Installation and service instructions

for heating engineers

Vitodens 100
Type WB1A
Gas fired wall mounted condensing boiler
Natural gas version

See applicability on the last page

VITODENS 100

5862 670 GB 2/2005

Please keep safe

Safety instructions

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

Safety instructions explained

Danger
This symbol warns against the risk of injury.

Important information
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 fitter.
- Electrical work must be compliant with Part P of the building regulations
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

If you notice the 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.
- Heating system shutdown
- Remove all personnel from the danger zone.
- Observe the safety regulations of your local gas supplier, found on the gas meter.
- Notify your heating contractor from outside the building.

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.

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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

Important information
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

Important information
Spare and wearing 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 infringe 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, Type WB1A

Set up for operation with natural gas.

General Information

Appliance description

The Vitodens 100 is a fully automatic, wall hung, fan assisted balanced flue condensing boiler for use with Natural Gas (G20).
The Vitodens 100 is fully modulating and provides central heating outputs between 8.0 kW (27,300Btu/h) and 24.0 kW (84,300Btu/h)/30.0 kW (93,550 Btu/h) and instantaneous hot water at outputs between 8.0 kW (27,300 Btu/h) and 24.0 kW (84,300Btu/h)/30.0 kW (93,550 Btu/h).
The appliance always gives priority to domestic hot water supply.

The appliance is designed for use with sealed primary water systems (only) and incorporates a circulation pump, diverter valve assembly, flow switch (combi boiler only), DHW plate heat exchanger (combi boiler only), safety valve and CH expansion vessel. A separate DHW expansion vessel is not required.
Internal frost protection and an electronic control unit is fitted as standard equipment and the boiler may be used with any suitable room thermostat and / or time clock in addition to the optional controls available from Viessmann.

Certification details

The Vitodens 100 is certified to comply with the requirements of prEN 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).

The appliance classification is either C_{13x} or C_{33x} depending upon whether a horizontal or vertical flue terminal is used.

Technical Specification

General Specifications and Performance Data

Rated output range			
Tv/Tr 50/30 °C	**kW**	**8 to 24**	**8 to 30**
Tv/Tr 80/60 °C	**kW**	**7.3 to 21.8**	**7.3 to 27.3**
Rated output range	kW	7.4 to 22.3	7.4 to 28.0
Maximum gas rate	m^3/h	2.50	3.14
Combi boiler: Design domestic hot water performance (specific rate)	l/min	7.5	12.8
Domestic hot water temperature range	°C	38 - 57	38 - 57
Maximum mains water inlet pressure	bar	10	10
Minimum mains water inlet pressure for operation	bar	1	1
Total water capacity (Including expansion Vessel)	l	3.5	3.5
Minimum CH system pressure (static head) – Cold	bar	1.0	1.0
Maximum CH system pressure (static head) – Hot	bar	3.0	3.0
Maximum CH flow temperature	°C	80	80
Integral expansion vessel capacity	l	8	8
Integral expansion vessel pre-charge pressure	bar	0.75	0.75
Lift weight			
- Combi boiler	kg	43	43
- System boiler	kg	42	42
Total weight inc. packaging			
- Combi boiler	kg	48	48
- System boiler	kg	47	47
Electrical supply		230 V, 50Hz	230 V, 50Hz
Internal fuse	A	4	4
Maximum power consumption	W	150	150
Flue outlet (clearance ∅):	mm	60	60
Ventilation pipe (outside ∅)	mm	100	100
Product ID		CE-0085 BQ 0017	

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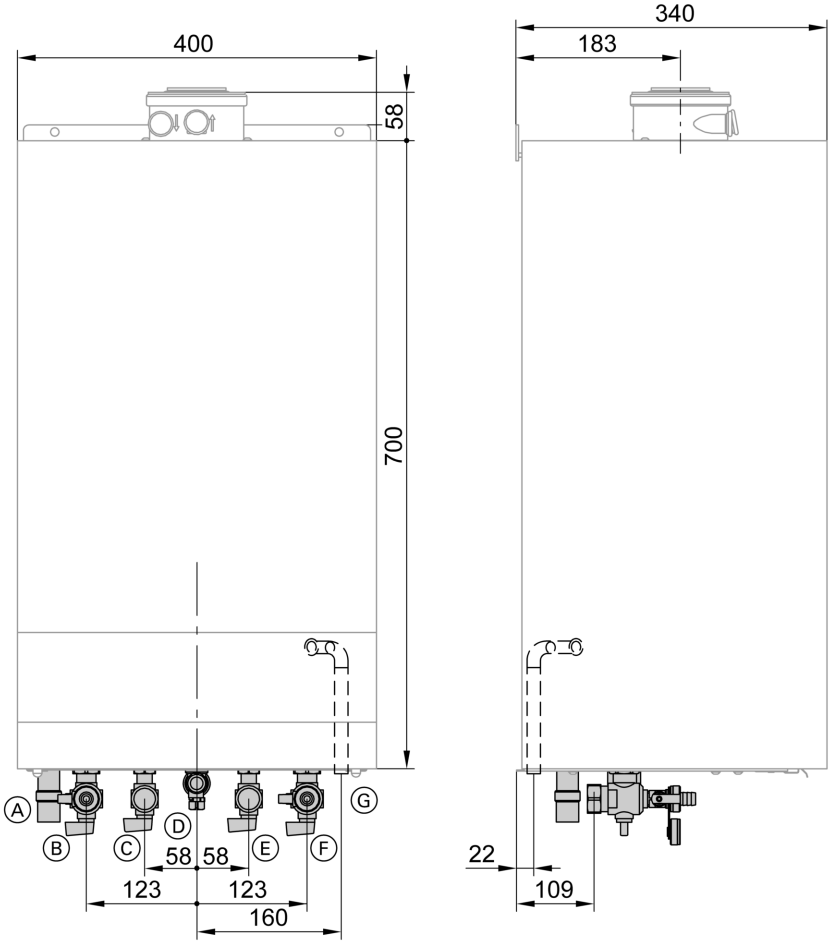
Technical Specification (cont.)

Overall Appliance Dimensions

Combi boiler



Ⓐ Condensate drain: Plastic pipe ∅22 mm
Ⓑ Heating flow: ∅22 mm
Ⓒ DHW: ∅15 mm
Ⓓ Gas connection: Rp ½
Ⓔ Cold water: ∅15 mm
Ⓕ Heating return: ∅22 mm
Ⓖ Safety valve drain: ∅15 mm

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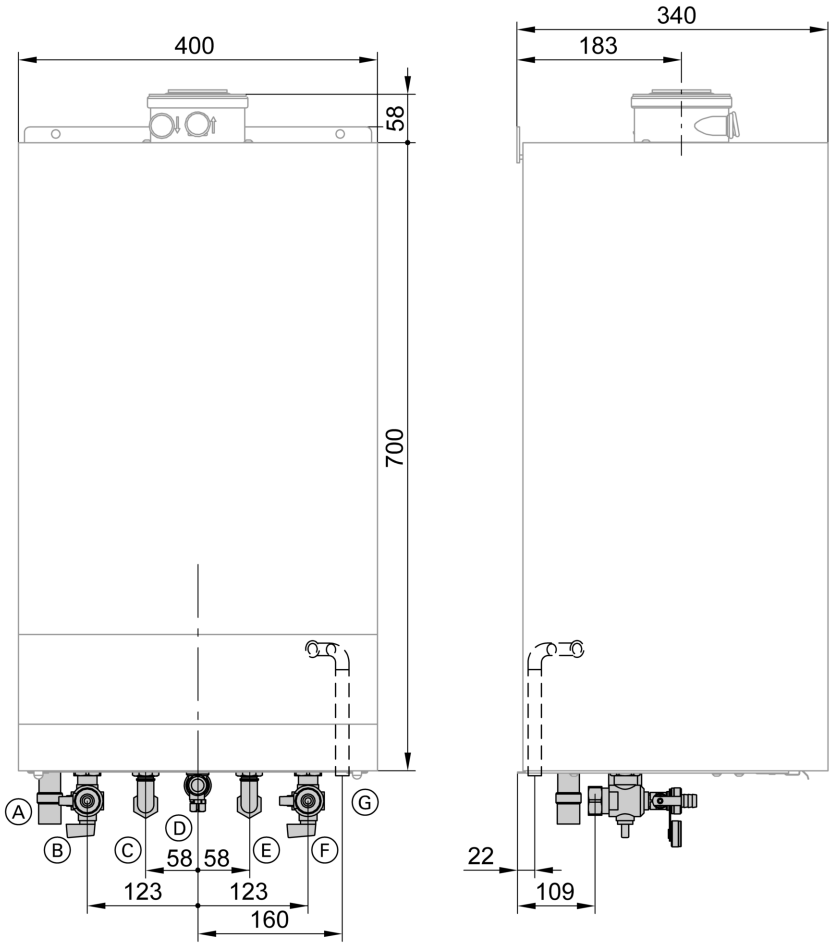
Technical Specification (cont.)

System boiler



Ⓐ Condensate drain: Plastic pipe ∅22 mm
Ⓑ Heating flow: ∅22 mm
Ⓒ DHW cylinder flow: ∅22 mm
Ⓓ Gas connection: Rp ½
Ⓔ DHW return: ∅22 mm
Ⓕ Heating return: ∅22 mm
Ⓖ Safety valve drain: ∅15 mm

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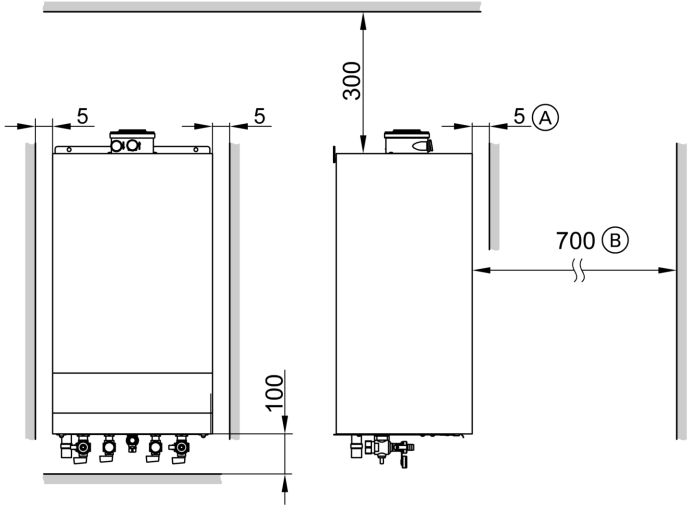
Technical Specification (cont.)

Minimum installation clearances

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



Ⓐ Front (behind removable panel)

Ⓑ Front (for service)

Flue System Specifications

Concentric Horizontal Flue System

Standard horizontal flue kit: The appliance is supplied complete with a standard concentric horizontal balanced 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.

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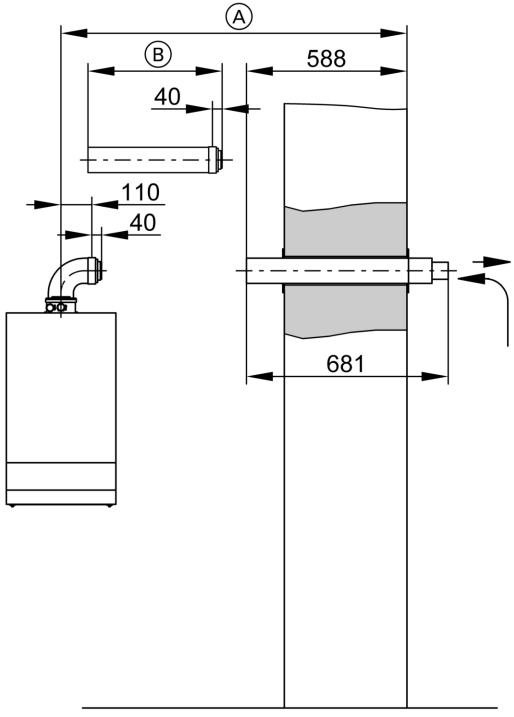
Technical Specification (cont.)

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 to10 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.

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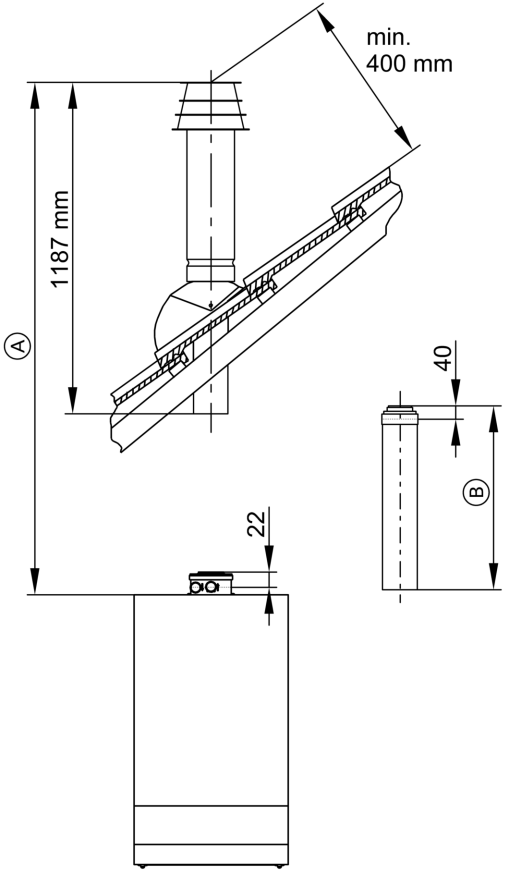
Technical Specification (cont.)

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)

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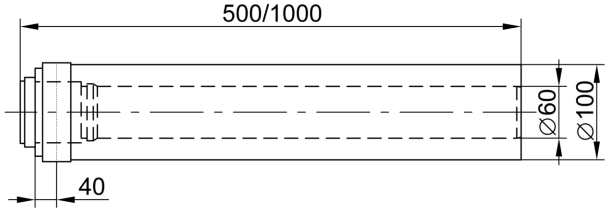
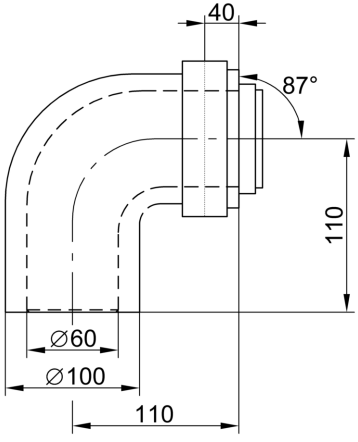
Technical Specification (cont.)

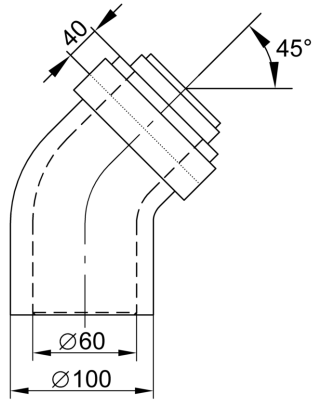
Elbows and extensions



Extension



Elbow 87°



Elbow 45°

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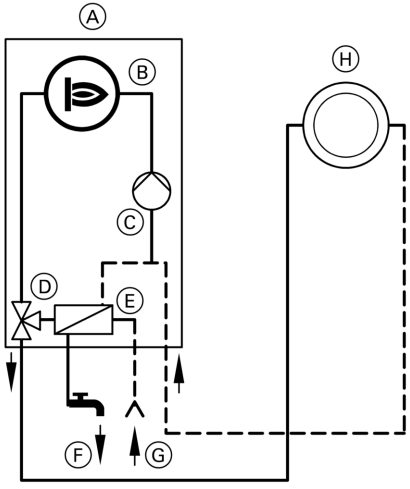
Technical Specification (cont.)

Hydraulic circuit

Combi boiler



Ⓐ Boiler
Ⓑ heat exchanger
Ⓒ circulation pump
Ⓓ Three-way diverter valve
Ⓔ Plate heat exchanger
Ⓕ DHW outlet
Ⓖ Cold water inlet
Ⓗ Heating circuit

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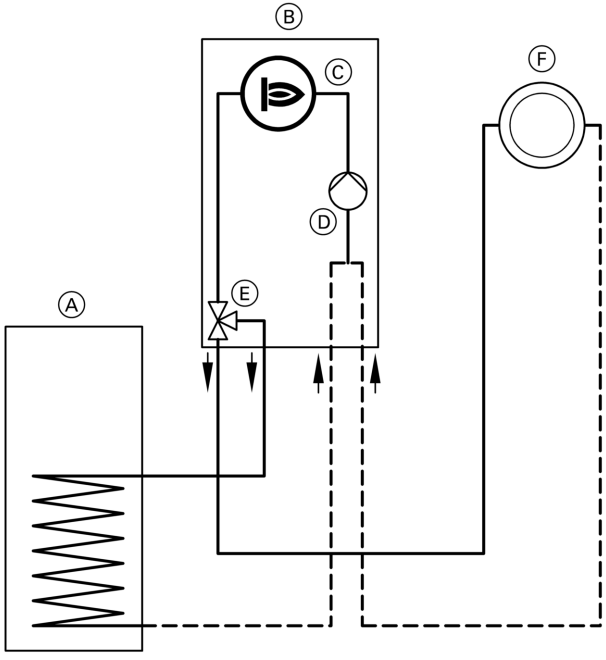
Technical Specification (cont.)

System boiler



Ⓐ DHW cylinder
Ⓑ Boiler
Ⓒ heat exchanger
Ⓓ circulation pump
Ⓔ Three-way diverter valve
Ⓕ Heating circuit

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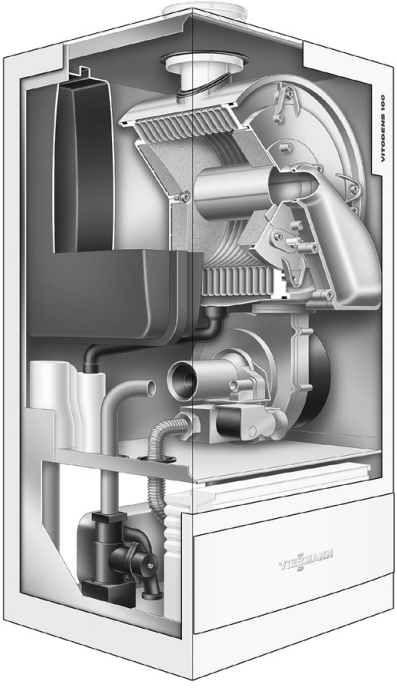
Technical Specification (cont.)

