

Installation and service instructions

for contractors

VIESSMANN

Vitodens 100-W

Type WB1A

Gas fired wall mounted condensing boiler

Natural gas version

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 CORGI registered gas installer.
- Electrical work must be compliant with Part P of the building regulations
- The system must be commissioned by a CORGI registered installer.

If you notice a smell of gas



Danger

Escaping gas can cause explosions which may lead to serious injury.

- Do not smoke. Prevent naked flames and sparks. Never operate light switches or those of electrical equipment.
- Open windows and doors.
- Close the gas shut-off valve.
- Remove all personnel from the danger zone.
- Observe the safety regulations of your local gas supplier, found on the gas meter.
- Contact your CORGI registered installer or TRANSCO.

If you smell flue gas



Danger

Flue gas may lead to life-threatening poisoning.

- Heating system shutdown
- Ventilate the boiler room.
- Close all doors leading to the living space.
- Do not operate electrical switches.

Safety instructions (cont.)

Working on the heating system

- Isolate the system from the mains electric power supply, e.g. by removing a separate fuse or by means of a mains electrical isolator, and check that it is no longer 'live'.
- Isolate the gas supply and safeguard against unauthorised reopening.

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 consumable parts



Please note

Spare and consumable parts which have not been tested together with the heating system can compromise its function. Installing non-authorised components and non-approved modifications/conversion can compromise safety and may compromise our warranty conditions.

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, WB1A

Set up for operation with natural gas.

Preparing for installation

General Information

Appliance description

The Vitodens 100-W is a fully automatic, wall hung, fan assisted balanced flue condensing boiler for use with Natural Gas (G20) and is designed for use with fully pumped systems only.

There are three models of the Vitodens 100-W in the range which are fully modulating between 8.0 kW (27.300 Btu/h) and 13.0 kW (44.400 Btu/h)/18.0 kW (61.400 Btu/h)/24.0 kW (81.900 Btu/h).

Certification details

The Vitodens 100-W is certified to comply with the requirements of pr EN 483 and EN 625 for use in GB and IE (Great Britain and Ireland) using gas category 2H (G20) with a governed gas supply at 20 mbar (8 in.wg) inlet pressure.

Internal frost protection and an electronic control unit is fitted as standard equipment. The boiler may be used with any suitable room thermostat and / or time clock in addition to the optional controls available from Viessmann.

Asbestos, mercury or CFC's have not and will not be used in this product.

The appliance classification is either C_{13x}, C_{33x}, C₆₃ or C_{63x} depending upon whether horizontal or vertical flue termination is used.

Preparing for installation

Preparing for installation (cont.)

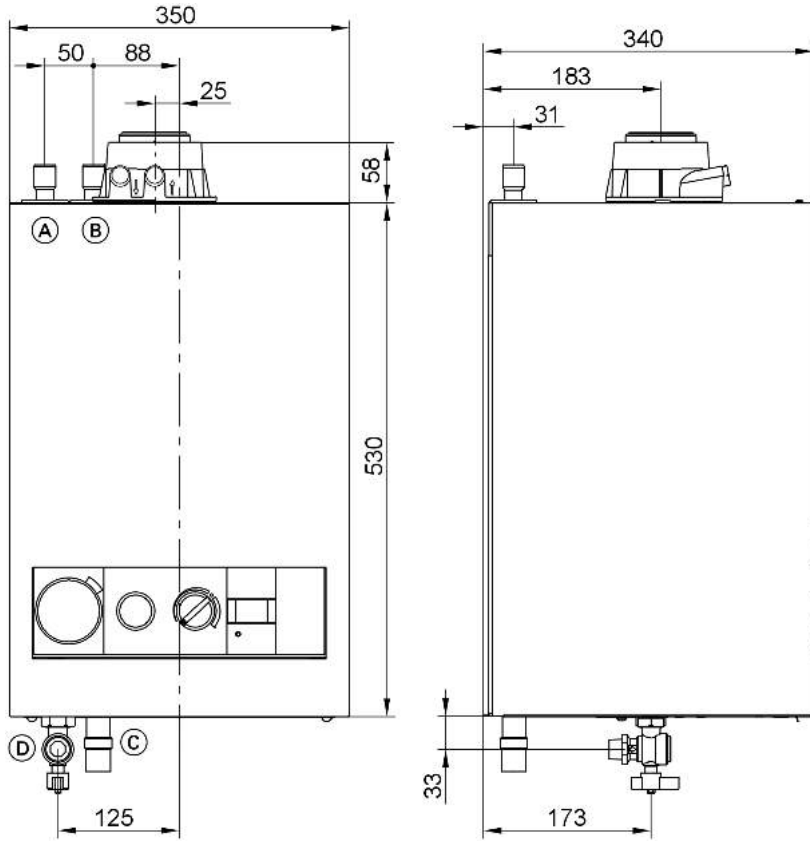
Technical Specification

General Specifications and Performance Data

Rated output range				
T_F/T_R 50/30 °C	kW	8 to 13	8 to 18	8 to 24
T_F/T_R 80/60 °C	kW	7.3 to 11.8	7.3 to 16.4	7.3 to 21.8
Rated heat load range	kW	7.4 to 12.1	7.4 to 16.7	7.4 to 22.3
Maximum gas rate	m ³ /h	1.28	1.77	2.36
Minimum CH system pressure (static head) – Cold	bar	0.2	0.2	0.2
Maximum CH system pressure (static head) – Hot	bar	1.0	1.0	1.0
Maximum CH flow temperature	°C	80	80	80
Lift weight	kg	37	37	37
Total weight inc. packaging	kg	39	39	39
Electrical supply		230 V, 50Hz	230 V, 50Hz	230 V, 50Hz
Internal fuse	A	4	4	4
Maximum power consumption	W	55	55	55
Inner flue duct (Diameter Ø):	mm	60	60	60
Outer Flue Duct (Diameter Ø)	mm	100	100	100
Product ID		CE-0085 BQ 0017		
Gas Council Number		41-819-13	41-819-12	41-819-10

Preparing for installation (cont.)

Overall Appliance Dimensions



- (A) Heating return: $\varnothing 22$ mm
- (B) Heating flow: $\varnothing 22$ mm

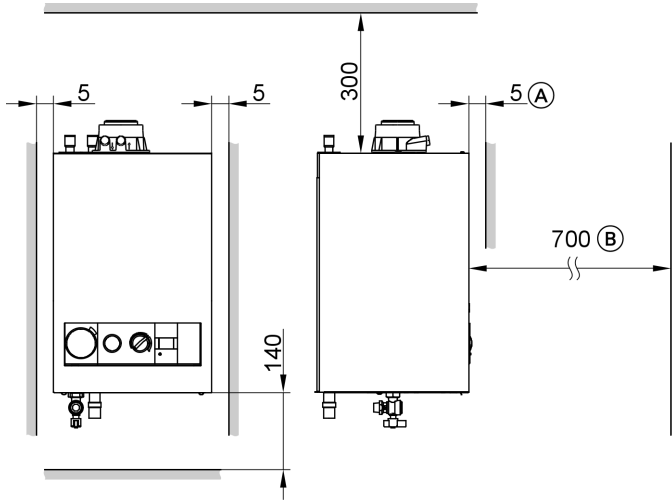
- (C) Condensate drain: Plastic pipe $\varnothing 22$ mm
- (D) Gas connection: R $\frac{1}{2}$ FBSP

Minimum installation clearances

The following minimum clearances (mm) must be maintained for installing and servicing the appliance.

Preparing for installation

Preparing for installation (cont.)



Ⓐ Front (behind removable panel)

Ⓑ Front (for service)

Flue System Specifications

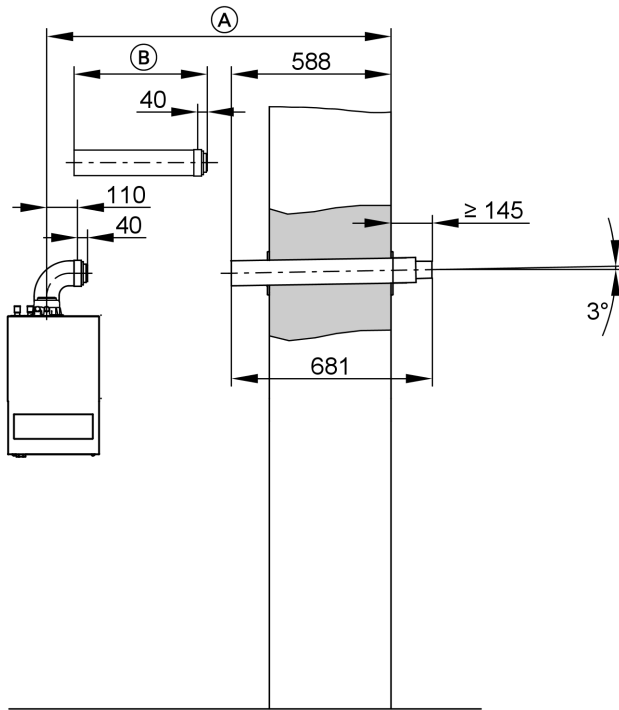
Concentric Horizontal Flue System

Standard horizontal flue kit: The appliance can be supplied complete with a standard concentric horizontal flue terminal assembly, suitable for flue lengths of up to 620 mm from the centre of the flue outlet, which equates to wall thicknesses of up to 480 mm for rear flues and 463 mm for side flues, including minimum clearances.

Extension ducts can be used to increase the straight flue length up to 6 m and include one 87° elbow.

Preparing for installation (cont.)

An extra 87° elbow can be used but this reduces the maximum permissible length by 1 m . An extra 45° elbow can be used but this reduces the maximum permissible length by 0.5 m .



Ⓐ Combined length of flue outlet/ventilation pipe max 6m.

Ⓑ Flue outlet/ventilation pipe (can be shortened as necessary)

Concentric Vertical Flue System

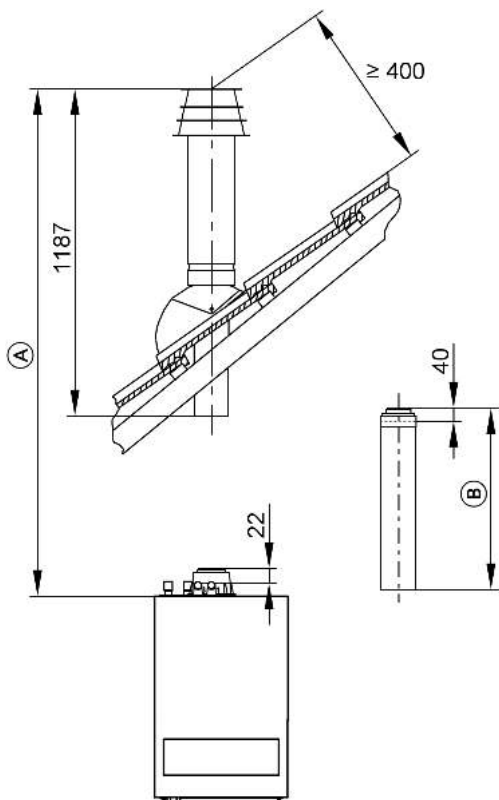
The vertical flue kit (optional extra) with extensions may be used for up to 10 m applications.

An extra 87° elbow can be used but this reduces the maximum permissible length by 1 m . An extra 45° elbow can be used but this reduces the maximum permissible length by 0.5 m .

Preparing for installation

Preparing for installation (cont.)

Before commencing the installation refer to diagram below to determine which optional extension kits are required, if any.

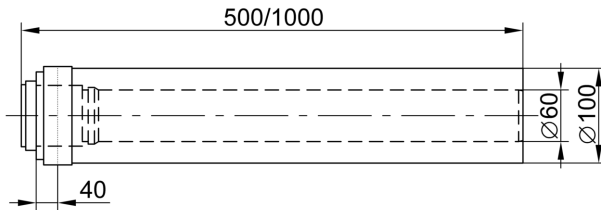


Ⓐ Combined length of flue outlet/ventilation pipe max. 10 m.

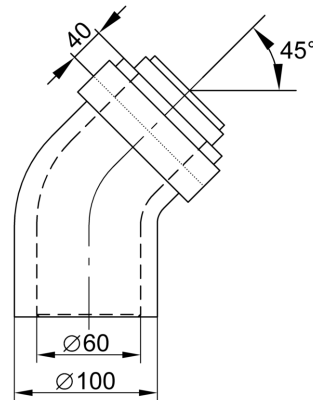
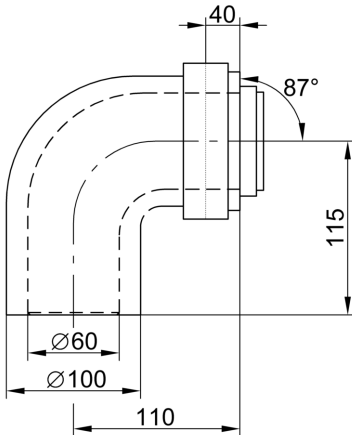
Ⓑ Flue outlet/ventilation pipe (can be shortened as necessary)

Preparing for installation (cont.)

Elbows and extensions



Extension



Elbow 45°

Elbow 87°

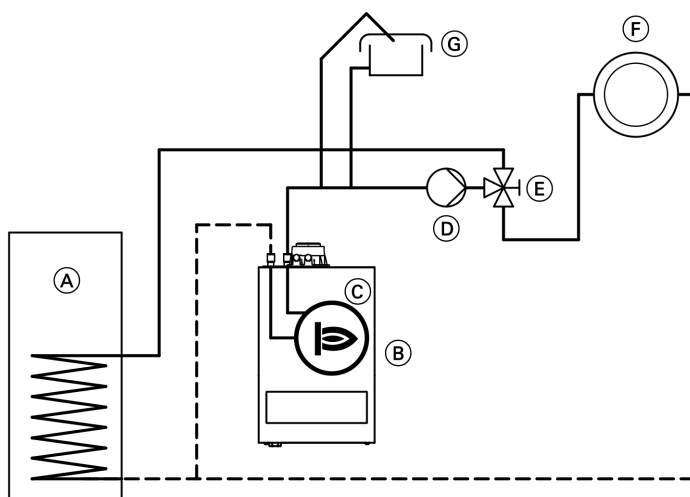
Installation

Preparing for installation

Preparing for installation (cont.)

Hydraulic circuit

Y-Plan System



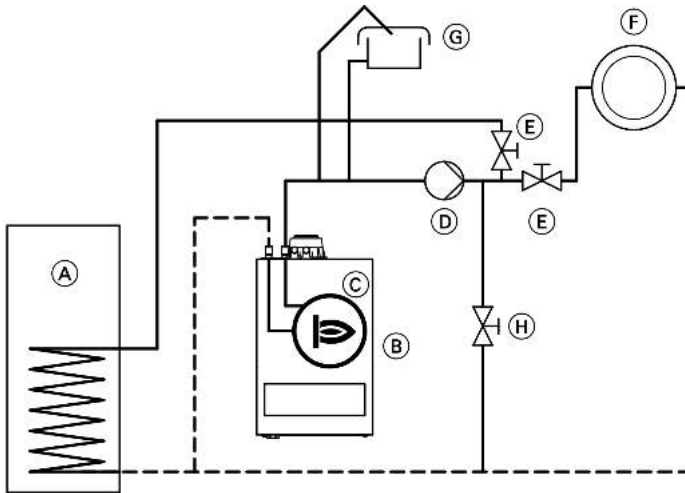
- Ⓐ DHW cylinder
- Ⓑ Boiler
- Ⓒ Heat exchanger
- Ⓓ Circulation pump

- Ⓔ Three-port diverter valve
- Ⓕ Heating circuit
- Ⓖ Feed & expansion tank

Note: The flow and return to the cylinder can be connected either way round, however the optimum method would be to connect the flow to the bottom connection of the cylinder.

