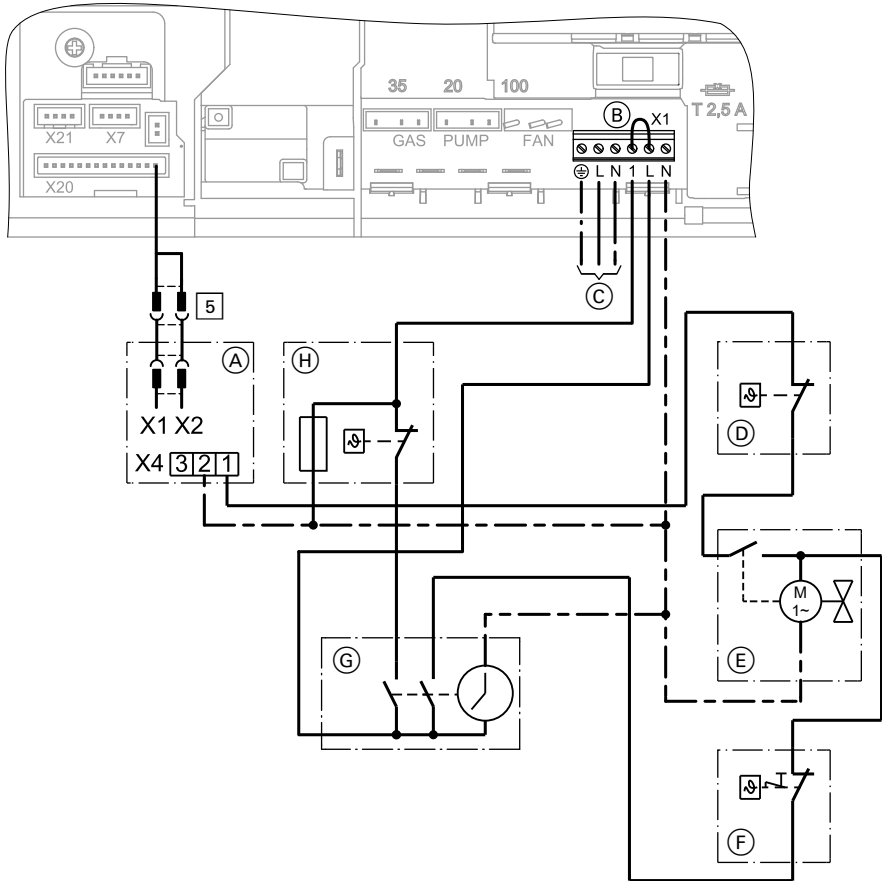
Connection of room temperature controller and DHW cylinder with 230 V cylinder temperature controller



- (A) Junction box, cylinder demand
- (B) Jumper, remove when making this connection
- (C) Power supply (230 V, 50 Hz). See page 21.
- (D) Cylinder temperature controller 230 V
- (E) Room thermostat

Electrical connections (cont.)

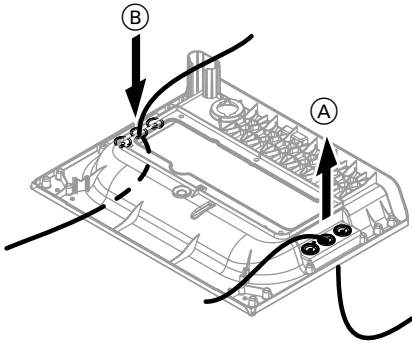
Connection of room temperature controller with time switch and DHW cylinder with 2-way valve and 230 V cylinder temperature controller



- | | |
|--|-------------------------------|
| (A) Junction box, cylinder demand | (E) 2-way shut-off valve |
| (B) Jumper, remove when making this connection | (F) High limit safety cut-off |
| (C) Power supply (230 V, 50 Hz). See page 21. | (G) Time switch |
| (D) Cylinder temperature controller 230 V | (H) Room thermostat |

Electrical connections (cont.)

Cable entry



- (A) Power cable, remote control connecting cable
- (B) LV leads (sensor leads)

Outside temperature sensor (accessory)

1. Fit outside temperature sensor.

Installation site:

- 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 ventilation outlets
- Not immediately below balconies or gutters
- Never render over
- Connection:

2-core lead, length max. 35 m with a cross-section of 1.5 mm²

2. Plug the lead supplied with the outside temperature sensor into slot "X21".
3. Connect the outside temperature sensor to terminals 3 and 4.

Electrical connections (cont.)

Power supply

Regulations and Directives




Danger

Incorrectly executed electrical installations can lead to injury from electrical current and result in equipment 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 requirements specified by your local power supply utility

Install an isolator in the power supply line that simultaneously isolates all non-earthed conductors from the mains with at least 3 mm contact separation.

We additionally recommend installing an AC/DC-sensitive RCD (RCD class B ) for DC (fault) currents that can occur with energy efficient equipment. Protect the power cable with an external fuse/MCB 3 A to BS 1362.



Danger

Incorrect core allocation can result in serious injury and damage to the appliance. Take care **not** to interchange wires "L1" and "N".



Danger

The absence of component earthing in the system can lead to serious injury from electrical current if an electrical fault occurs. Connect the appliance and pipe-work to the equipotential bonding of the building in question.

Electrical connections (cont.)

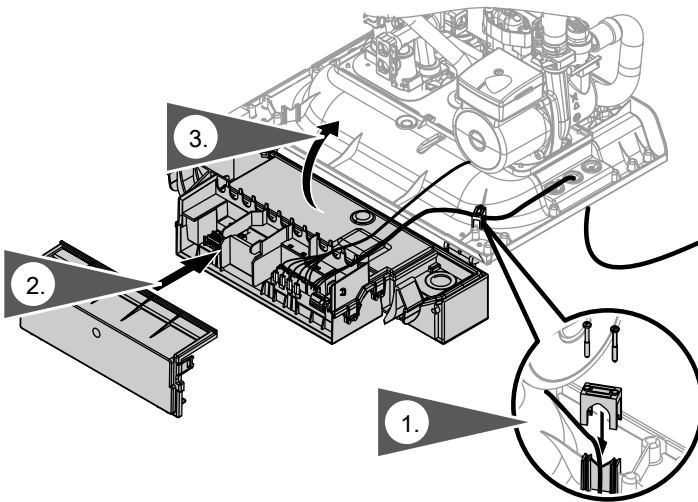
Routing connecting cables and closing control unit



Please note

Connecting cables will be damaged if they touch hot components.

When routing and securing cables/leads on site, ensure that the maximum permissible temperatures for these cables/leads are not exceeded.



Steps - commissioning, inspection and maintenance

For further information regarding the individual steps, see the page indicated

				Page
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			Inspection steps	
			Maintenance steps	
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	•	•	11. Checking and adjusting electrode	38
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•	•	•	16. Checking all connections on the heating water side and DHW side for leaks	
•	•	•	17. Checking firm seating of electrical connections	
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Further details regarding the individual steps

Filling the heating system

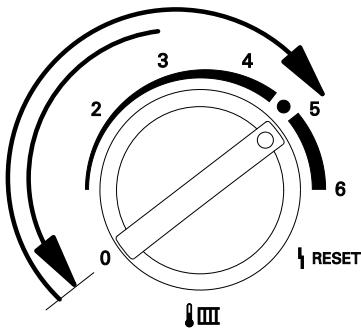


Please note

Unsuitable fill water increases the level of deposits and corrosion and may lead to boiler damage.

- Thoroughly flush the entire heating system prior to filling it.
- Only use fill water of potable quality.

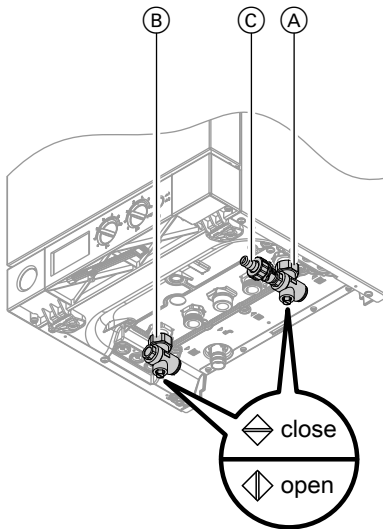
- Soften fill water harder than 300 ppm.
- An antifreeze additive suitable for heating systems can be added to the fill water.



1. Close the gas shut-off valve.
2. Switch ON the power supply.
3. Turn rotary selector "III" anti-clockwise for less than 2 s and then clockwise back into the control range. "SERV", "III" and "T" will appear on the display. Filling has been activated. This function will end automatically after 20 min or after the ON/OFF switch has been turned off.

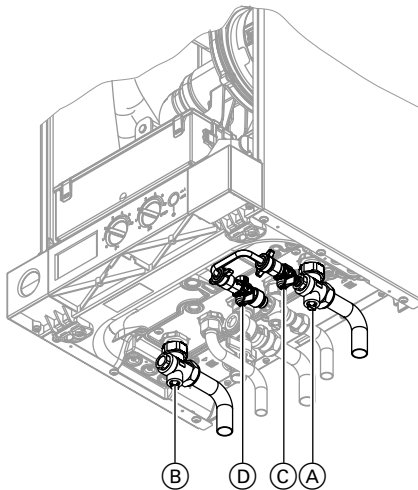
Further details regarding the individual steps (cont.)

Gas condensing boiler



1. Open shut-off valves (A) and (if fitted) (B).
2. Connect fill hose to valve (C) and open valve (C).
3. Fill heating system [a removable filling loop with double check valve must be used in UK] (system pressure 0.8 to 1.2 bar).
4. Close valve (C).

Gas condensing combi boiler



1. Open shut-off valves (A) and (if fitted) (B).
2. Open valves (C) and (D).

Note

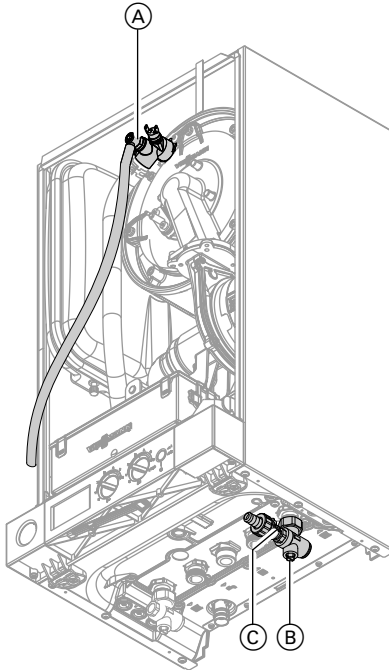
The cold water supply must be open.

3. Fill the heating system (system pressure 0.8 to 1.2 bar).
4. Close valves (C) and (D).

Further details regarding the individual steps (cont.)

Venting the boiler by flushing

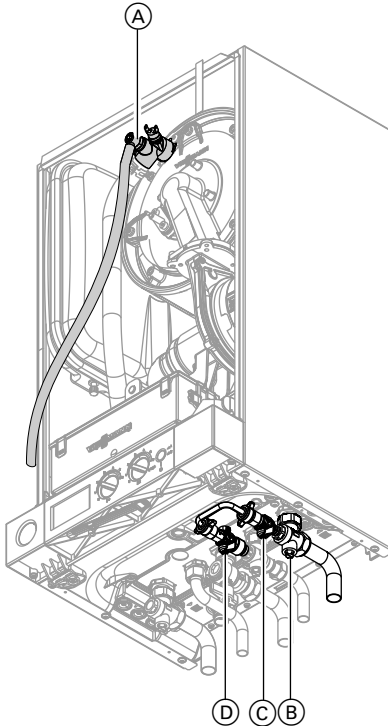
Gas condensing boiler



1. Connect the drain hose on shut-off valve (A) to a drain.
2. Close shut-off valve (B).
3. Open valves (A) and (C) and flush at mains pressure, until no sound of escaping air can be heard.
4. First close valve (A) and then valve (C).
5. Adjust operating pressure ≥ 0.8 bar with valve (C).
6. Open shut-off valve (B).
7. Disconnect drain hose and put to one side.

Further details regarding the individual steps (cont.)

Gas condensing boiler



1. Connect the drain hose on shut-off valve (A) to a drain.
2. Close shut-off valve (B).
3. Open valves (A), (C) and (D) and flush at mains pressure, until no sound of escaping air can be heard.
4. First close valve (A) and then valves (C) and (D).
5. Adjust operating pressure ≥ 0.8 bar with valves (C) and (D).
6. Open shut-off valve (B).
7. Disconnect drain hose and put to one side.

Changing to operation with LPG

In the delivered condition, the boiler is set up for operation with natural gas. For operation with LPG, change the gas nozzle and convert the gas type in the control unit.



Separate installation instructions.

Changing from LPG to natural gas - see page 59.

Further details regarding the individual steps (cont.)