Sectional Diagram



Combi boiler illustrated

Installation Requirements

Statutory Requirements

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

It is in your own interest and safety, to ensure that the law is complied with.

Installation Requirements (cont.)

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'.
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 and IGE/UP/7.
From 1 April 2005, all CORGI Registered Installers will be required to notify CORGI when they have installed or exchanged a gas appliance in a residential dwelling.
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 to form part of the Home Information Pack (HIP) that becomes a requirement from January 2007 in order to sell your house.

! **Important information**
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.

Installation Requirements (cont.)

- 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 the British Gas publication 'Guide for Gas Installations In Timber Frame Housing', reference DM2. If in doubt, advice must be sought from British Gas.
- 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.
- 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 5376:2 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 gives detailed guidance on this aspect.

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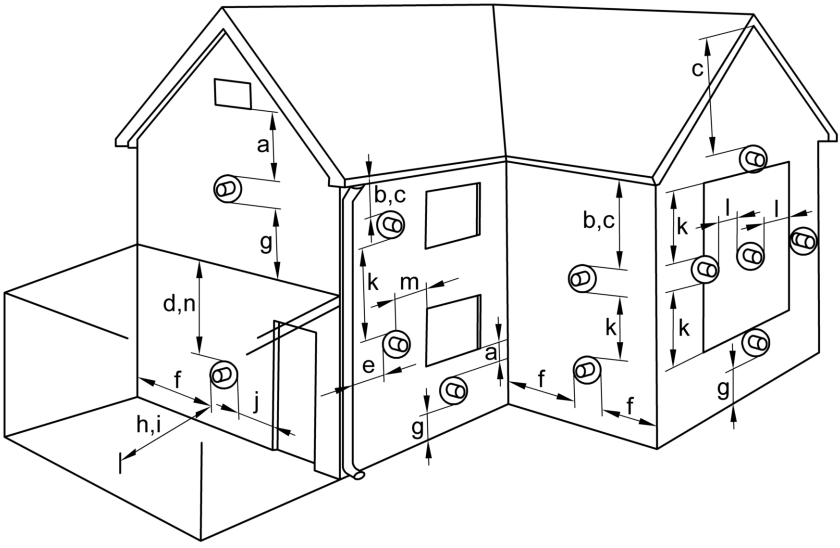
Installation Requirements (cont.)

Flue terminal position



Horizontal flue systems

Position		Minimum spacing mm
a	Directly below an window that can be opened, air vent or any other ventilation opening	300
b	Below 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

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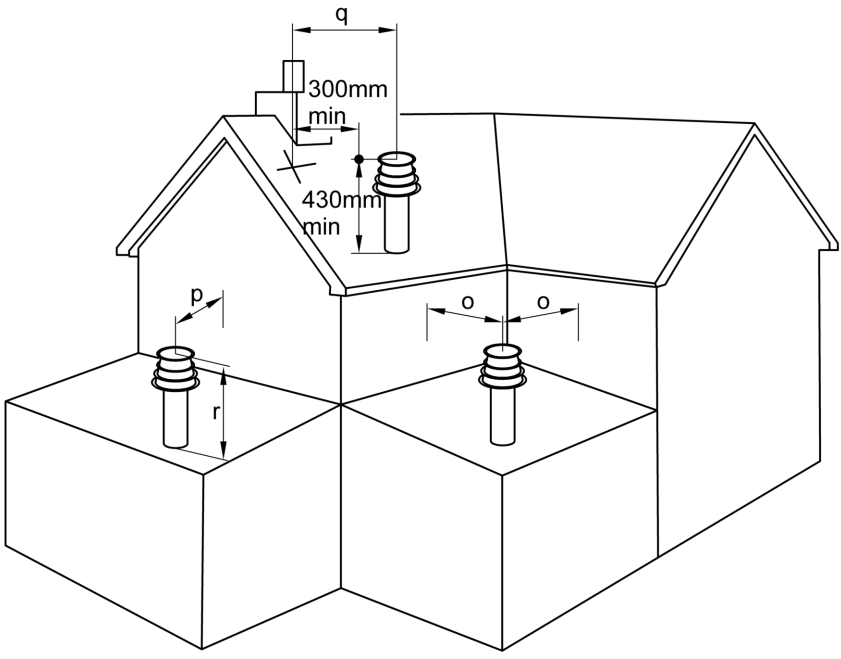
Installation Requirements (cont.)



Vertical flue systems

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.

Installation Requirements (cont.)

- 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 16(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.

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 9 are maintained.

Installation Requirements (cont.)

Central Heating System (typical system designs)

- The Vitodens 100 is designed for connection to sealed central heating water systems.
- A sealed system must only be filled by a competent person.
  Filling the heating system see page 48. Do not fill up the whole system using the internal filling loop (the internal filling loop is only for topping-up).

Combination boiler

Note
The boiler incorporates an internal bypass to ensure adequate water flow. Certain thermostatic radiator valve manufacturers may require that a bypass valve is fitted in addition to the integral by pass. Specifications as to the individual requirements should be sought prior to installation.

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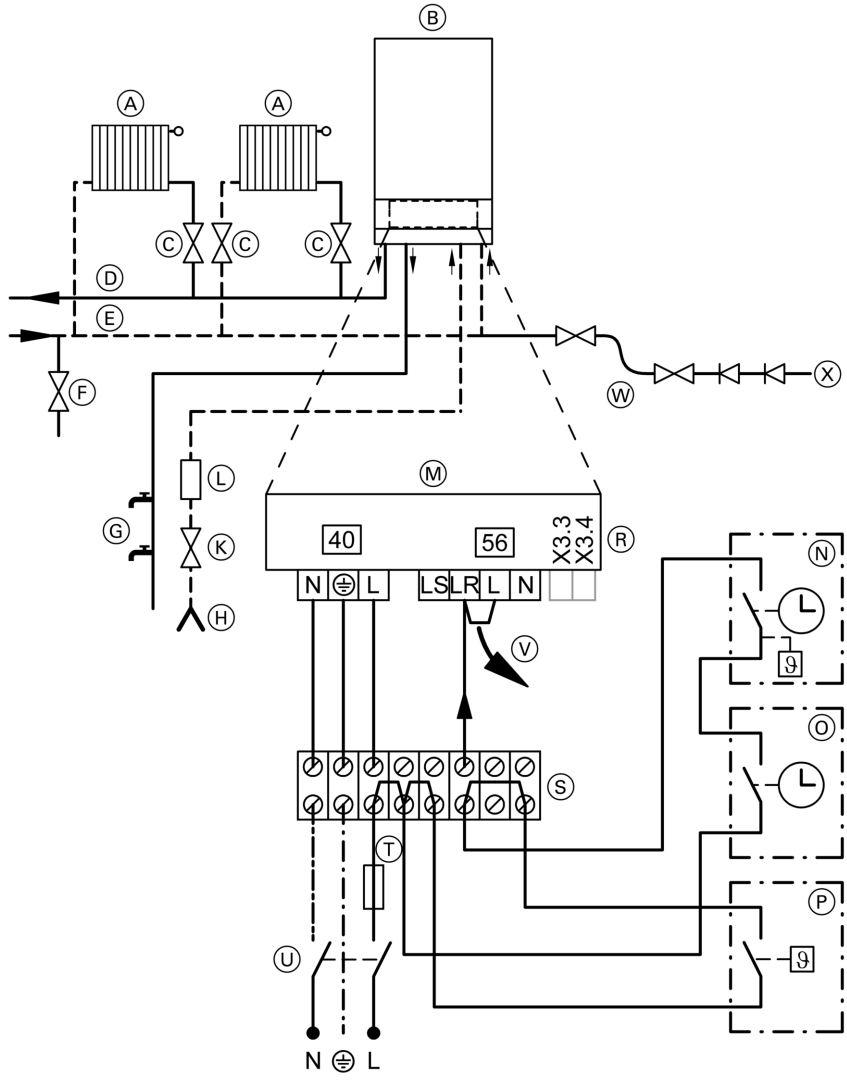
Installation Requirements (cont.)



Ⓐ Radiators
Ⓑ Boiler
Ⓒ Lockshield valve
Ⓓ CH flow
Ⓔ CH return
Ⓕ Drain cock at lowest point in the system
Ⓖ Hot water taps

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Installation Requirements (cont.)

Ⓗ Water main
Ⓚ BS stop valve
Ⓛ Pressure reducing valve (if necessary)
Ⓜ Control unit
Ⓝ Room temperature control (on site)
Connection of Viessmann Vitotrol 100 see page 42
Ⓞ Time switch
Ⓟ Frost stat
Ⓡ Open therm-connection(alternative)
Connection see page 42
Ⓢ Connection box (not supplied)
Ⓣ Fuse 3 A
Ⓤ Mains ON/OFF switch
Ⓥ When connecting, remove bridge
Ⓦ Temporary filling loop
Ⓧ Water mains
40 Power supply
56 Mains connection accessories/ room temperature control/DHW cylinder control
LR Connection of room temperature control
LS Connection of DHW cylinder control

- The following Viessmann control configurations are available:
  Constant temperature
  Timer with constant temperature
  Vitotrol 100 UTD
- The boiler requires a permanent live feed via plug 40.

System boiler

Cylinder connected directly to boiler.

Note
The boiler incorporates an internal bypass to ensure adequate water flow, however one radiator should be permanently open (fitted with two lockshield valves) to dissipate any excess heat.

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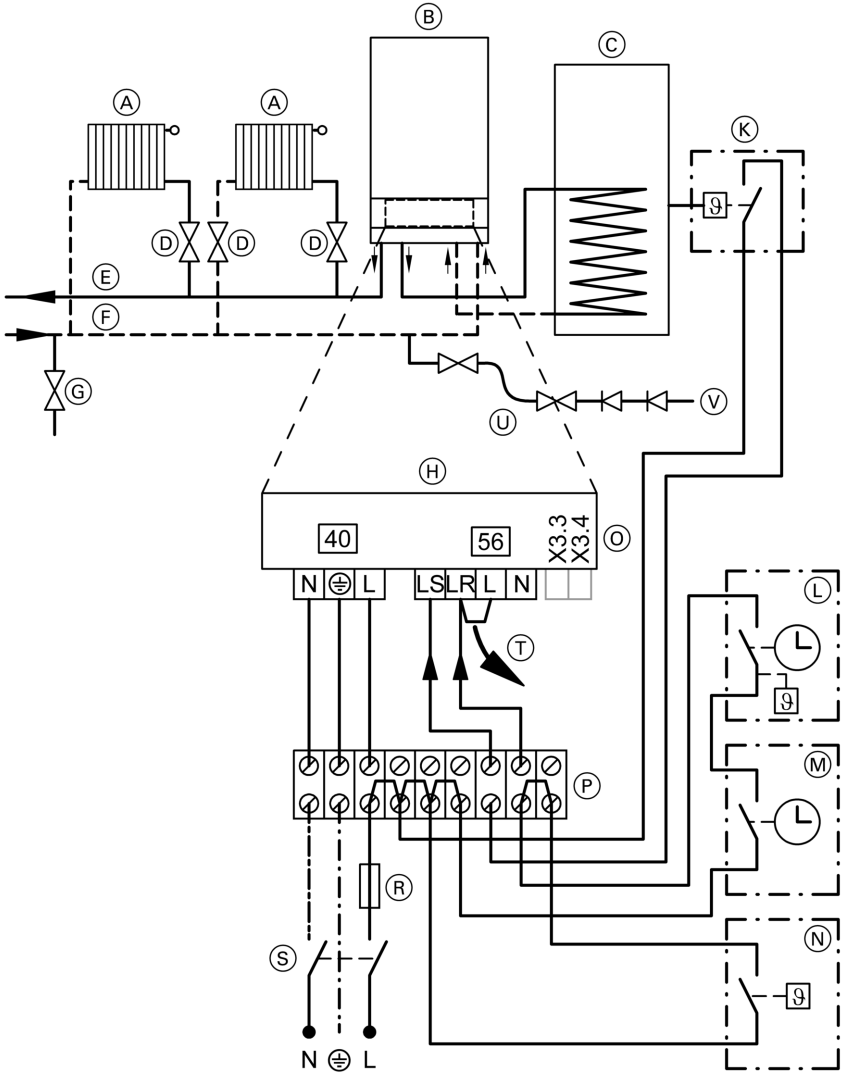
Installation Requirements (cont.)



Ⓐ Radiators
Ⓑ Boiler
Ⓒ DHW-Cylinder
Ⓓ Lockshield valve
Ⓔ CH flow
Ⓕ CH return
Ⓖ Drain cock at lowest point in the system

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Installation Requirements (cont.)

Ⓗ Control unit
Ⓚ Cylinder thermostat
Ⓛ Room temperature control (on site)
Connection of Viessmann Vitotrol 100 see page 42
Ⓜ Time switch
Ⓝ Frost stat
Ⓞ Open therm-connection(alternative)
Connection see page 42
Ⓟ Connection box (not supplied)
Ⓡ Fuse 3 A
Ⓢ Mains ON/OFF switch
Ⓣ When connecting, remove bridge
Ⓤ Temporary filling loop
Ⓥ Water mains
40 Power supply
56 Mains connection accessories/ room temperature control/DHW cylinder control
LR Connection of room temperature control
LS Connection of DHW cylinder control

- The following Viessmann control configurations are available:
  Constant temperature
  Timer with constant temperature
  Vitotrol 100 UTD
- The boiler requires a permanent live feed via plug 40.
- The DHW cylinder must have an integrated temperature control connected to the Vitodens 100
- The DHW will always take priority over the central heating when timed demand is selected.

Hydraulic components in the boiler

Pump

The available head shown in following figure is that in excess of the appliance hydraulic resistance, i.e that available for the system.

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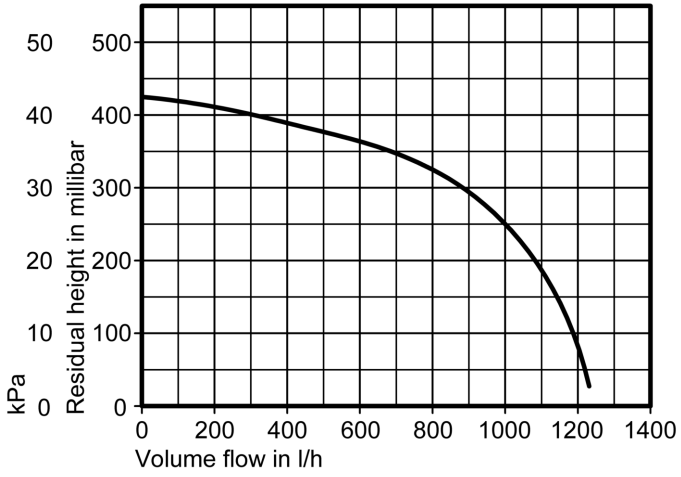
Installation Requirements (cont.)



Expansion vessel

The table shows the maximum system volume that the integral expansion vessel can sustain under different charge pressure conditions. If the system volume exceeds that shown, an additional expansion vessel must be fitted and connected to the heating system primary return pipe as close as possible to the appliance. If an extra vessel is required, ensure that the total capacity of both vessels is adequate.

Further details are available in the current issues of BS 5449 and BS 6798.

Note
If the pressure gauge rises by 1.5 bar when the appliance is at maximum temperature with all radiators in circulation an extra expansion vessel is required.

Vessel charge and initial system pressure	bar	0.5	1.0	1.5
	psi	7.3	14.5	21.5
Total water content of system using 8 litre capacity expansion vessel supplied with appliance	litres	106	75	42
	gallons	23	16.5	9
For systems having larger capacity, multiply the total system capacity in litres by the factor to obtain the total minimum expansion vessel capacity required		0.0833	0.11	0.16

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Installation Requirements (cont.)

Pressure relief valve

A pressure relief valve set at 3 bar (43.5 psi) is supplied with the appliance.

Domestic Hot Water System (Combi boiler only)

- Check that the mains water pressure is sufficient to produce the required DHW flow rate of 7,5 l/min (24 kW)/12,8 l/min (30 kW), but does not exceed the maximum DHW pressure (10 bar). If necessary, a pressure reducing valve must be fitted to the mains supply before the DHW inlet connection.
- The final 600 mm (24 in) of the mains supply pipe to the boiler must be copper.
- A regulator is fitted to control the maximum water flow rate.
- If the appliance is installed in an area where the temporary hardness of the water supply is high (over 150 ppm) the fitting of an in line scale inhibitor may be an advantage. Consult the Local Water Authority if in doubt.
- For specific information relating to fittings (e.g.. showers, washing machines etc) suitable for connection in the DHW circuit, consult the Local Water Authority. However, the following information is given for guidance.
  Domestic hot/cold water supply taps and mixing taps: All equipment designed for use at mains water pressure is suitable.
  Showers and bidets: Any mains pressure shower or bidet complying with the Local Water Authority regulations is suitable.

Gas Supply

- The Gas Supplier 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.

Installation Requirements (cont.)

- 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.
  Warning: Before purging open all doors and windows, also extinguish any cigarettes, pipes and any other naked lights.
- The complete installation must be tested for gas soundness.

Electricity 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 mm^2(24/0.2 mm) PVC insulated to BS 6500 table 16.
- **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 certificated room thermostat or time clock room thermostat.

Preparations for boiler installation

Unpacking the appliance

The appliance is supplied in 2 separate packages plus any optional flue packages. Check the availability and contents of each package before commencing the installation.