Preparing for installation (cont.)

S-Plan System



- (A) DHW cylinder
- (B) Boiler
- (C) Heat exchanger
- (D) Circulation pump
- (E) Zone 2 port valve
- (F) Heating circuit
- (G) Feed & expansion tank
- (H) Bypass with Lockshield Valve

Note: The flow and return to the cylinder can be connected either way round, however the optimum method would be to connect the flow to the bottom connection of the cylinder

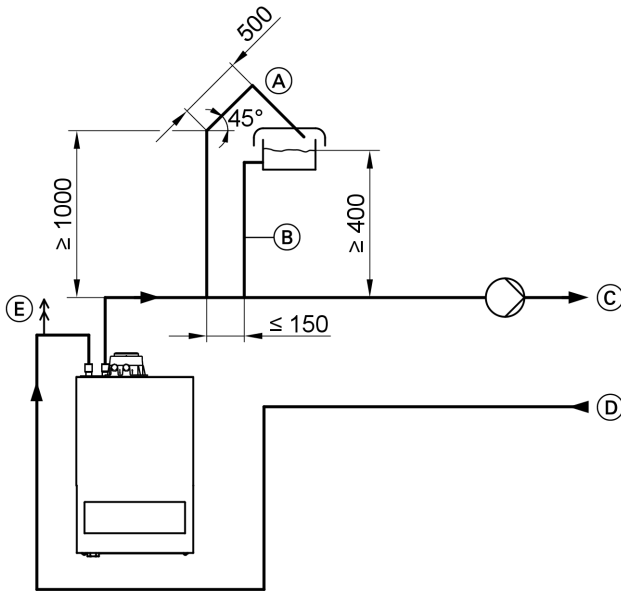
Installation

Preparing for installation

Preparing for installation (cont.)

Low Head Installation

Typical Low Head Installation

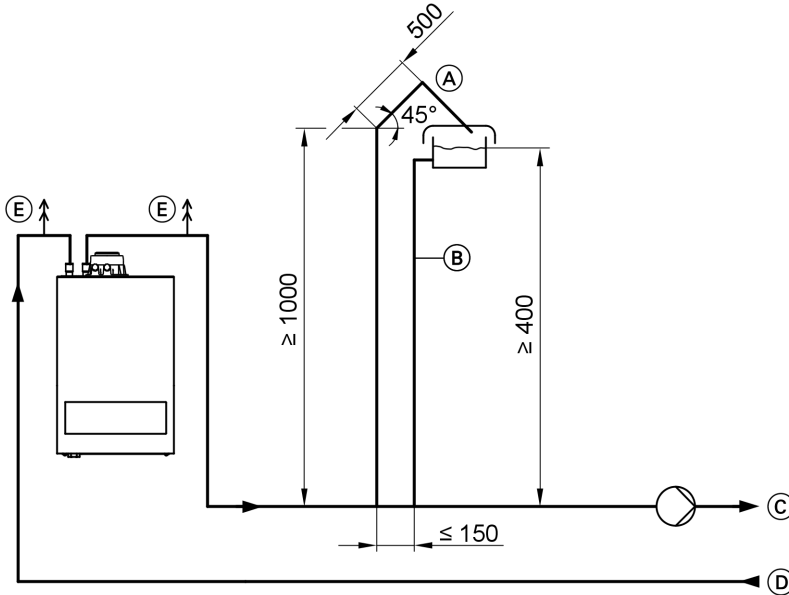


- (A) \varnothing 22 mm Open Vent
- (B) \varnothing 15 mm Cold Feed
- (C) Heating Flow

- (D) Heating Return
- (E) Automatic Air Vent

Preparing for installation (cont.)

If conditions require, this system is possible



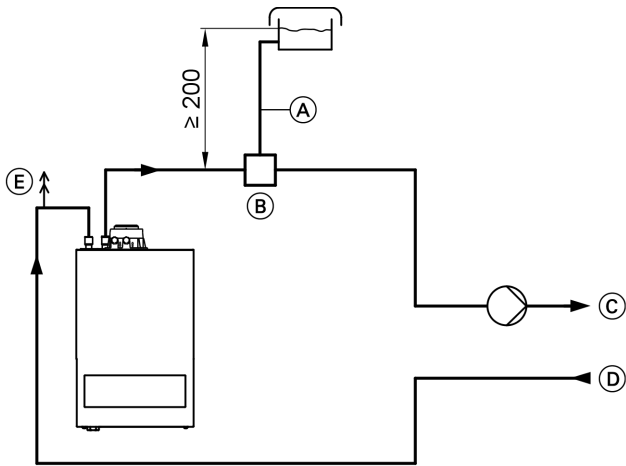
- (A) Ø 22 mm Open vent
- (B) Ø 15 mm Cold feed
- (C) Heating flow

- (D) Heating return
- (E) Automatic air vent

Installation

Preparing for installation (cont.)

Alternative low head installation



- Ⓐ Ø 22 mm Feed and vent pipe
- Ⓑ Air separator
- Ⓒ Heating flow

- Ⓓ Heating return
- Ⓔ Automatic air vent

Preparing for installation (cont.)

Sectional diagram



Installation requirements

Statutory requirements

Gas safety (installation and use) regulations (current issue)

This appliance must be installed in accordance with the current issue of the gas safety regulations.

In addition to the above regulations, this appliance must be installed in accordance with the current IEE Wiring Regulations for electrical installation (BS 7671), local building regulation, the Building Standards (Scotland) (Consolidation) Regulations, bye laws of the local water undertaking and Health and Safety Document No. 635 'The Electricity at Work regulations 1989'.

Preparing for installation (cont.)

It should also be in accordance with the relevant recommendations in the current editions of the following British Standards and Codes of Practice: BS 5449, BS 5546, BS 5440:1, BS 5440:2, BS 6798, BS 7593, BS 6891. All CORGI Registered Installers are required to notify building control when they have installed or replaced a gas appliance in a residential dwelling (This can be done via CORGI).

CORGI will then issue either a Building Compliance Certificate (for England and Wales) or a Declaration of Safety (for Scotland, Northern Ireland, Isle of Man or appliances out of the scope of Building Regulations) to the homeowner, which will confirm that the work has been carried out by a competent CORGI Registered Installer. This document will be used in the Home Information Pack (HIP).

- !** **Please note**
- Manufacturers instructions must not be taken in any way as overriding statutory obligations.

Boiler Position

The following limitations must be observed when siting the boiler:

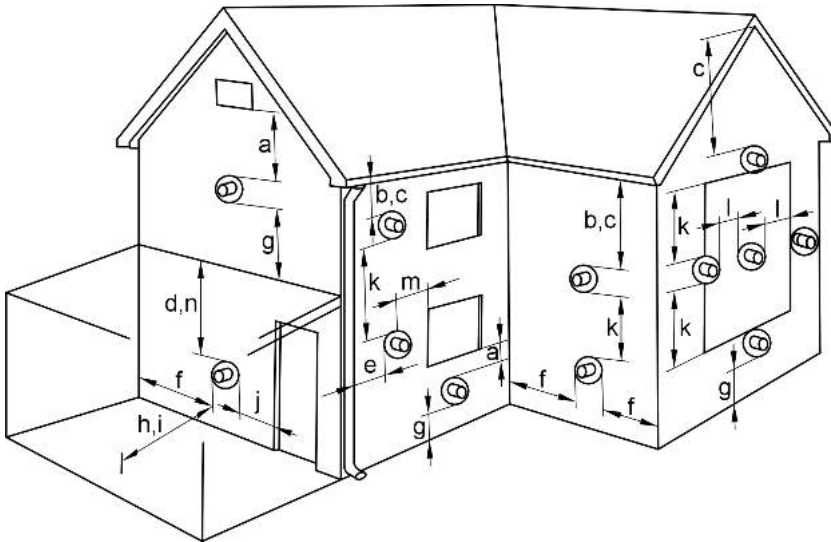
- The boiler is not suitable for external installation. The position selected for installation should be within the building, unless otherwise protected by a suitable enclosure and must allow adequate space for installation, servicing and operation of the appliance and for air circulation around it.
- This position must allow for a suitable flue system and terminal position. The boiler must be installed on a flat vertical wall capable of supporting the weight of the appliance and any ancillary equipment when full.
- Due consideration should be given to the routing of the condensate drain from the chosen position.
- If the boiler is to be fitted in a timber framed building it should be fitted in accordance with IGE/UP/7. If in doubt advice must be sought from the institute of Gas Engineers.
- If the appliance is to be installed in a room containing a bath or shower, any electrical switch or control utilising mains electricity, it must be so situated, that it cannot be touched by a person using the bath or shower. Attention is drawn to the requirements of BS 7671 (the current I.E.E Wiring Regulations) and in Scotland the electrical provisions of the Building Regulations applicable in Scotland.



Preparing for installation (cont.)

- A compartment used to enclose the appliance must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used provided it is modified accordingly. BS 6798:2000 gives details of the essential features of cupboard / compartment design, including airing cupboards
- Where installation will be in an unusual location, special procedures may be necessary. BS 6798:2000 gives detailed guidance on this aspect.

Flue terminal position
Horizontal flue system



Position	Minimum spacing	mm
a	Directly below an openable window, air vent or any other ventilation opening	300

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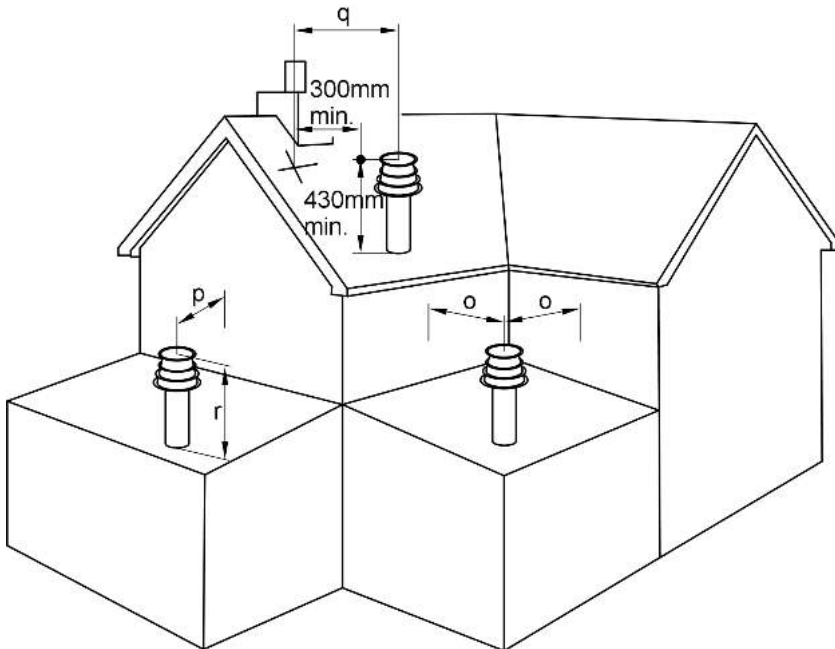
Installation

Preparing for installation

Preparing for installation (cont.)

Position		Minimum spacing
		mm
b	Below a gutter drain or soil pipe	75
c	Below eaves	200
d	Below a balcony	200
e	From vertical drain or soil pipes	150
f	From internal and external corners	300
g	Above adjacent ground or balcony level/roof	300
h	From a surface facing the terminal	600
i	Facing terminals	1200
j	From opening door/window in carport into dwelling	1200
k	Vertically from a terminal on same wall	1500
l	Horizontally from a terminal on same wall	300
m	Adjacent to opening	300
n	Below carport/roof	200

Vertical flue systems



Preparing for installation (cont.)

Position		Minimum spacing mm
o	From adjacent wall	300
p	From adjacent opening window	1000
q	From another terminal	600
r	Minimum height	300

Flue terminal location

Detailed recommendations for flue installation are given in BS 5440:1. The following notes are for general guidance.

- The boiler must be installed so that the terminal is exposed to external air.
- It is important that the position of the terminal allows free passage of air across it at all times.
- It is essential to ensure that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building, through ventilators, windows, doors, other sources of natural air infiltration or forced ventilation / air conditioning.
- The minimum acceptable dimensions from the terminal to obstructions and ventilation openings are specified in on page 18(BS 5440 Part 1).
- If the terminal discharges into a pathway or passageway check that combustion products will not cause nuisance and that the terminal will not obstruct the passageway.
- Where the lowest part of the terminal is fitted less than 2 m above ground, above a balcony or above a flat roof to which people have access, the terminal must be protected by a purpose designed guard. (Available as an optional extra).
- Where the terminal is fitted within 850 mm of a plastic or painted gutter, or 450 mm of painted eaves, an aluminium shield, at least 750 mm long, must be fitted to the underside of the painted surface.
- The air inlet / flue outlet duct must not be closer than 25 mm to combustible material.
- Due to the high efficiency of the boiler the terminal may emit a plume of vapour. This is normal but positions where this would cause a nuisance should be avoided.

Installation

Preparing for installation

Preparing for installation (cont.)

Ventilation Requirements

Detailed recommendations for air supply are given in BS 5440:2. The following notes are for general guidance.