Checking the static and supply pressure

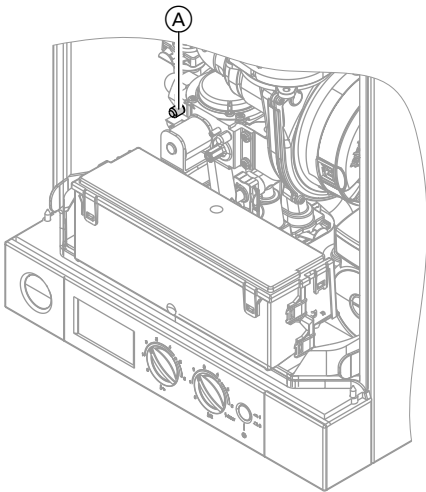


Danger

CO build-up as a result of incorrect burner adjustment can have serious health implications. Carry out a CO test before and after work on gas appliances.

Operation with LPG

Flush the LPG tank twice during commissioning or replacement. Purge the tank and gas supply line thoroughly after flushing.



1. Close the gas shut-off valve.
2. Undo screw (A) inside test nipple "IN" on the gas train but do not remove it, and connect the pressure gauge.
3. Open the gas shut-off valve.

4. Check the static pressure.
Set value: max. 57.5 mbar
5. Start the boiler.

Note

During commissioning, the boiler can enter a fault state because of airlocks in the gas line. After approx. 5 s press **Reset** to reset the burner.

6. Check the supply (flow) pressure.

Set value:

- Natural gas: 20 mbar
- LPG: 37 mbar

Note

Use a suitable measuring device with a resolution of at least 0.1 mbar to check the supply pressure.

7. Record the actual values in the report on page.
Take the action shown in the following table.
8. Shut down the boiler, close the gas shut-off valve, remove the pressure gauge and close test nipple (A) with the screw.

Further details regarding the individual steps (cont.)

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



Danger

Gas escaping from the test nipple leads to a risk of explosion.

Check gas tightness at test nipple (A).

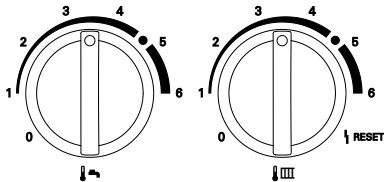
Note

The maximum pressure drop between the gas shut-off valve and test nipple (A) at the gas train is 0.5 mbar.

Supply pressure (flow pressure)		Action
for natural gas	for LPG	
below 17.4 mbar	below 25 mbar	Do not start the boiler. Notify your gas supply utility or LPG supplier.
17.4 to 25 mbar	25 to 47 mbar	Start the boiler.
above 25 mbar	above 47 mbar	Install a separate gas pressure governor upstream of the system and regulate the pre-charge pressure to 20 mbar for natural gas or 37 mbar for LPG. Notify your gas supply utility or LPG supplier.

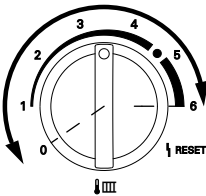
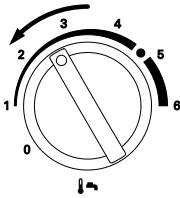
Matching the burner output to the flue system

To match the burner output to the system's flue pipe length, a correction factor can be set.



1. Turn ON/OFF switch ON.
2. Turn both rotary selectors "flame" and "pressure" simultaneously into their respective central positions. "SERV" appears on the display.
3. Refer to the following table for the correction factor required for the connected flue system.

Further details regarding the individual steps (cont.)



4. Within 2 s, turn rotary selector "⚡" to the top left range.
The display shows "III", "⚡", "⊃", and the selected correction factor flashes.
In the delivered condition, factor 0 has been set.
5. Within 15 s, set rotary selector "⚡III" to the required correction factor.
6. The set correction factor is saved when the value stops flashing, and the control unit returns to standard mode.

Correction factor		1	2	3	4	5	6
Flue system	Rated heating output (kW)	Max. run length (m)					
	Open flue operation \varnothing 60 mm	4	10	16	22	—	—
	26/30	2	8	13.5	18.5	22	25
	35	5	12	18	23	—	—
Balanced flue operation \varnothing 60/100 mm coaxial	19	2	6	10	13	16	19
	26/30	1	4	7	10	12	13.5
	35	3	6	9	12	14	17

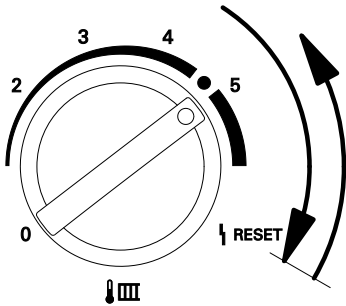
Observe max. flue lengths. A calculated performance verification is required if the max. flue lengths in the table are exceeded.

Reducing the max. heating output

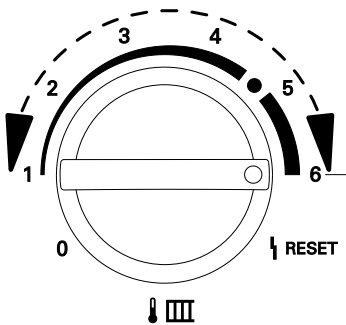
The max. heating output can be reduced according to the system requirements.

1. Turn ON/OFF switch ON.

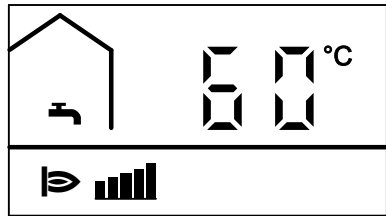
Further details regarding the individual steps (cont.)



2. Turn rotary selector "🌡️📊" fully clockwise for less than 2 s and then back into the r.h. control range. "SERV" and "👁️" appear on the display.



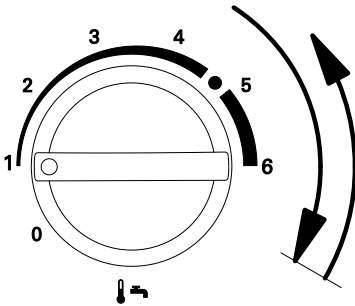
3. Select the required max. heating output with rotary selector "🌡️📊". Bars for the selected heating output flash on the display.



- Position 1 (1 bar) = lower heating output.
- Position 6 (5 bars) = upper heating output.

4. Test selected heating output by measuring the gas throughput.

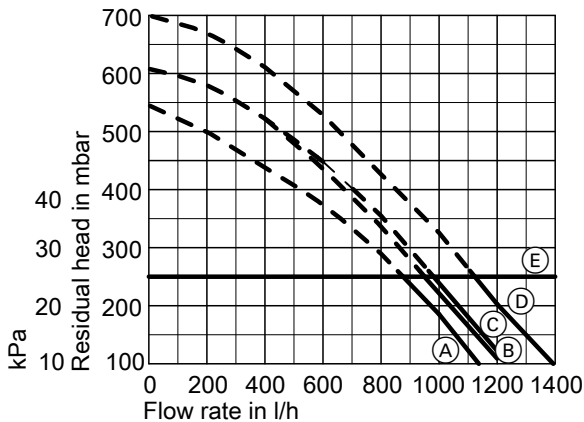
Further details regarding the individual steps (cont.)



5. Transfer selected heating output:
Turn rotary selector "🔥" fully clockwise for less than 2 s and then back into the r.h. control range.
During the transfer, the display shows "- . - . -".
6. Shut down the boiler.

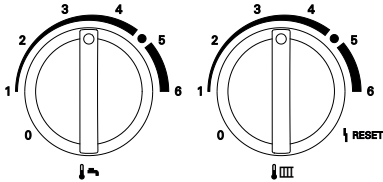
Matching the circulation pump to the heating system

Only for gas condensing combi boilers:
In the delivered condition, the circulation pump in heating mode is set to stage 1.
If necessary to suit the heating system, the circulation pump can be set to stage 2.

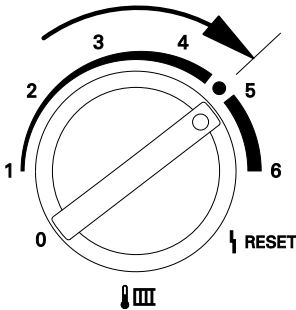


- | | |
|--|---|
| <p>(A) Gas condensing boiler 26 kW
Gas condensing combi boiler 26 kW, pump stage 1</p> <p>(B) Gas condensing boiler 30 kW
Gas condensing combi boiler 30 and 35 kW, pump stage 1</p> | <p>(C) Gas condensing combi boiler 26 kW, pump stage 2</p> <p>(D) Gas condensing boiler 35 kW
Gas condensing combi boiler 30 and 35 kW, pump stage 2</p> <p>(E) Upper operational limit</p> |
|--|---|

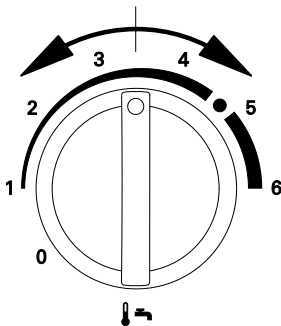
Further details regarding the individual steps (cont.)



1. Turn ON/OFF switch ON.
2. Turn both rotary selectors "1" and "SERV" simultaneously into their respective central positions. "SERV" appears on the display.



3. Within 2 s, turn rotary selector "SERV" to the top right range. "SERV" appears on the display and the set value flashes.



4. Adjust the control unit to stage 1 or stage 2 by turning rotary selector "1".
The display shows:
 - "1" for operation with stage 1
or
 - "2" for operation with stage 2.

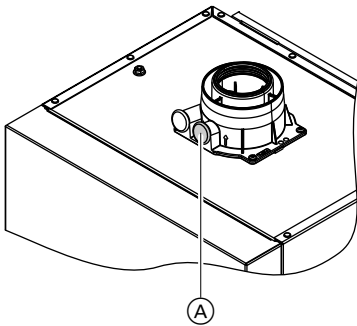
5. The set operating mode is saved when the value stops flashing, and the control unit returns to standard mode.

Further details regarding the individual steps (cont.)

Checking the CO₂ content

The Vitodens 100-W is factory-set for natural gas. During commissioning or maintenance, the CO₂ and CO have to be measured at the boiler flue adaptor test point to check the flue integrity. Subject to the Wobbe index, the CO₂ content fluctuates between 7.4 % and 10.5 %. CO of up to 500 ppm during ignition is acceptable.

We recommend measuring the O₂ as the value is unmistakable regarding lambda (air/gas). The O₂ content fluctuates between 7.5 % and 3.2 %. The CO/CO₂ ratio has to be less than 0.004.



If the actual CO₂ or O₂ and CO values deviate from the stated range, check the balanced flue systems for leaks. If the flue installation is in order, change the gas valve.

Note

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

1. Connect a flue gas analyser at flue gas port (A) on the boiler flue connection.
2. Start the boiler and check for leaks.

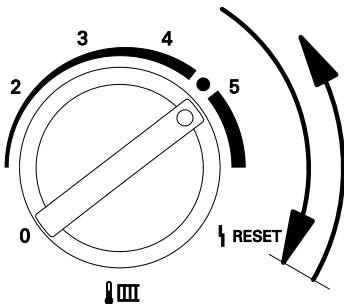


Danger

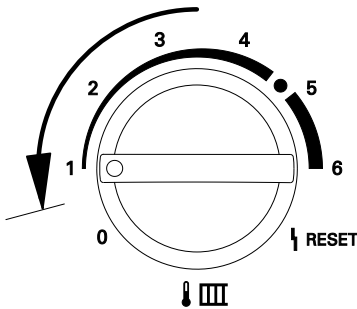
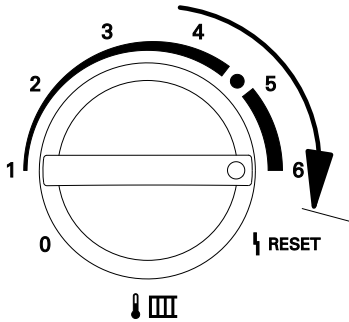
Escaping gas leads to a risk of explosion.

Check gas equipment for tightness.

3. Turn rotary selector "🔥" fully clockwise for less than 2 s and then back into the r.h. control range. The display shows "SERV", "👁" and the boiler water temperature is displayed.



Further details regarding the individual steps (cont.)