Boiler package

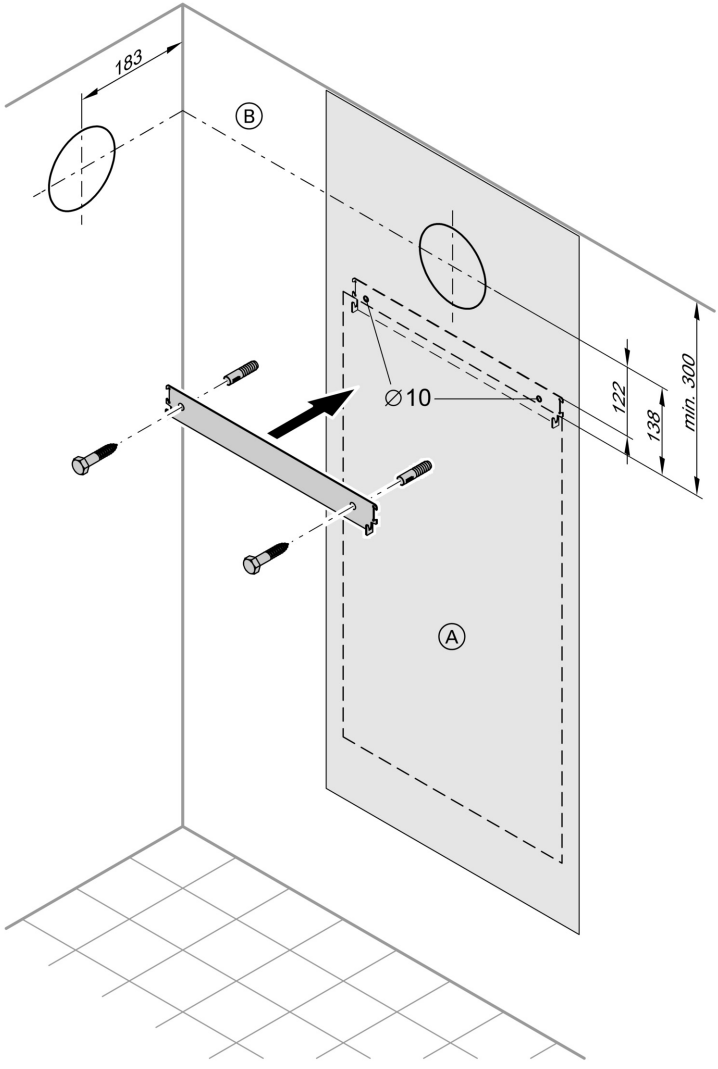
Combi boiler
- Boiler (assembled)
- 5 shut-off valves
- Wall mounting fixture
- 2 wall plugs and 2 screws
- Installation template

System boiler
- Boiler (assembled)
- 3 shut-off valves
- 2 connection elbows
- Wall mounting fixture
- 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.

Preparations for boiler installation (cont.)



Ⓐ Installation template

Ⓑ Observe the minimum slope of 3° (5mm/m) towards the boiler

1. Position the installation template on the wall.

2. Mark wall plug holes and balanced flue pipe opening.

Preparations for boiler installation (cont.)

3. Drill ∅10 mm holes and insert the rawl plugs.

4. Cut flue pipe opening to 100 mm ∅.

5. Fit wall mounting frame 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. Flush the heating system.

2. Prepare gas connection to BS 6891.

3. Prepare the electrical connections.
   - Mains cable: H05V2V2-F 3 G 1,0 mm^2, 230 V~, 50 Hz. A 1.5m power cable is part of the standard delivery.
   - Accessory cables: H05V2V2-F 3 G 1.0 mm^2 for connection of room temperature control and DHW cylinder control (system boiler).

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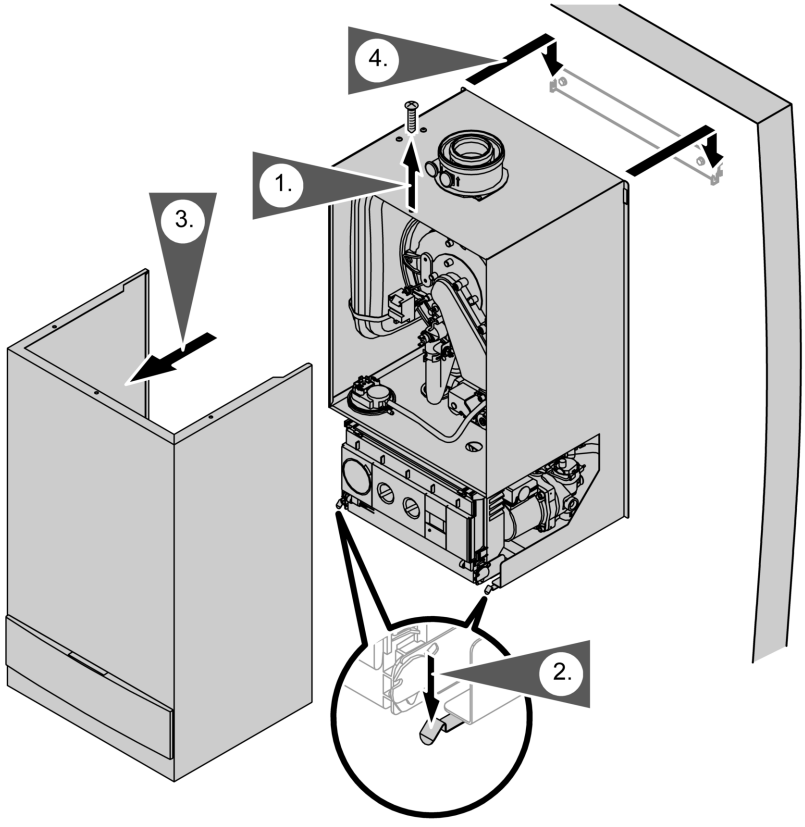
Installing the boiler and making all connections

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 and remove the front panel.

3. Hook the boiler on to the wall mounting frame.

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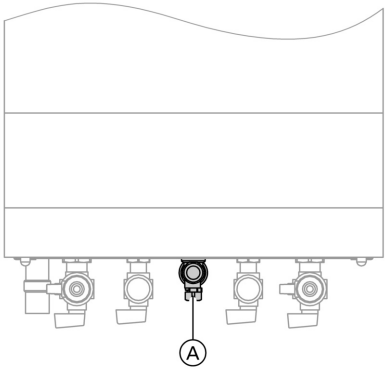
Installing the boiler and making all connections (cont.)

Gas connection

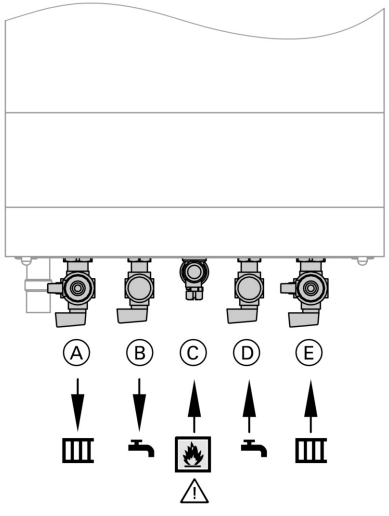


1. Connect the gas supply to the gas inlet connection on the gas cock Ⓐ. Upon completion, tighten the union connection.
2. Carry out a gas soundness test.
3. Purge the gas supply pipe.

Ⓐ Gas connection: ½ BSP

Installing water fittings

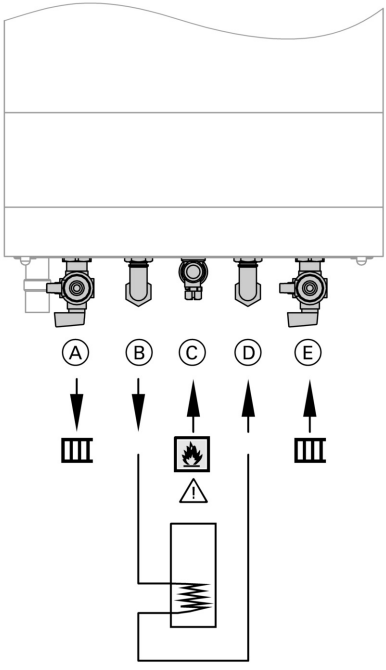
Combi boiler



Installing the boiler and making all connections (cont.)

Ⓐ Heating flow: ∅22 mm
Ⓑ DHW: ∅15 mm
Ⓒ Gas connection: ½ BSP
Ⓓ Cold water: ∅15 mm
Ⓔ Heating return: ∅22 mm

System boiler



For operation without a DHW cylinder, shut-off connections Ⓑ and Ⓓ.

Ⓐ Heating flow: ∅22 mm
Ⓑ DHW cylinder flow: ∅22 mm
Ⓒ Gas connection: ½ BSP
Ⓓ DHW return: ∅22 mm
Ⓔ Heating return: ∅22 mm

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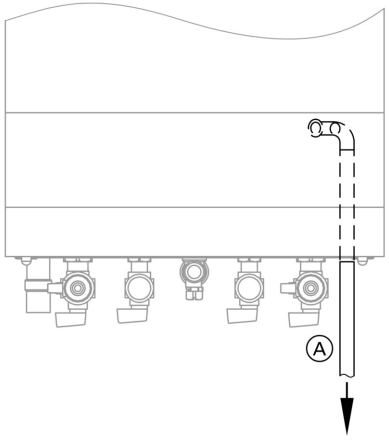
Installing the boiler and making all connections (cont.)

Connect safety valve drain



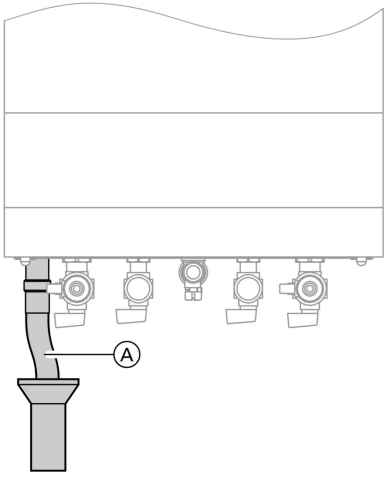
Ⓐ ∅15 mm

Connect a suitable discharge pipe to the pressure relief valve outlet. The pipe discharging to a safe place must be a minimum of 15 mm copper and run continually downwards.
The pipe from the pressure relief valve must not discharge above an entrance, window or any type of public access area.
The pipe must be routed to a position so that any discharge of water possibly boiling, or steam, cannot create any danger to persons, damage to property or external electric components and wiring. The point of discharge must be clearly visible.
To ease future servicing it is advisable to use a compression type fitting to extend the discharge pipe.

Installing the boiler and making all connections (cont.)

Condensate connection

Vitodens 100 has within a syphonic condensate trap.



Ⓐ ∅22 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 ° (4.5 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 safely disperse.
- The condensate pipe must be of non corrosive material, preferably plastic. Note: ferrous materials or copper must not be used.

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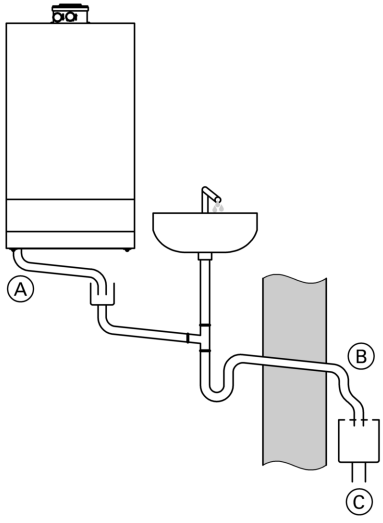
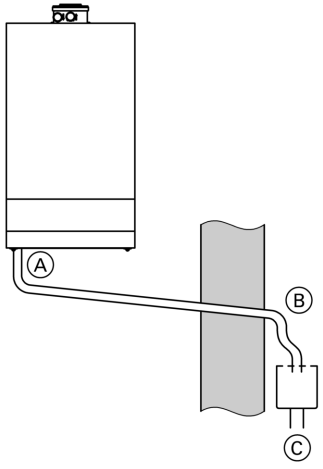
Installing the boiler and making all connections (cont.)



Terminating into an internal waste system

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



Terminating into an external waste system

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

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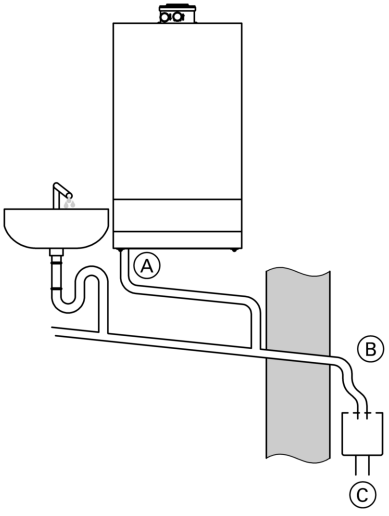
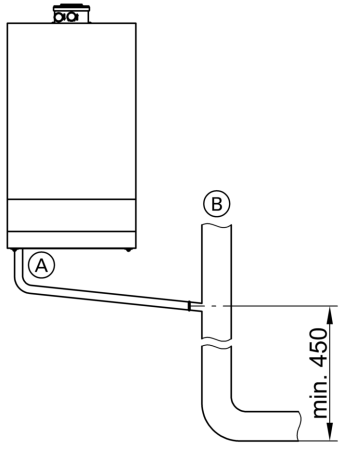
Installing the boiler and making all connections (cont.)



Terminating into an external purpose made soakaway

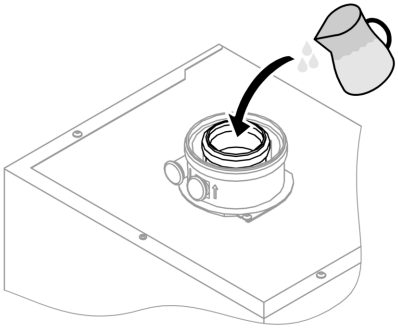
Ⓐ ∅22 mm plastic condensate pipe
Ⓑ External length of pipe 3 m max.
Ⓒ Open end direct into gully, below ground but above water level



Terminating into the rainwater system

Ⓐ ∅22 mm plastic condensate pipe
Ⓑ 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.

Important information
At initial start-up, flue gas may be emitted from the condensate drain.
Fill the siphon with water before start-up.

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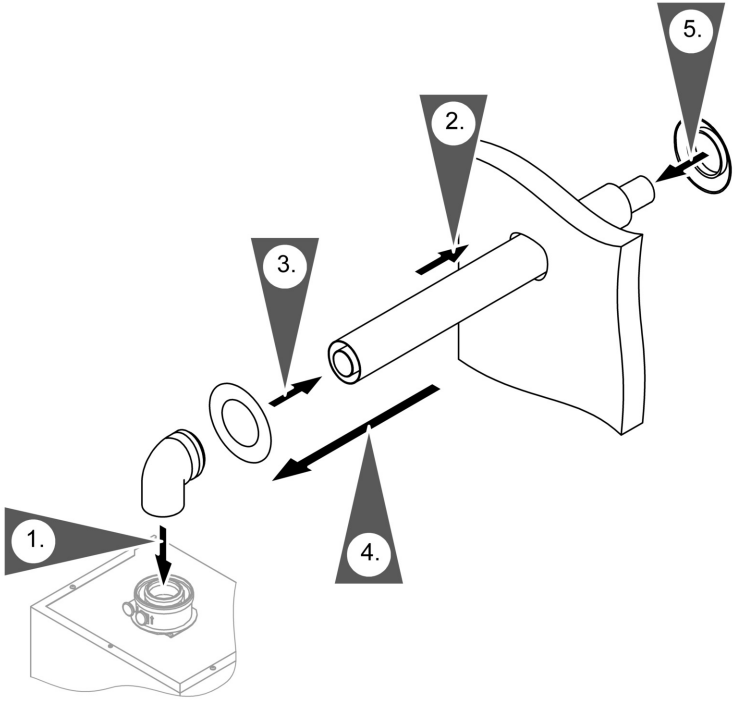
Flue outlet

External wall terminal C_{13x}



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.

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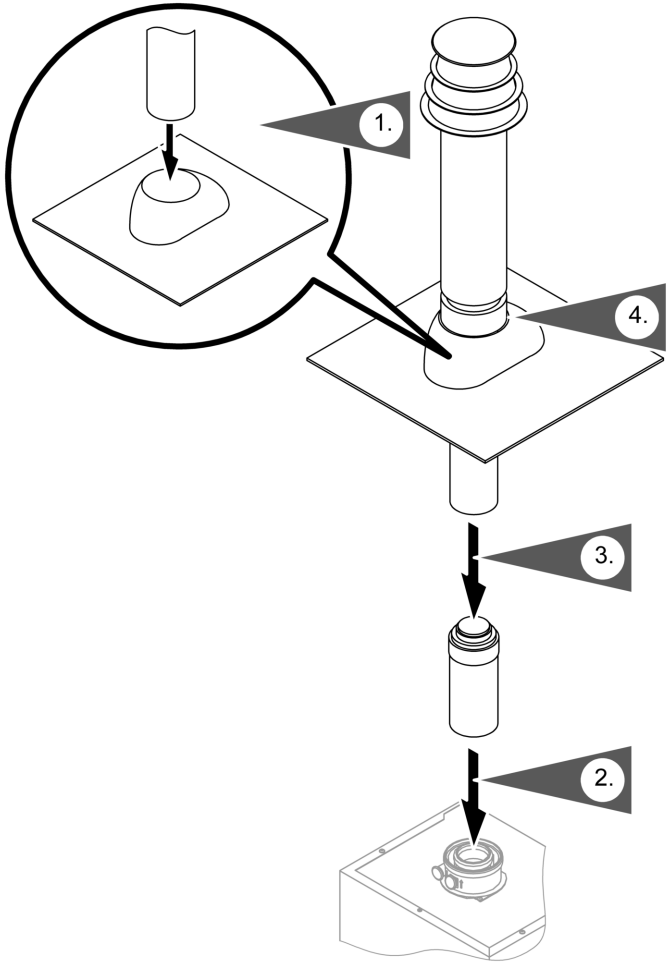
Flue outlet (cont.)

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.

