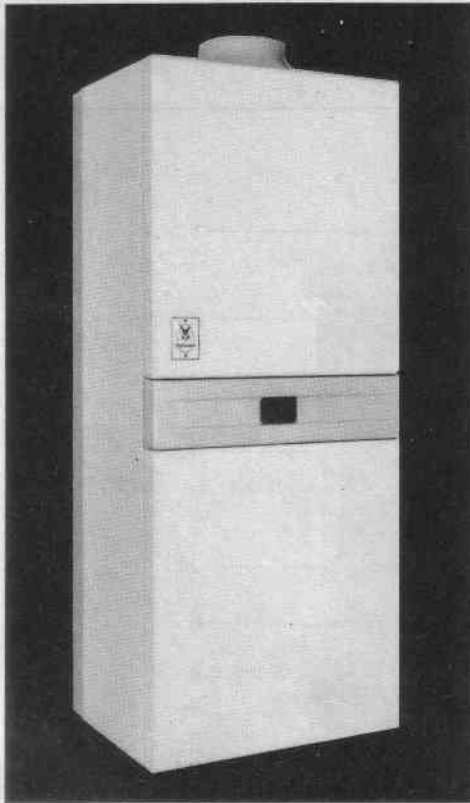




# Vaillant

## Instructions for Installation and Servicing



### **Vaillant** **Combined appliances** **for heating** **and** **domestic hot water**

**VCW 20/1 T3 W**

GC-No. 47 044 03

**VCW 25/1 T3 W**

GC-No. 47 044 05

**VCW-sine 18 T3 W**

GC-No. 47 044 01

**Central heating**  
**Domestic hot water**

This appliance shall be installed in accordance with the relevant Codes of Practice by British Gas or by an authorized installer (CORGI member)

**These instructions should be left near the gas meter when the installation is completed.**

**80 53 74 GB 02**

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# 1 Introduction

The Vaillant combi boiler is a wall-mounted natural draught open-flued (or in the case of VCW-sine, room-sealed) boiler with built in instantaneous domestic hot water heater.

Output ratings are shown in "Technical Data".

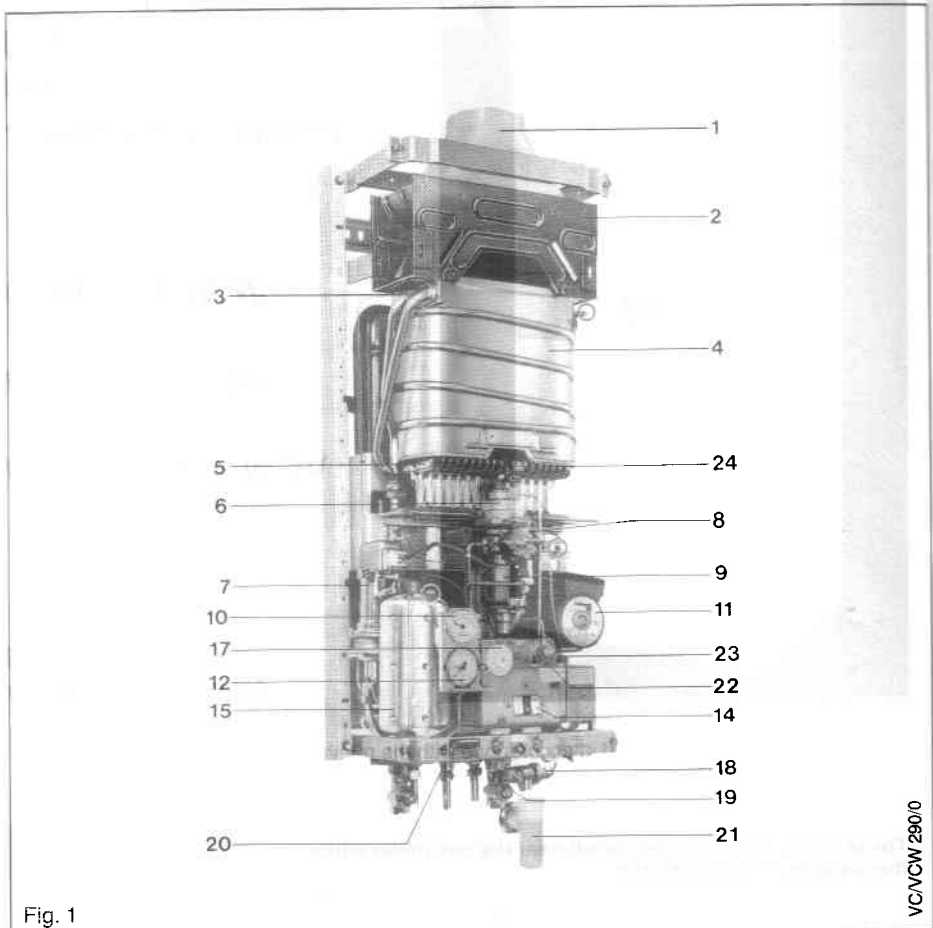
The boiler is designed for use in a sealed or open vented system with pumped circulation and includes the instantaneous hot water system.