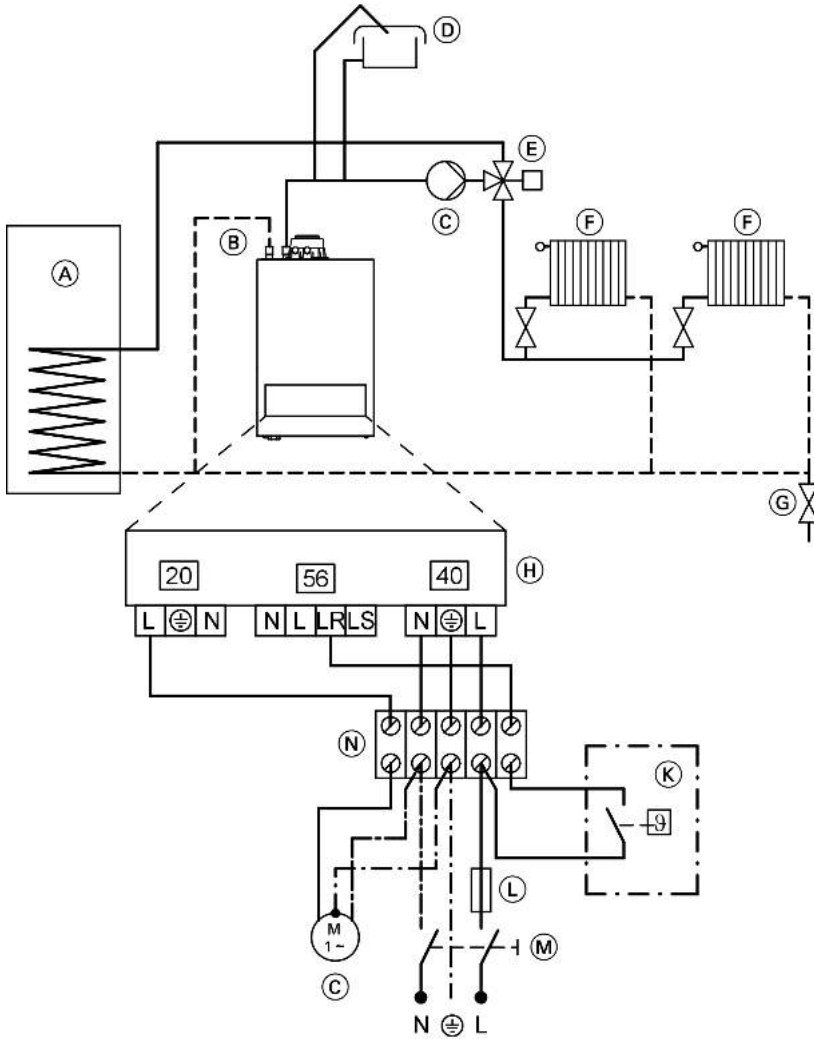
- It is not necessary to have a purpose provided air vent in the room or internal space in which the appliance is installed.
- If the boiler is to be installed in a cupboard or compartment, no permanent air vents are required for cooling purposes in the cupboard or compartment, however, it is essential to ensure that the minimum clearances stated in page 7 are maintained.

Central heating system

Y-Plan system

Electrical connections

Preparing for installation (cont.)



Installation

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- (A) DHW cylinder
- (B) Boiler
- (C) Circulation pump
- (D) Feed & expansion tank
- (E) Three-way diverter valve
- (F) Radiators
- (G) Drain cock at lowest point in the system
- (H) Control unit



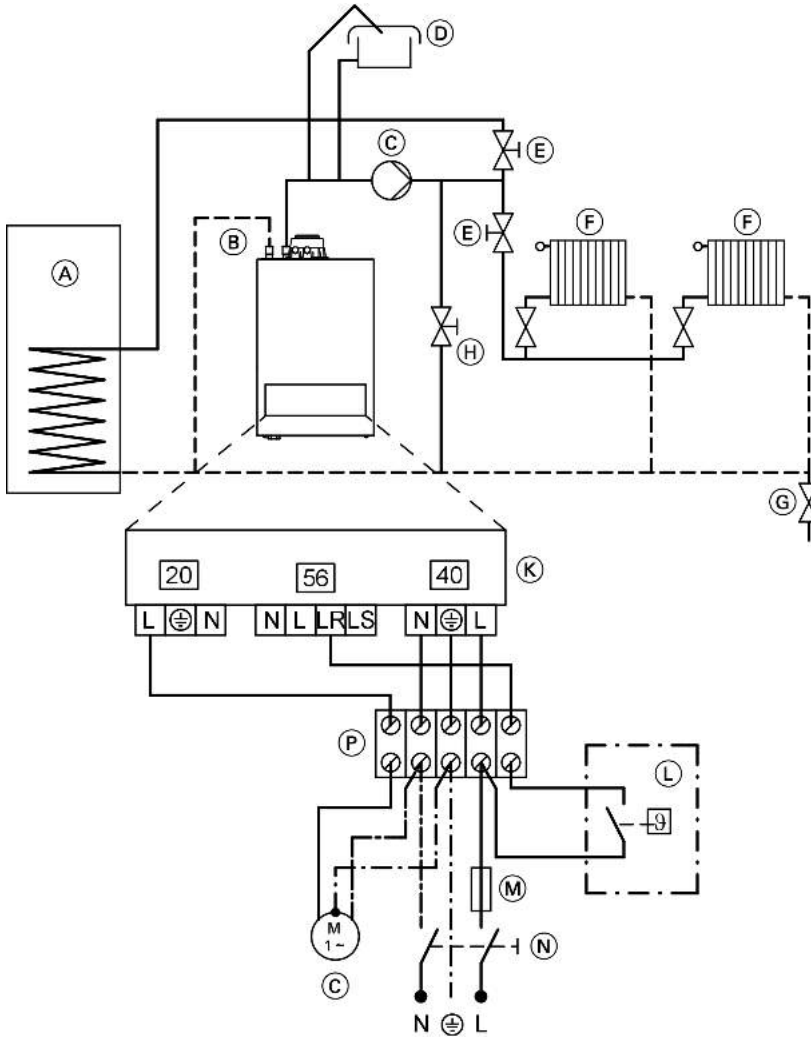
Preparing for installation

Preparing for installation (cont.)

- Ⓚ Room temperature control (on site)
Connection of Viessmann Vitotrol 100 see page 39
- Ⓛ Fuse 3 A
- Ⓜ Mains ON/OFF switch
- Ⓝ Connection box (not supplied)
- 20 Circulation pump
- 40 Power supply
- 56 Mains connection accessories/
room temperature control
- LR Connection of room temperature control

Preparing for installation (cont.)

S-Plan system



Installation

- (A) DHW cylinder
- (B) Boiler
- (C) Circulation pump
- (D) Feed & expansion tank

- (E) Zone 2 port valve
- (F) Radiators
- (G) Drain cock at lowest point in the system

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Preparing for installation

Preparing for installation (cont.)

- Ⓜ Bypass with Lockshield valve
- Ⓚ Control unit
- Ⓛ Room temperature control (on site)
Connection of Viessmann Vitotrol 100 see page 39
- Ⓜ Fuse 3 A
- Ⓝ Mains ON/OFF switch
- Ⓟ Connection box (not supplied)
- 20 Circulation pump
- 40 Power supply
- 56 Mains connection accessories/ room temperature control
- LR Connection of room temperature control

Gas supply

- The gas supply utility should be consulted at the installation planning stage in order to establish the availability and supply of an adequate supply of gas.
- A gas meter can only be connected by the gas supplier or by their contractor.
- An existing meter and / or pipework should be of sufficient size to carry the maximum boiler input plus the demand of any other installed appliance. (BS 6891: 1988). A minimum of 22 mm dia. pipework is required to within 1 metre of the appliance gas cock.
- The governor at the meter must give a constant outlet pressure of 21 mbar +/- 1mbar. when the appliance is running.
- The gas supply line should be purged prior to commissioning.
Warning: Before purging open all doors and windows, also extinguish any cigarettes, pipes and any other naked lights.
- The installation must be tested for gas soundness on completion of the work.

Power supply

- Wiring external to the appliance must be in accordance with BS 7671 (the current I.E.E Wiring Regulations) for electrical installation and any local regulations which apply.
- The mains cable must be at least 0.75 mm²(24/0.2 mm) PVC insulated to BS 6500 table 16.



Preparing for installation (cont.)

- **Warning:** This appliance must be earthed. (Failure to provide a satisfactory earth connection would be a safety hazard and may also result in appliance malfunction).
- The method of connection to the mains supply must facilitate complete electrical isolation of the appliance. Either a 3A fused three pin plug and unswitched shuttered socket outlet, both complying with BS 1363, or a 3A fused double pole switch having a 3 mm contact separation in both poles and serving only the boiler (and its external controls) may be used.

External controls

To ensure optimum performance, Viessmann offer a range of external controls however the appliance may be used with any certified room thermostat, cylinder thermostat or time clock room thermostat.

Preparations for boiler installation

Unpacking the appliance

The appliance is supplied in 2 packages. Boiler pack and flue pack (vertical or horizontal) additional optional flue items are supplied individually. Check the availability and contents of each package before commencing the installation.

Preparing for installation

Preparing for installation (cont.)

Boiler pack

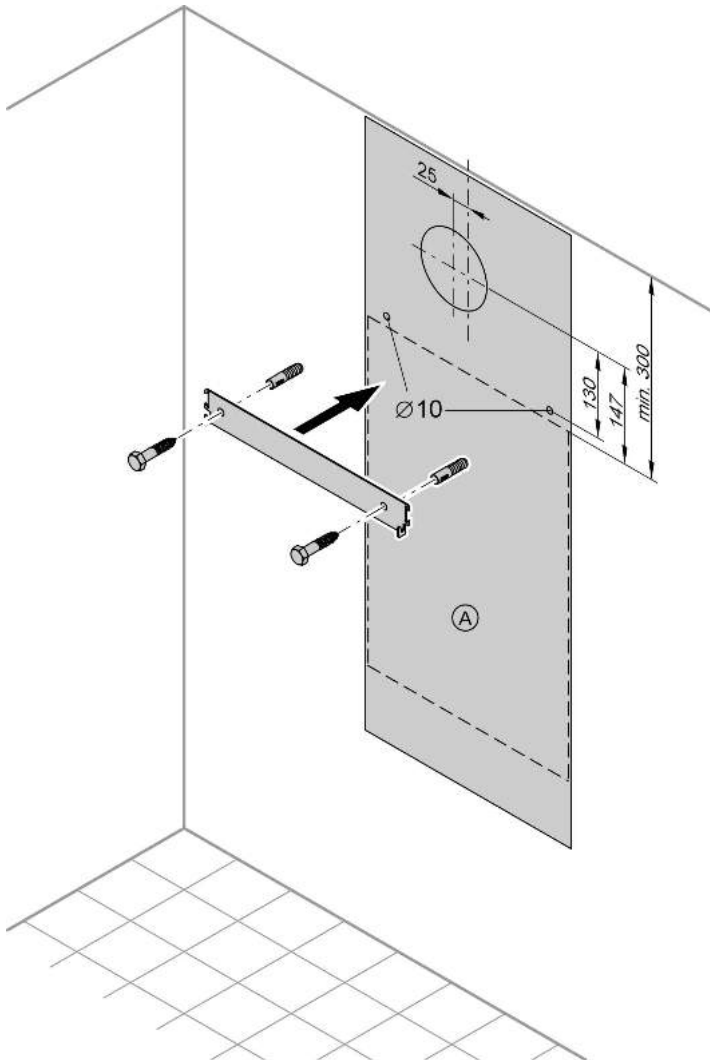
Boiler pack

- Boiler (assembled)
- 1 gas cock
- Wall mounting bracket
- 2 wall plugs and 2 screws
- Installation template

Wall mounting bracket installation

Important: Before installing the appliance, check that the chosen position is suitable, adequate installation clearances are available and that the requirements for flue terminal position are satisfied.

Preparing for installation (cont.)



Installation

Ⓐ Installation template

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1. Position the installation template on the wall.
2. Mark wall plug holes and balanced flue pipe opening.



Preparing for installation

Preparing for installation (cont.)

3. Drill \varnothing 10 mm holes and insert the rawl plugs.
4. Cut flue pipe opening.
5. Fit wall mounting bracket with enclosed screws.

Preparing the connections

Note

For dimensions for on-site preparations of the gas and water side connections see "Overall appliance dimensions" on page 7.

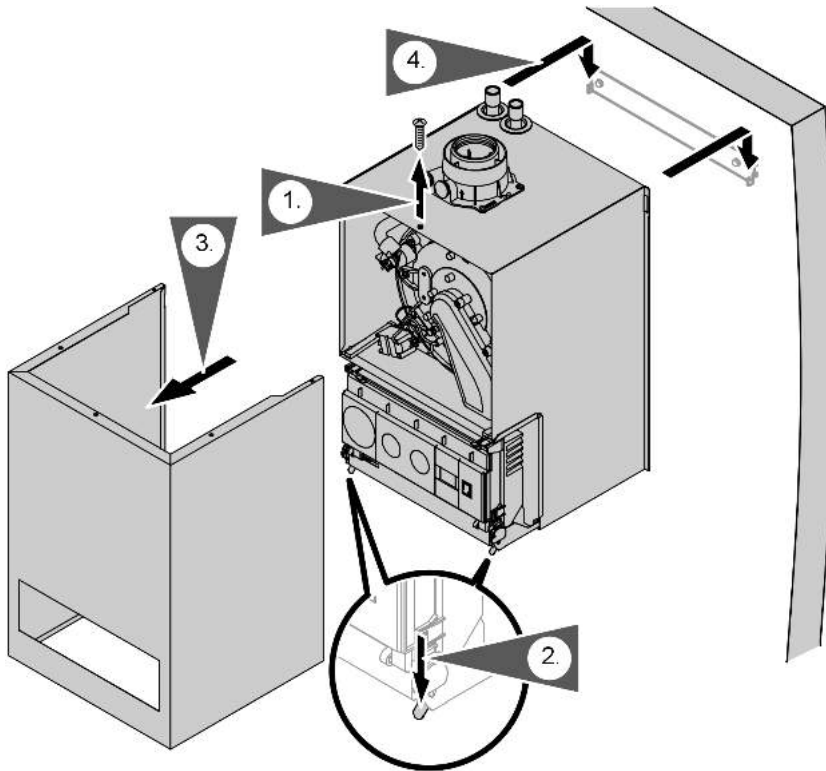
1. Prepare the water connections.
2. Clean and flush the heating system.
Use only the following cleaning agents:
 - Cleanser (Ferrox)
 - Sentinel X300...
3. Prepare gas connection to BS 6891.
4. Prepare the electrical connections.
 - Mains cable: H05V2V2-F 3 G 1.0 mm², 230 V~, 50 Hz.
A 1.5m power cable is part of the standard delivery.
 - External Controls cables:
H05V2V2-F 3 G 1.0 mm² for connection of room temperature control.

Installing the boiler and making all connections

Remove front panel and mount boiler

Note

The front panel must be removed before mounting the boiler.



1. Remove the screw at the top of the boiler.
2. Press down the springs on the underside of the boiler.
3. Remove the front panel.
4. Hook the boiler on to the wall mounting bracket.

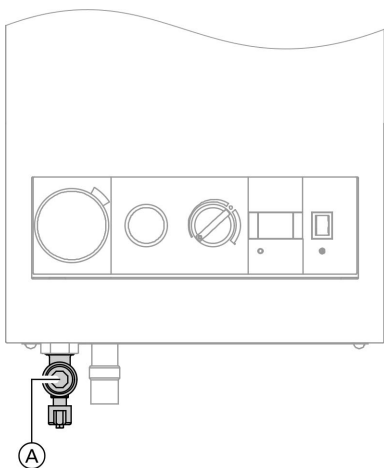
Gas connection

1. Purge the gas supply pipe.



Installation sequence

Installing the boiler and making all connections (cont.)

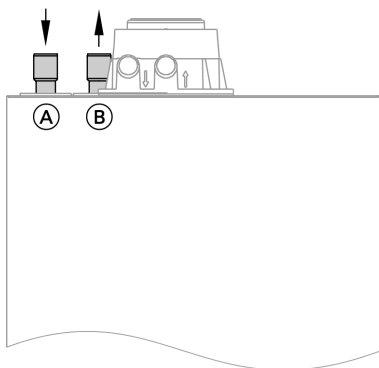


2. Connect the gas supply to the gas inlet connection on the gas cock (A). Upon completion, tighten the union connection.