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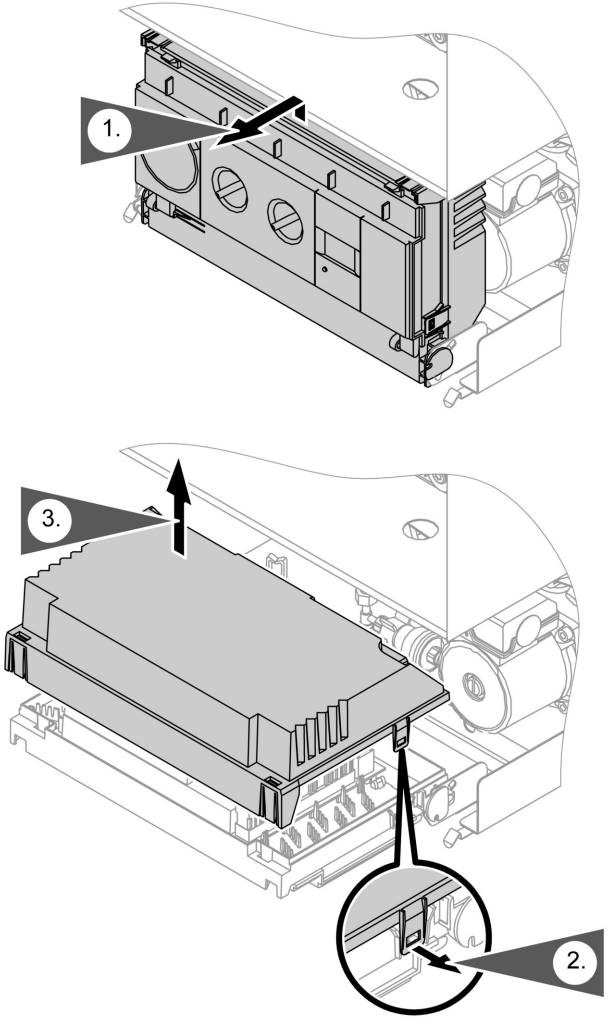
Electrical connections

Opening the control unit housing



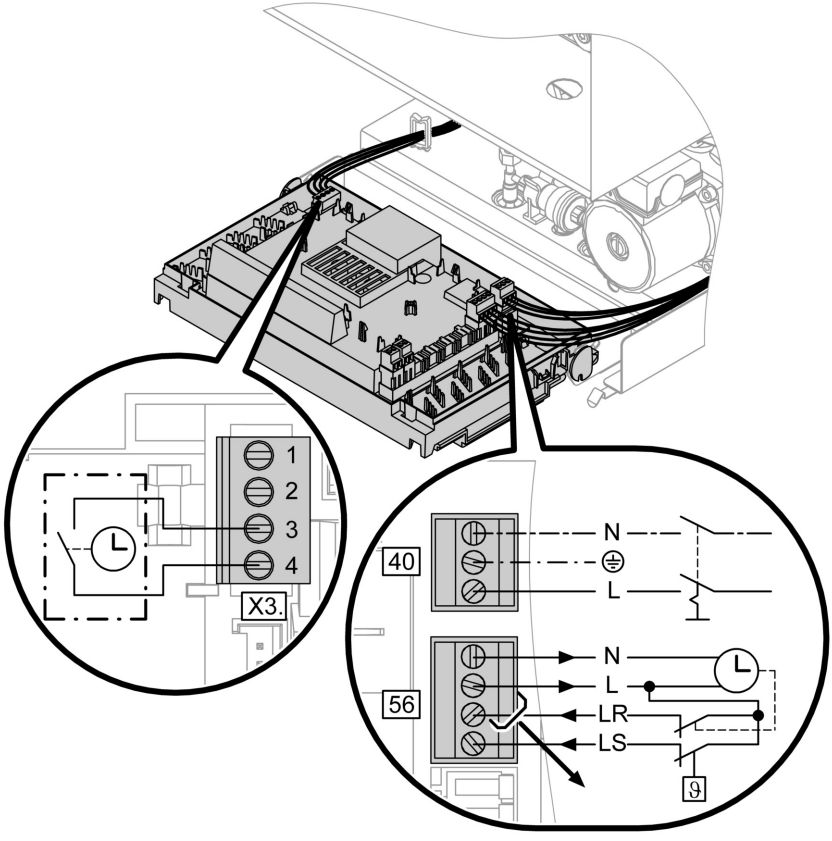
Electrical connections (cont.)

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 21.

Electrical connections (cont.)



40 Mains power connection 230 V ~ 50 Hz (green plug)
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.

56 Mains connection accessories/ room temperature control/DHW cylinder control (black plug)

Ⓐ Room temperature control with zero volt contact e.g. Vitotrol 100 UTD
If making the connection between, "L" and "LR" remove jumper 56.

LR Connection of room temperature control
- Vitotrol 100 UTA
- Vitotrol 100 UTD

If making the connection between, "L" and "LR" remove jumper.

LS Connection of DHW cylinder control

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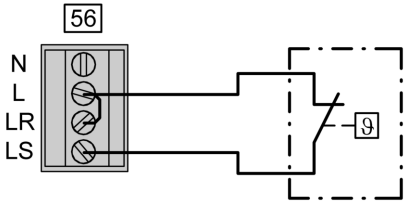
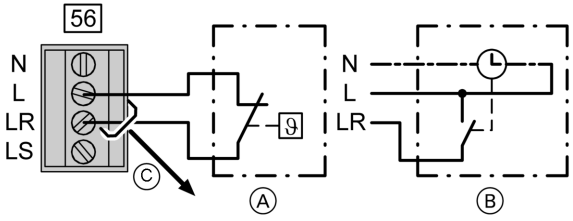
Electrical connections (cont.)

Connect DHW cylinder temperature control



Connect Vitotrol 100



Ⓐ Vitotrol 100 UTD

Ⓑ Vitotrol 100 UTA
Ⓒ When connecting, remove link

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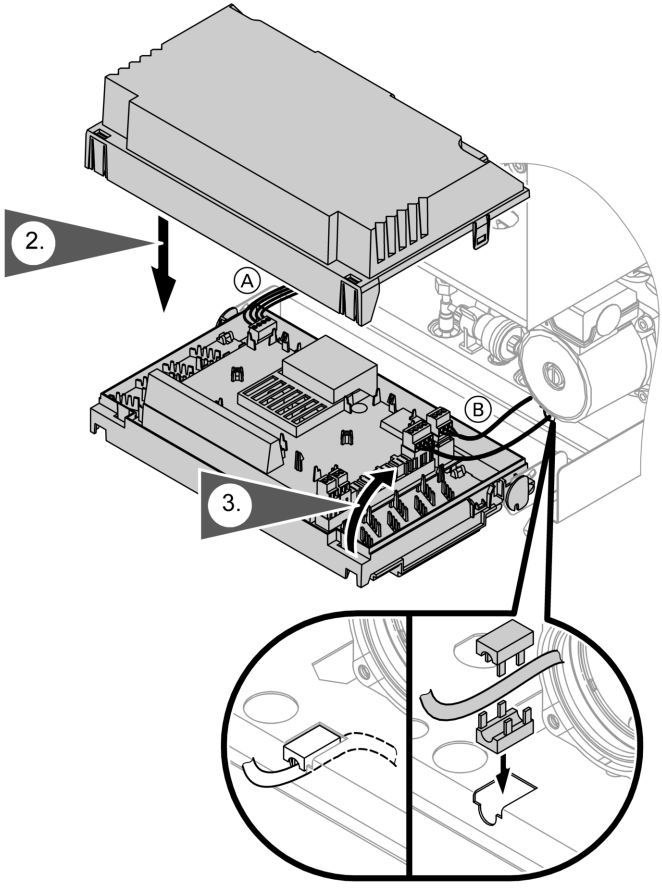
Electrical connections (cont.)

Routing connecting cables

Important information
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.



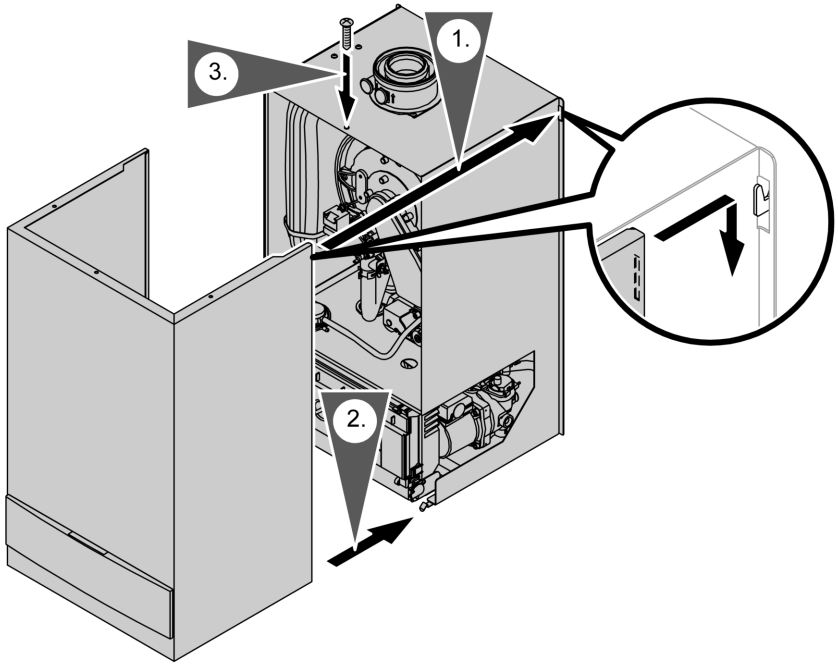
Ⓐ Low voltage connections

Ⓑ 230 V connections

Electrical connections (cont.)

1. Connect strain relief to the external cable and clip into the mounting plate aperture.
2. Fit cover.
3. Pivot the control unit upwards.

Front panel installation



1. Hang the front panel to the wall mounting frame by the appropriate hook.
2. Press down the front panel at the bottom.
3. 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.

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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.
Clean and flush the system to BS 7593.
Fill the system with cold water. It may be convenient to carry out this procedure before fitting the boiler to the piping frame. 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

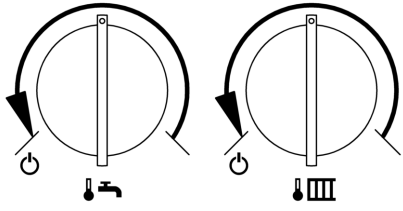
- Boiler noise silencer
- Leak sealer
- Fuel, Oil, Grease, Washing powder/liquid
- pipe jointing compound (like boss white and boss green, Sentinel)
- Anti-blockage

Commissioning and testing (cont.)

Note
Additive combinations are permitted only if approsed additive suppliers recommend it and always according to supplier´s dosage recommendation.

Filling the heating system

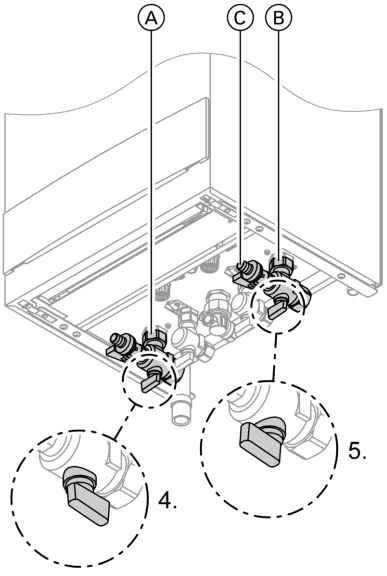
Important information
Unsuitable fill water increases the level of deposits and corrosion and may lead to boiler damage.
- Thoroughly flush the entire heating system prior to filling with water.
- Only use fill water of potable quality.
- Soften fill water harder than 150 ppm temporary hardness.
- Inhibitors or antifreeze additives suitable for heating systems should be injected or added manually.



1. Close the gas shut-off valve.
2. Only when operating with DHW cylinder: Prevent heat demand from the DHW cylinder.
3. Switch on mains supply and turn rotary selectors "🌡" and "🌡" counter clockwise to the end stop.

   Note
   The display will show the actual operating pressure, will position the three-way valve in the centre and the circulation pump is switched on in cycles.

Commissioning and testing (cont.)



4. Close the shut off valves Ⓐ to prevent water leaving the boiler (toggle at 90 to the pipe). Connect a hosepipe to outlet Ⓓ ready to vent the boiler later.

5. Turn valve Ⓑ to the draining position (toggle to the front). This will allow the system pressure reading to be displayed on the boiler control panel.

6. Fill and vant the system through your external temporary filling loop ensuring that most of the air has been removed from all drain and vent points on the system.

7. Turn on valve Ⓑ (toggle to the rear) to allow water into the boiler and at the same time turn valve Ⓐ to the draining position (toggle to the front) with the drain toggle open (a jubilee type clip will ensure no water loss an secure the hose in place on the drain point).

8. Fill heating system. (minimum system pressure > 1.0 bar).
The actual system pressure is displayed electronically on the boiler display.

9. Shut off valve Ⓒ(toggle down).

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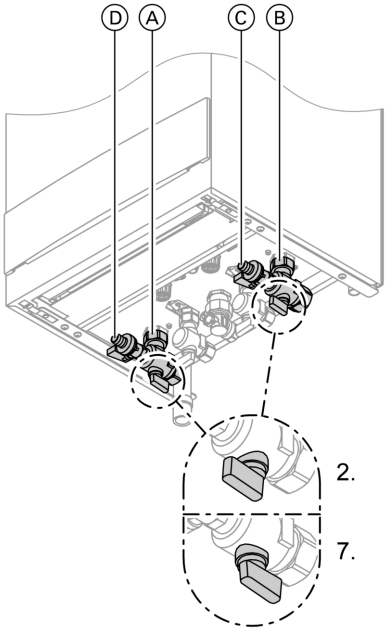
Commissioning and testing (cont.)

Venting the boiler by flushing out (after venting system)



1. Leaving the hose connections from filling the system continue to fil the biler from the external filling loop and drainining the ewater to a drain from connection Ⓓ.

2. Continue flushing the water through the boiler until no air pockets are discharged out of the drain hose.

3. Slowly turn off the valve Ⓓ and turn off the temporary filling loop to regulate the pressure in the boiler and system to approx 1.2 bar.

4. Turn valve Ⓐ to open position (toggle to rear).

5. Turn on the appliance to circulate the pump in both DHW and CH positions in order to continue venting. Continue venting and reverse the filling procedure if required.
Note: It is essential that there is no air in the heat exchanger and the system prior to firing the appliance. This will caus en F1 fault and prevent you finishing the installation without hinderance.

6. Turn off shut off valves (Ⓒ and Ⓓ) when the biler is vented and filled fully

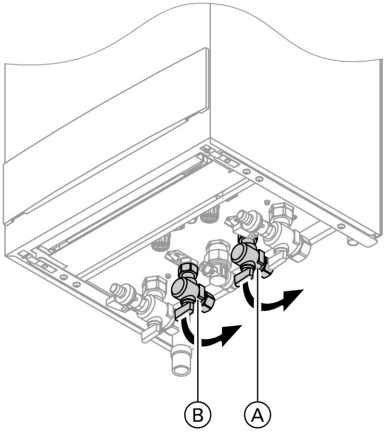
7. Turn boiler isolation valves Ⓐ and Ⓑ to operating position (toggle to the back), seal with the caps provided.

Commissioning and testing (cont.)

8. Turn temperature gauge controls to the desired operating position.
Note: Be aware thath the boiler may still need to be vented as air pockets are drawn into the heat exchanger.

9. Turn rotary knobs "🌡🏠" and "🌡🚿" into control range again.

Filling the Domestic Hot Water Circuit (Combi boiler only)



1. Open the DHW inlet valve Ⓐ and outlet valve Ⓑ.

2. Open all DHW taps in turn to vent any air from the DHW pipework.

Checking 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.

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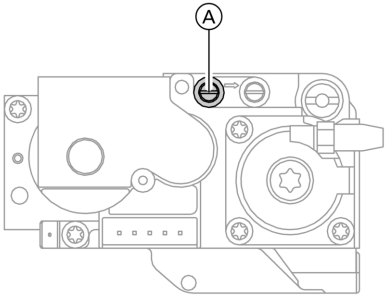
Commissioning and testing (cont.)



1. Close the gas shut-off valve.

2. Release the screw inside test nipple "IN" Ⓐ on the gas combination valve , but do not remove, and connect the pressure gauge.

3. Open the gas shut-off valve.

4. Check the static pressure; it should be a max. 20 mbar +/- 1mbar.

5. 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 "↳" key. The ignition procedure will then be repeated.

6. 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.

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

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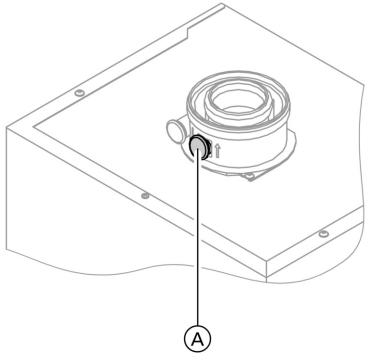
Commissioning and testing (cont.)

8. 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.

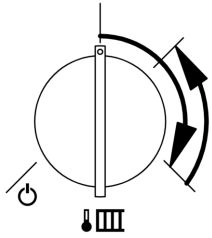
Checking the CO_2 settings

Vitodens100 is factory-set for natural gas.
During commissioning or maintenance, the CO_2 setting can be measured at the boiler flue adaptor testpoint. Checking CO_2 levels is not a requirement.
Subject to the Wobbe index, the CO_2 content fluctuates between 7.4% and 10.5%
If the actual CO_2 value deviates from the stated ranges by more than 1%, check the balanced flue system for leaks.



1. Connect a flue gas analyser at flue gas connector Ⓐ on the flue outlet.
2. Open the gas shut-off valve, commission the boiler and create a heat demand.

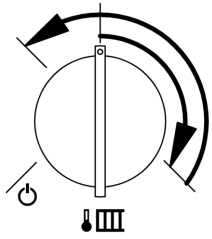
Commissioning and testing (cont.)



3. Set the upper rated output.
   Turn rotary selector "🌡" less than 3 seconds clockwise to the end stop, then back again into the correct control range.

4. Check the CO_2 content. Should the actual value deviate by more than 1% from the above range, check the seals in the balanced flue system.

5. Enter actual values into the service report.



6. Select the lower rated output.
   Turn rotary selector "🌡" to the left control range.

7. Check the CO_2 content. Should the actual value deviate by more than 1 % from the above range, check the seals in the balanced flue system.

8. Enter actual values into the service report.

9. Once checked, turn the rotary selector "🌡" less than 3 s to the right to the end-stop and back again into the control range.

   Note
   The process will automatically end after 30 minutes

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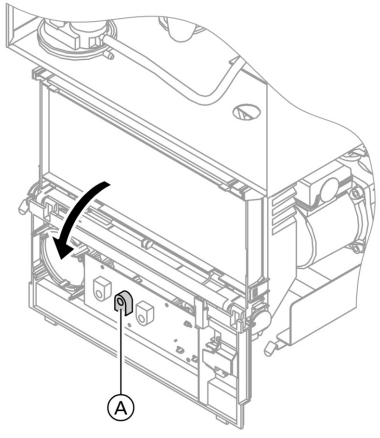
Commissioning and testing (cont.)

Setting the max. output

Note
The gas control is fully modulating and will normally facilitate a rapid heat up at maximum output followed by a continually controlled heat output. If the system has a particularly low heating load it is possible to restrict the maximum heating output to prevent short cycling.
You can limit the output via the modulation range.

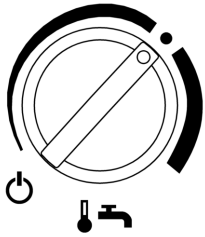


1. Switch OFF the mains power.
2. Unhook the front of the control unit and flip down.
3. Start up the boiler and at the potentiometer Ⓐ select the maximum boiler output . Check the adjustment for the corresponding gas throughput.
4. Flip up the control unit front and snap into position.

Domestic hot water flow rate and temperature (Combi boiler only)

A flow regulator is fitted to ensure that no adjustment of maximum flow is necessary.