Circulating pump, expansion vessel (for sealed system only), terminal box, control and safety devices are provided with the appliance.

## Note to Installers

In hard water areas we recommend the cold supply to the appliance is via a scale reducer.

# 2 Construction of Appliance



VCVCW 290/0

Fig. 1

- |                                     |  |
|-------------------------------------|--|
| 1 Flue connection                   | 13 Terminal box  |
| 2 Down draught diverter             | 14 Switch board (main switch, heating switch, domestic hot water switch) |
| 3 Sensor of overheat cut-off device | 15 Domestic heat exchanger   |
| 4 Main heat exchanger               | 17 Flow thermostat   |
| 4a Combustion chamber               | 18 Pressure relief valve   |
| 5 Main burner                       | 19 Service cock  |
| 6 Gas governor                      | 20 Gas service cock  |
| 7 Flow switch                       | 21 Overflow (optional extra)   |
| 8 Differential valve                | 22 Push button start   |
| 9 DC solenoid                       | 23 Push button stop  |
| 10 Flow thermometer                 | 24 Pilot burner  |
| 11 Pump with automatic air vent     | 25 Piezo unit  |
| 12 Pressure gauge                   |  |

○ air vent points

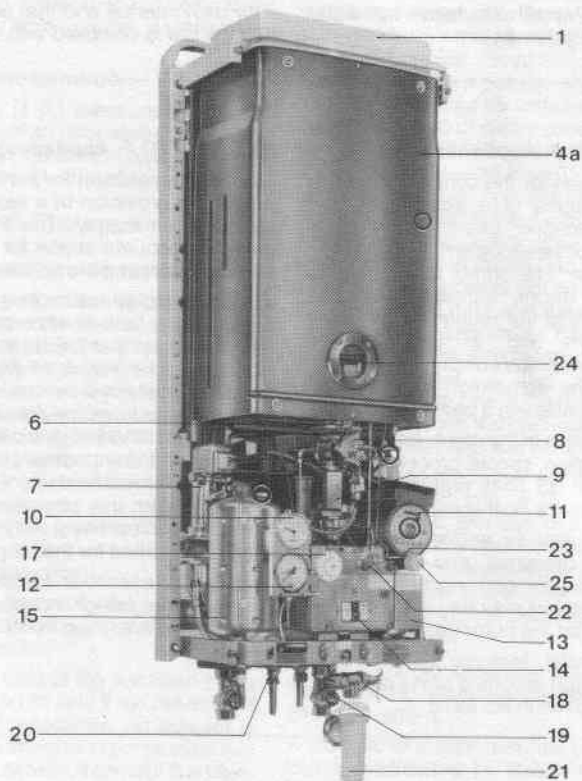


Fig. 2

VCVCW-sine 39/0

## 3 General requirements

### 3.1 Related documents

The installation of the combi boiler must be in accordance with the relevant requirements of the Gas Safety Regulations\*), building regulations, I.E.E. Regulations, and the byelaws of the local Water Undertaking.

It should be in accordance also with any relevant requirements of the local authority and the relevant recommendations of the following British Standard Codes of Practice:

- CP 331 Installation of pipes and meters for town gas,  
Part 3: Low pressure installation pipes.
- BS 5376 Selection and installation of gas space heating (1. and 2. family gases).  
Part 2 Boilers of rated input not exceeding 60 kW.
- BS 5449 Central heating for domestic premises.  
Part 1 Forced circulation hot water systems.