3. Carry out a gas soundness test.

(A) Gas connection: R ½" FBSP

Heating connection



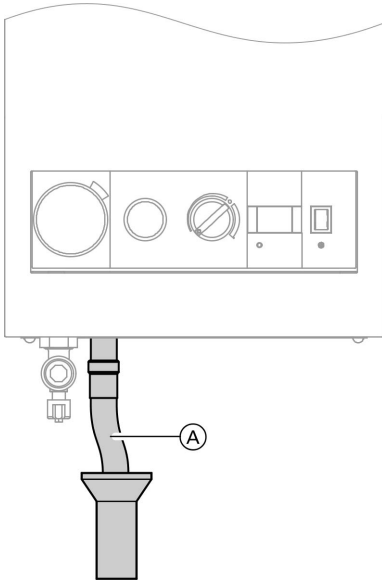
(A) Heating return: \varnothing 22 mm

(B) Heating flow: \varnothing 22 mm

Installing the boiler and making all connections (cont.)

Condensate connection

Vitodens 100-W has an internal syphonic condensate trap.



Ⓐ Ø22 mm plastic condensate pipe

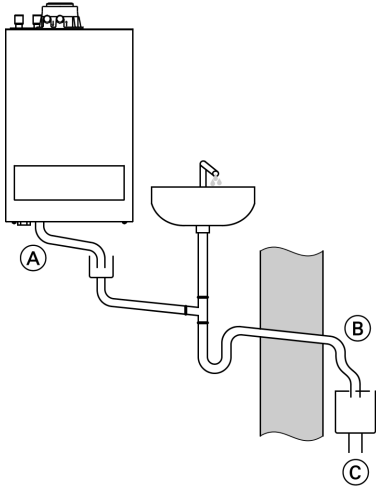
Routing

The condensate pipe can terminate into any one of the following areas. It is always the best practice to terminate the condensate pipe via an internal waste system.

- The pipe run should take the shortest practical route with a downward slope of at least 2.5° (45 mm/m)
- The external pipework should be insulated to prevent freezing
- The pipework should terminate as close as possible to the ground or drain, whilst still allowing the condensate to disperse safely.
- The condensate pipe must be of non-corrosive material, preferably plastic. Note: ferrous materials or copper must not be used.

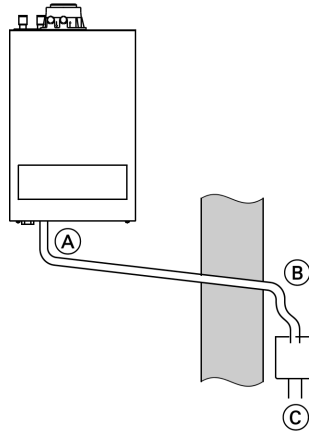
Installation sequence

Installing the boiler and making all connections (cont.)



Terminating into an internal waste system

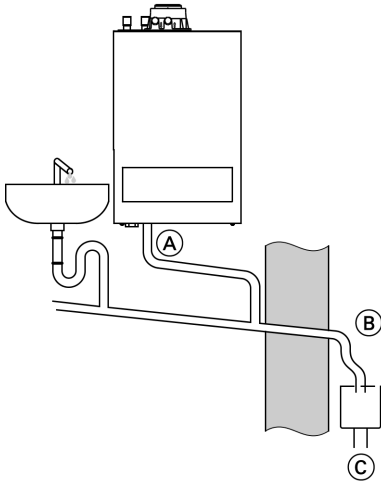
- (A) \varnothing 22 mm plastic condensate pipe
- (B) External length of pipe 3 m max.
- (C) Open end direct into gully, below ground but above water level



Terminating into an external waste system

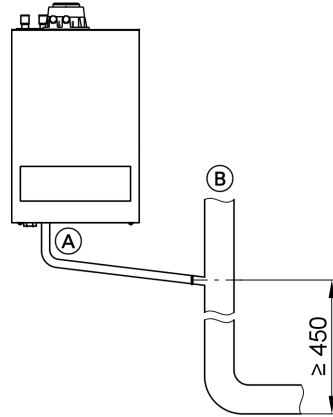
- (A) \varnothing 22 mm plastic condensate pipe
- (B) External length of pipe 3 m max.
- (C) Open end direct into gully, below ground but above water level

Installing the boiler and making all connections (cont.)



Terminating into an external purpose made soakaway

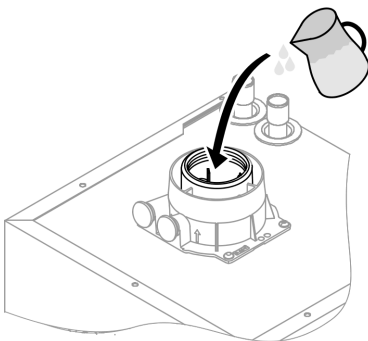
- (A) Ø22 mm plastic condensate pipe
- (B) External length of pipe 3 m max.
- (C) Open end direct into gully, below ground but above water level



Terminating into the rainwater system

- (A) Ø22 mm plastic condensate pipe
- (B) Internal soil and vent stack

Filling the siphon with water

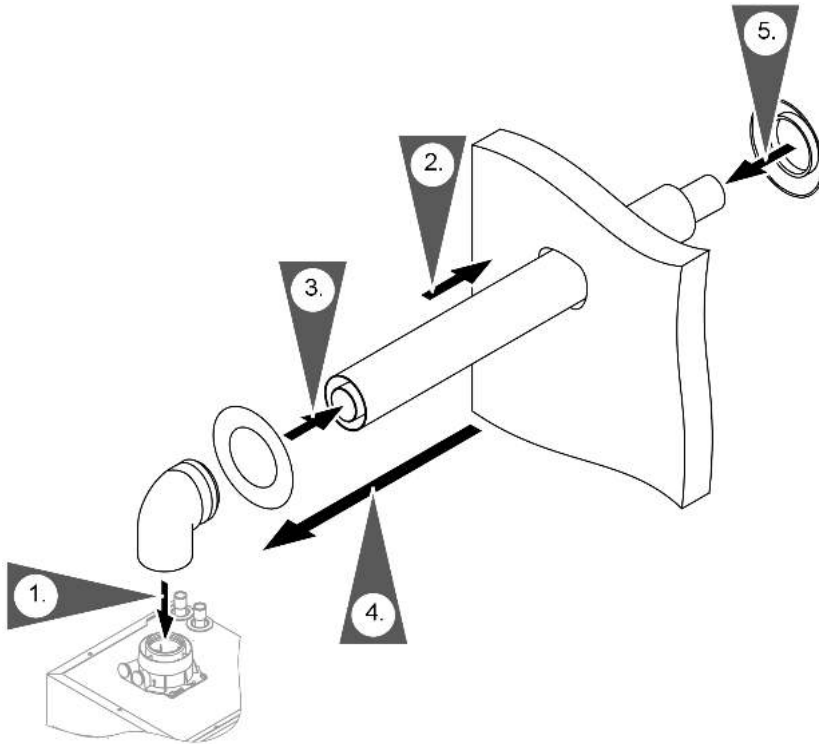


Fill a minimum of 0.3 l of water into the boiler connect kit flue outlet.

- !** **Please note**
At initial start-up, flue gas may be emitted from the condensate drain.
Fill the siphon with water before start-up.

Flue outlet

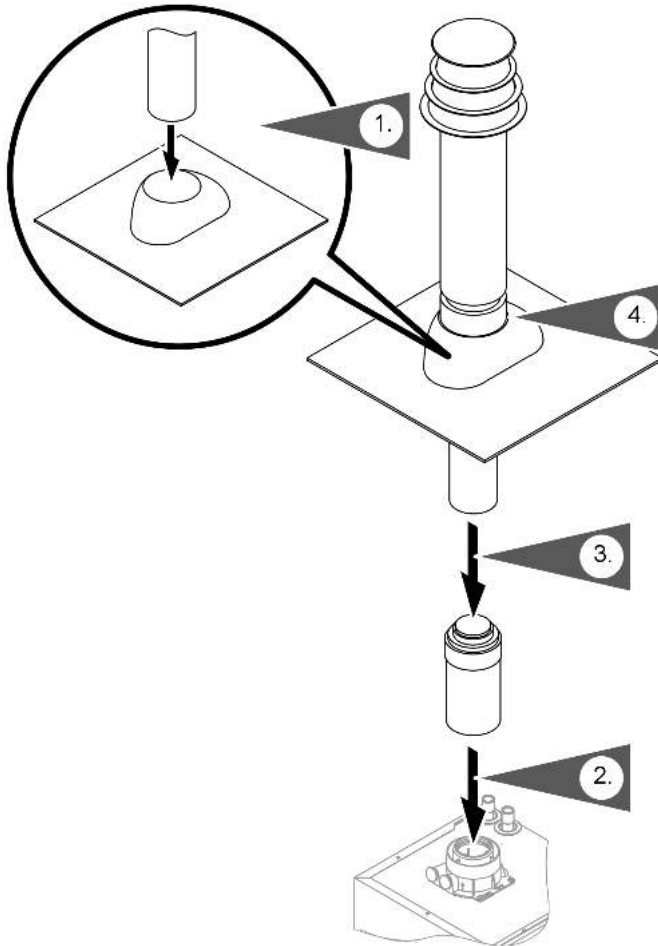
External wall terminal C13x



1. Insert pipe bend into the boiler flue outlet.
2. Insert external flue terminal into the wall outlet.
3. Secure the wall bezel internally.
4. Connect external flue terminal to pipe bend.
Install flue and supply pipes accordingly, with a minimum of 3° slope (ca. 50 mm/m) towards the boiler.
5. Secure the wall bezel externally.

Flue outlet (cont.)

Vertical roof terminal C33x



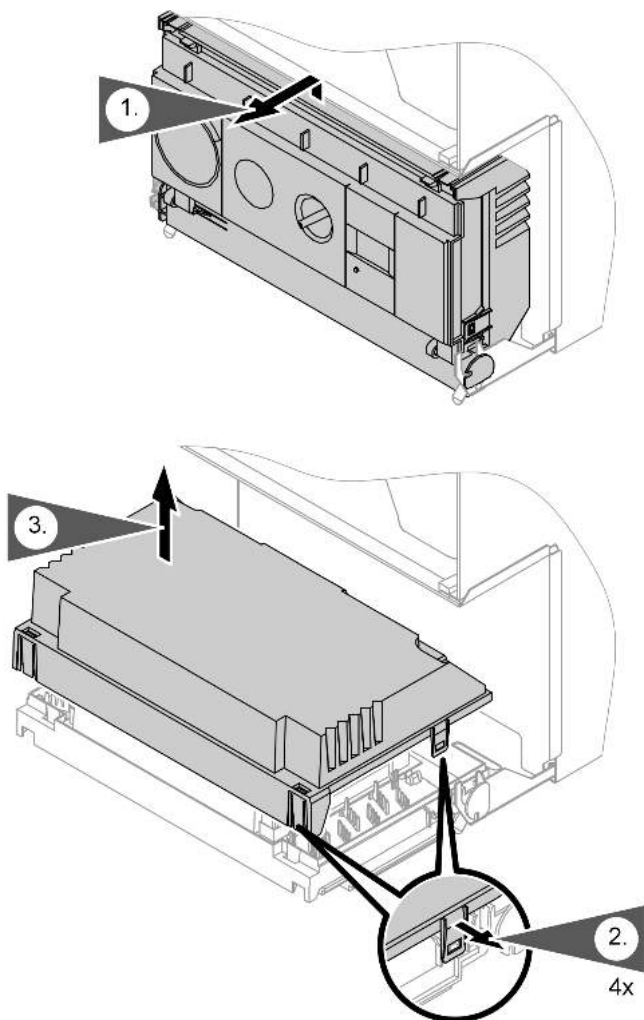
1. Install the universal roof tile.
2. Install flue and supply pipes accordingly.

3. Push roof terminal through roof and insert into flue/supply pipe.
4. Seal roof terminal.

Installation sequence

Power connections

Opening the control unit housing



Power connections (cont.)

Making connections



Notes regarding the connection of accessories

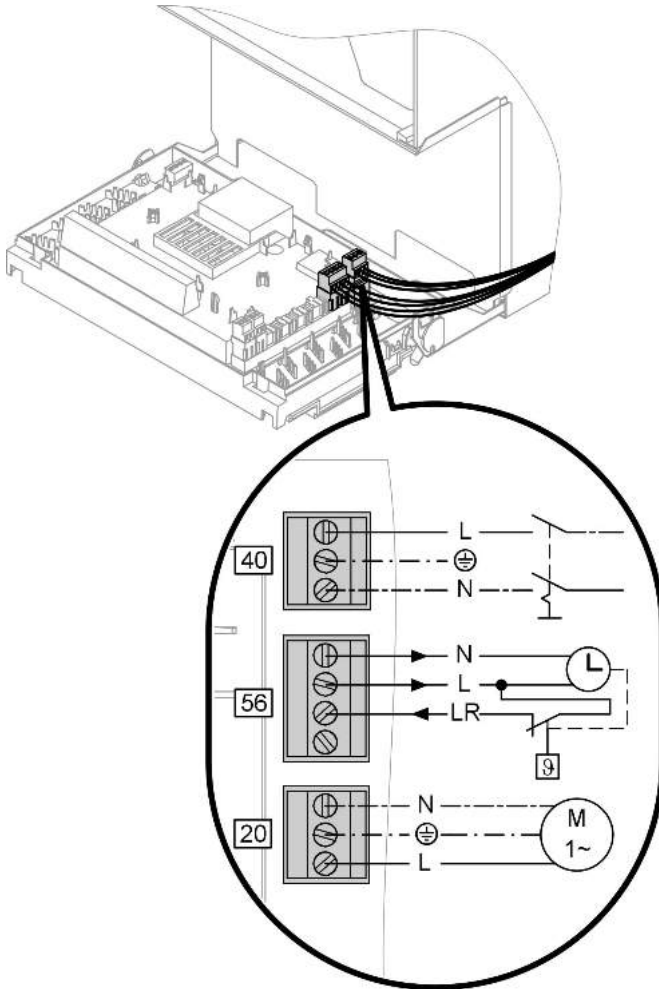
For details of accessories, also observe the separate installation instructions provided.

Notes regarding the connection of room temperature and DHW cylinder temperature control

For more information about the connection of on site temperature controls see page 22.

Installation sequence

Power connections (cont.)



20 Circulation pump electrical connections

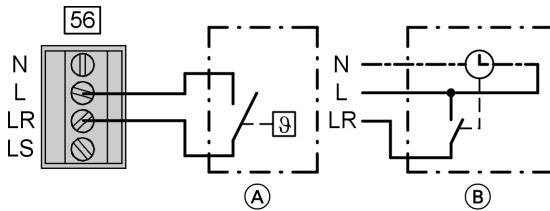


Power connections (cont.)