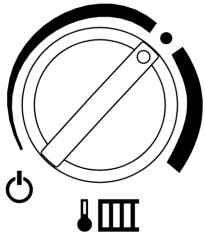
Commissioning and testing (cont.)



Setting DHW temperature:
Set rotary selector to the desired DHW temperature.
The display shows the set temperature is shown.

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 DHW temperature.
The display shows the set temperature is shown.

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.

   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.

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Commissioning and testing (cont.)

User´s 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.
- 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 installer or service engineer consulted.
- Stress the importance of an annual service by a registered heating engineer.

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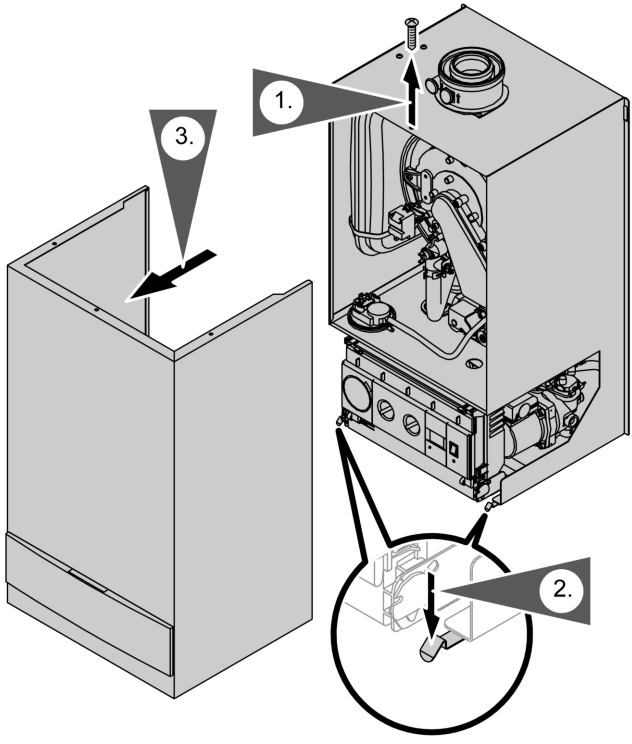
Routine Servicing Instructions

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 service 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.

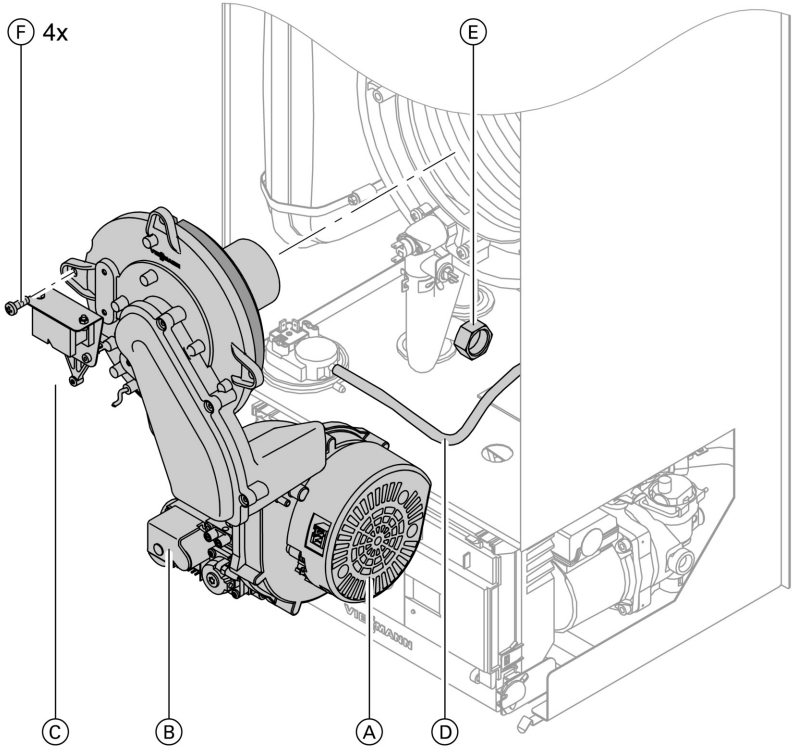
Removing front panel



Routine Servicing Instructions (cont.)

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 frame.

Burner removal



1. Switch OFF the mains power.
2. Close the gas shut-off valve and safeguard against reopening.
3. Pull electrical cables from fan motor Ⓐ, gas train Ⓑ, and ignition unit Ⓔ.
4. Remove connection hose from air pressure switch Ⓓ.

Routine Servicing Instructions (cont.)

5. Release gas connection pipe Ⓔ.

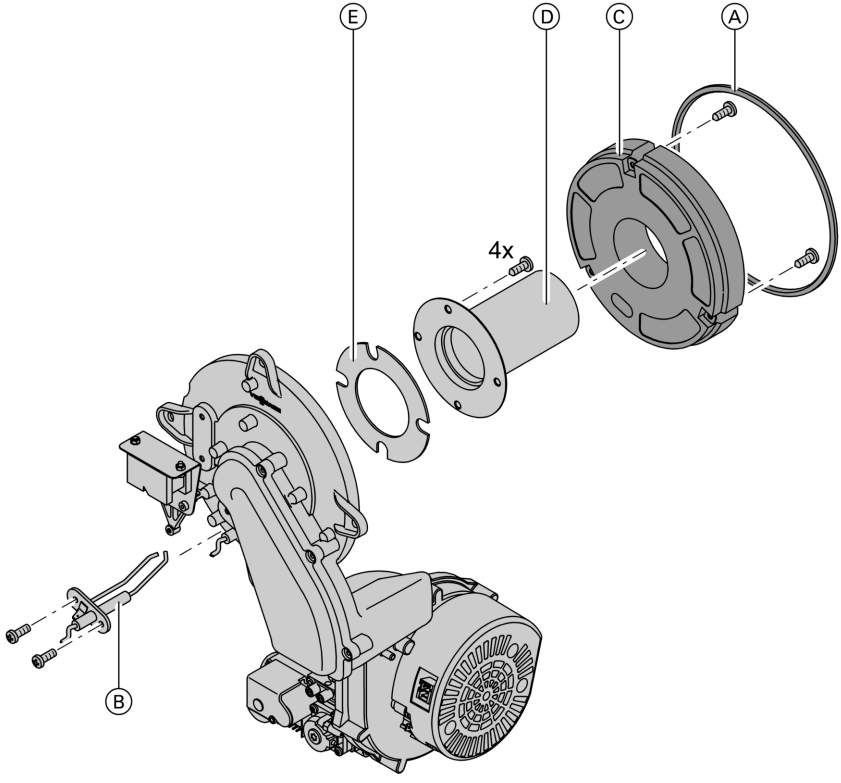
6. Release four screws Ⓕ and remove the burner.

! **Important information**
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 Ⓐ for damage and replace if necessary.

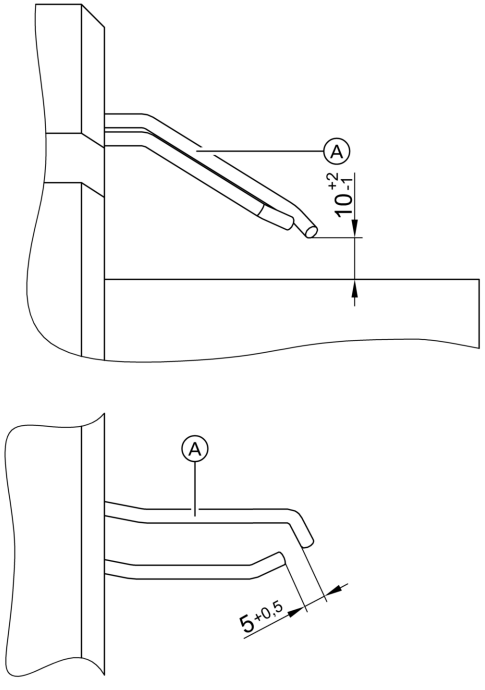
Replace the burner gauze assembly if it is damaged.



Routine Servicing Instructions (cont.)

1. Remove electrode Ⓑ.
2. Release the three Torx screws, and remove thermal insulating ring Ⓒ.
3. Release the four Torx screws, and remove burner gauze assembly Ⓓ with its gasket Ⓔ.
4. Insert and secure a new burner gauze assembly Ⓓ with a new gasket Ⓔ.
   Torque: 3.5 Nm.approx.
5. Refit the thermal insulation ring Ⓒ.
6. Refit the electrode Ⓑ.
   Torque: 2.5 Nm.approx.

Checking and adjusting the ignition and ionisation electrodes



Ⓐ Ignition and ionisation electrode

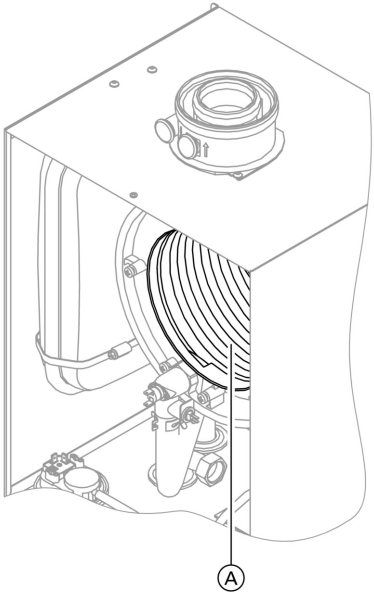
1. Check the electrode for wear and contamination.

Routine Servicing Instructions (cont.)

2. Clean the electrode with a small brush (not with a wire brush) or emery paper.

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. (2.5 Nm approx.).

Cleaning the heating surfaces

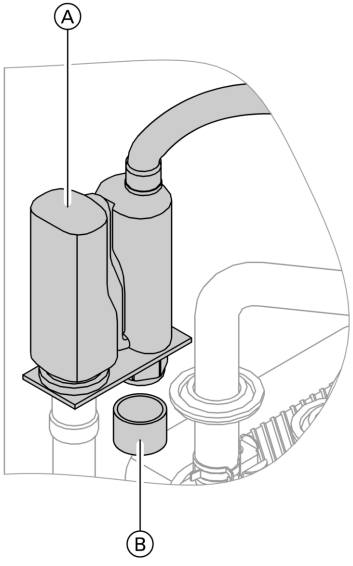


If required, clean heating surfaces Ⓐ with a brush or flush with water.

Important information
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.)

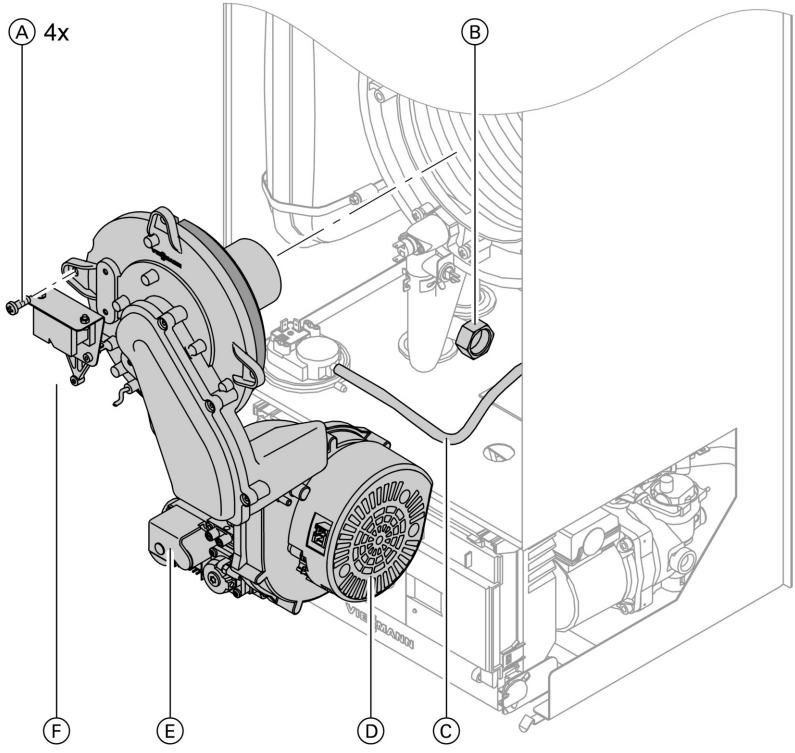
Checking the condensate drain and cleaning the siphon



1. Check at the siphon, that the condensate can freely drain.
2. Place an appropriate container under the siphon Ⓐ.
3. Remove the locking cap Ⓑ and drain the siphon content.
4. Replace the locking cap Ⓑ.
5. Fill the siphon Ⓐ 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 Ⓐ diagonally. (4 Nm. approx.)
2. Insert new gasket and tighten the fittings on the gas connection pipe Ⓑ
3. Insert air pressure switch connection pipe Ⓒ onto the gas valve "OUT" connector.
4. Replace electrical cables from fan motor Ⓓ, gas valve Ⓔ, and ignition unit Ⓔ.
5. Open gas shut-off valve and switch on the mains.

▶▶

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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.

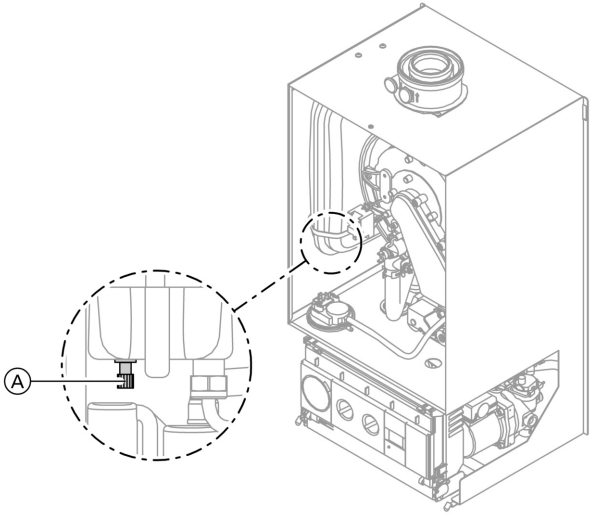
Check primary and secondary connections for leaks

Checking diaphragm expansion vessel and system pressure

Note
Carry out this test on a cold system.

1. Empty the system until a pressure of "0" is displayed.

Note
To view the operating pressure, turn rotary selectors "🌡🏠" and "🌡🚿" counter clockwise to the end stop.



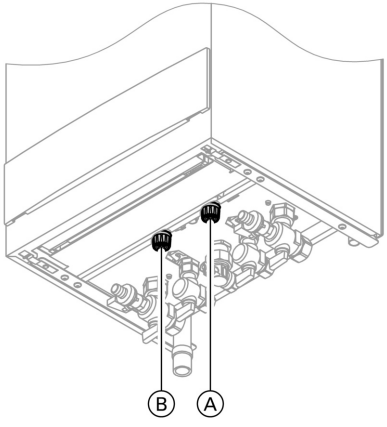
Routine Servicing Instructions (cont.)

2. Check the inlet pressure of the diaphragm expansion vessel at the test nipple Ⓐ.

3. If the inlet pressure of the diaphragm expansion vessel is lower than the static system pressure, top up with nitrogen until the inlet pressure is raised by 0.1 to 0.2 bar.

4. Top up your heating system with water and vent until the filling pressure of a cool system is 0.2 bar higher than the inlet pressure of the diaphragm expansion vessel.
Max. operating pressure: 3 bar
Min. operating pressure: 1.0 bar

Topping up heating water via the filling loop (combi boiler only)



1. Turn both rotary selectors "🌡🏠" and "🌡🚿" counter clockwise to the end stop.
The display shows the operating pressure.

2. Open shut-off valve Ⓐ (secondary side).

3. Slowly open the shut-off valve Ⓑ (primary side) and top-up with water.

4. After topping-up first close shut-off valve Ⓑ.

5. Return both rotary selectors "🌡🏠" and "🌡🚿" to their original positions.

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Routine Servicing Instructions (cont.)

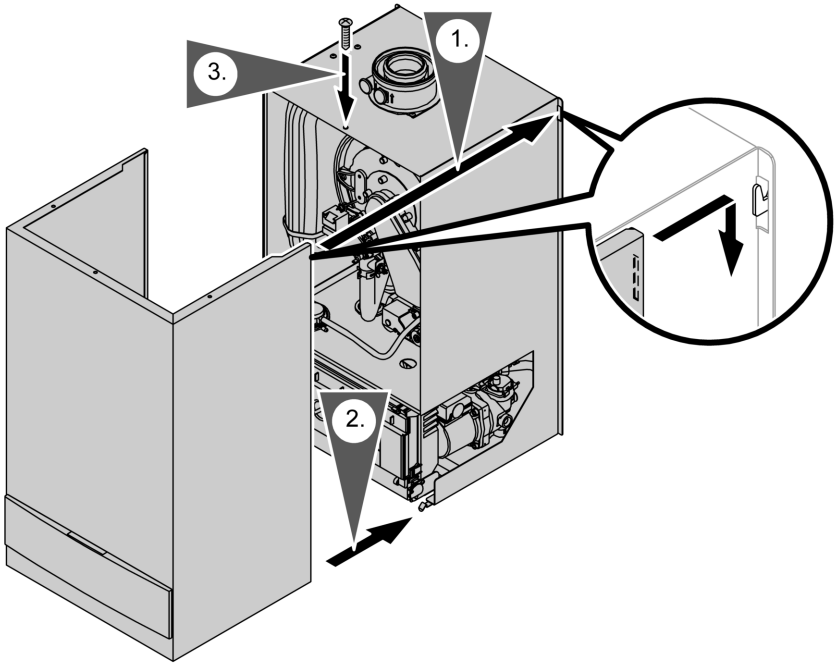
Checking function of all safety valves

Checking tightness of electrical connections

Checking static and supply pressure

See page 51.

Front panel installation



1. Hang the front panel to the wall mounting frame by the appropriate hook.
2. Press down the front panel at the bottom.

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Routine Servicing Instructions (cont.)

3. 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.

Start-up the boiler

1. Open gas shut-off valve and switch on mains voltage.
2. Check the operation of the appliance in both central heating and DHW modes.

Checking the CO_2 settings

See page 53.