- CP 342 Centralized hot water supply.  
Part 1 Individual dwellings,  
Part 2 Buildings other than individual dwellings.

- BS 5440 Flues and air supply for gas appliances of rated input not exceeding 60 kW (1. and 2. family gases).  
Part 1 Flues  
Part 2 Air supply.

- BS 5446 : 1979  
Installation of gas hot water supplies for domestic purposes.

We like to draw your attention to the fact that any connection for the filling or replenishing of a sealed primary circuit from a supply pipe is conditional upon a water undertaking seeking and obtaining consent for a relaxation of its Byelaws 3 and 8 (1) from the Secretary of State.

\*) Gas Safety Regulation, 1972:

It is the law that all gas appliances are installed by competent persons in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. This is in your own interest and that of safety to ensure that the law is complied with.

### 3.2 Location

#### 3.2.1 VCW-gine (B.F. Appliance)

The location chosen for the combi boiler must permit the provisions of a satisfactory flue terminal. The location must also provide adequate space for servicing and air circulation around the heater. The combi boiler may be installed in any room, although particular attention is drawn to the requirements of the I.E.E. Regulations and, in Scotland, the electrical provisions of the building regulations, with respect to the installation of the combi boiler in a room containing a bath or shower.

Where the installation of the combi boiler will be in an unusual location, special procedures may be necessary and BS 5546 and BS 5376 : 2 give detailed guidance on this aspect.

A compartment used to enclose the combi boiler must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used provided that it is modified for the purpose.

Details of essential features of cupboard/compartment design including airing cupboard installations are given in BS 5376 : 2.

#### 3.2.2 VCW (O.F. Appliance)

The location chosen for the combi boiler must permit the provision of a satisfactory flue and adequate air supply. The location must also provide adequate space for servicing and air circulation around the appliance.

The combi boiler must not be installed in a room containing a bath or shower. In addition, it is recommended that the combi boiler should not be fitted in a bedroom. Where the installation of the combi boiler will be in an unusual position, special procedures may be necessary and BS 5376 : 2 and BS 5546 give detailed guidance on this aspect. A compartment used to enclose the combi boiler must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used provided that it is modified for the purpose.

Details of essential features of cupboard/compartment design including airing cupboard installations are given in BS 5376 : 2.

### 3.3 Gas supply

#### 3.3.1 Service pipes

The local gas region should be consulted at the installation planning stage in order to establish

the availability of an adequate supply of gas.

An existing service pipe must not be used without prior consultation with the local gas region.

### 3.3.2 Meters

A gas meter is connected to the service pipe by the local gas region or a local gas region contractor.

An existing meter should be checked to ensure that it is capable of passing an additional 2.95 m<sup>3</sup>/h (106 CFH) before the VCW 20 (or 3.38 m<sup>3</sup>/h (122 CFH) before the VCW 25 or 2.47 m<sup>3</sup>/h (89 CFH) before the VCW-sine 18) is installed.

### 3.4 Flue system

Detailed recommendations for fluing are given in BS 5440 : 1. The following notes are intended to give general guidance.

#### 3.4.1 VCW-sine (B.F. Appliance)

The boiler must be installed so that the flue terminal is exposed to the external air.

Termination should be on a clear expanse of wall;

the terminal being preferably not less than 600 mm (2 ft.) away from a corner, a recess or a projection.

##### **Do not install the terminal:**

- Within 300 mm (1 ft.) measured vertically from the bottom of an openable window, air vent, or any other ventilation opening.
- Within 300 mm (1 ft.) above adjacent ground level.
- Within 600 mm (2 ft.) of any surface facing the terminal.
- Immediately beneath eaves or a balcony.

Where the lowest part of the terminal is less than 2 m (6.6 ft.) above the level of any ground, balcony, flat roof or place to which people have access, the terminal must be protected by a guard of durable material. A terminal protective guard is available as an optional extra with the combi boiler. The air inlet/products outlet duct and the terminal of the boiler must not be closer than 50 mm (2 in.) to combustible material. Detailed recommendations on protection of combustible material are given in BS 5440 : 1.

#### 3.4.2 VCW (O.F. Appliance)

Detailed recommendations for fluing are given in BS 5440 : 1. The following notes are intended to give general guidance.