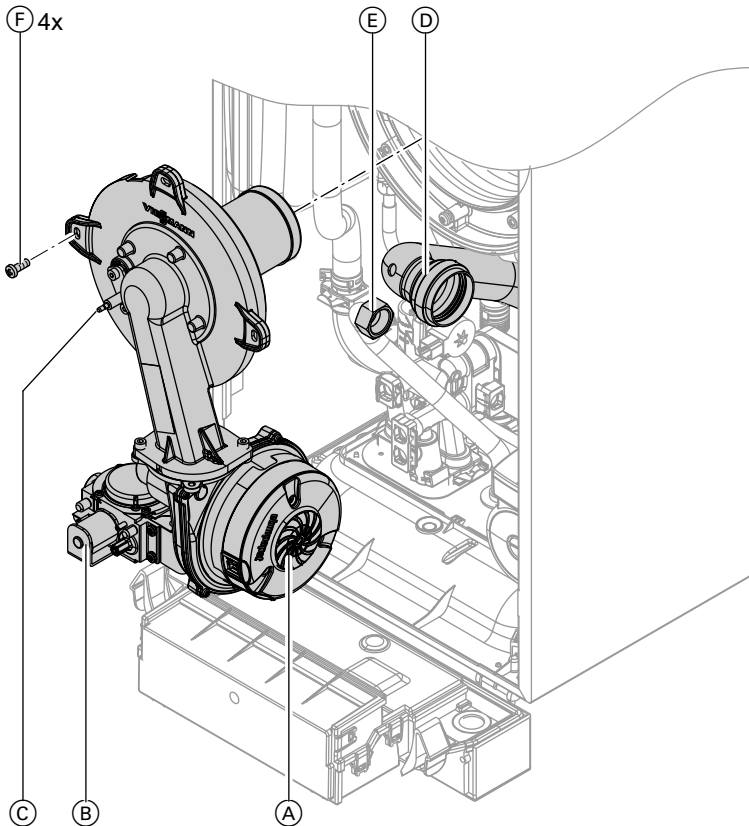
4. Adjust the upper heating output:
Turn rotary selector "🌡️ III" to the control range on the right until the display shows 5 bars for the upper heating output.
5. Check the CO₂ content for the upper heating output.
The CO₂ content must be between 7.0 and 10.5 %.
6. Adjust the lower heating output:
Turn rotary selector "🌡️ III" to the control range on the left until the display shows 1 bar for the lower heating output.
7. Check the CO₂ content for lower heating output.
The CO₂ content must be between approx. 0.3 and 0.9 % below the value for the upper heating output.
8.
 - If the CO₂ content is within the given range, continue with point 10.
 - If the CO₂ content is **outside** the given range, check the flue gas/ventilation air system for tightness; remedy any leaks.
Replace gas train if required
9. Test the CO₂ content for upper and lower heating output again.
10. Shut down the boiler, remove the flue gas analyser and cap flue gas aperture (A).



Further details regarding the individual steps (cont.)

11. Turn both rotary selectors "⚡" and "⏏" into their respective original positions.

Burner removal



1. Switch the power OFF.
2. Shut off the gas supply.
3. Pull power cables from fan motor (A), gas valve (B) and electrodes (C).
4. Pull venturi extension (D) from the fan.
5. Undo gas supply pipe fitting (E).

Further details regarding the individual steps (cont.)

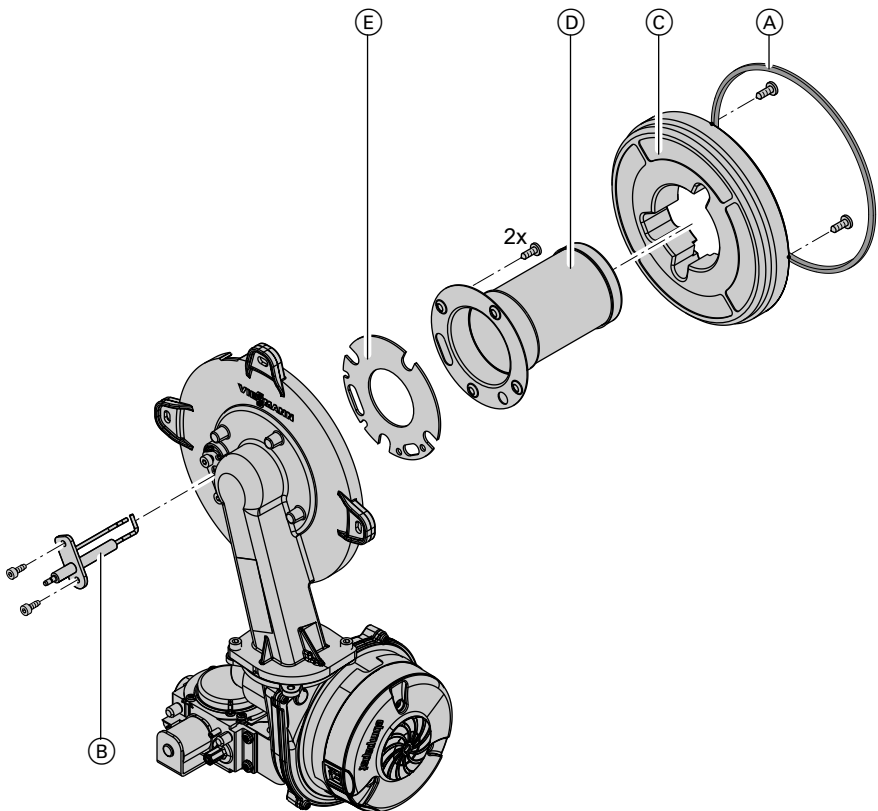
6. Undo four screws (F) and remove the burner.

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

Checking the burner gasket and burner gauze assembly

Check burner gasket (A) for damage and replace if required.

Replace the burner gauze assembly if it is damaged.



1. Remove electrode (B).
2. Undo the two Torx screws and remove thermal insulating ring (C).
3. Undo the two Torx screws and remove burner gauze assembly (D) with gasket (E).

Further details regarding the individual steps (cont.)

4. Insert and secure new burner gauze assembly (D) with new gasket (E).

! **Please note**
Tighten screws sufficiently to prevent the components being damaged and to ensure they function correctly.

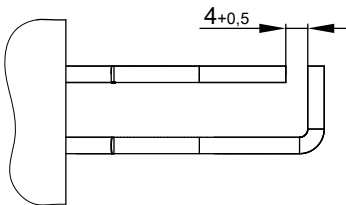
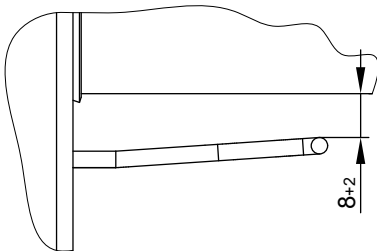
5. Refit thermal insulation ring (C).

! **Please note**
Tighten screws sufficiently to prevent the components being damaged and to ensure they function correctly.

6. Fit electrode (B).

! **Please note**
Tighten screws sufficiently to prevent the components being damaged and to ensure they function correctly.

Checking and adjusting electrode

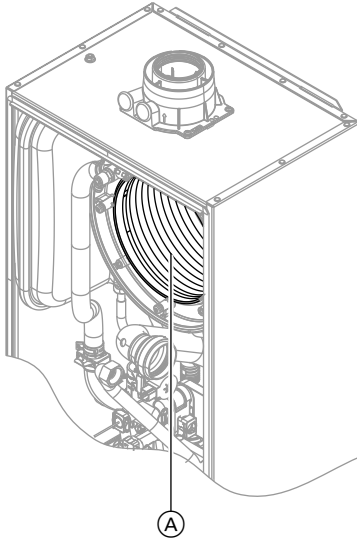


1. Check the electrode for wear and contamination.
2. Clean the electrode with a small brush (not with a wire brush) or emery paper.
3. Check the electrode gaps. If the gaps are not as specified or the electrode is damaged, replace and align the electrode together with a new gasket. Tighten electrode fixing screws.

! **Please note**
Tighten screws sufficiently to prevent the components being damaged and to ensure they function correctly.

Further details regarding the individual steps (cont.)

Cleaning the heat exchanger

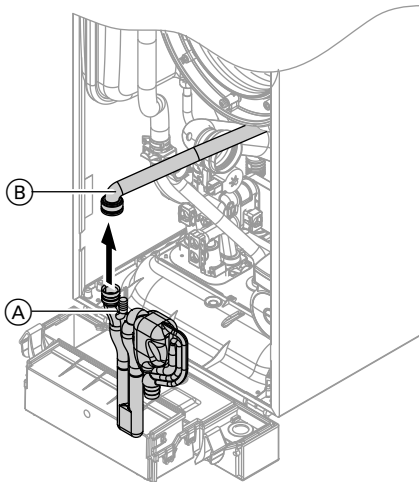


- !** **Please note**
Scratches on parts that are in contact with flue gas can lead to corrosion.
Never use brushes to clean the heat exchanger.

Use a vacuum cleaner to remove residues from heat exchanger (A) inside the combustion chamber.

- If required, spray slightly acidic, chloride-free cleaning agents based on phosphoric acid onto heat exchanger (A) and let the solution soak in for at least 20 min.
- Thoroughly flush heat exchanger (A) with water.

Checking the condensate drain and cleaning the siphon

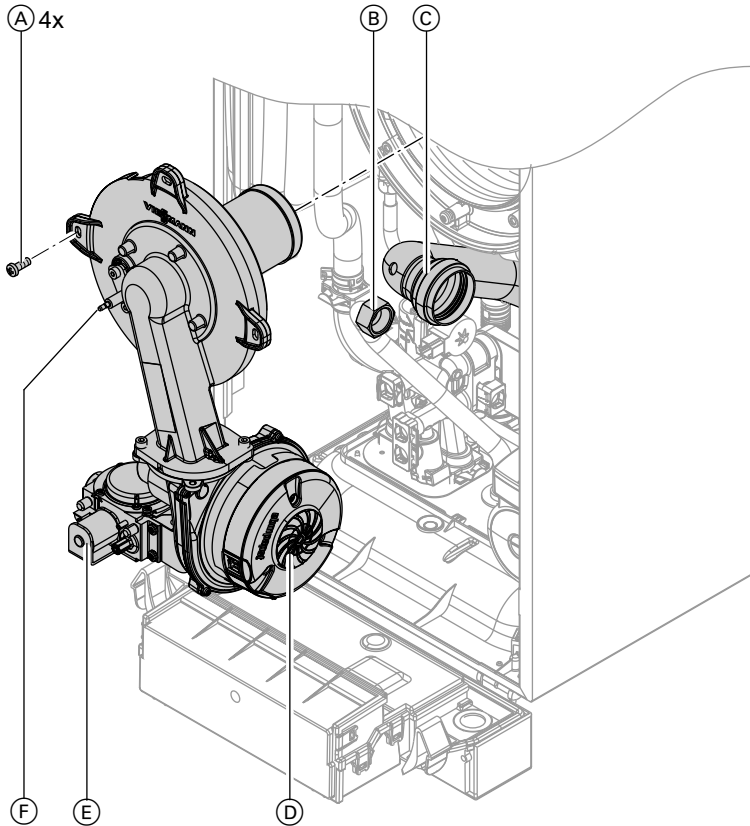


- Pull siphon (A) upwards out of the drain connection.
- Detach supply hose (B) from siphon (A).
- Clean siphon (A).
- Reconnect supply hose (B).
- Refit siphon (A) to the drain connection.
- Fill siphon (A) with water by pouring about 0.3 l of water into the combustion chamber.

Further details regarding the individual steps (cont.)

7. Check that condensate can drain freely and that the connections are tight.

Burner installation



Further details regarding the individual steps (cont.)

1. Fit the burner and tighten four screws (A) diagonally.



Please note

Tighten screws sufficiently to prevent the components being damaged and to ensure they function correctly.

2. Insert new gasket and tighten the fittings on gas supply pipe (B).
3. Plug the venturi extension (C) into the fan.
4. Fit electrical cables to fan motor (D), gas valve (E) and ignition unit (F).
5. Reopen gas supply and switch on power supply.

6. Check the gas connections for tightness.



Danger

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



Please note

The use of leak detection spray can result in incorrect functions.
Leak detection spray must not reach electrical contacts or seal diaphragm openings on the gas valve.

Checking the diaphragm expansion vessel and system pressure

Note

The diaphragm expansion vessel can lose some charge pressure over a time in use. When the boiler heats up, the pressure gauge will indicate a higher pressure of 2 or 3 bar. The safety valve too can respond and discharge excess pressure.

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

1. Drain the system or close the cap valve on the diaphragm expansion vessel and reduce the pressure until the pressure gauge indicates "0".

2. If the pre-charge pressure of the diaphragm expansion vessel is lower than the static system pressure, top up with nitrogen until the pre-charge pressure is raised by 0.1 to 0.2 bar.
3. Top up with water until the charge pressure of the cooled system is at least 1.0 bar and 0.1 to 0.2 bar higher than the pre-charge pressure of the diaphragm expansion vessel.
Permiss. operating pressure: 3 bar

Further details regarding the individual steps (cont.)