- 40** Mains power connection 230 V ~ 50 Hz (green plug). Note: a permanent live connection is required, Do not interchange the supply conductors L1 and the neutral conductor N.
A two pole shut-off switch with a contact separation of at least 3 mm must be fitted in the mains supply to the boiler with a maximum fuse value of 3 A.
A 1.5 m power cable is part of the standard delivery.

- 56** Mains connection accessories/ room temperature control/DHW cylinder control (black plug)
LR switched live Connection from external controls
 ■ Vitotrol 100 UTA
 ■ Vitotrol 100 UTD

Connect Vitotrol 100



(A) Vitotrol 100 UTD

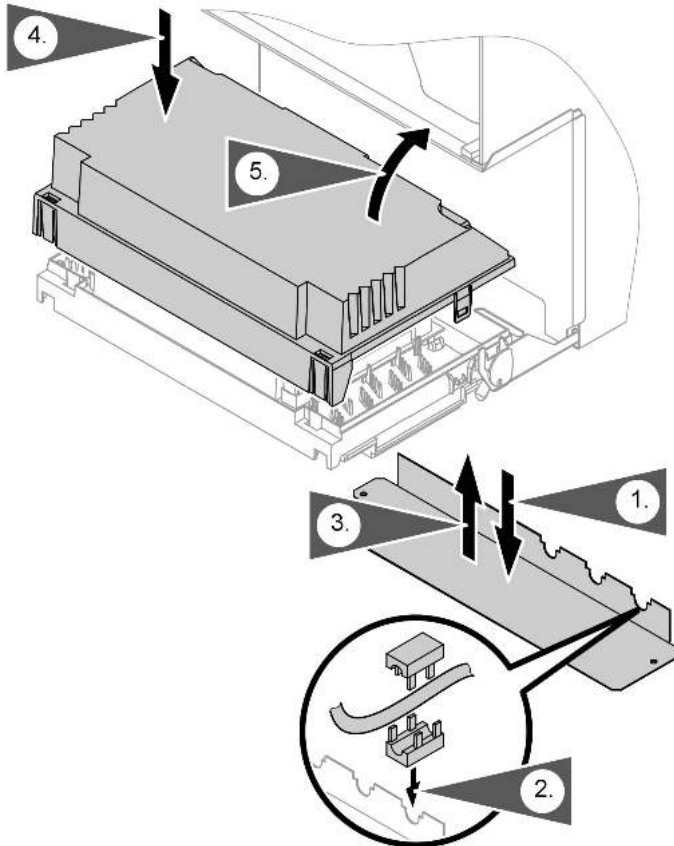
(B) Vitotrol 100 UTA

Routing connecting cables

- !** **Please note**
Connecting cables can be damaged if they touch hot components. When routing and securing connecting cables on site, ensure that the maximum permissible cable temperatures are not exceeded.

Installation sequence

Power connections (cont.)



1. Remove 2 screws on the underside of the boiler and remove cover panel.
2. Connect strain reliefs to the external cables and clip into the mounting plate aperture.
3. Fasten cover panel at the bottom.
4. Fit cover.
5. Pivot the control unit upwards.

Commissioning and testing

Before commissioning the appliance, the whole gas installation including the meter must be purged and tested for gas soundness in accordance with BS 6891: 1988.



Danger

Open all doors and windows; extinguish naked lights and **do not smoke** whilst purging the gas line.

Before commencing the commissioning procedure, ensure that the gas service cock is turned on, the electricity supply is isolated and that the DHW and CH pipework is complete.

Fill the system with cold water. Vent the system via the radiator valves and system air vents in accordance with normal practice, close all air vents and check for system soundness. Drain the entire system to flush out any debris.

Additives from the approved list below may be used. The use of non approved additives will invalidate the warranty on this product.

- Anti-scaling: Sentinel X200
- Anti-bacterial:
 - System Cleaner (Fernox)
 - Sentinel X300...
- Anti-freeze:
 - Glycol (30% max.)
 - Antifreeze (Fernox)
 - Sentinel X500...
- Anti-corrosion:
 - Inhibitor (Fernox)
 - Sentinel X100...
- Cleaner:
 - Cleanser (Fernox)
 - Sentinel X300...

Do not use non approved additives or any chemicals from the following list

- Boiler noise silencer
- Leak sealer
- Fuel, oil, grease, washing powder/liquid
- pipe jointing compound (like boss white and boss green, Sentinel)
- Anti-blockage

Commissioning and testing (cont.)

Note

Additive combinations are permitted only if approved additive suppliers recommend it and always according to supplier's dosage recommendation.

It is essential that the procedure below is followed to ensure that all the air in the boiler heat exchanger and the system is completely vented prior to firing the appliance.

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 with water.
- Only use fill water of potable quality.
- Soften fill water harder than 150 ppm temporary hardness.
- Inhibitors or antifreeze additives suitable for heating systems should be injected or added manually.

Fill and vent the system ensuring that the air has been removed from all drain and vent points on the system.

Check static and supply pressure



Danger

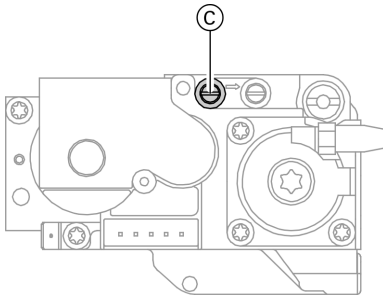
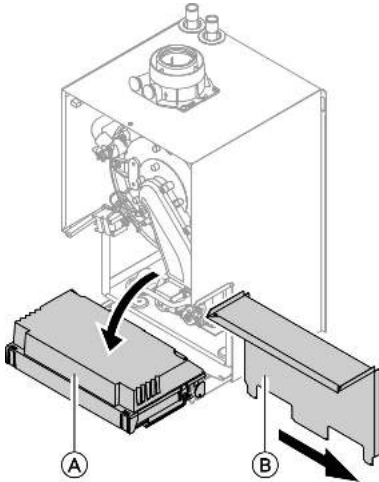
CO formation, as a result of incorrect burner adjustment, can lead to severe health problems.

Carry out a CO test prior to, and after, work on gas equipment.

1. Close the gas shut-off valve.



Commissioning and testing (cont.)



2. Pivot down control unit (A).
3. Remove 2 screws and remove cover panel (B).

4. Release the screw inside test nipple "IN" (C) on the gas combination valve, but do not remove, and connect the pressure gauge.
5. Open the gas shut-off valve.
6. Check the static pressure; it should be 20 mbar +/- 1 mbar.
7. Switch ON mains voltage and start up the boiler.

Note

During commissioning, the boiler can enter a fault state because of airlocks in the gas pipe. To reset press "I" key. The ignition procedure will then be repeated.



Commissioning and testing (cont.)

8. Check the inlet working pressure = 20 mbar.
 - Minimum working pressure = 12 mbar
 - Maximum working pressure = 20 mbar

Note

Use suitable test equipment, with a resolution of at least 0.5 mbar, to measure the supply pressure.

9. Shut down the boiler, close the gas shut-off valve, remove the pressure gauge, and close test nipple © with the screw.
10. Open the gas shut-off valve and start the boiler.



Danger

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

Check test nipple © for soundness.

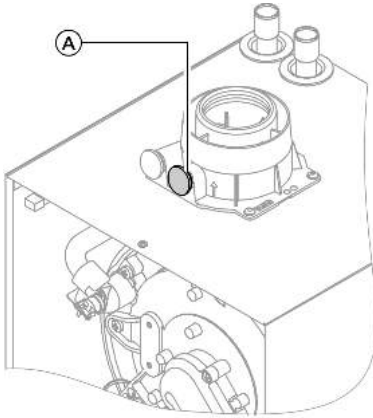
Setting the CO₂ value and checking the CO content

The Vitodens 100-W is set at the factory for natural gas H.
During commissioning/maintenance, the CO₂ setting can be checked and changed.

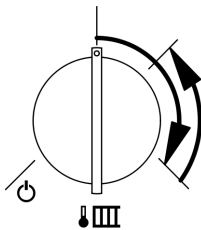
The CO₂ content must be in the range 8.5 to 9.1 %.

The CO content must be < 200 ppm.

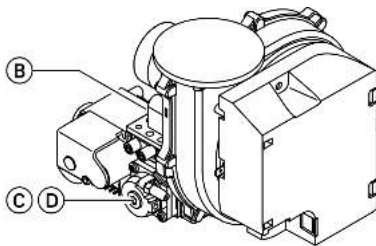
Commissioning and testing (cont.)



1. Remove plug from connection (A) and connect the flue gas analyser
2. Open the gas shut-off valve, start the boiler and create a heat demand.



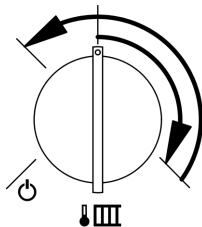
3. Set the upper heat output. Turn rotary selector "flame" for less than 2 s clockwise to its end stop and then back into the correct control range.



4. Check the CO₂ content.
 - If the value lies between 8.5 - 9.1%, continue with point 5.
 - If the value lies outside the range 8.5 - 9.1%, adjust the CO₂ value at screw (B) at the gas train. Increasing the CO₂ value: Turning anti-clockwise



Commissioning and testing (cont.)



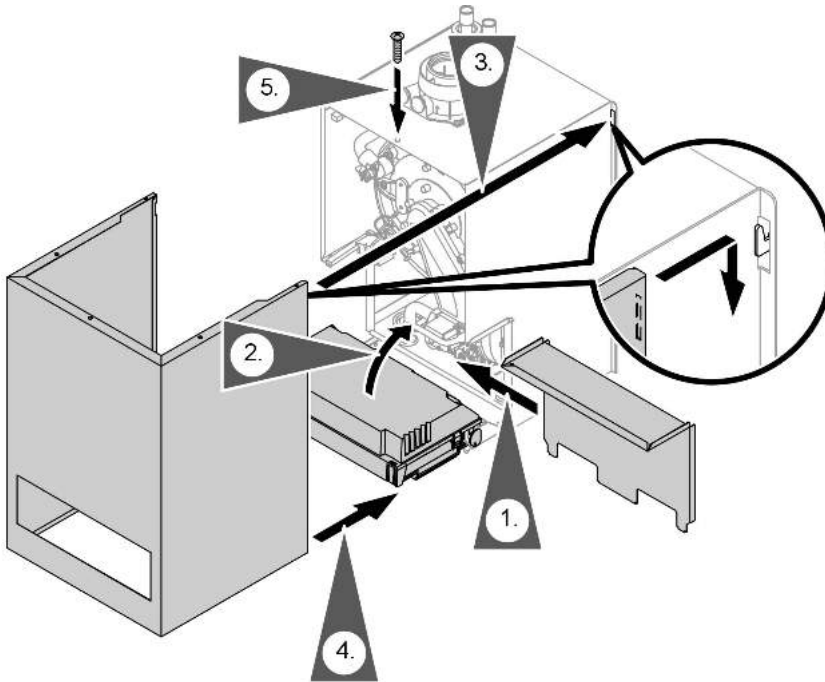
5. Set the lower heat output. Turn rotary selector "🔥🔥🔥" towards the clockwise control range.
6. Check the CO₂ content.
 - If the value lies between 8.5 - 9.1%, continue with point 7.
 - If the value lies outside the range 8.5 - 9.1%, remove cap © and adjust the CO₂ value at screw at the gas train.
Increasing the CO₂ value: Turning anti-clockwise
7. Turn rotary selector "🔥🔥🔥" for less than 2 s clockwise to its end stop and then back into the control range.

Note

The function will also be terminated automatically after 30 min.

Commissioning and testing (cont.)

Front panel installation



1. Fasten the cover panel onto the boiler
2. Pivot the control unit upwards.
3. Hang the front panel to the wall mounting frame by the appropriate hook.
4. Press down the front panel at the bottom.

5. Insert the screw at the top of the boiler.

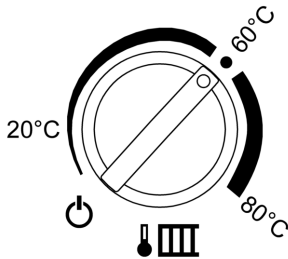
Note

The outer case forms a seal with the combustion box. It must therefore be securely fitted with the screw provided.

Commissioning and testing (cont.)

Adjusting the boiler water temperature

The boiler water temperature must be set at an adequate level to satisfy the requirements of the heating system.



Selecting the boiler water temperature:

Set rotary selector  to the desired temperature.

Final checks

1. If a time switch has been built into the control unit:
Set required activation periods as per the time switch operating instructions.
2. Fill in the relevant details for the installation in the benchmark logbook supplied in the instructions pack and affix the self adhesive bar code strip from the outside of the boiler packaging to this logbook.



Time switch operating instructions

User instructions

Upon completion of commissioning and testing, hand the appliance over to the user, with reference to the following.

- Give the users instructions to the responsible person for the property and emphasise their responsibilities under the current edition of the Gas Safety (Installation and Use) Regulations.
- Explain and demonstrate the lighting and shutdown procedures.
- Advise the householder on the efficient use of the system, including the use and adjustment of all system controls for both DHW and CH.
- Advise the user of the precautions necessary to prevent damage to the system and to the building in the event of the system remaining inoperative during frost conditions.

Commissioning and testing (cont.)

- Explain the function of the boiler safety controls and how to reset them. Emphasise that if cut-out persists, the boiler should be turned off and the CORGI registered installer or CORGI registered engineer consulted.
- Stress the importance of an annual service by a CORGI registered engineer.

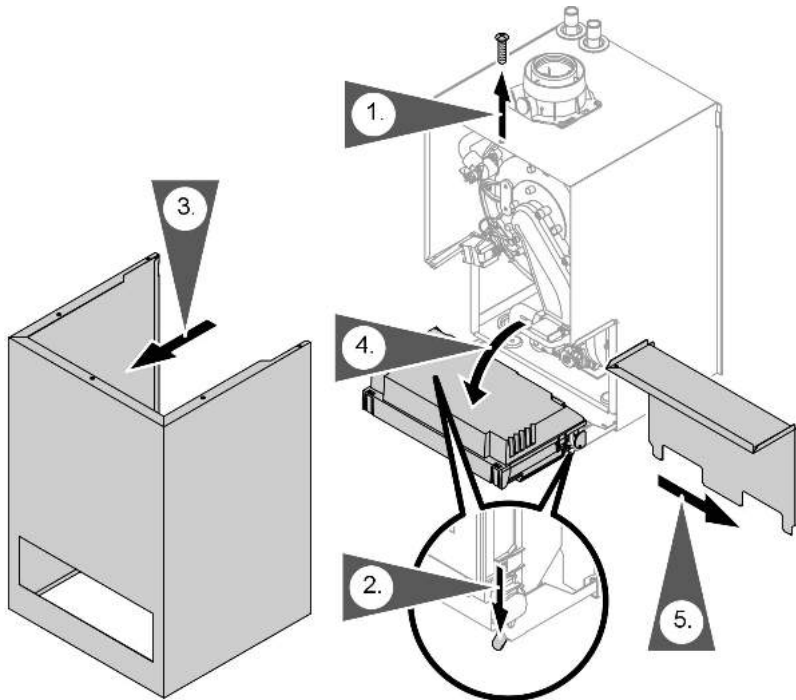
Routine servicing instructions

To ensure continued efficient operation of the appliance, it is recommended that it is checked and serviced as necessary at regular intervals. The frequency of servicing will depend upon the particular installation conditions and usage but in general once a year should be adequate. It is the law that any service work must be carried out by a competent CORGI registered person.