The cross sectional area of the flue fitted to the combi boiler must be not less than the area of the flue outlet of the appliance. An adapter is supplied to allow the fitting of 125 mm steel flue pipe or 125 mm light asbestos cement flue pipe.

**When fitting flue pipes a split socket connector must be fitted to ensure easy disconnection of the flue pipe** (see page 13 fig. 16).

### 3.3.3 Installation pipes

Installation pipes should be fitted in accordance with CP 331 : 3.

Pipework from the meter to the combi boiler must be of a adequate size. Do not use pipes of a smaller size than the combi boiler gas connection.

The complete installation must be tested for soundness as described in the above Code.

Flue pipes and fittings should be constructed from one of the following materials:

- Asbestos cement,
- Aluminium or stainless steel,
- Cast-iron acid-resistant vitreous enamel lined.

If double-walled flue pipe is used it should be of a type acceptable to British Gas.

If a chimney is used it preferably should be one that is composed of or lined with a nonporous acid-resistant material. (Chimneys lined with salt-glazed earthenware pipes are acceptable if the pipes comply with BS 65 and 540 : 1.) A flue pipe constructed from one of the materials in a) to c) above should form the initial connection to lined chimneys. Where a chimney is to be used which is not composed of or lined with a non-porous acid-resistant material it should be lined with a stainless steel flexible flue liner or any other liner that is of a type acceptable to British Gas. The internal diameter of the liner must not be less than shown in the technical data and the number of joints must be kept to a minimum. If the flue liner is not to be connected directly to the combi boiler draught diverter a flue pipe which is constructed from one of the materials in a) to c) above should form the connection between the draught diverter and flue liner.

Before connecting the combi boiler to, or inserting a liner into, a flue that has been previously used, the flue must be thoroughly swept clean of any soot and loose material. If a register plate, restrictor plate, damper etc. is fitted in the flue, it must be removed before connecting the combi boiler to, or inserting a liner into, the flue.

The flue should terminate in accordance with the relevant recommendations given in BS 5440 : 1, table 4.

A terminal of a type that has been tested and found satisfactory by British Gas should be fitted at the flue outlet.

The point of termination must not be within 600 mm (2 ft.) of an openable window, air vent or any other ventilation opening.

### 3.5 Air supply

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

#### 3.5.1 Room or internal space air supply

The room or space in which the boiler is located must have a permanent air vent. This vent must be either direct to the outside air or to an adjacent room or internal space which must itself have a permanent air vent of at least the same size direct to the outside air. The

minimum effective area of permanent air vent(s) is specified below and is related to the maximum rated heat input of the unit.

| Appliance | cm <sup>2</sup> | in. <sup>2</sup> |
|-----------|-----------------|------------------|
| VCW 20/1  | 108             | 16               |
| VCW 25/1  | 130             | 20               |

The balanced flued combi boiler, VCW-sine, does not require the room or internal space to have a permanent air vent.

#### 3.5.2 Cupboard or compartment air supply

Where the combi boiler is to be installed in a cupboard or compartment, permanent air vents are required (for cooling purposes and in the case of open flued appliances also for combustion and flue dilution) in the cupboard or compartment at high and low level. These air

vents must either communicate with the room or internal space or be direct to outside air.

The minimum effective areas of the permanent air vents required in the cupboard or compartment are specified below (Tab. 1) and are related to the maximum rated heat input of the unit.

| Pos. of air vents |          | Air vent areas                  |                    |                         |                    |
|-------------------|----------|---------------------------------|--------------------|-------------------------|--------------------|
|                   |          | Air from room or internal space |                    | Air direct from outside |                    |
|                   |          | cm <sup>2</sup>                 | (in <sup>2</sup> ) | cm <sup>2</sup>         | (in <sup>2</sup> ) |
| High Level        | VCW 20/1 | 280                             | (42)               | 140                     | (21)               |
|                   | VCW 25/1 | 320                             | (50)               | 160                     | (25)               |
|                   | VCW-sine | 235                             | (36,5)             | 120                     | (18,5)             |
| Low Level         | VCW 20/1 | 560                             | (84)               | 280                     | (42)               |
|                   | VCW 25/1 | 640                             | (100)              | 320                     | (50)               |
|                   | VCW-sine | 235                             | (36,5)             | 120                     | (18,5)             |

Tab. 1

Note: Both air vents must communicate with the same room or internal space or must be both on the same wall to the outside air.