Checking gas equipment for tightness at operating pressure



Danger

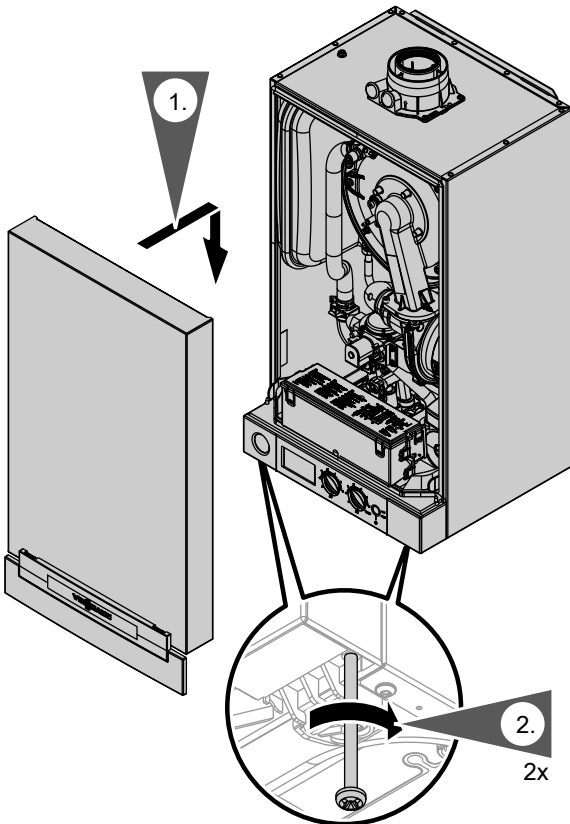
Escaping gas leads to a risk of explosion.
Check gas equipment for tightness.



Please note

The use of leak detection spray can result in incorrect functions. Leak detection spray must not reach electrical contacts or seal diaphragm openings on the gas valve.

Fitting the front panel



1. Hook the front panel into place.

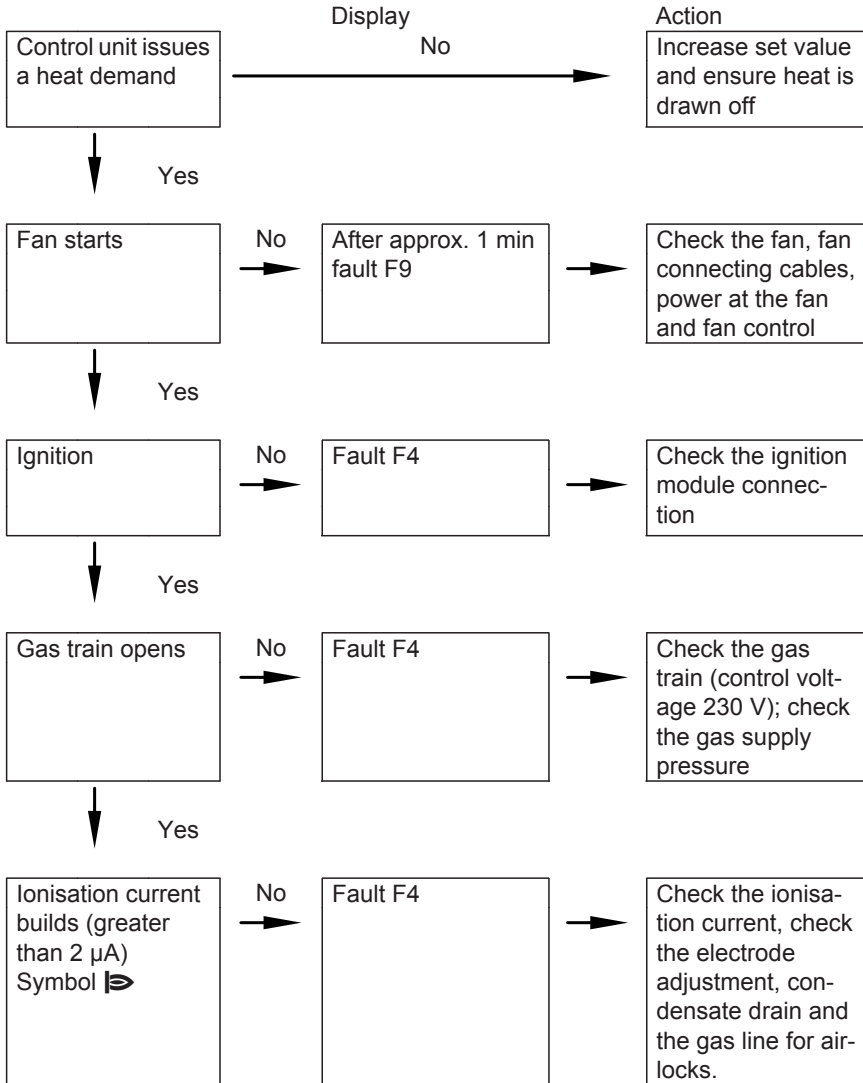
2. Tighten screws at the bottom.

Further details regarding the individual steps (cont.)

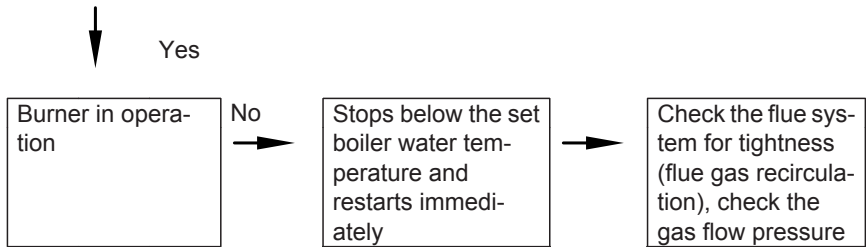
Instructing the system user

The system installer must hand the operating instructions to the system user and instruct the user in the operation of the system.

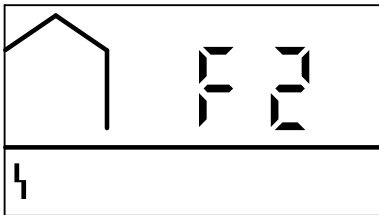
Function sequence and possible faults



Function sequence and possible faults (cont.)



Fault messages on the display



Faults are indicated by a flashing fault code with fault symbol "F" on the display. For fault code explanations see the following table.

Displayed fault code	System characteristics	Cause	Measures
10	Constant mode	Short circuit, outside temperature sensor	Check the outside temperature sensor and lead (see page 49).
18	Constant mode	Lead break, outside temperature sensor	Check the outside temperature sensor and lead (see page 49).
30	Burner blocked	Short circuit, boiler water temperature sensor	Check the boiler water temperature sensor (see page 51).
38	Burner blocked	Lead break, boiler water temperature sensor	Check the boiler water temperature sensor (see page 51).
50	No DHW heating	Short circuit, cylinder temperature sensor	Check the sensor (see page 52).

Fault messages on the display (cont.)

Displayed fault code	System characteristics	Cause	Measures
51	No DHW heating	Short circuit, outlet temperature sensor	Check the sensor (see page 54).
52	Burner blocked	Short circuit, flow sensor	Check connections and lead; replace sensor if required.
58	No DHW heating	Lead break, cylinder temperature sensor	Check the sensor (see page 52).
59	No DHW heating	Lead break, outlet temperature sensor	Check the sensor (see page 54).
5 A	Burner blocked	Lead break, flow sensor	Check connections and lead; replace sensor if required.
A9	Control mode without OpenTherm device	Communication fault OpenTherm device	Check connections and lead; replace OpenTherm device if required.
b0	Burner blocked	Short circuit, flue gas temperature sensor	Check the sensor (see page 55).
b8	Burner blocked	Lead break, flue gas temperature sensor	Check the sensor (see page 55).
E3	Burner in a fault state	Fault in safety chain	Check the temperature limiter and connecting leads (see page 53). Check the control unit, and replace if required.
E5	Burner blocked	Internal fault	Check the ionisation electrode and cables. Press "Reset" (see page 48).
F0	Burner blocked	Internal fault	Replace control unit.
F1	Burner in a fault state	Max. flue gas temperature exceeded	Check heating system fill level. Check circulation pump. Vent the system. Press "Reset" (see page 48).

Fault messages on the display (cont.)

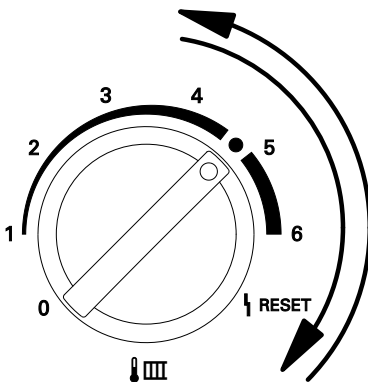
Displayed fault code	System characteristics	Cause	Measures
F2	Burner in a fault state	The temperature limiter has responded	Check heating system fill level. Check circulation pump. Vent the system. Check the temperature limiter and connecting leads (see page 53). Press "Reset" (see page 48).
F3	Burner in a fault state	Flame signal is already present at burner start	Check ionisation electrode and connecting cable. Press "Reset" (see page 48).
F4	Burner in a fault state	No flame signal	Check the ignition/ionisation electrode and cables, check the gas pressure, check the gas train, ignition, ignition module and condensate drain. Press "Reset" (see page 48).
F8	Burner in a fault state	Fuel valve closes too late	Check gas train. Check both control paths. Press "Reset" (see page 48).
F9	Burner in a fault state	Fan speed too low during burner start	Check fan, fan connecting cables and power supply; check fan control. Press "Reset" (see page 48).
FA	Burner in a fault state	Fan not at standstill	Check fan, fan connecting cables and fan control. Press "Reset" (see page 48).
FC	Burner blocked	Electrical fan control (control unit) faulty	Check fan connecting cable; if required, replace or replace control unit.



Fault messages on the display (cont.)

Displayed fault code	System characteristics	Cause	Measures
Fd	Burner blocked	Fault, burner control unit	<p>Check ignition electrodes and connecting cables. Check whether a strong interference (EMC) field exists near the appliance.</p> <p>Press "Reset" (see page 48). Replace control unit if fault persists.</p>
FF	Burner blocked	Fault, burner control unit	<p>Check ignition electrodes and connecting cables. Check whether a strong interference (EMC) field exists near the appliance.</p> <p>Press "Reset" (see page 48). Replace control unit if fault persists.</p>

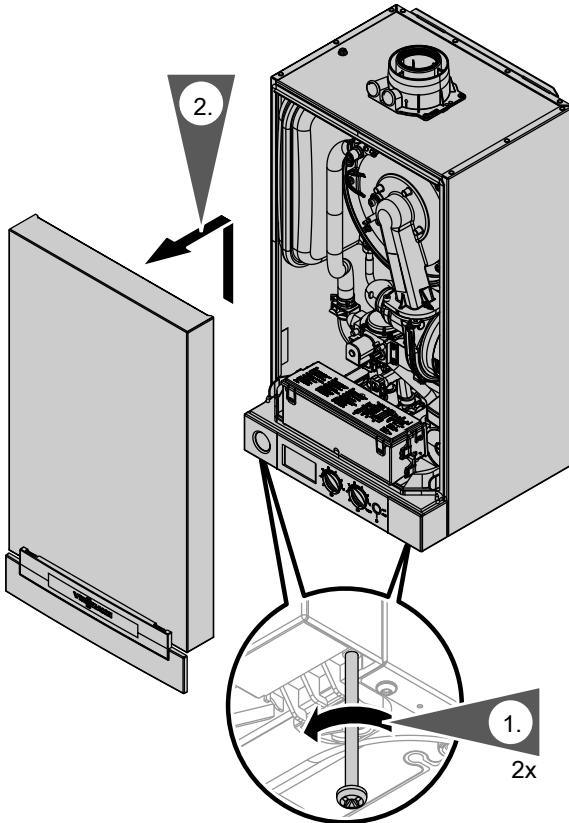
Press reset



Turn rotary selector "🔥" to "RESET" for less than 2 s, then back into the control range.

Repairs

Removing the front panel



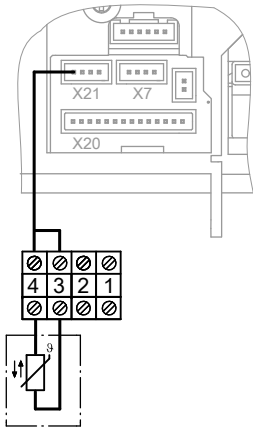
1. Undo screws at the bottom of the boiler; do not remove completely.