The boiler incorporates a flue sampling point in front of the flue outlet. The flue gases can be analysed if required. The push fit cap may be removed and a sample tube fitted. The push fit cap must be replaced after use. The flue gas sample will enable the engineer to judge whether any major action is required.

Before commencing any service operation, isolate the mains electrical supply and turn off the gas supply at the main service cock.

Removing front panel



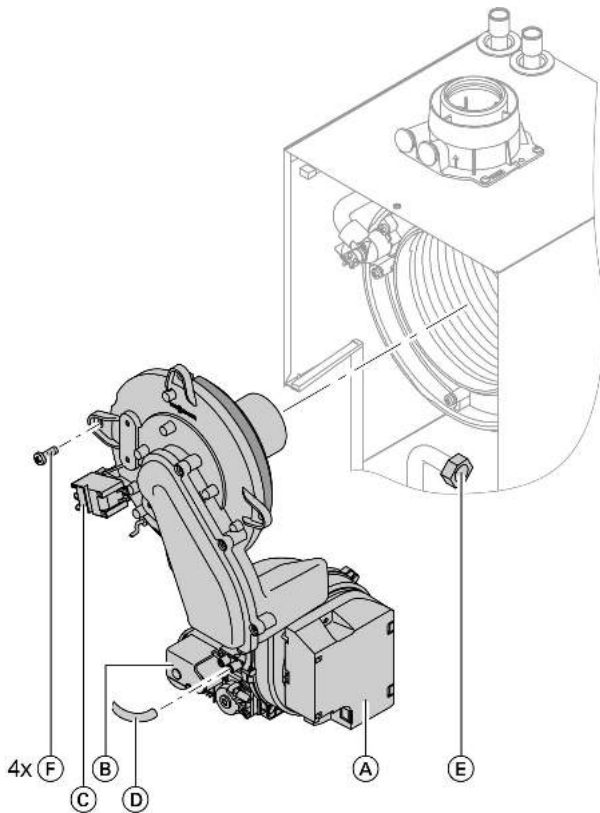
1. Remove the screw at the top of the boiler.

2. Press down the springs on the underside of the boiler.

Routine servicing instructions (cont.)

3. Lift the front panel from the wall mounting bracket.
4. Flip down the control unit.
5. Remove 2 screws and remove cover panel.

Burner removal



1. Close the gas shut-off valve and safeguard against reopening.
2. Pull electrical cables from fan motor (A), gas valve (B), and ignition unit (C).
3. Remove connection hose from air pressure switch (D).
4. Release gas connection pipe (E).

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Service



Routine servicing instructions (cont.)

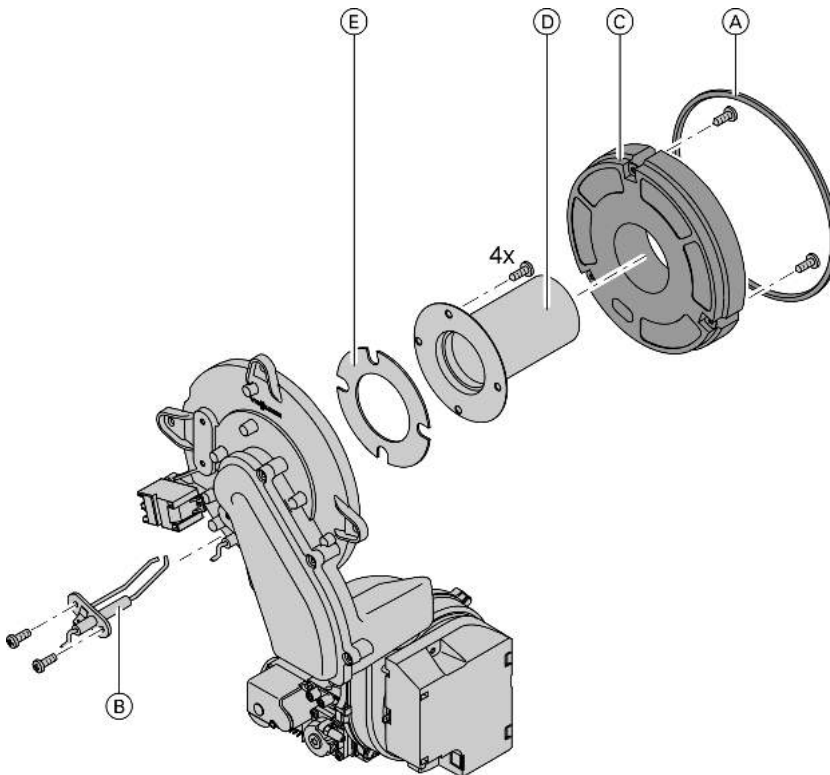
5. Release four screws (F) and remove the burner.

! **Please note**
To prevent damage,
never rest the burner on the
gauze assembly.

Check the burner gasket and burner gauze assembly for damage.

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

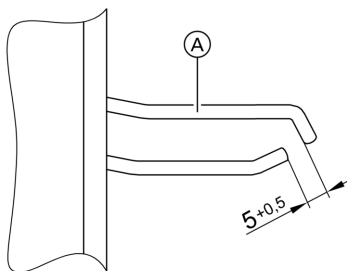
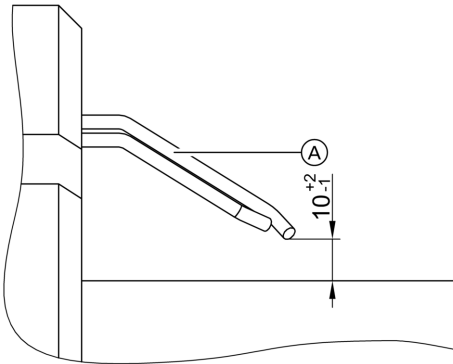
Replace the burner gauze assembly if it is damaged.



Routine servicing instructions (cont.)

1. Remove electrode (B).
2. Release the three Torx screws, and remove thermal insulating ring (C).
3. Release the four Torx screws, and remove burner gauze assembly (D) with its gasket (E).
4. Insert and secure a new burner gauze assembly (D) with a new gasket (E).
5. Refit the thermal insulation ring (C).
6. Refit the electrode (B).

Checking and adjusting the ignition and ionisation electrodes



(A) Ignition and ionisation 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.

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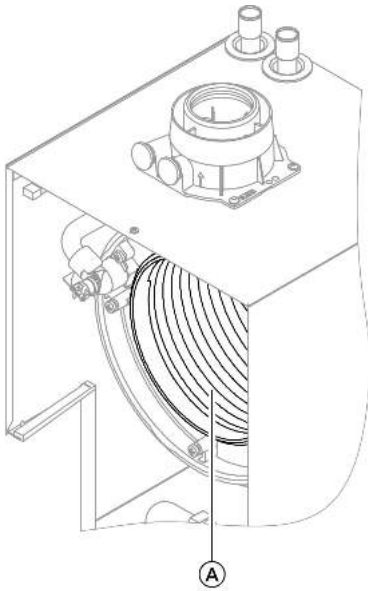
Service



Routine servicing instructions (cont.)

3. Check all clearances. If the gaps are not as specified or the electrode is damaged, replace and align the electrode together with new gaskets. Tighten the electrode fixing screws.

Cleaning the heating surfaces

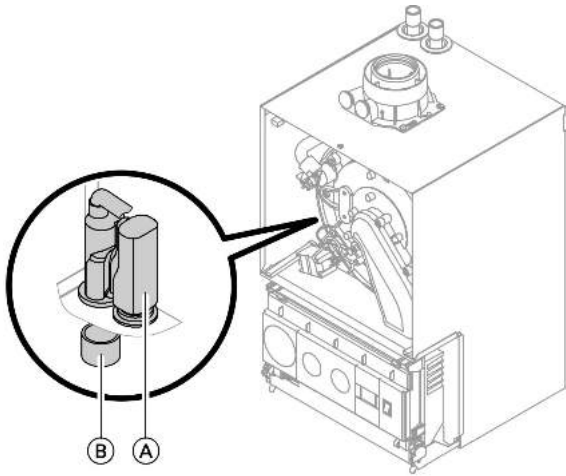


If required, clean heating surfaces (A) with a brush or flush with water.

- ! **Please note**
Scratches on parts which are in contact with flue gases can lead to corrosion.
Only use plastic brushes and NOT wire brushes.

Routine servicing instructions (cont.)

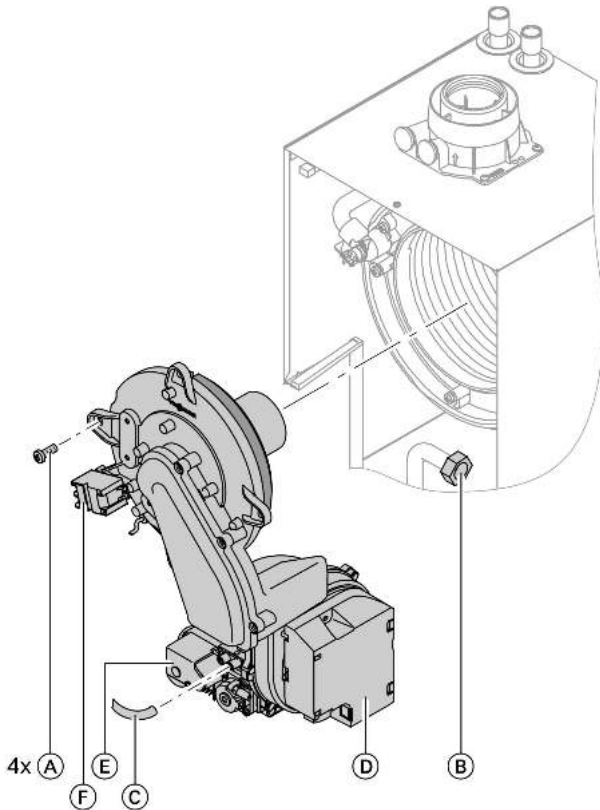
Checking the condensate drain and cleaning the siphon



1. Check at the siphon, that the condensate can freely drain.
2. Place an appropriate container under the siphon **(A)**.
3. Remove the locking cap **(B)** and drain the siphon content.
4. Replace the locking cap **(B)**.
5. Fill the siphon **(A)** with water by pouring about 0.3l of water into the combustion chamber.

Routine servicing instructions (cont.)

Burner installation



1. Install the burner and torque screws (A) diagonally.
2. Tighten the fittings on the gas connection pipe (B).
3. Insert air pressure switch connection pipe (C) onto the gas valve "Outlet" connection.
4. Replace electrical cables from fan motor (D), gas valve (E), and ignition unit (F).
5. Open gas shut-off valve and switch on the mains.



Routine servicing instructions (cont.)

6. Check the gas connections for soundness.



Danger

Escaping gas leads to a risk of explosion.

Check all fittings for soundness.

Check primary and secondary connections for leaks

Check function of all safety valves

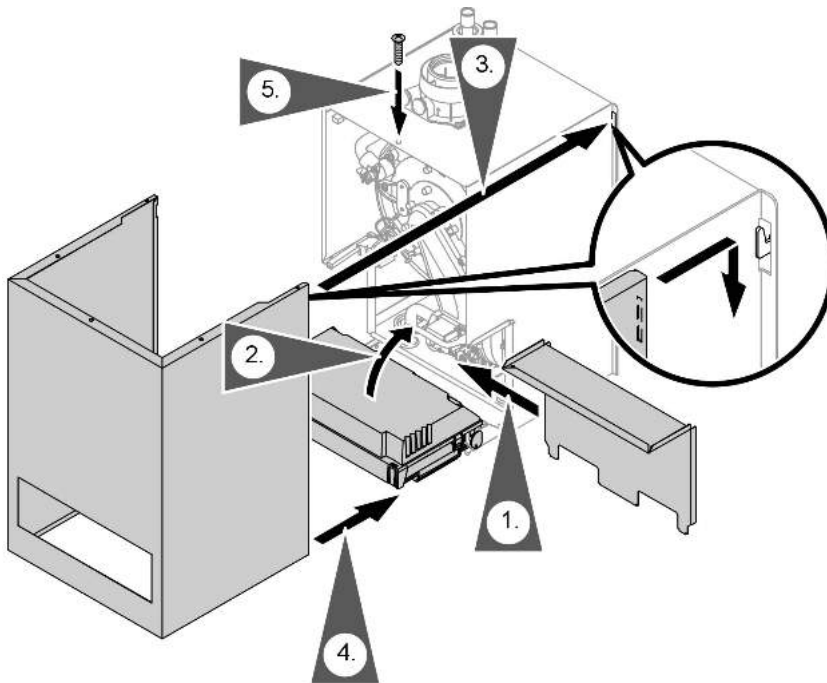
Check tightness of electrical connections

Check static and supply pressure

See page 44.

Routine servicing instructions (cont.)

Front panel installation



1. Fasten cover panel on the boiler.
2. Pivot the control unit upwards.
3. Hang the front panel to the wall mounting frame by the appropriate hook.
4. Press down the front panel at the bottom.

5. Insert the screw at the top of the boiler.

Note

The outer case forms a seal with the combustion box: It must therefore be securely fitted with the screw provided.

Routine servicing instructions (cont.)

Start-up the boiler

1. Open gas shut-off valve and switch on mains electricity supply.
2. Check the operation of the appliance.

Checking all gas equipment for soundness at operating pressure



Danger

Escaping gas leads to a risk of explosion.

Check gas equipment for soundness.

Final checks

1. Check that the flue terminal is in good condition and clear of any obstructions.
2. Return all appliance and external controls (if fitted) to their original settings.

Fault finding

General

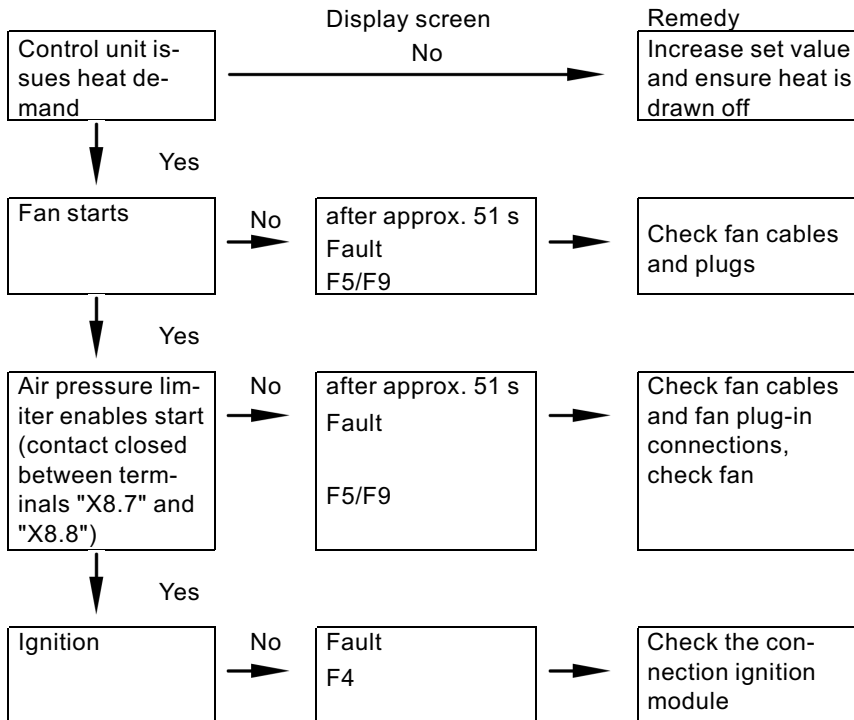
Note

The law requires that any service work must be carried out by a competent CORGI registered engineer.