Where cupboard or compartment air vents communicate with the room or internal space the room or internal space must itself have a permanent air vent(s) as specified in 3.5.1.

#### 3.5.3 Effect of an extract fan

If there is any type of extract fan fitted in the premises there is the possibility that if adequate air inlet area from outside is not provided spillage of the products from the open flued

combi boilers flue could occur when the extract fan is in operation. Where such installations occur a spillage test as detailed in BS 5440 : 1 must be carried out and any necessary action taken.

#### 3.6 Water circulation system

Detailed recommendations for the water circulation system are given in BS 5376 : 2, BS 5449 : 1 (for small bore and micro bore central heating systems) and CP 342. The following notes are of particular importance. Pipework not forming part of the useful heating surface should be insulated to help prevent heat loss and possible freezing, particularly where pipes

are run through roof spaces and ventilated underfloor spaces.

Draining taps must be located in accessible positions which permit the draining of the whole system including the combi heater and the hot water system. Draining taps should be at least 1/2 in. nominal size and be in accordance with BS 2879.

### 3.7 Electrical supply

Wiring external to the combi boiler must be installed in accordance with the I.E.E. Regulations and any local regulations which apply.

The combi boiler is supplied for 220/240 V,

## 4 Installation of boiler

### 4.1 General

The combi boiler is to be wall-mounted and a vertical flat area of wall is required which must measure as shown on template.

This area does not include clearance for installation and servicing. If the appliance is fitted on a wall of combustible material, the wall should be protected by a sheet of fireproof material.

In addition, a minimum clearance of 400 mm

50 Hz. Fuse rating is 3 A.

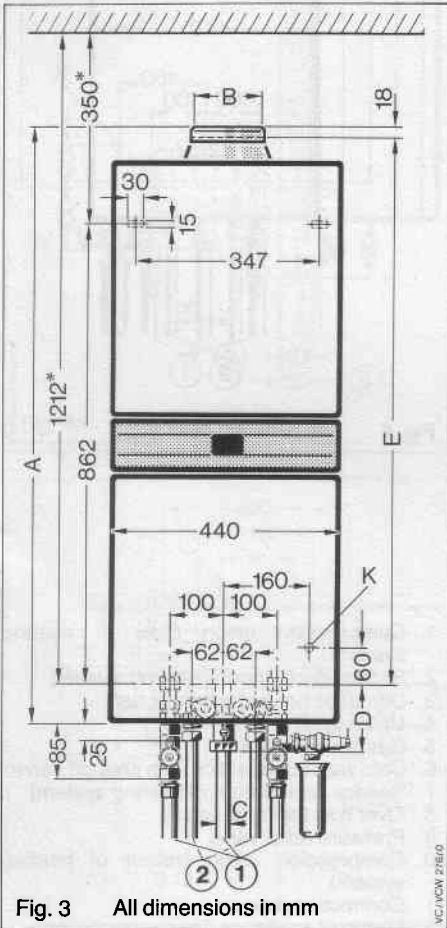
The combi boiler has to be connected direct to the mains electricity supply using the internal terminal box.

For wiring instructions see paragraph 4.7.

(16 in.) must be available at the front of the appliance to enable the combi boiler to be serviced.

Service clearance of 150 mm (6 inches) either side is required.