2. Remove front panel.

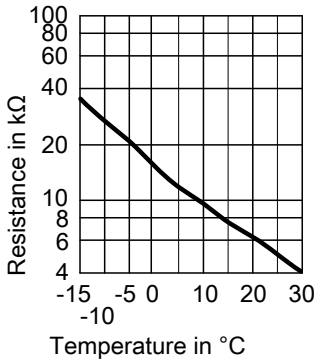
Outside temperature sensor

1. Open the control unit casing. See page 16.

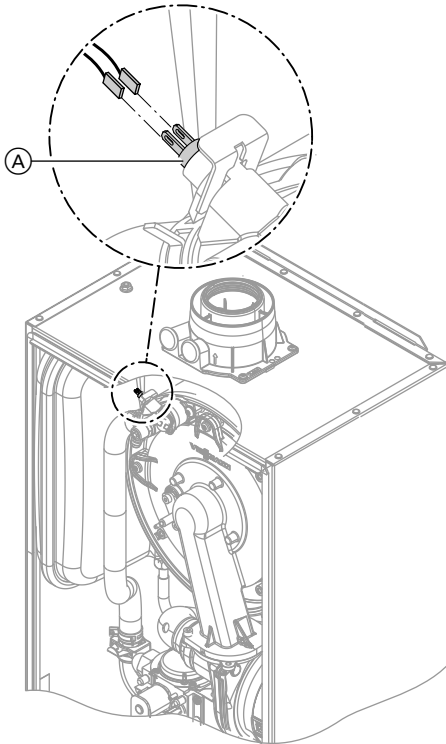
Repairs (cont.)



2. Disconnect leads from outside temperature sensor.

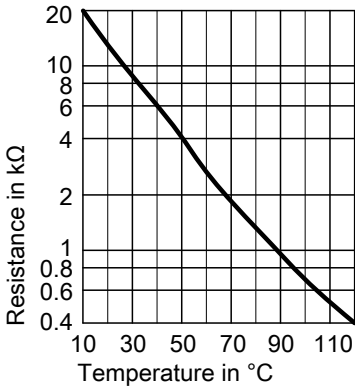


3. Check the sensor resistance and compare it with the curve.
4. Replace the sensor in the case of severe deviation.

Repairs (cont.)**Boiler water temperature sensor**

1. Pull the leads from boiler water temperature sensor (A) and check the resistance.

Repairs (cont.)



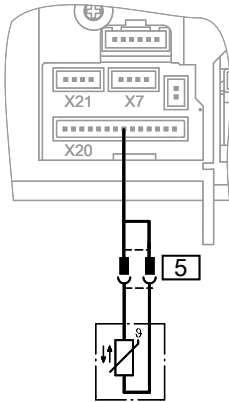
2. Check the sensor resistance and compare it with the curve.
3. In case of severe deviation, drain boiler on the heating water side and replace the sensor.



Danger

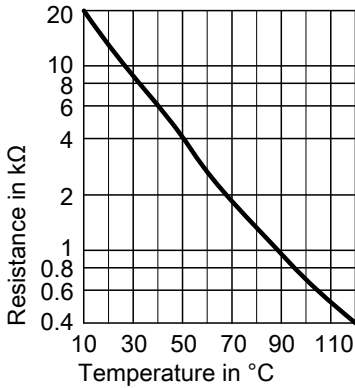
The boiler water temperature sensor is immersed in the heating water (risk of scalding). Drain the boiler before replacing the sensor.

Checking cylinder temperature sensor (gas condensing boiler)



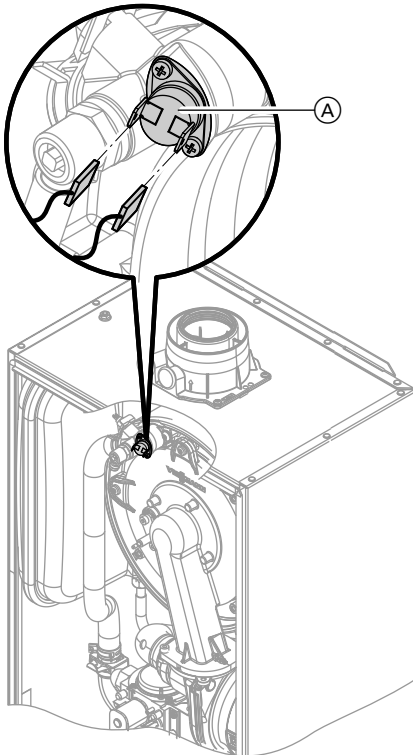
1. Remove plugs **5** from the cable harness and check the resistance.

Repairs (cont.)



2. Compare the sensor resistance with the curve.
3. Replace the sensor in the case of severe deviation.

Checking the temperature limiter

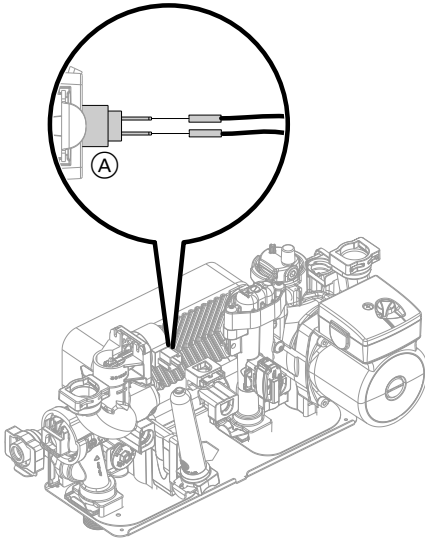


If the burner control unit cannot be reset after a fault shutdown, although the boiler water temperature is below approx. 95 °C, check the temperature limiter.

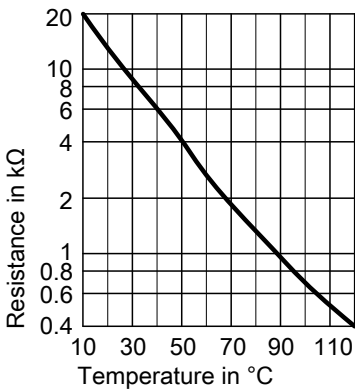
1. Pull the leads from temperature limiter (A).
2. Check the continuity of the temperature limiter with a multimeter.
3. Remove the faulty temperature limiter.
4. Install a new temperature limiter.
5. Press "Reset" at the control unit (see page 48).

Repairs (cont.)

Checking the outlet temperature sensor (gas condensing combi boiler)



1. Pull leads from outlet temperature sensor (A).
2. Check the sensor resistance and compare it with the curve.



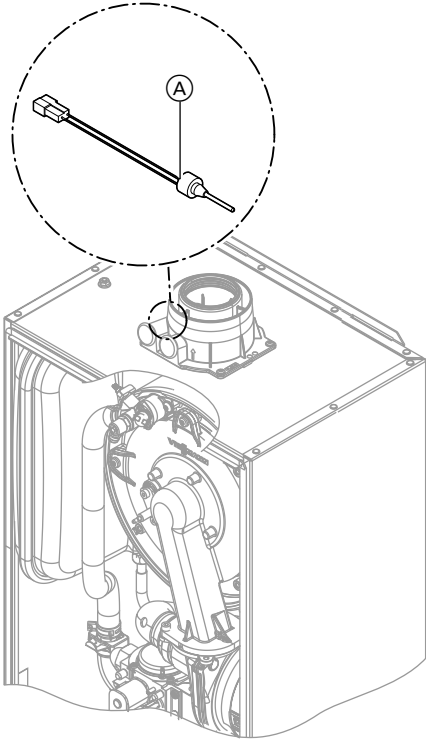
3. Replace the sensor in the case of severe deviation.

Note

Water can leak when replacing the outlet temperature sensor. Shut off the cold water supply. Drain the DHW line and the plate heat exchanger (DHW side).

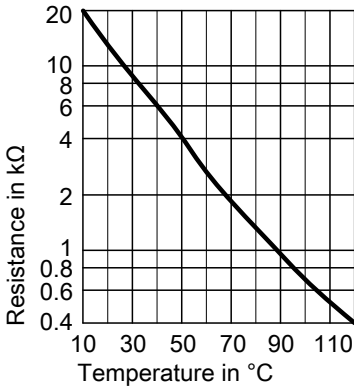
Repairs (cont.)

Checking the flue gas temperature sensor



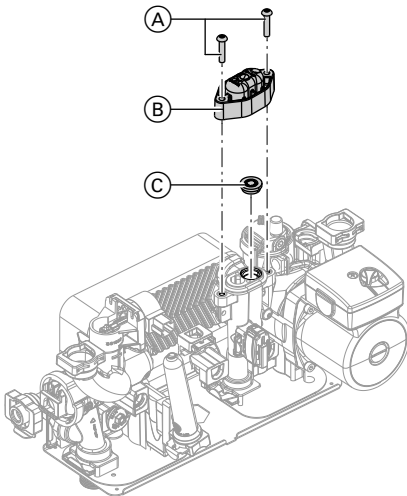
1. Pull leads from flue gas temperature sensor (A).
2. Check the sensor resistance and compare it with the curve.

Repairs (cont.)



3. Replace the sensor in the case of severe deviation.

Replacing flow limiter (gas condensing combi boiler)

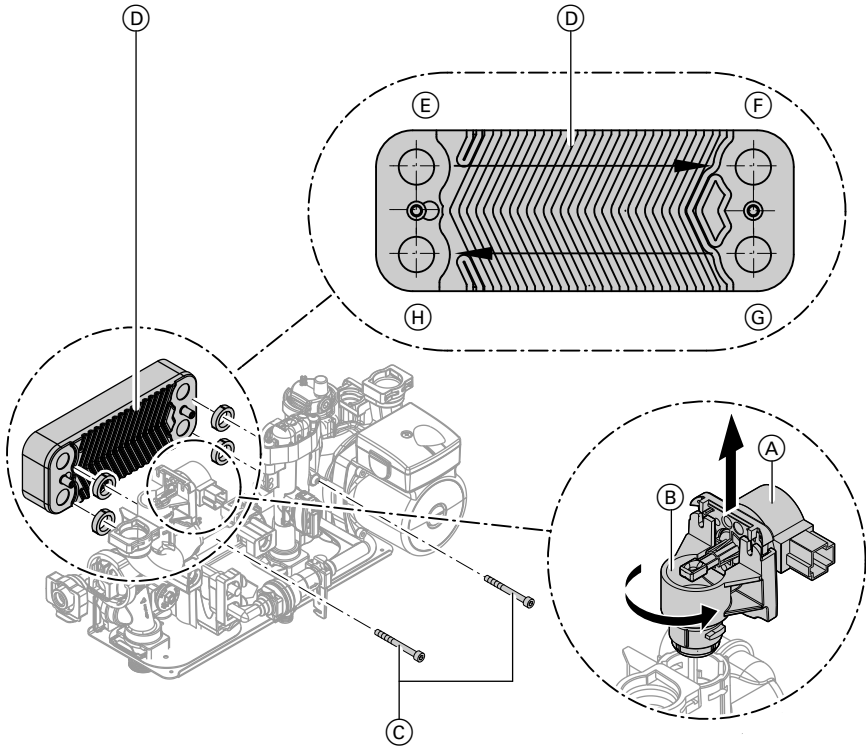


1. Drain the boiler from the DHW side.
2. Pivot the control unit downwards.
3. Undo screws (A).
4. Remove cap (B).
5. Remove faulty flow limiter (C).
6. Select new flow limiter (C) corresponding to boiler serial no. (see type plate) and the following table.
7. Insert new flow limiter (C).
8. Fit new cap (B) provided.

Serial no. (Type plate)	Flow rate l/min	Colour
7499425	10	black
7499427	12	red
7499429	14	brown

Repairs (cont.)

Checking or replacing the plate heat exchanger (gas condensing combi boiler)



- (E) Heating water flow
- (F) Heating water return

- (G) Cold water
- (H) Domestic hot water

1. Shut off and drain the boiler on the heating water and the DHW side.
2. Flip down control unit.
3. Push servomotor (A) slightly upwards.
4. Turn adaptor (B) with servomotor (A) 1/8 of a turn anti-clockwise and remove.

Repairs (cont.)

5. Remove two screws (C) from the plate heat exchanger and remove plate heat exchanger (D) with gas-kets.

Note

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

6. Check the DHW side for scaling and if required clean or replace the plate heat exchanger.

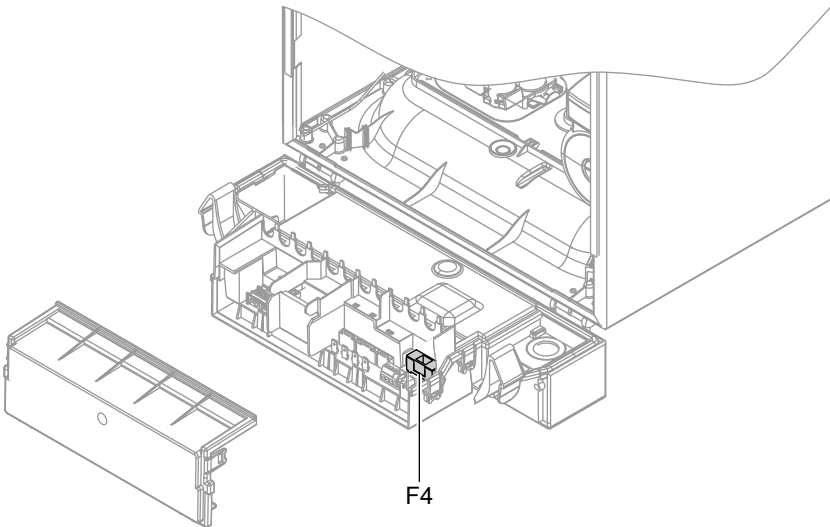
7. Check the heating water side for contamination and if required clean or replace the plate heat exchanger.