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

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Fault finding

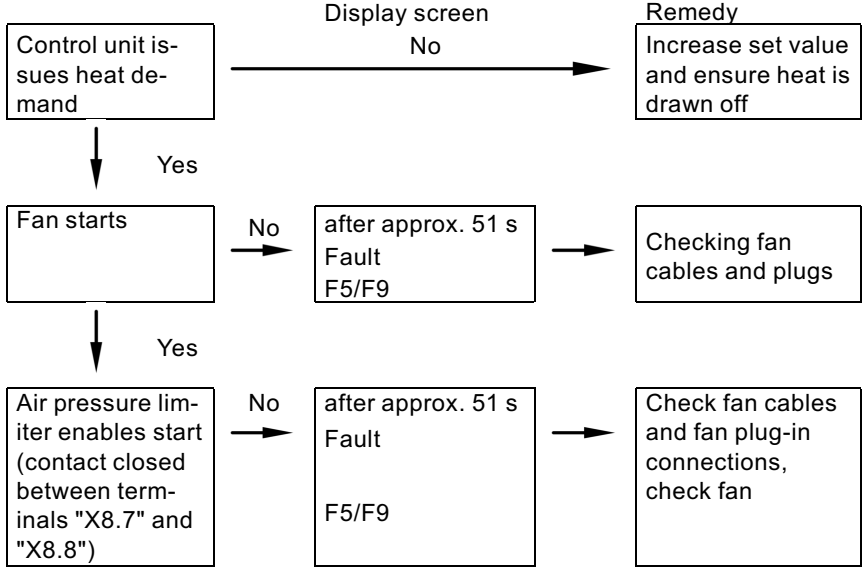
Note
It is the law that any service work must be carried out by a competent CORGI registered engineer.

General

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 DHW (Combi only) and CH isolation cocks are open.
- The system is at design pressure.

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



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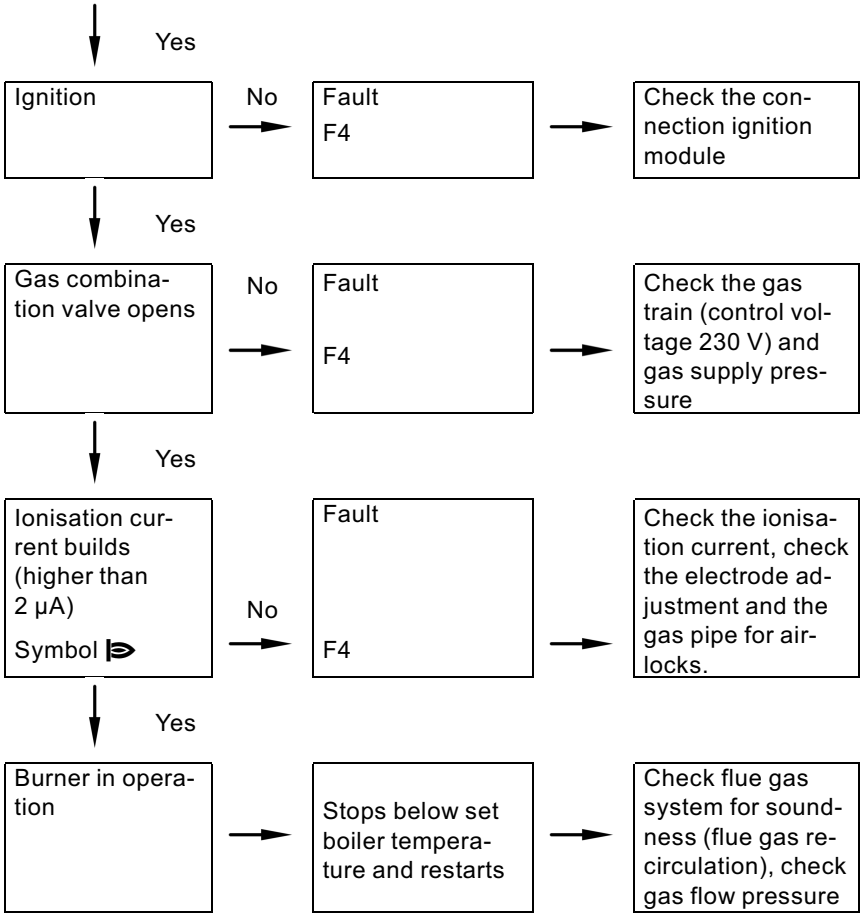
Fault finding (cont.)



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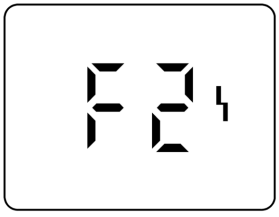
Fault finding (cont.)

Fault messages in the display



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

Display fault code	System characteristics	Cause	Remedy
30	Burner blocked	Boiler temperature sensor shorted out	Check the boiler temperature sensor (see page 76).
38	Burner blocked	Boiler temperature sensor lead break	Check the boiler temperature sensor (see page 76).
51	No DHW heating	Draw off temperature sensor short circuit	Check sensors (see page 78).
59	No DHW heating	Draw off temperature sensor short circuit	Check sensors (see page 78).
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".
E6	Burner blocked	Water pressure too low	Top up water (see page 66).
F0	Burner blocked	Internal fault	Replace control unit.

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Fault finding (cont.)

Display fault code	System characteristics	Cause	Remedy
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".
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	Check the air pressure switch and the interconnecting cable.
F7	Burner blocked	Faulty water pressure sensor	Check the water pressure sensor and the interconnecting cable.
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".

Fault finding (cont.)

Display fault code	System characteristics	Cause	Remedy
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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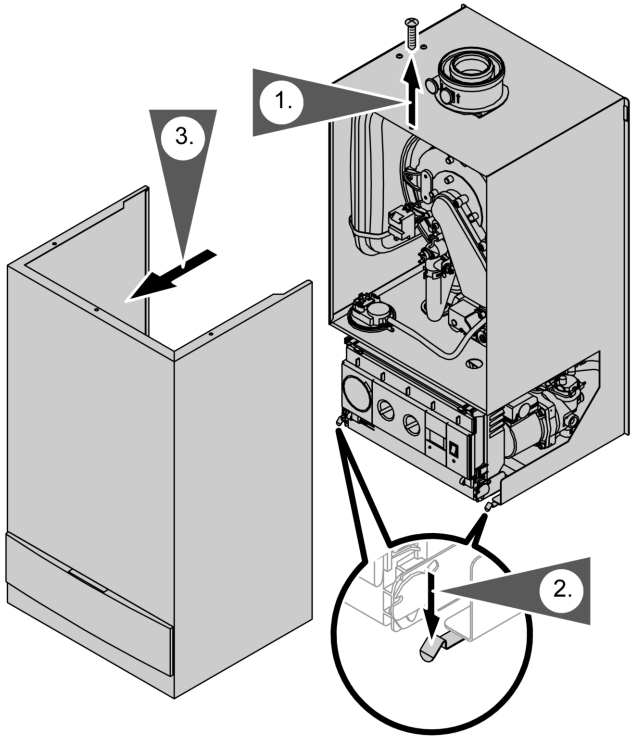
Repairs

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 frame.

Drain boiler on the primary side

Note
For certain repairs the boiler must be drained on the primary side.

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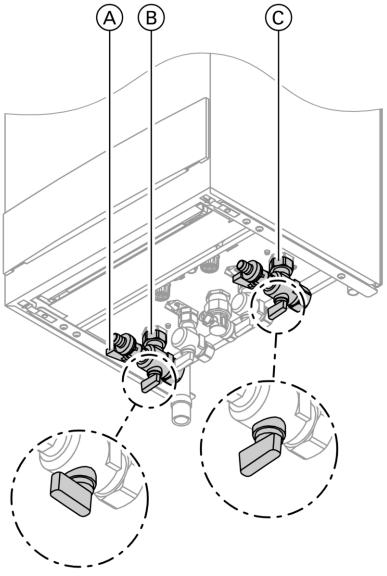
Repairs (cont.)



1. Connect the drain hose to valve Ⓐ and connect with a drain outlet.
2. Turn toggle on the shut-off valve Ⓑ to the front.
3. Turn toggle on the shut-off valve Ⓒ to the front.
4. Turn toggle on the valve Ⓐ to the front and drain the boiler if necessary.
   Turn toggle back down again.

   Note
   Residual water left in the boiler.
5. Turn toggle on the shut-off valve Ⓑ to the front.

   Note
   Filling up on the primary side see page 48.

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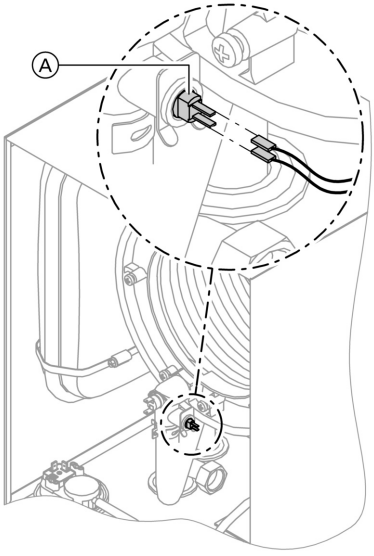
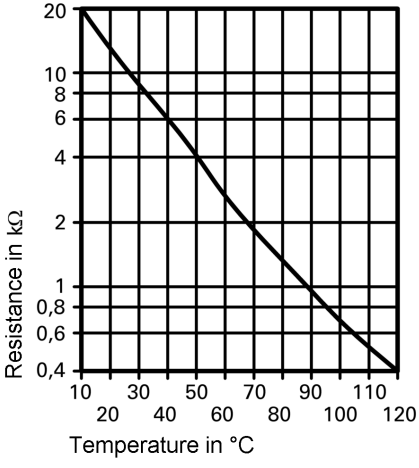
Repairs (cont.)

Boiler temperature sensor



1. Pull the leads from boiler temperature sensor Ⓐ and measure the resistance.



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

3. In case of severe deviation, drain boiler on the primary side (see page 74) 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.

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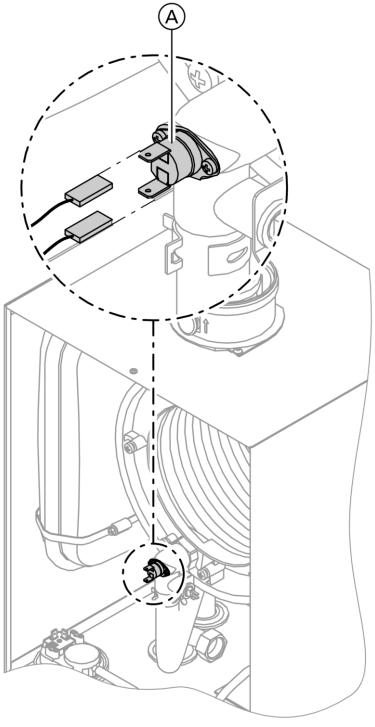
Repairs (cont.)

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 Ⓐ.
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.

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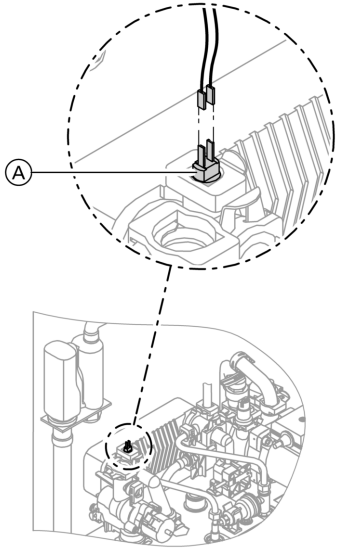
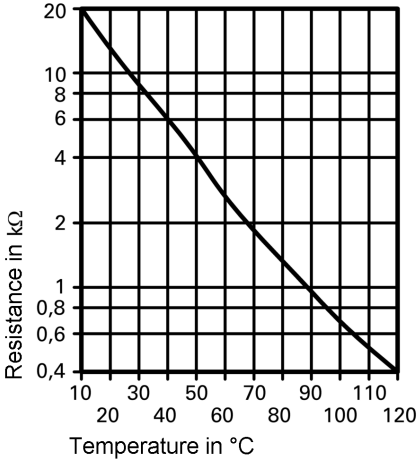
Repairs (cont.)

Check the DHW temperature sensor (only for gas combination devices)



1. Pull the leads from outlet temperature sensor Ⓐ
2. Check the sensor resistance and compare actual values with the curve.



3. Replace the sensor in case of severe deviation.

Note
Water can leak out when replacing the outlet sensor. Close the cold water shut-off valve. Drain DHW pipe and plate heat exchanger (secondary side).

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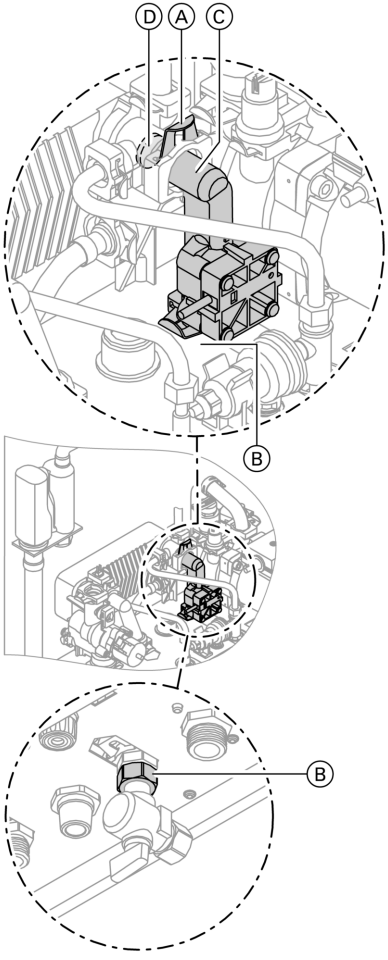
Repairs (cont.)

Replacing flow limiter



1. Switch OFF the mains power.
2. Close the gas shut-off valve and safeguard against reopening.
3. Drain the boiler from the secondary side.
4. Pivot the control unit downwards.
5. Release the ties Ⓐ and screws Ⓑ.
6. Remove the flow switch Ⓒ connector.
7. Replace flow limiter Ⓓ.
8. Refit the flow switch Ⓒ connector.

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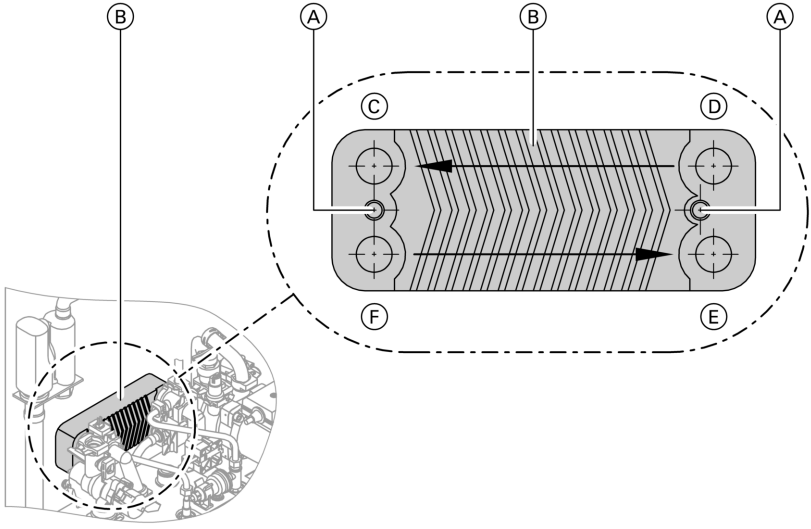
Repairs (cont.)

Checking plate heat exchanger



Ⓒ DHW
Ⓓ Cold water
Ⓔ Heating water return
Ⓕ Heating water flow

1. Switch OFF the mains power.
2. Close the gas shut-off valve and safeguard against reopening.
3. Shut off and drain the boiler on the primary and the secondary side. Draining on the primary side (see page 74).
4. Flip down control unit.
5. Remove two screws Ⓐ at the plate heat exchanger and Ⓑ remove.

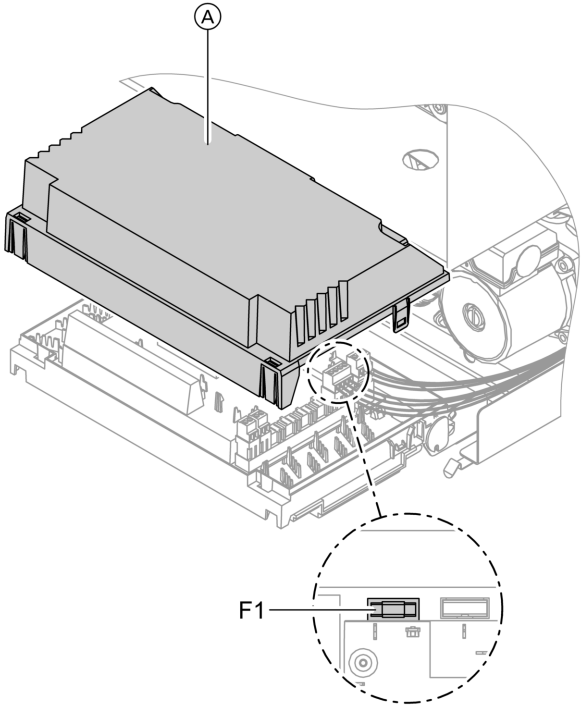
   Note
   During removal, small amounts of water may trickle out and escape from the removed plate heat exchanger.
6. Check the secondary side for contamination and, if necessary, clean or replace the plate heat exchanger.
7. Check the primary side for contamination and, if necessary, clean or replace the plate heat exchanger.

Repairs (cont.)

8. Install in reverse order using new gaskets.

Note
Ensure that fixing holes and seals are aligned. Install the heat plate exchanger the correct way round.