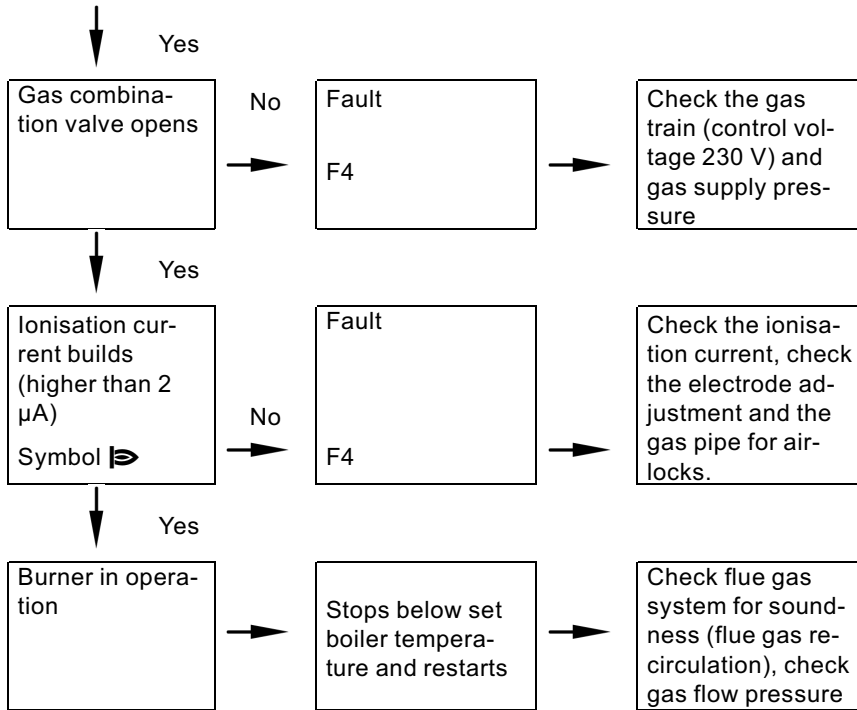
Before looking for a fault condition, check that:

- The mains electrical supply is turned on.
 - The clock and / or room thermostat (if fitted) are calling for heat (CH 'faults' only).
 - The gas service cock is open.
 - The system is full and vented.
- Before attempting any electrical fault finding, always conduct the preliminary electrical system safety checks. On completion of any service or fault finding operation involving making or breaking electrical connections always check for earth continuity, polarity and resistance to earth.

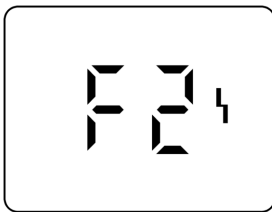
Function sequence and possible faults



Fault finding (cont.)



Fault messages in the display



Faults are indicated by a flashing fault code with fault symbol "f" and the reset key is illuminated. For fault code explanations see the following table.

Fault finding (cont.)

Display fault code	System characteristics	Cause	Measures
0b	Burner blocked	Flow of water too low. Air in heat exchanger. Flow switch faulty.	Check the circulation pump. Vent the heating system. Check the interconnecting cable.
30	Burner blocked	Boiler temperature sensor shorted out	Check the boiler temperature sensor (see page 67).
38	Burner blocked	Boiler temperature sensor lead break	Check the boiler temperature sensor (see page 67).
60	Control mode	Return temperature sensor shorted out	Check the return temperature sensor (see page 67).
68	Control mode	Return temperature sensor lead break	Check the return temperature sensor (see page 67).
b1	Control mode	Communication fault – programming unit (internal)	Check connections and replace the programming unit, if necessary.
b5	Control mode	Internal fault	Replace control unit.
E4	Burner blocked	Fault – supply voltage	Replace control unit.
E5	Burner blocked	Internal fault	Check the ionisation electrode and leads. Press "Reset".
F0	Burner blocked	Internal fault	Replace control unit.
F2	Burner in fault state	Temperature limiter has responded.	Check the heating system water level. Check the circulation pump. Vent the heating system. Check the temperature limiter and leads. Press "Reset".
F3	Burner in fault state	The flame signal is already present at burner start.	Check the ionisation electrode and leads. Press "Reset".

Fault finding (cont.)

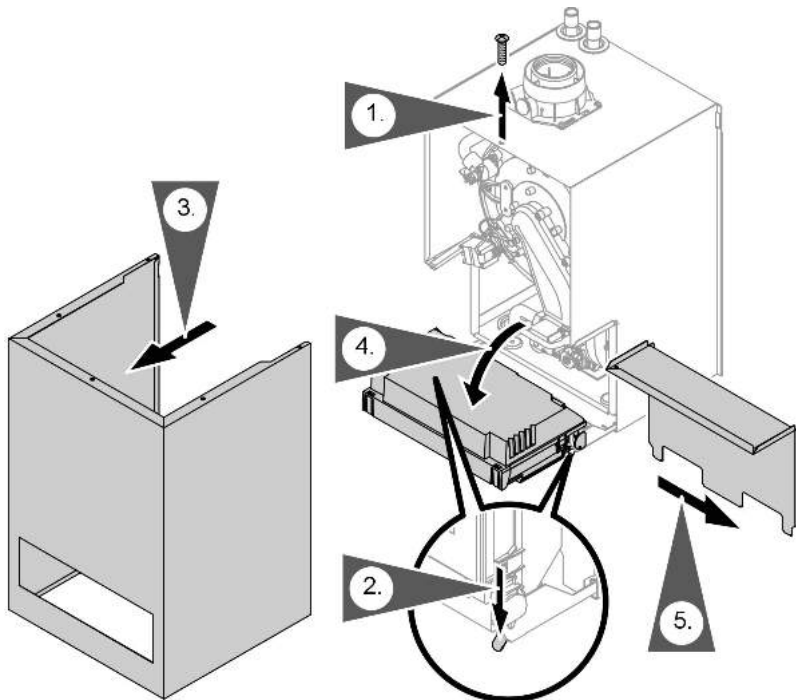
Display fault code	System characteristics	Cause	Measures
F4	Burner in fault state	No flame signal is present.	Check the ionisation electrode and leads, measure the ionisation current, check the gas pressure, check the gas combination valve, ignition, ignition module and condensate drain. Press "Reset".
F5	Burner blocked	Air pressure switch faulty / Sticking mixture damper	Check the air pressure switch and the interconnecting cable / mixture damper .
F8	Burner in fault state	Fuel valve closes too late	Check gas combination valve. Check both control paths. Press "Reset".
F9	Burner in fault state	Fan speed too low at burner start	Check the fan, check the fan cables and supply, check the fan control. Press "Reset".
FA	Burner in fault state	Fan not at standstill	Check the fan, check the fan cables, check the fan control. Press "Reset".
Fd	Burner blocked	Burner control unit fault	Check the ignition electrodes and leads. Check whether a strong interference (EMC) field exists near the equipment. Press "Reset". If the fault is not removed, replace the control unit.
FE	Burner blocked	Faulty main PCB	Switch OFF the control unit, if the equipment will not restart.

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Service

Repairs

Removing front panel

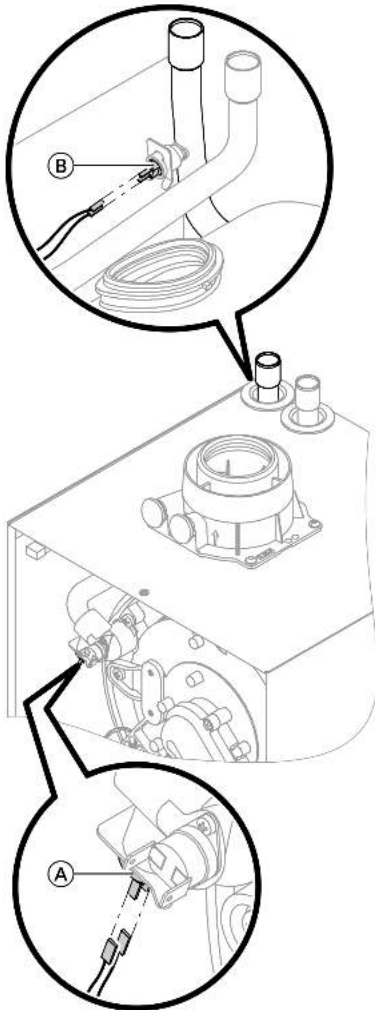


1. Remove the screw at the top of the boiler.
2. Press down the springs on the underside of the boiler and remove the front panel.
3. Lift the front panel from the wall mounting bracket.
4. Flip down control unit.
5. Remove 2 screws and remove cover panel.

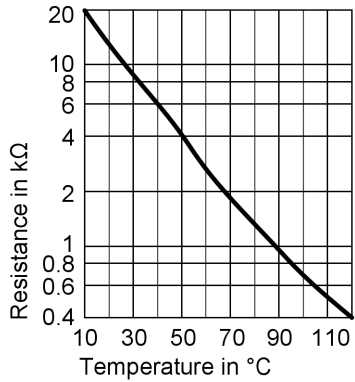
Repairs (cont.)

Boiler temperature sensor and return temperature sensor

1. Pull the leads from boiler temperature sensor (A) or return temperature sensor (B) and measure the resistance.



Repairs (cont.)



2. Check the sensor resistance and compare actual values with the curve.

3. In case of severe deviation, drain boiler on the primary side and replace the sensor.



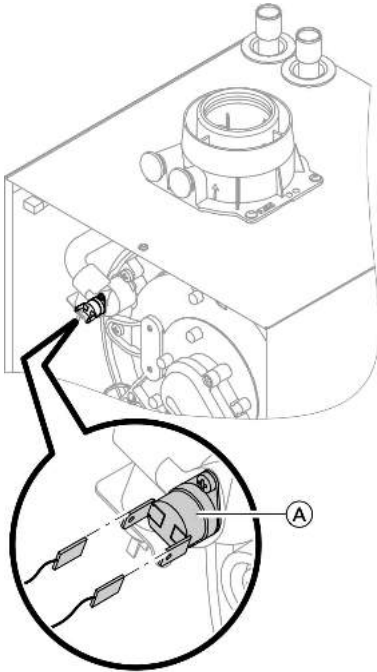
Danger

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

Repairs (cont.)

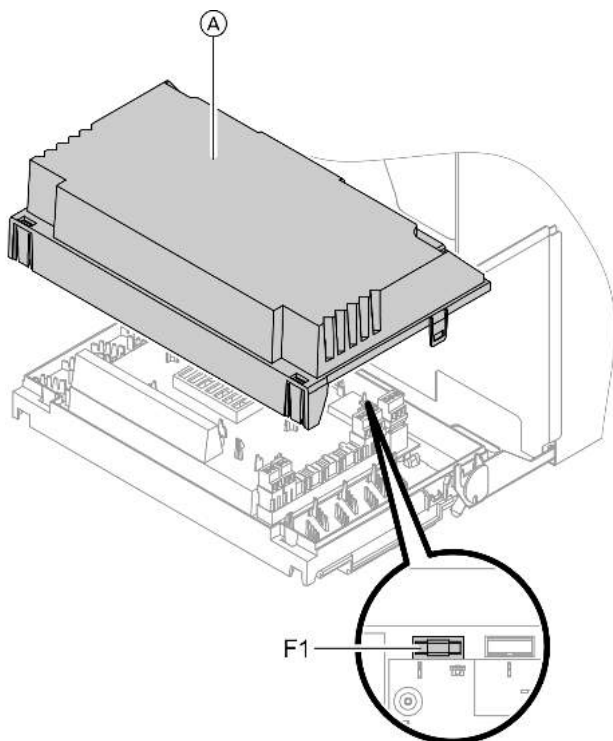
Check the temperature limiter

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



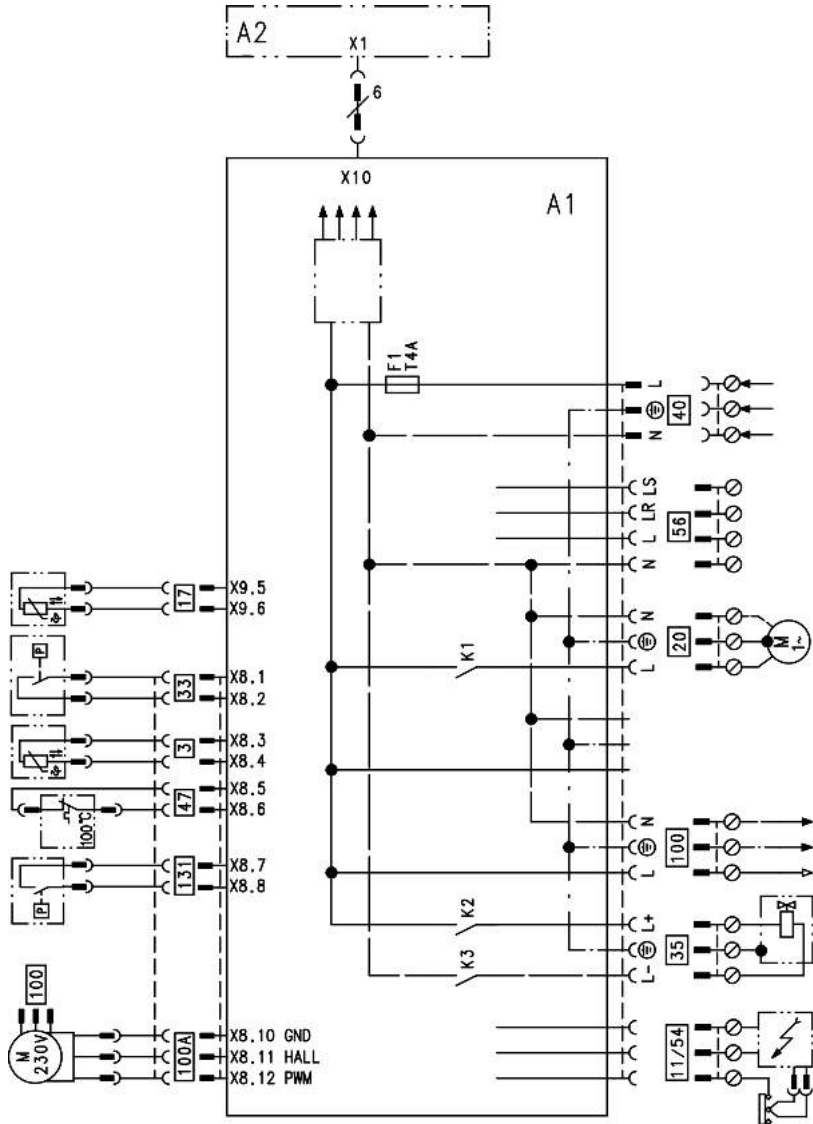
1. Pull the leads from temperature limiter (A).
2. Check the continuity of the temperature limiter with a multimeter.
3. Remove faulty temperature limiter.
4. Coat the replacement temperature limiter with heat conducting paste and install.
5. To reset press "Reset" key on the control unit.