8. Install in reverse order with new gas-kets.

Note

During installation, ensure that fixing holes are aligned and gaskets seated correctly. Install the plate heat exchanger the correct way round.

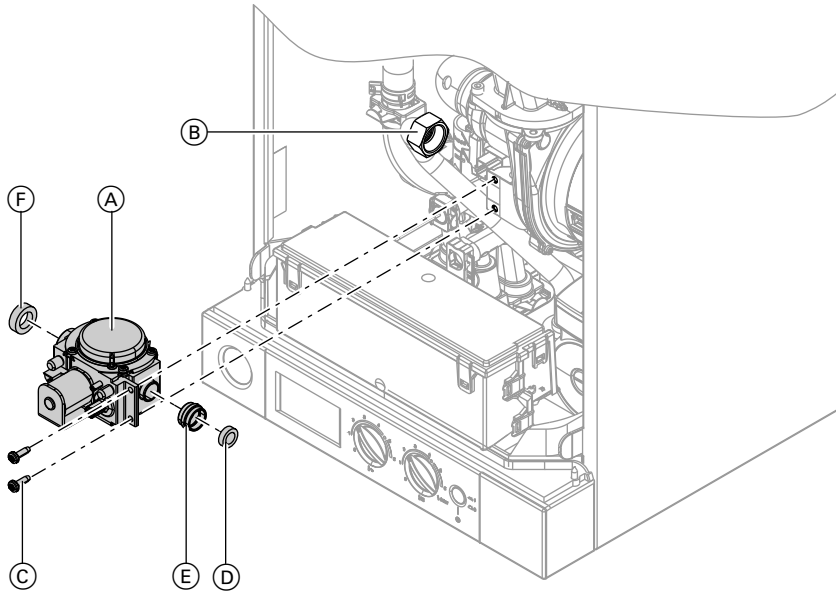
Checking the fuse



1. Switch the power OFF.
2. Open control unit casing (see page 16).
3. Check fuse F4.

Converting from LPG to natural gas

Removing gas restrictor



1. Pull cable from gas train (A).
2. Remove union nut (B).
3. Undo two screws (C) and remove gas train (A).
4. Remove gas restrictor (D) from gas train (A).
5. Mount gas train (A) with new gaskets (E) and (F).
6. Remove or void gas type sticker on the top of the boiler (next to the type plate).
7. Start the boiler and check for leaks.



Danger

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

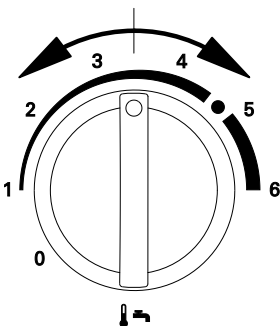
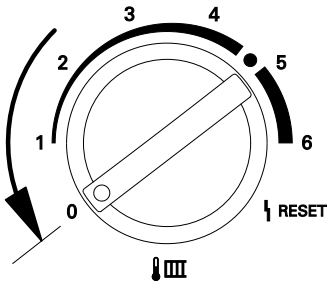
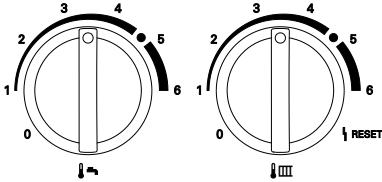


Please note

Tighten screws sufficiently to prevent the components being damaged and to ensure they function correctly.

Converting from LPG to natural gas (cont.)

Converting the gas type at the control unit



1. Turn ON/OFF switch ON.
2. Turn both rotary selectors "🔥🔌" and "🔥📊" simultaneously into their respective central positions. "SERV" appears on the display.
3. Turn rotary selector "🔥📊" fully anti-clockwise within 2 s.
The set value and "▶" flash on the display.
4. Adjust the control unit to natural gas or LPG by turning rotary selector "🔥🔌".
The display shows:
 - "0" for operation with natural gas
or
 - "1" for operation with LPG.
5. The set operating mode is saved when the value stops flashing, and the control unit returns to standard mode.

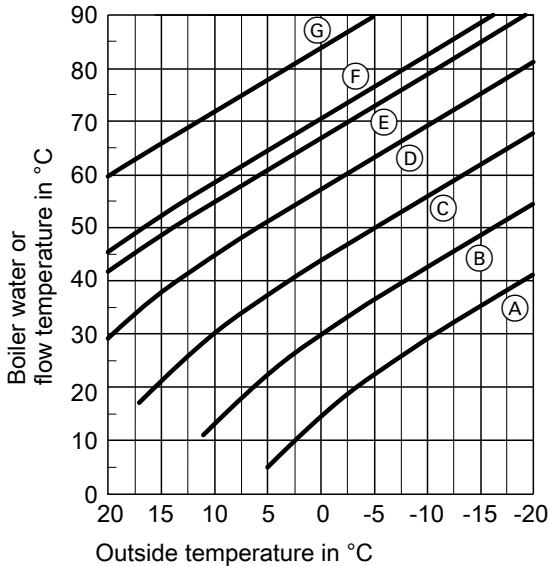
Checking the CO₂ content

See page 34.

Functions and operating conditions in weather-compensated mode

In weather-compensated mode, the boiler water temperature is regulated subject to the outside temperature.

Heating curve of weather-compensated control unit



Setting of rotary selector "🌡️" :

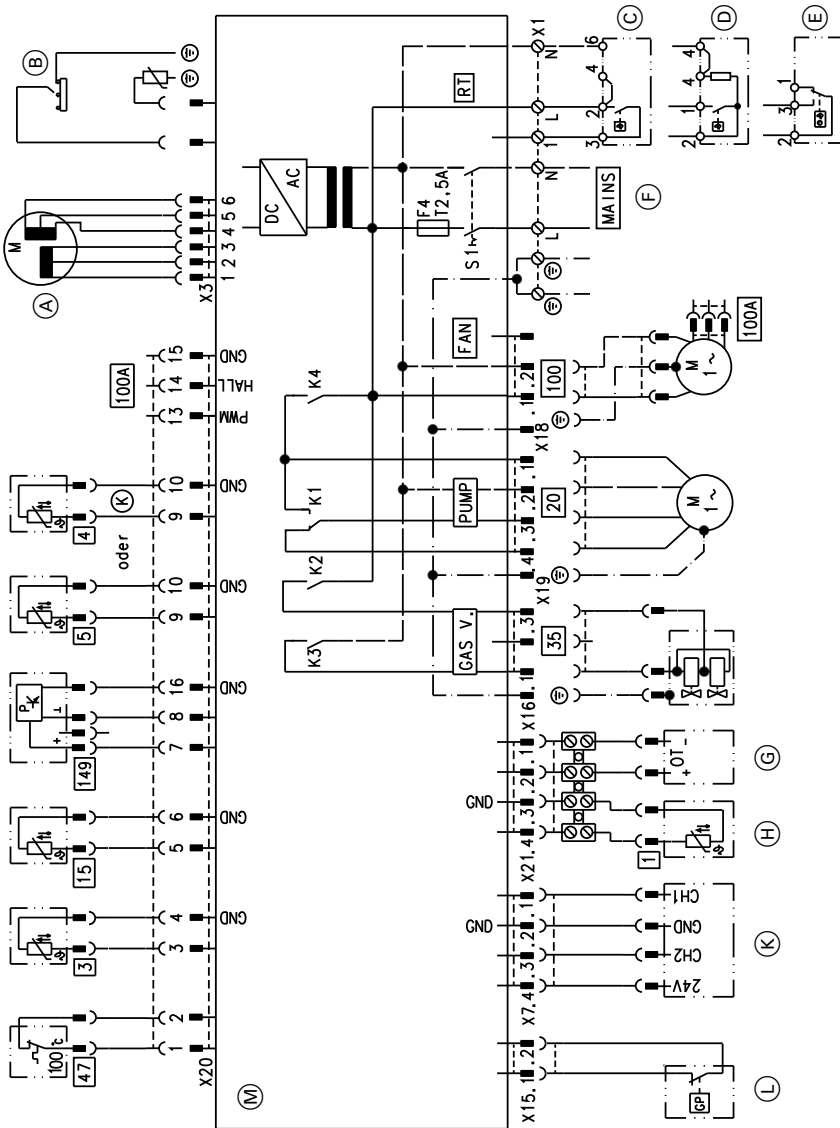
- Ⓐ = 1
- Ⓑ = 2
- Ⓒ = 3
- Ⓓ = 4
- Ⓔ = Delivered condition
- Ⓕ = 5
- Ⓖ = 6

Frost protection function becomes active at outside temperatures of $< 5\text{ °C}$. The burner is switched on and the boiler water temperature is held at 20 °C .

Frost protection function

Frost protection function is only possible when an outside temperature sensor is connected.

Connection and wiring diagram



(A) Stepper motor diverter valve
(B) Ignition/ionisation

(C) Vitotrol 100 type UTA or on-site room temperature controller (switched 230 V input)

Connection and wiring diagram (cont.)

- | | |
|--|--|
| <p>Ⓓ Vitotrol 100 type RT or on-site room temperature controller (switched 230 V input)</p> <p>Ⓔ Vitotrol 100 type UTDB or on-site room temperature controller (switched 230 V input)</p> <p>Ⓕ Mains input 230 V/50 Hz</p> <p>Ⓖ Remote control (OpenTherm device)</p> <p>Ⓕ Outside temperature sensor (accessory)</p> <p>Ⓕ Time switch (accessory)</p> <p>Ⓕ Gas pressure switch (accessory)</p> <p>Ⓕ PCB inside the control unit</p> <p>X ... Electrical interface</p> <p>Ⓕ Boiler water temperature sensor</p> <p>Ⓕ Outlet temperature sensor (gas condensing combi boiler)</p> | <p>Ⓕ Gas condensing boiler:</p> <ul style="list-style-type: none"> ■ In the case of DHW cylinders from Viessmann: Cylinder temperature sensor ■ In the case of alternative DHW cylinders compliant with the G3 Directive: Cylinder demand junction box (for connection of a 230 V cylinder temperature controller and a 2-way shut-off valve) <p>Ⓕ Flue gas temperature sensor</p> <p>Ⓕ Circulation pump 230 V~</p> <p>Ⓕ Gas solenoid valve</p> <p>Ⓕ Temperature limiter</p> <p>Ⓕ Fan motor 230 V~</p> <p>Ⓕ Fan control</p> <p>Ⓕ Flow sensor</p> |
|--|--|

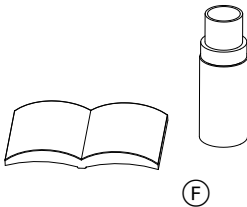
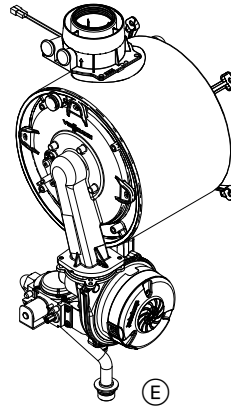
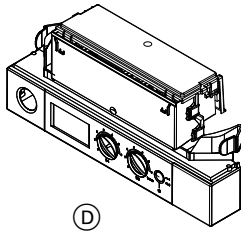
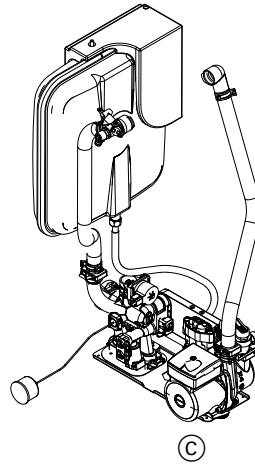
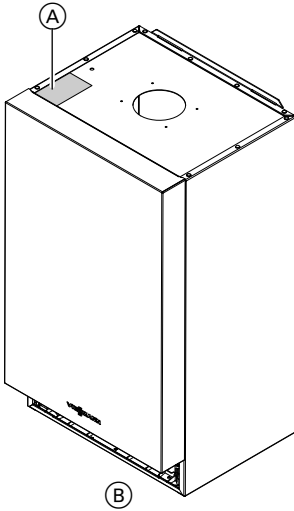
Ordering parts

The following information is required:

- Serial no. (see type plate (A))
- Assembly (from this parts list)
- Position number of the individual part within the assembly (from this parts list)

Obtain standard parts from your local supplier.