Checking the fuse



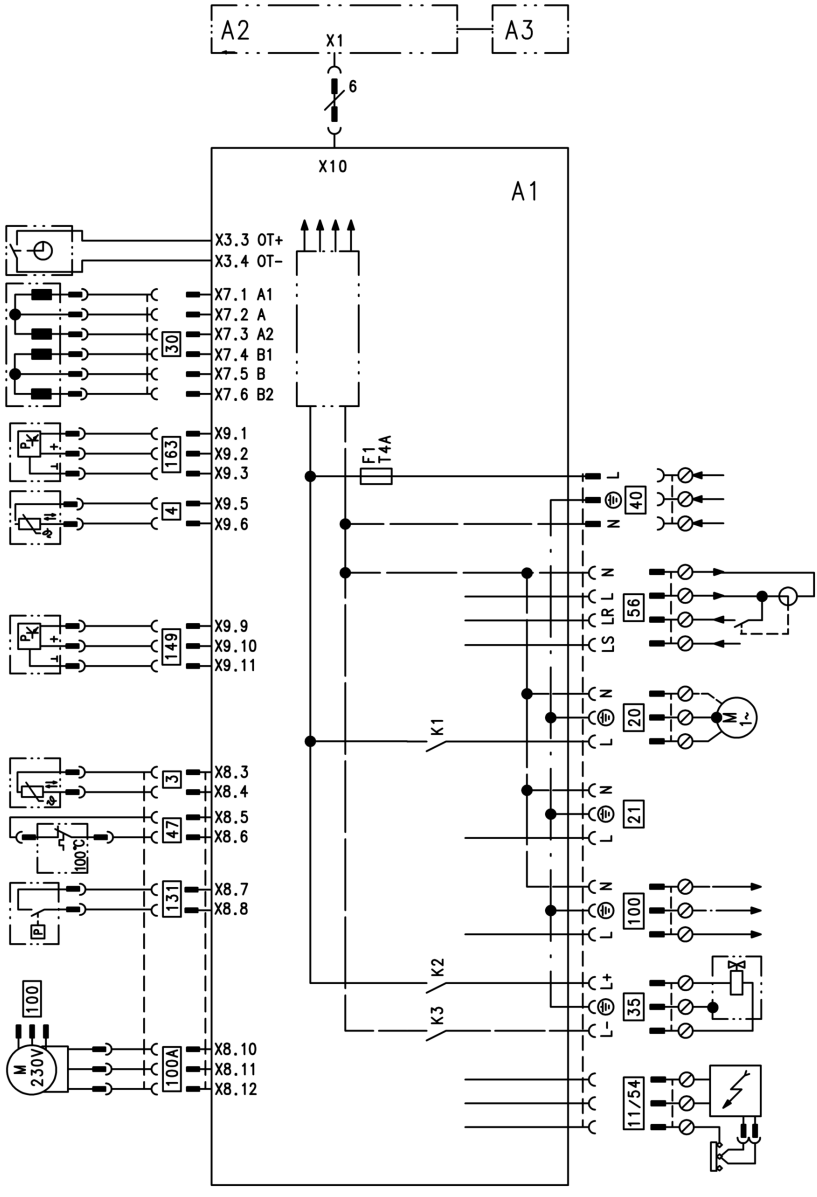
1. Switch OFF the mains power.

2. Flip down control unit.

3. Remove cover Ⓐ.

4. Check fuse F1.

Connection and wiring diagrams – combi boiler



A1 Main PCB A2 Programming unit

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Connection and wiring diagrams – combi boiler (cont.)

A3	Time switch
3	Boiler temperature sensor
4	DHW outlet sensor
20	Circulation pump 230V~
30	Step motor diverter valve
35	Gas solenoid valve
40	Mains input 230V~/50Hz
47	Temperature limiter
56	Mains connection accessories/ room temperature control
100A	Fan
131	Air pressure switch
149	Flow switch
163	Water pressure sensor

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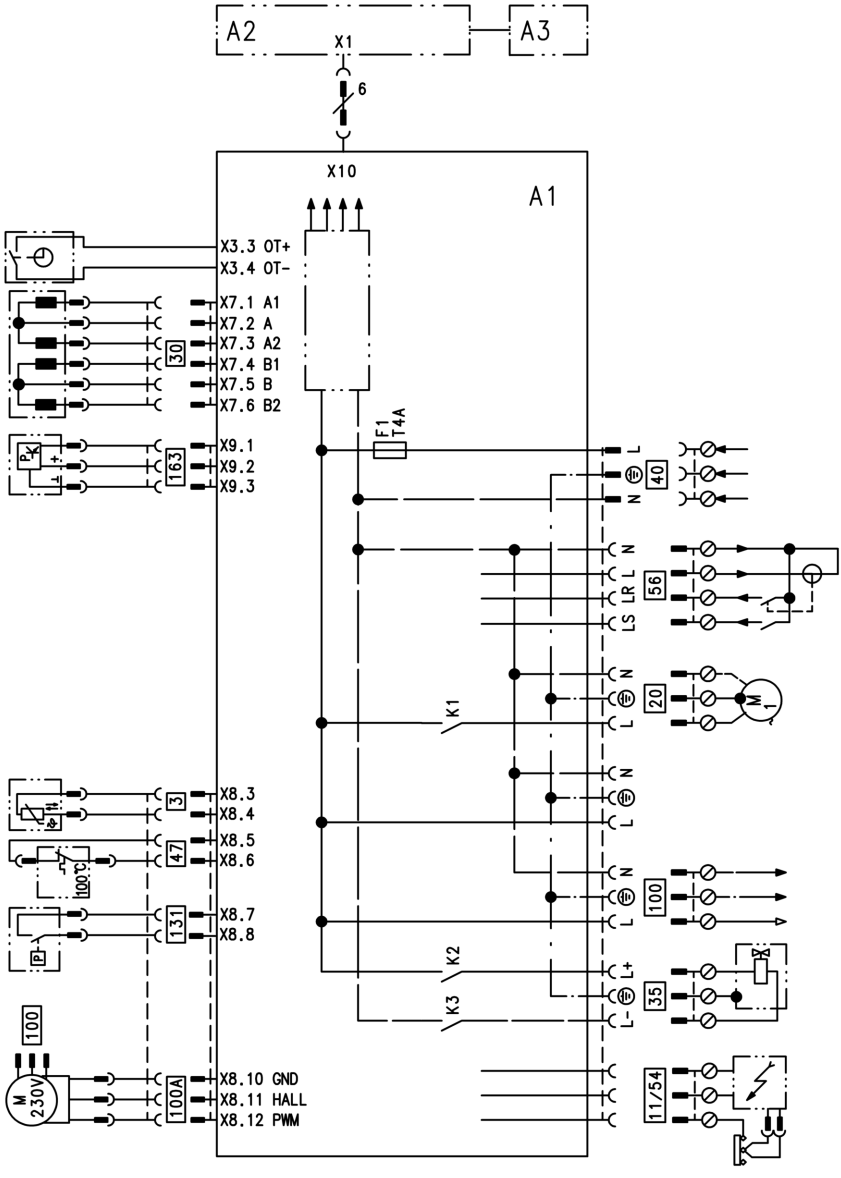
Connection and wiring diagram - system boiler



A1 Main PCB A2 Programming unit

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Connection and wiring diagram - system boiler (cont.)

A3	Time switch
3	Boiler temperature sensor
20	Circulation pump 230V~
30	Step motor diverter valve
35	Gas solenoid valve
40	Mains input 230V~/50Hz
47	Temperature limiter
56	Mains connection accessories/ room temperature control/DHW cylinder control
100A	Fan
131	Air pressure switch
163	Water pressure sensor

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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 Diaphragm expansion vessel connecting cable
006 Diaphragm expansion vessel
007 Boiler connection plug
008 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 Heating water flow connection elbow
018 Heating water return connection elbow
019 Heating water flow connection pipe
020 Heating water return connection pipe
021 Plate heat exchanger*[1]
022 Gasket set – plate heat exchanger*[1]
023 Filling Loop*[1]
024 Filling Loop connecting cable*[1]
025 Pipe clip ∅18 mm*[1]
026 Quick air vent valve cartridge
027 Safety valve
028 Water pressure sensor
029 Flow switch*[1]
030 Step motor cartridge
031 Circulation pump
032 Bypass with overflow valve
033 Grommets
034 Gaskets (set)
035 Spring clips (set)
036 Flow limiter
037 Hydraulic
040 Lip seal ∅ 60 mm
041 Ventilation seal ∅ 100 mm
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
202 Cover flap
203 Domestic water fittings (set)*[1]
204 Heating water fittings (set)
205 Corner gas tap
206 Elbow with locking ring fittings ∅ 22 mm (set)*[2]

Wearing parts
054 Ignition and ionisation electrode

*[1] *Only for serial no. 7179917 and 7179917*
*[2] *Only for serial no. 7179918*

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Parts lists (cont.)

Parts not shown

039 Installation and service instructions
090 Cable harness X8
091 Cable harness X9
092 Cable harness 100/35/54
093 Step motor connecting cable
094 Mains power switch cable harness
095 Gas valve connecting cable 35
096 Ignition transformer/ionisation connecting cable
300 Touch-up spray paint, Vitowhite
301 Touch-up paint stick, Vitowhite
Ⓐ Data plate

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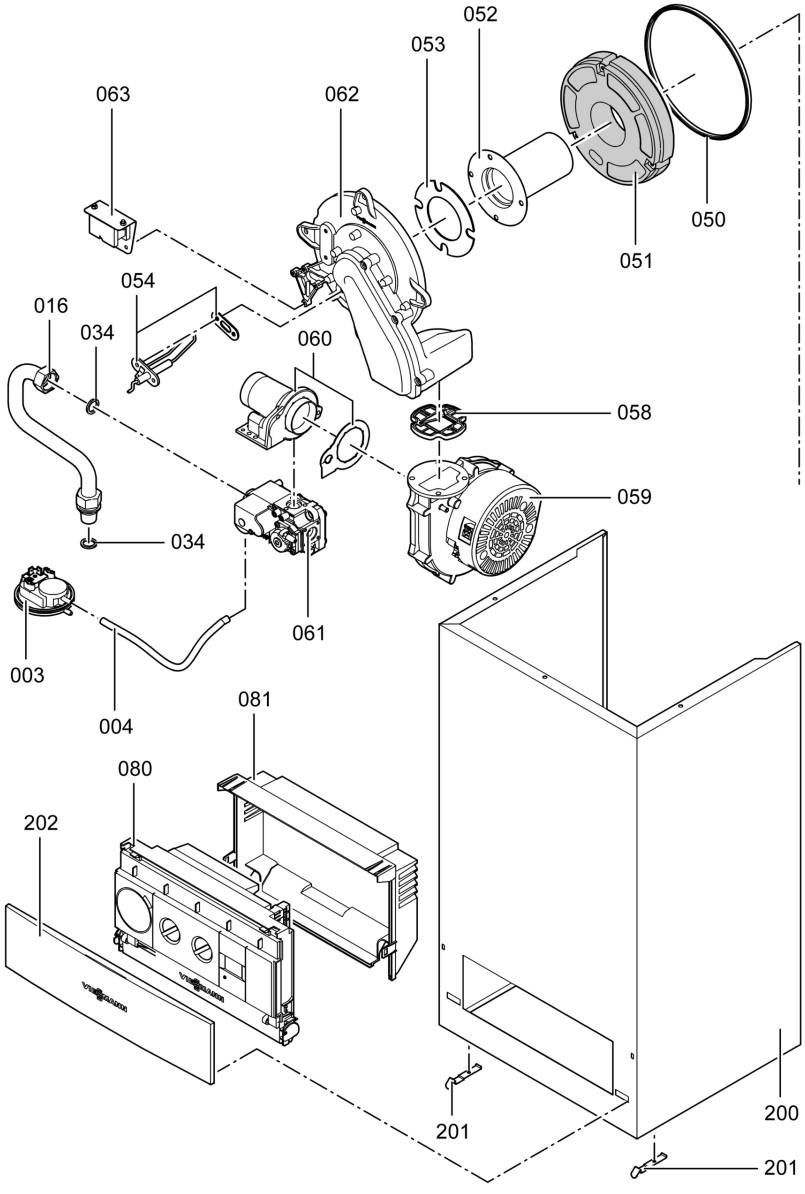
Parts lists (cont.)



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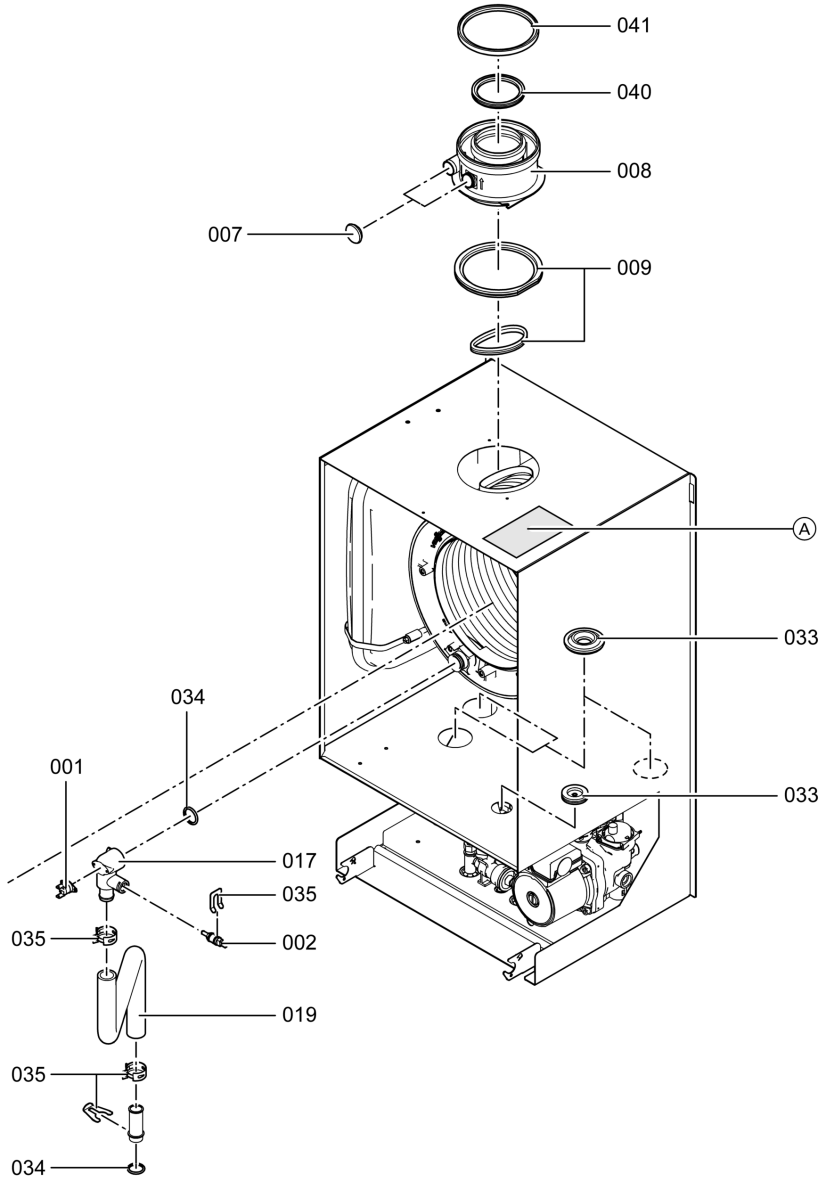
Parts lists (cont.)



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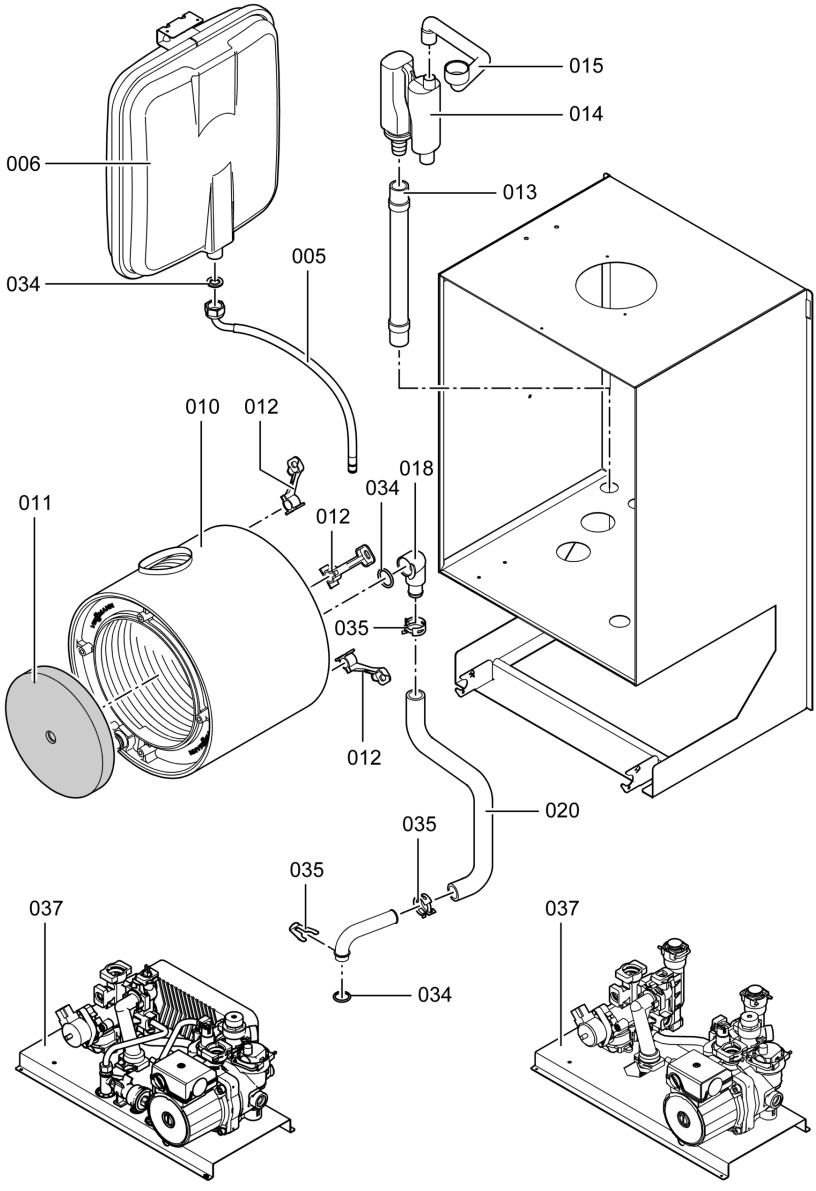
Parts lists (cont.)