Checking the fuse



1. Switch OFF the mains power.
2. Flip down control unit.
3. Remove cover (A).
4. Check fuse F1.

Connection and wiring diagram



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- A1 Main PCB
- A2 Programming unit
- [3] Boiler temperature sensor

- [11] Ionisation electrode
- [17] Return temperature sensor
- [20] Circulation pump 230V~

Service



Designs

Connection and wiring diagram (cont.)

33	Flow switch	56	Mains connection accessories/ room temperature control
35	Gas solenoid valve	100 A	Fan
40	Mains input 230V~/50Hz	131	Air pressure switch
47	Temperature limiter		
54	Ignition unit		

Parts lists

Spare parts information

Quote the type and serial no. (see data plate) and the item no. of the required part (as per this parts list). Obtain standard parts from your local supplier.

- 001 Thermocouple
- 002 Temperature sensor
- 003 Pressure switch
- 004 Control cable
- 005 Boiler connection plug
- 006 Boiler adaptor
- 009 Flue gas gaskets (set)
- 010 Heat exchanger
- 011 Insulating block
- 012 Heat exchanger mounting (set)
- 013 Condensate hose
- 014 Siphon
- 015 Condensate pipe
- 016 Gas supply pipe
- 017 Cover gaskets
- 018 Heating water flow connection pipe
- 019 Heating water return connection pipe
- 020 Flow switch
- 021 Grommets
- 022 Gaskets (set)
- 024 Spring clips (set)
- 050 Burner gasket

- 051 Insulation ring
- 052 Burner gauze assembly
- 053 Burner gauze assembly gasket
- 058 Mixture damper
- 059 Radial fan
- 060 Venturi top
- 061 Gas train
- 062 Burner door
- 063 Ignition unit
- 080 Control unit
- 081 Cover – wiring chamber
- 200 Front panel
- 201 Spring tie
- 203 Viessmann logotype

Wearing parts

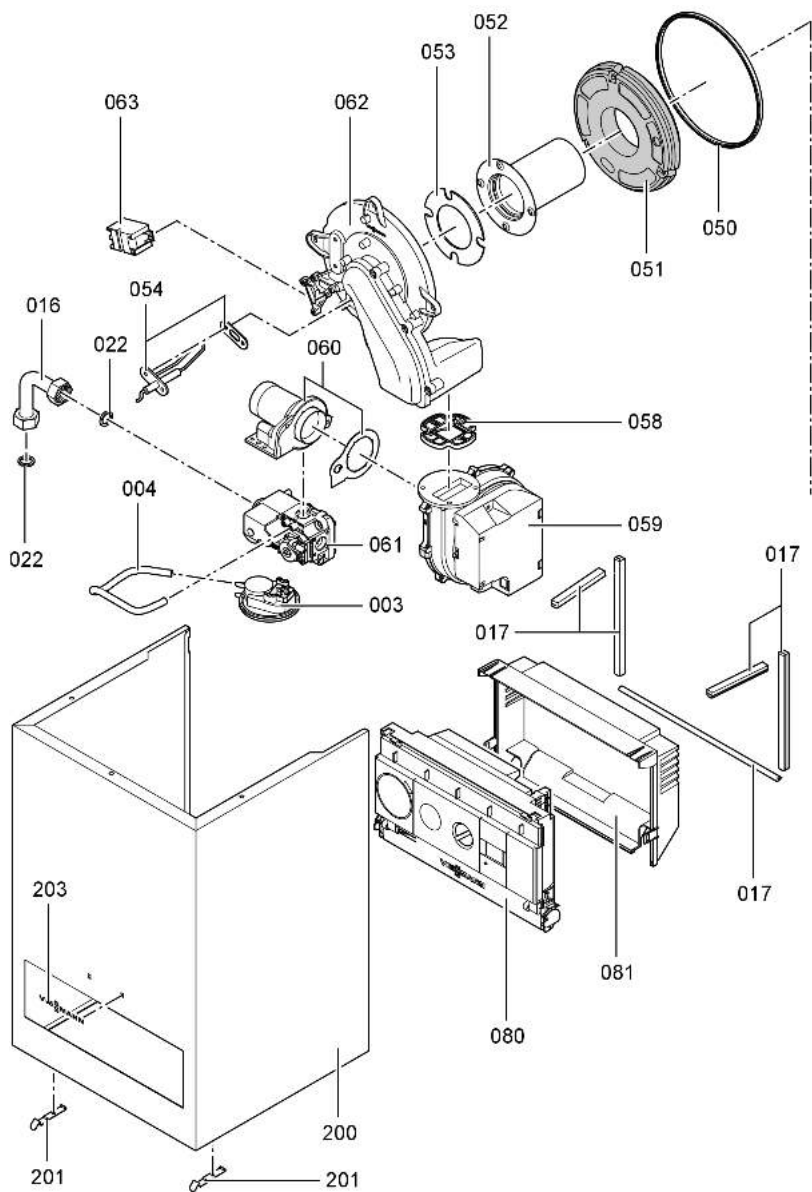
- 054 Ignition and ionisation electrode

Parts not shown

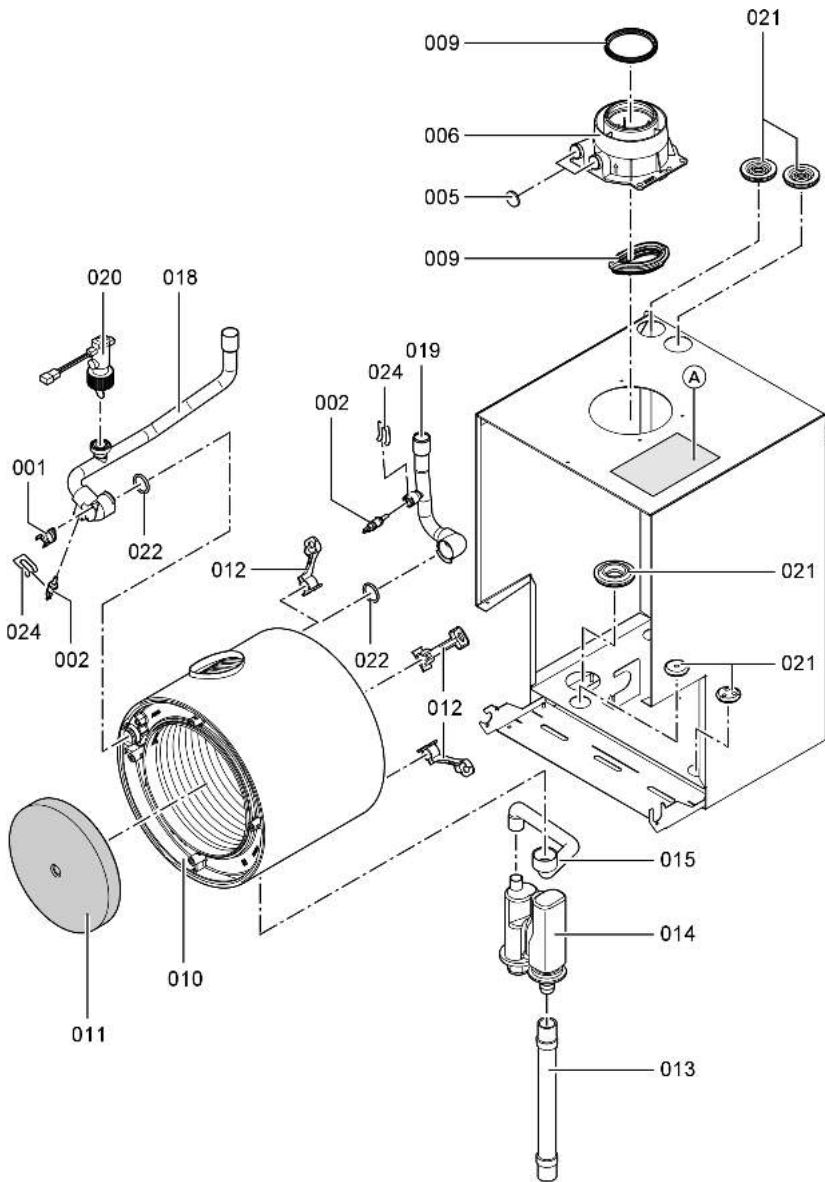
- 023 Installation and service instructions
- 094 Mains cable
- 095 Cable harness X8
- 096 Connecting cable fan 100
- 097 Gas valve connecting cable 35
- 098 Ignition transformer/ionisation connecting cable
- 300 Touch-up spray paint, Vitowhite
- 301 Touch-up paint stick, Vitowhite
- Ⓐ Data plate

Parts lists

Parts lists (cont.)



Parts lists (cont.)



5592 805 GB

Service

Commissioning/service reports



BENCHMARK No. | | | | |

GAS BOILER COMMISSIONING CHECKLIST

BOILER SERIAL No. _____ NOTIFICATION No. _____

CONTROLS To comply with the Building Regulations, each section must have a tick in one or other of the boxes

TIME & TEMPERATURE CONTROL TO HEATING	ROOM T/STAT & PROGRAMMER/TIMER	PROGRAMMABLE ROOM/STAT
TIME & TEMPERATURE CONTROL TO HOT WATER	CYLINDER T/STAT & PROGRAMMER/TIMER	COMBI BOILER
HEATING ZONE VALVES	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>
HOT WATER ZONE VALVES	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>
THERMOSTATIC RADIATOR VALVES	FITTED <input type="checkbox"/>	
AUTOMATIC BYPASS TO SYSTEM	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>

FOR ALL BOILERS CONFIRM THE FOLLOWING

THE SYSTEM HAS BEEN FLUSHED IN ACCORDANCE WITH THE BOILER MANUFACTURER'S INSTRUCTIONS?

THE SYSTEM CLEANER USED _____

THE INHIBITOR USED _____

FOR THE CENTRAL HEATING MODE, MEASURE & RECORD

GAS RATE _____ m³/hr _____ ft³/hr

BURNER OPERATING PRESSURE (IF APPLICABLE) N/A mbar

CENTRAL HEATING FLOW TEMPERATURE _____ °C

CENTRAL HEATING RETURN TEMPERATURE _____ °C

Commissioning/service reports (cont.)

FOR COMBINATION BOILERS ONLY

HAS A WATER SCALE REDUCER BEEN FITTED? YES NO
 WHAT TYPE OF SCALE REDUCER HAS BEEN FITTED? _____

FOR THE DOMESTIC HOT WATER MODE, MEASURE & RECORD

GAS RATE _____ m³/hr _____ ft³/hr
 MAXIMUM BURNER OPERATING PRESSURE (IF APPLICABLE) N/A _____ mbar
 COLD WATER INLET TEMPERATURE _____ °C
 HOT WATER OUTLET TEMPERATURE _____ °C
 WATER FLOW RATE _____ lts/min

FOR CONDENSING BOILERS ONLY CONFIRM THE FOLLOWING

THE CONDENSATE DRAIN HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS? YES

FOR ALL INSTALLATIONS CONFIRM THE FOLLOWING

THE HEATING AND HOT WATER SYSTEM COMPLIES WITH CURRENT BUILDING REGULATIONS
 THE APPLIANCE AND ASSOCIATED EQUIPMENT HAS BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS
 IF REQUIRED BY THE MANUFACTURER, HAVE YOU RECORDED A CO/CO₂ RATIO READING? N/A YES CO/CO₂ RATIO _____
 THE OPERATION OF THE APPLIANCE AND SYSTEM CONTROLS HAVE BEEN DEMONSTRATED TO THE CUSTOMER
 THE MANUFACTURER'S LITERATURE HAS BEEN LEFT WITH THE CUSTOMER

COMMISSIONING ENG'S NAME PRINT _____ CORGI ID No. _____
 SIGN _____ DATE _____

Commissioning/service reports (cont.)

SERVICE INTERVAL RECORD

It is recommended that your heating system is serviced regularly and that you complete the appropriate Service Interval Record Below.

Service Provider. Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the boiler manufacturer's instructions. Always use the manufacturer's specified spare part, when replacing all controls

SERVICE 1 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 2 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 3 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 4 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

Commissioning/service reports (cont.)

SERVICE 6 DATE _____
ENGINEER NAME _____
COMPANY NAME _____
TEL No. _____
CORG ID CARD SERIAL No. _____
COMMENTS _____
SIGNATURE _____

SERVICE 8 DATE _____
ENGINEER NAME _____
COMPANY NAME _____
TEL No. _____
CORG ID CARD SERIAL No. _____
COMMENTS _____
SIGNATURE _____

SERVICE 10 DATE _____
ENGINEER NAME _____
COMPANY NAME _____
TEL No. _____
CORG ID CARD SERIAL No. _____
COMMENTS _____
SIGNATURE _____

SERVICE 5 DATE _____
ENGINEER NAME _____
COMPANY NAME _____
TEL No. _____
CORG ID CARD SERIAL No. _____
COMMENTS _____
SIGNATURE _____

SERVICE 7 DATE _____
ENGINEER NAME _____
COMPANY NAME _____
TEL No. _____
CORG ID CARD SERIAL No. _____
COMMENTS _____
SIGNATURE _____

SERVICE 9 DATE _____
ENGINEER NAME _____
COMPANY NAME _____
TEL No. _____
CORG ID CARD SERIAL No. _____
COMMENTS _____
SIGNATURE _____

Certificates

Declaration of conformity

Declaration of conformity for Vitodens 100-W

We, Viessmann Werke GmbH & Co KG, D-35107 Allendorf, declare as sole responsible body, that the product

Vitodens 100-W

conforms to the following standards:

DIN 4702-6

EN 297

EN 483

EN 625

EN 677

EN 50.165

EN 60.335

EN 61 000-3-2

EN 61 000-3-3

This product is designated in accordance with the following directives:

90/396/EEC

89/336/EEC

92/42/EEC

73/23/EEC

as follows:

CE-0085

EC Declaration of conformity by an authorised body according to EMVG article 10.2 Certificate number: E9 02 08 1730.

This product complies with the requirements of the Efficiency Directive (92/42/EEC) for:

Condensing boilers

Allendorf, 14.02.07

Viessmann Werke GmbH&Co KG



pp. Manfred Sommer

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Applicability

Gas fired condensing combi boiler

Type WB1A

8 to 13 kW

from serial no.

7248 320 7 00001

8 to 18 kW

from serial no.

7179 920 5 00001

8 to 24 kW

from serial no.

7179 919 5 00001

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