Overview of the assemblies



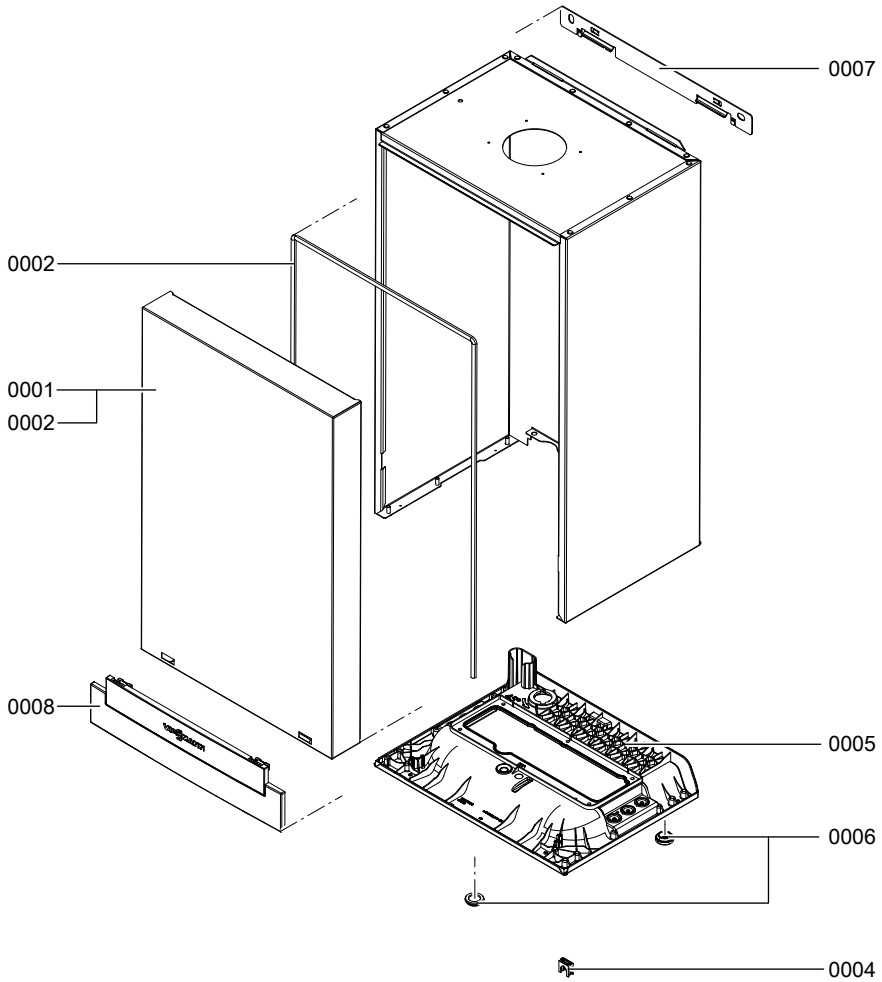
- (A) Type plate
- (B) Sheet metal parts assembly
- (C) Hydraulic assembly

- (D) Control unit assembly
- (E) Heat cell assembly
- (F) Miscellaneous assembly

Sheet metal parts assembly

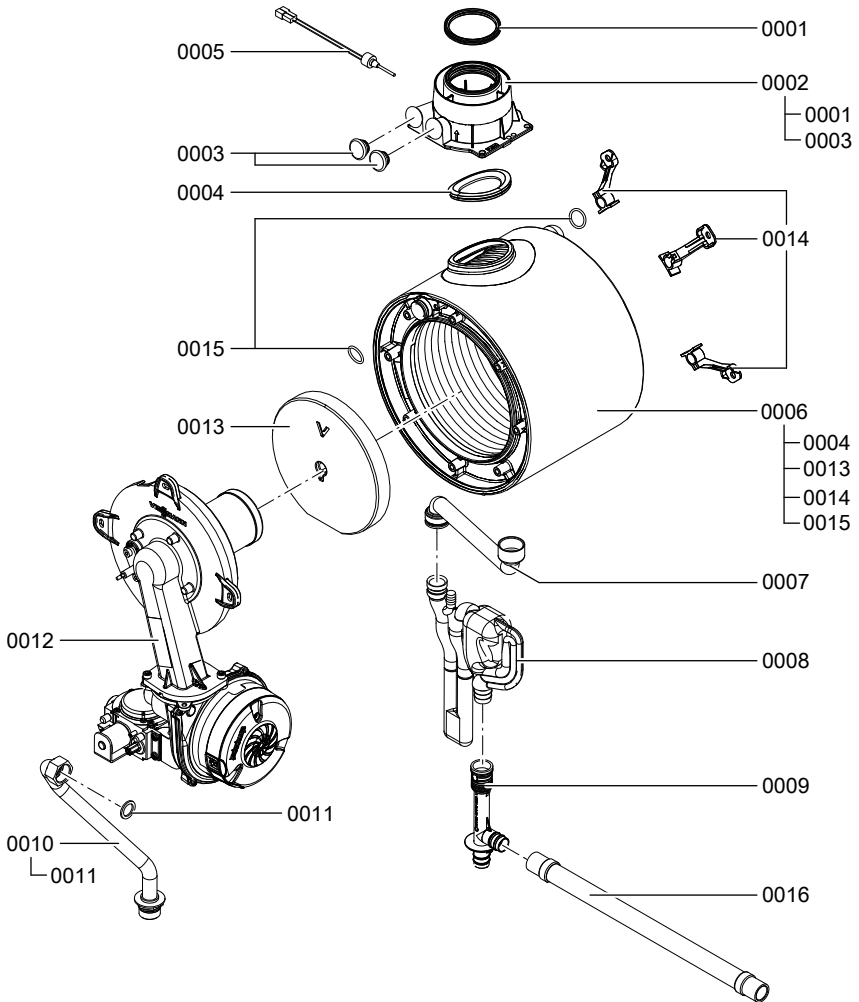
- 0001 Front panel
- 0002 Profiled seal
- 0003 Logo
- 0004 Strain relief upper part

- 0005 Air box floor
- 0006 Diaphragm grommets (set)
- 0007 Wall mounting bracket
- 0008 Control flap



Heat cell assembly

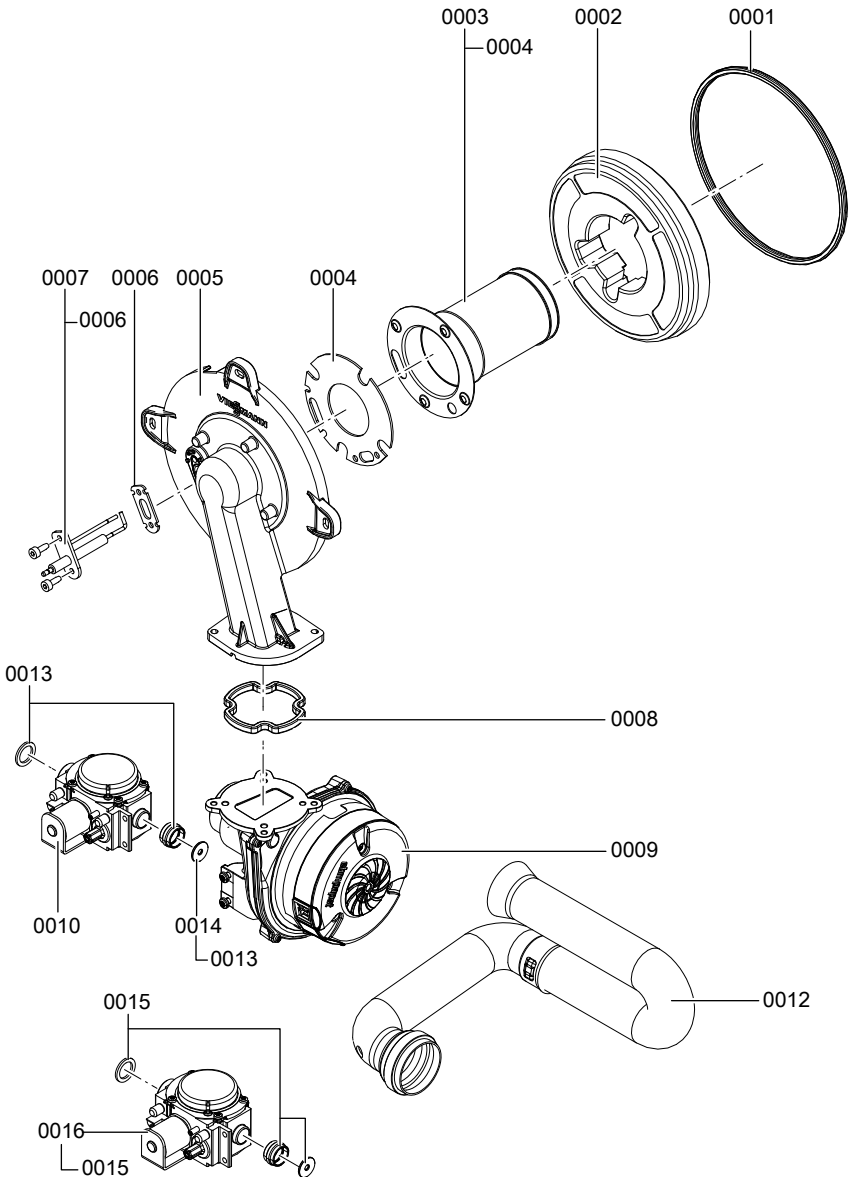
- | | | | |
|------|-----------------------------|------|-------------------------------|
| 0001 | Gasket DN 60 | 0009 | Tee |
| 0002 | Boiler flue connection | 0010 | Gas pipe |
| 0003 | Boiler flue connection plug | 0011 | Gasket 17 x 24 x 2 (set) |
| 0004 | Flue gas gasket | 0012 | Burner |
| 0005 | Flue gas temperature sensor | 0013 | Thermal insulation block |
| 0006 | Heat exchanger | 0014 | Heat exchanger mounting (set) |
| 0007 | Condensate hose | 0015 | O-ring gasket set 20.6 x 2.6 |
| 0008 | Siphon | 0016 | Condensate hose 400 mm long |



Burner assembly

0001	Burner gasket	0009	Radial fan
0002	Insulation ring	0010	Gas valve
0003	Cylinder burner gauze assembly	0012	Venturi extension
0004	Burner gauze assembly gasket	0013	Gasket A 17 x 24 x 2 (set)
0005	Burner door	0014	Conversion kit G31
0006	Ionisation electrode gasket	0015	Gasket set G27 (not GB)
0007	Ignition and ionisation electrode	0016	Conversion kit G2.350/G27 (not GB)
0008	Burner door flange gasket		

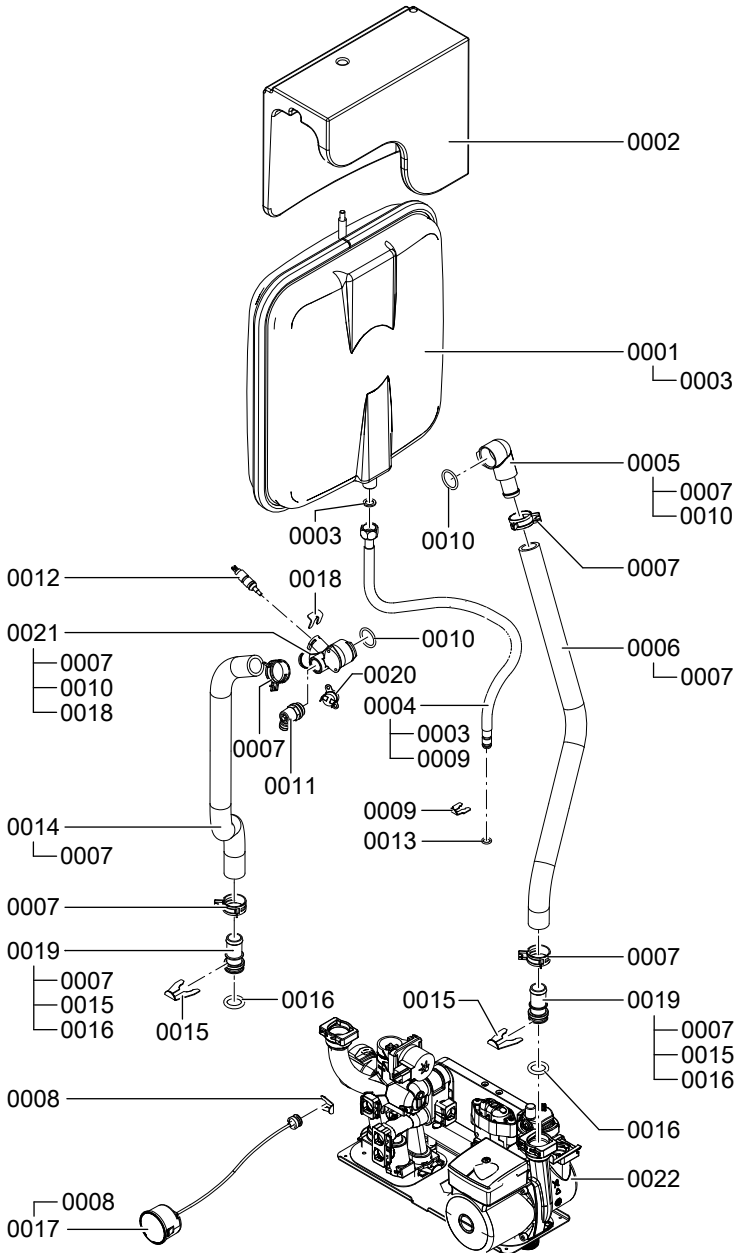
Burner assembly (cont.)