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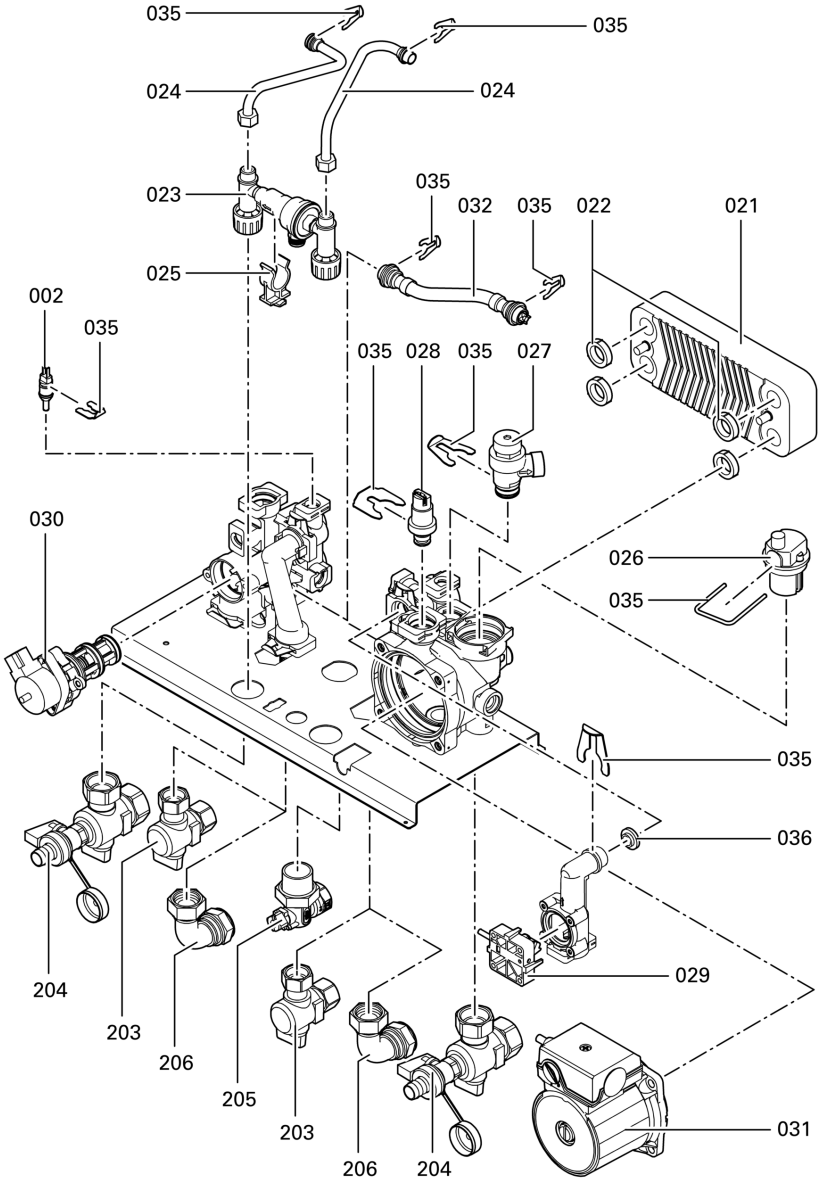
Parts lists (cont.)



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Declaration of conformity

Declaration of conformity for Vitodens 100

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

Vitodens 100

conforms to the following standards:	**This product is designated in accordance with the following directives:**
DIN 4702–6	90/ 396/EEC
EN 297	89/ 336/EEC
EN 483	73/ 23/EEC
EN 625	92/ 42/EEC
EN 677	
EN 50,165	
EN 60,335	**as follows:**
EN 61 000-3-2	**CE-0085**
EN 61 000-3-3	

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, 14.01.05

Viessmann Werke GmbH&Co KG

pp. Manfred Sommer

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Keyword index

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Keyword index (cont.)

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Applicability

Gas fired condensing combi boiler
Type WB1A
8 to 24 kW
from serial no.
7179 917 5 00001
8 to 30 kW
from serial no.
7179 916 5 00001

Gas fired condensing boiler
Type WB1A
8 to 24 kW
from serial no.
7179 918 5 00001

Viessmann Limited
Hortonwood 30, Telford, TF1 7YP, GB
Telephone: +44 1952 675000
Fax: +44 1952 675040
www.viessmann.com

5862 670 GB Subject to technical modifications

Operating instructions

for system users

Heating system
with control unit for constant temperature operation

VITODENS 100

5592 487 GB 2/2005

Please keep safe

For your safety

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

Safety instructions explained

Danger
This symbol warns against the risk of injury.

Important information
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 operating instructions are designed for heating system users.

Danger
Incorrect work on the heating system can lead to life-threatening accidents.

-
- Electrical work carried out must be by a person qualified to work to Part P of the building regulations.
- Work on gas appliances must only be carried out by a CORGI registered gas engineer.
-

If you notice the smell of gas contact your heating installer or TRANSCO immediately.

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.
- Shut off the gas supply at the meter control.
- Remove all personnel from the danger zone.
- Observe the safety regulations of your local gas supplier, found on the gas meter.

If you smell flue gas inside the property

Danger
Flue gases may lead to life-threatening poisoning.

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

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For your safety (cont.)

If you notice fire from the appliance call the fire brigade. Do not attempt to extinguish the fire unless competent to do so.

Danger
Fire causes a risk of burns and explosion.
- Shut down the boiler.
- Close the fuel line shut-off valves.
- Use a tested fire extinguisher, class ABC.

Installation area conditions

Important information
Incorrect ambient conditions can lead to damage to the heating system and put safe operation at risk.
- Ensure ambient temperatures are higher than 0 ºC and lower than 35 ºC.
- Prevent the air becoming contaminated by halogenated hydrocarbons (e.g. as contained in paints, solvents or cleaning fluids) and excessive dust (e.g. through grinding/polishing work).
- Avoid continuously high humidity levels (e.g. through frequent drying of washing).
- Never close existing ventilation apertures.

Ancillary components, spare and wearing parts

Important information
Components which are not tested with the heating system may damage the heating system, or affect its functions. Installation or replacement must only be carried out by qualified personnel.

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Initial start-up

The initial start-up and matching of the control unit to local conditions and the structural characteristics of the building must be carried out by your heating contractor.

Your heating system is pre-set at the factory

Your combi boiler is ready to provide both central heating and hot water after installation. Your system boiler will provide both heating and hot water providing a cylinder is installed.

Your heating system is ready for use. You may change the factory settings in accordance with personal requirements.

Note
All data is saved in case of power failure.

The Vitodens 100 is certified to comply with the requirements of the relevant European Directives (90/396/EEC, 73/23 EEC and 92/42/EEC) for use in Great Britain and Ireland with gas category I2H (G20 with a governed gas supply at 20 mbar (8 in.wg) inlet pressure).
The appliance classification is either C_{13x} or C_{33x} depending upon whether a horizontal or vertical flue terminal is used.

General Description

The Vitodens 100 is a fully automatic, wall mounted, fan assisted balanced flue gas combination or system boiler for use with natural gas (G20) at 20 mbar (8 in.wg) supply on sealed systems only.
The unit provides central heating at outputs between 8.0 kW to 24.0 kW/ 30.0 kW. If required, the central heating heat output can be range rated to suit the system requirements.

Heat output is automatically controlled according to demand (in both domestic hot water and central heating mode). Note that hot water is always given priority.

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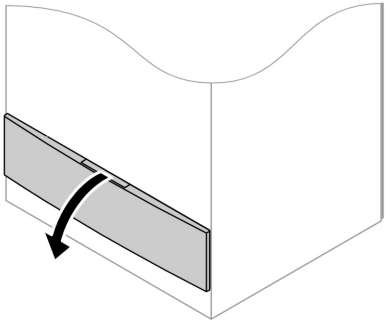
Summary of controls and indicators

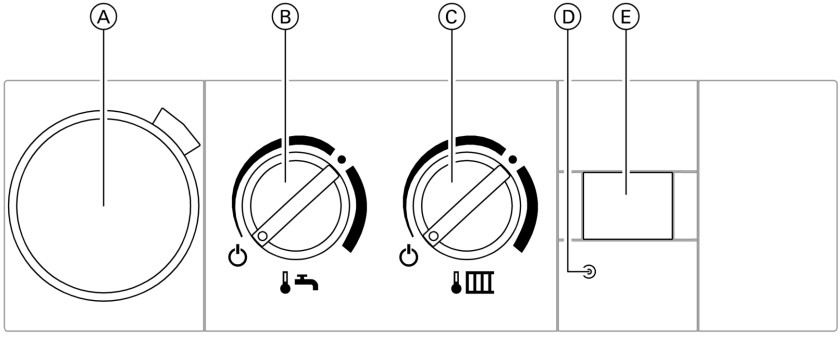
Opening the control unit

Controls and indicators are located behind the hinged front cover.



Control and display elements

The control unit is preset at the factory for standard operation.
Your heating system is ready for use.



Ⓐ Time switch (accessory)
Ⓑ Rotary selector"DHW temperature" (Combi boiler only)
Ⓒ Rotary selector "heating water temperature"
Ⓓ Display, fault and reset button.
Ⓔ Display

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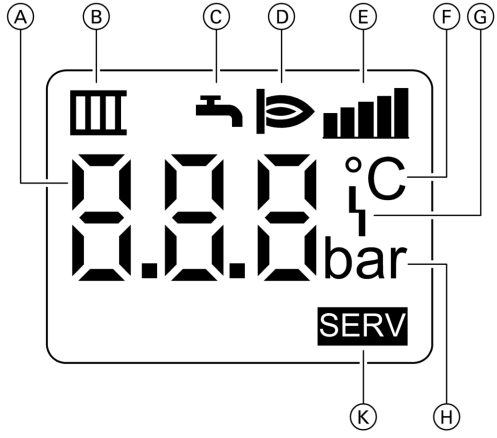
Summary of controls and indicators (cont.)

Display indication



Ⓐ Display value or fault code
Ⓑ Heating mode
Ⓒ DHW heating
Ⓓ Burner in operation
Ⓔ Current burner output
Ⓕ Boiler primary water temperature in °C (combined with display value)
Ⓖ Fault
Ⓗ System pressure (combined with display value)
Ⓚ Emissions test switch (only for qualified personnel)

Changing room temperature

In addition to the boiler control unit, a separate room temperature controller must be installed in one of the living rooms to comply with part L of the building regs if the heating system is to be regulated in accordance with the required room temperature.

Make adjustments using the appropriate operating instructions.
Please also note:
It ist not recommended that thermostatic radiator valves are intalled in the same room as the controller.

If thermostatic radiator valves are installed in the room where the controller ist fitted they mus be fully open.

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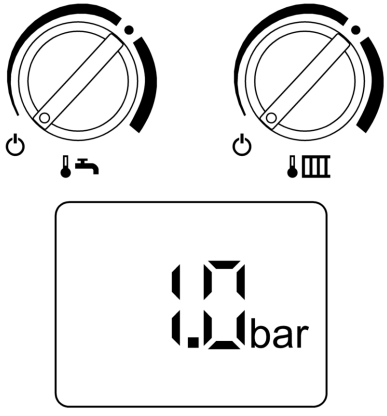
Heating system start-up

The initial start-up and matching of the control unit to local conditions and structural characteristics of the building, must be carried out by your heating contractor.
Before you switch ON a heating system which has been switched OFF for longer periods, it would be advisable to contact your local heating contractor.



1. Switch ON the mains power.
   Your heating system and, if installed, your room temperature controller Vitotrol 100 or similar programmable room thermostat are now ready to operate.

2. Control the pressure of the heating system by setting the rotary selectors to" " and " " to "⏻". The system pressure is displayed.
   Minimum system pressure 1.0 bar.
   Please contact your heating contractor if the system pressure is too low. Information regarding topping up the system can be found in the installation and service instructions.

Operating modes

Vitodens can be operated in the following modes: "heating" or "hot water".

Heating mode

If the room temperature controller Vitotrol 100, or similar programmable room thermostat, is connected, then the room temperature is controlled from there.
Observe the separate operating instructions.

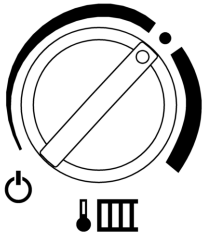
Should the room temperature controller not produce sufficient heat (e.g. when it's very cold), the heating temperature can be changed at the rotary selector "".

DHW heating - combi

In the event of a demand for hot water, the appliance will detect water flow and initiate the ignition sequence. The fan (and pump) will start and the boiler will light.
If the hot water demand is near to the maximum design flow rate the boiler will run continuously at full output until the tap is closed or the flow rate is reduced, the heat input will be reduced to maintain a steady preset temperature at the tap.

Hot water is available almost instantaneously from the boiler, but the final outlet temperature and the delay in reaching full temperature will depend on the flow rate and the distance from the boiler to the tap.
When the tap is closed, the boiler will return to heating mode if there is a demand for heating, otherwise the boiler will shut down until the next demand for heating or hot water.

Heating



Switching ON:
Set rotary selector "" to the desired heating temperature.
The display "" indicates when room temperature has been reached.

Switching OFF:
Turn heating rotary selector"" to "".

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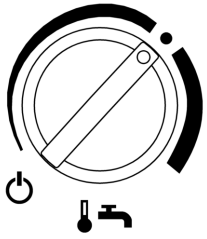
DHW (combi boiler only)

Operation with integral instantaneous water heater:
Select the DHW temperature in accordance with your personal preferences (e. g. for showers).



Switching ON:
Set rotary selector "🌡🚰" to the desired DHW temperature.

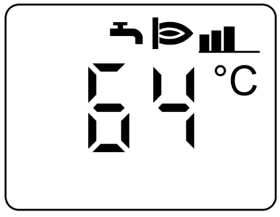
The display "🚰" indicates when DHW temperature has been reached.

Switching OFF:
Turn DHW rotary selector"|||" to "|||".

DHW (system boiler only)

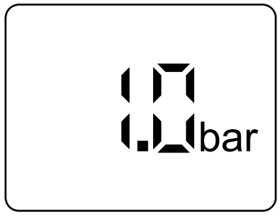
When in operation with separate a DHW cylinder, DHW temperature is regulated at the temperature control on the DHW cylinder.

Heating water temperature and system pressure



Checking the heating temperature

During operation, heating water temperature is constantly displayed.



Checking the system pressure

1. Turn both the rotary selectors"🌡🏢" and "🌡🚿" fully "⏻" anti-clockwise. The display now shows the actual system pressure, for instance 1.0 bar.
2. Return both rotary selectors to their original positions.

Note

The display will flash if the system pressure falls below 0.6 bar. In this instance, please notify your heating contractor. Information regarding topping up the system pressure can be found in the installation and service instructions.

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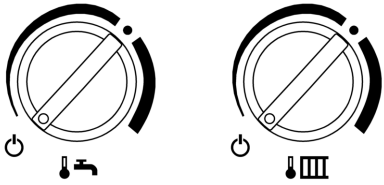
Switching OFF Vitodens with frost protection

Switch OFF the equipment if you don't want to use the boiler for a few days.



Turn both rotary selectors to "⏻".
Boiler frost protection is active.

Heating system shutdown

Shut down your heating system completely, if it will not be needed for longer periods of time (several months).
Before you switch your heating system OFF for longer periods, it would be advisable to contact your local heating contractor. Your heating engineer will take any necessary measures, e.g. for frost protection of the system or to preserve the heating surfaces.

1. Close the main gas shut-off valve and safeguard against unauthorised reopening.
2. Switch OFF the mains power.
   Now the system is idle.
   Please note that the system is no longer frost protected.

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System characteristics

What to do if ...	Cause	Solution
... the heating system doesn't come on	System switch switched off	Switch on
	System controls including room thermostats not calling for heatKnob "🌡" is set to "⏻"	System controls to create demand. 9
	Knob "🌡" is set to "⏻"	Set required heating water temperature (see page 9)
Fuse has triggered (either at the fuse board or in the controls)	Contact your heating engineer	
... the boiler does not switch on (or switched on infrequently)	No gas	Contact your gas utility supplier or heating engineer
	Control fault	Read off the fault codes in the display. Contact your heating engineer and report fault codes.

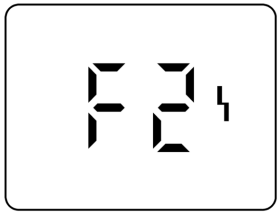
System characteristics (cont.)

What to do if ...	Cause	Solution
... the burner doesn't ignite, the fault symbol "ϟ" is displayed and "Reset" flashes red	False start	Press "Reset" button. If this attempt to start is also unsuccessful contact your heating engineer.
	Low system water pressure	The system pressure will flash in the display. Contact your heating engineer. It is possible to recharge system via the filling loop. Note: Care must be taken to ensure the fill valve is not left turned on. Viessmann Ltd will not be liable for incorrect use of the filling loop, if in doubt contact your heating engineer. Information re topping up can be found in the installation an service instructions.
... the heating system doesn't come on	System controls including room thermostats not calling for heat	Switch on system controls to create demand.
... the burner doesn't ignite, display shows fault symbol "ϟ"	Control fault	Read off the fault codes in the display. Contact the heating engineer and report fault codes.
… the burner switches off although the desired room temperature hasn't been reached	Fault in air supply or in the flue	Contact your heating engineer.
	Heating water temperature or room temperature is set too low	Increase heating water temperature by turning knob "🌡" (see page 9) or increase desired room temperature (see Vitotrol 100 manual).

System characteristics (cont.)

What to do if ...	Cause	Solution
... the rooms are cold, even though the burner is working	Hot water priority	Stop using hot water
	Fault on Vitotrol 100 or similar programmable room thermostat	Contact your heating engineer.
… the temperature of the hot water is too low	The hot water temperature is set too low or knob "🌡🚿" is set on "⏻"	Set desired hot water temperature

Fault messages in the display



Any faults in your heating system are indicated on the display by a flashing fault symbol "ϟ".
Read off the fault code in the display and report it to your heating engineer.

Cleaning

The appliance casing can be cleaned using a damp cloth and a mild detergent. Do not use abrasive cleaners.

Inspection and maintenance

To ensure continued efficient operation of the appliance, it is recommended that it is checked and serviced 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 engineer.

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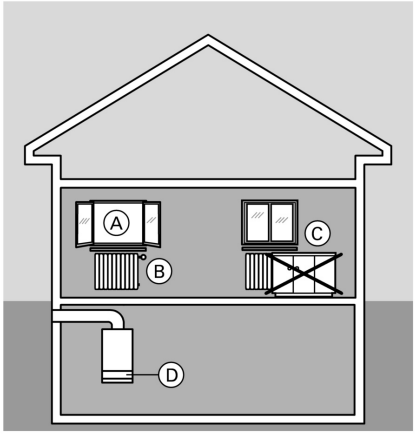
Energy saving tips

Along with using a modern heating system, you can save additional energy by your own actions.
For this, the following measures will help you:



- Correct ventilation.
  If windows are left open Ⓐ close thermostatic radiator valves Ⓑ to prevent incorrect heat demand.
- Do not overheat.
  Endeavour to reach a room temperature of 20 ºC; every degree of room temperature reduction saves up to 6 % of your heating bills.
- Close roller shutters (where installed) at dusk.
- Adjust thermostatic radiator valves Ⓑ correctly.
- Do not cover radiators Ⓒ or thermostatic radiator valves Ⓑ.
- Utilise the setting options offered by control unit Ⓓ.
- Controlled DHW consumption: A shower generally uses less energy than a full bath.

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Keyword index

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Your contact

Contact your local heating contractor if you have any questions regarding the maintenance and repair of your heating system. You may, for example, find local heating contractors on the internet under www.viessmann.com.

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