Hydraulic assembly

0001	Diaphragm expansion vessel	0011	Air vent valve G $\frac{3}{8}$
0002	Support block, diaphragm expansion vessel	0012	Temperature sensor
0003	Gasket A 10 x 15 x 1.5 (set)	0013	Round sealing ring 8 x 2
0004	Connection line; diaphragm expansion vessel	0014	Moulded hose heating water flow
0005	Heating water return connection elbow	0015	Clip Ø 18 (5 pce)
0006	Moulded hose heating water return	0016	O-ring 17 x 4 (5 pce)
0007	Hose clip DN 25	0017	Pressure gauge
0008	Clip Ø 10 (5 pce)	0018	Clip Ø 8 (5 pce)
0009	Clip Ø 8 (5 pce)	0019	Hose connector adaptor
0010	O-ring gasket set 20.6 x 2.6	0020	Thermal circuit breaker
		0021	Heating water flow connection elbow
		0022	Hydraulics

Hydraulic assembly (cont.)



5009 059 GB

Service

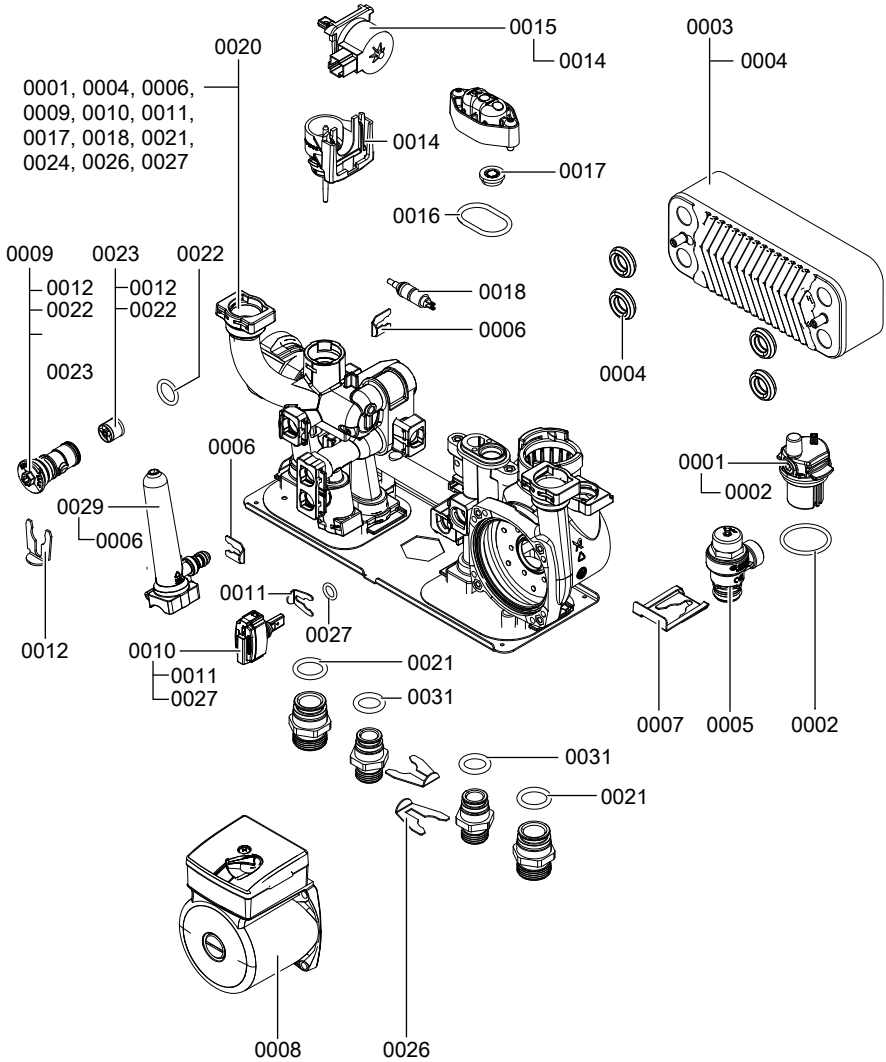
System boiler hydraulic assembly

0001	Air vent valve	0015	Linear stepper motor
0002	O-ring 34 x 3 (5 pce)	0016	Oval cap seal (5 pce)
0004	Gasket set, plate heat exchanger	0020	Hydraulics
0005	Safety valve 3 bar	0021	O-ring 19.8 x 3.6 (5 pce)
0007	Special safety valve clip (5 pce)	0022	O-ring 16 x 3 (5 pce)
0008	Pump motor	0023	Check valve
0009	Bypass cartridge	0026	Clip Ø 18 (5 pce)
0012	Clip Ø 16 (5 pce)	0031	O-ring 17 x 4 (5 pce)
0014	Stepper motor adaptor		

Combi hydraulic assembly

0001	Air vent valve	0015	Linear stepper motor
0002	O-ring 34 x 3 (5 pce)	0016	Oval cap seal (5 pce)
0003	Plate heat exchanger	0017	Water volume controller
0004	Gasket set, plate heat exchanger	0018	Temperature sensor
0005	Safety valve	0020	Hydraulics
0006	Clip Ø 8 (5 pce)	0021	O-ring 19.8 x 3.6 (5 pce)
0007	Safety valve clip (5 pce)	0022	O-ring 16 x 3 (5 pce)
0008	Pump motor	0023	Check valve
0009	Bypass cartridge	0026	Clip Ø 18 (5 pce)
0010	Flow sensor	0027	O-ring 9.6 x 2.4 (5 pce)
0011	Clip Ø 10 (5 pce)	0029	Expansion tank
0012	Clip Ø 16 (5 pce)	0031	O-ring 17 x 4 (5 pce)
0014	Stepper motor adaptor		

Combi hydraulic assembly (cont.)



Control unit assembly

0001 Cover, wiring chamber
0002 Clip hinge

0003 Profiled seal
0004 Control unit

Control unit assembly (cont.)

0005 Cable harness X20

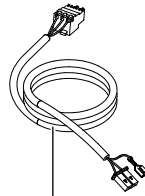
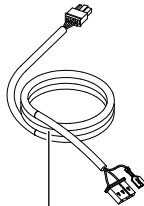
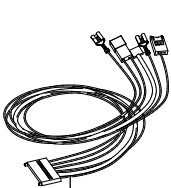
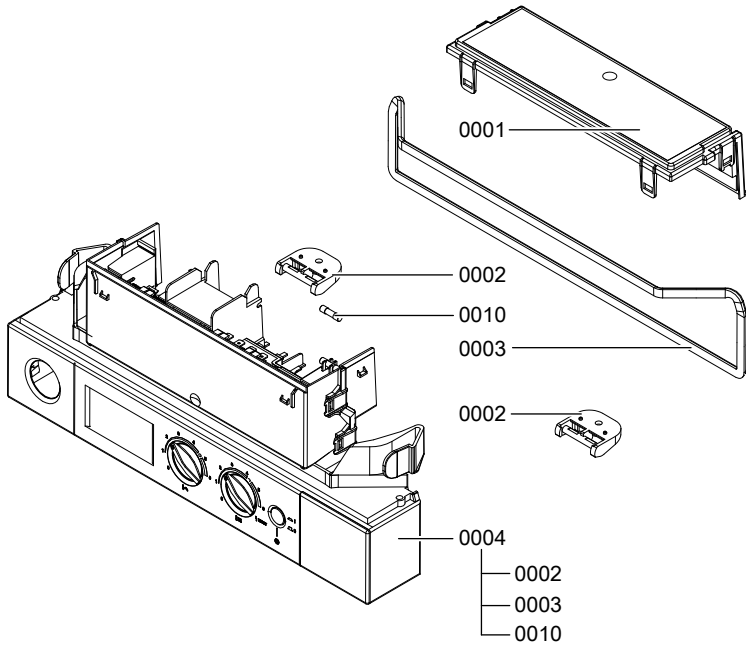
0006 Ignition cable with elbow plug
5 k Ω

0007 Gas valve cable

0008 Fan connecting cable

0009 Cable harness stepper motor

0010 Fuse 2.5 A (slow) 250 V



Miscellaneous assembly

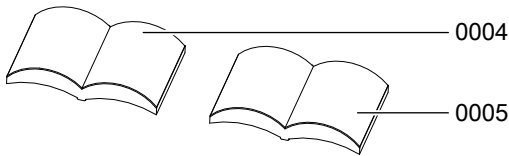
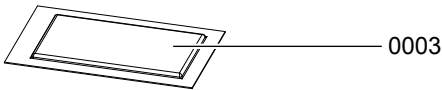
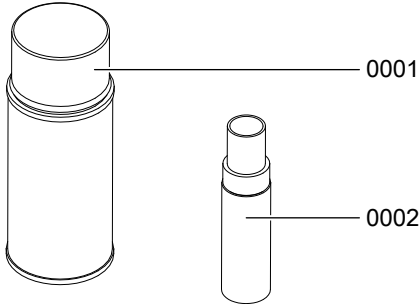
0001 Spray paint, Vitowhite

0002 Touch-up paint stick, Vitowhite

0003 Special grease

0004 Operating instructions

0005 Installation and service instructions



Specification

Rated voltage:	230 V~	Temperature limiter setting:	100 °C (fixed)
Rated frequency:	50 Hz	Backup fuse (power supply):	3 A
Rated current:	2.0 A~		
Safety category:	I		
IP rating:	IP X4 to EN 60529		

Permissible ambient temperature

- during operation: 0 to +40 °C
- during storage and transport: -20 to +65 °C

Gas boiler, category II_{2H3P}

Rated heating output range in heating mode					
T_V/T_R 50/30 °C	kW	6.5 – 19	6.5 – 26	8.8 – 30	8.8 – 35
T_V/T_R 80/60 °C	kW	5.9 – 17.3	5.9 – 23.7	8.0 – 27.3	8.0 – 31.9
Rated heating output range for DHW heating (gas condensing combi boiler)	kW	—	5.9 – 26.0	8.0 – 30.0	8.0 – 35.0
Rated heat input range	kW	6.1 – 17.8	6.1 – 24.3	8.2 – 28.0	8.2 – 32.7
Connection values *1 relative to the max. load with:					
- Natural gas E	m ³ /h	1.9	2.6	3.0	3.5
- LPG P	kg/h	1.4	1.9	2.2	2.6
Power consumption (max.)					
- Gas condensing boiler	W	102	107	106	154
- Gas condensing combi boiler	W	—	119	132	158
Gas condensing combi boiler (DHW heating) Permiss. operating pressure	bar	—	10	10	10

*1 The connection values are only for documentation purposes (e.g. in the gas contract application) or to estimate a supplementary volumetric settings check. Due to the factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar.

Specification (cont.)

Rated heating output range in heating mode					
T_V/T_R 50/30 °C	kW	6.5 – 19	6.5 – 26	8.8 – 30	8.8 – 35
T_V/T_R 80/60 °C	kW	5.9 – 17.3	5.9 – 23.7	8.0 – 27.3	8.0 – 31.9
Rated water volume at ΔT 35 K (to EN 13203)	l/min	—	10.6	12.3	14.3
Set flow rate (max.)	l/min	—	10.0	12.0	14.0
Product ID	CE-0085BT0029				

Declaration of conformity

Declaration of Conformity for the Vitodens 100-W

We, Viessmann Werke GmbH&Co KG, D-35107 Allendorf, confirm as sole responsible body that the product **Vitodens 100-W** complies with the following standards:

EN 297	EN 55 014-2
EN 483	EN 60 335-1
EN 625	EN 60 335-2-102
EN 677	EN 61 000-3-2
EN 806	EN 61 000-3-3
EN 12 897	EN 62 223
EN 55 014-1	

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

92/42/EEC	2006/95/EC
2004/108/EC	2009/142/EC

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

Allendorf, 1 January 2012

Viessmann Werke GmbH&Co KG



Authorised signatory Manfred Sommer

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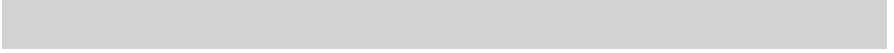
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Applicability

Serial No.:

7499423
7499427

7499424
7499428

7499425
7499429

7499426

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