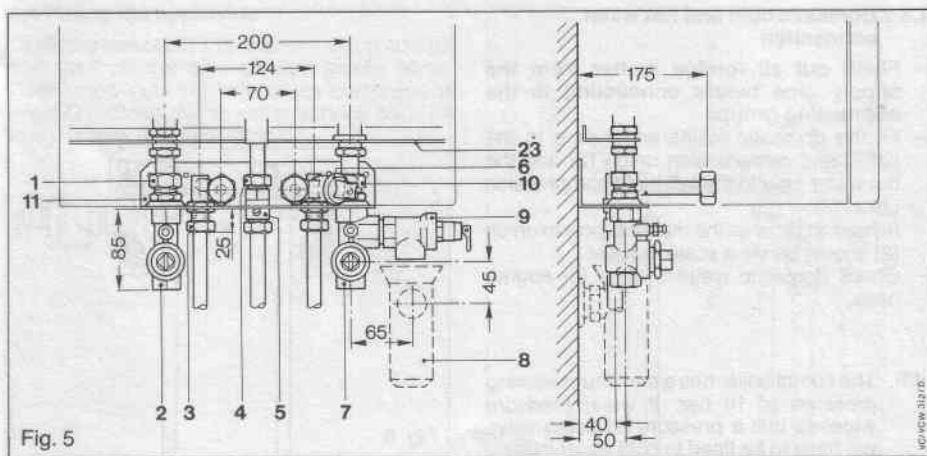
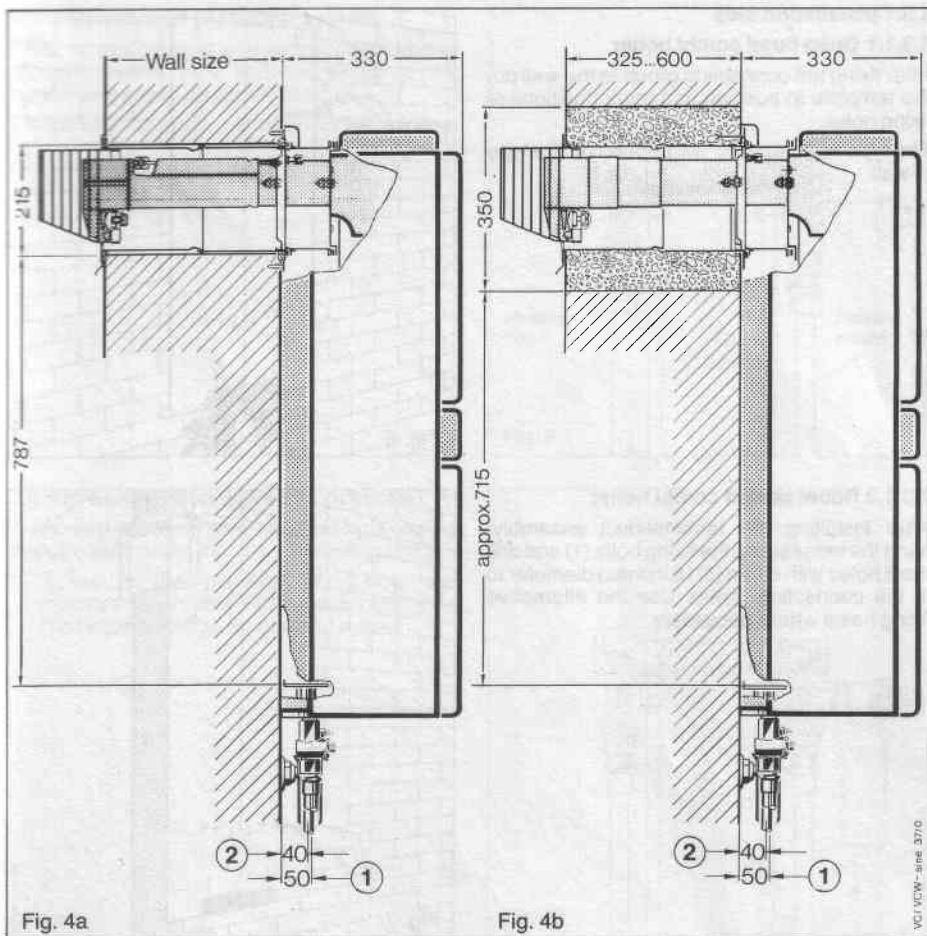
For the open flue type appliances VCW 20/1 and 25/1 an additional clearance is required for the flue. The combi boiler is supplied in 2 cartons, one containing the boiler, the other the installation accessories. An additional carton containing the terminal/duct assembly is delivered with the balanced flued appliance.



| Type of appliance   | VCW 20/1                      | VCW 25/1 |
|---|-------------------------------|----------|
| A   | 1095 mm                       | 1161 mm  |
| B   | 130 mm<br>125 mm with adapter |          |
| C   | 15 mm                         | 22 mm    |
| D   | 100 mm                        | 107 mm   |
| E   | 1014 mm                       | 1080 mm  |
| K   | Electrical mains connection   |          |
| weight  | 59 kg                         | 60 kg    |
| *) Minimum distance required to remove expansion vessel. Installation may require another distance. |                               |          |





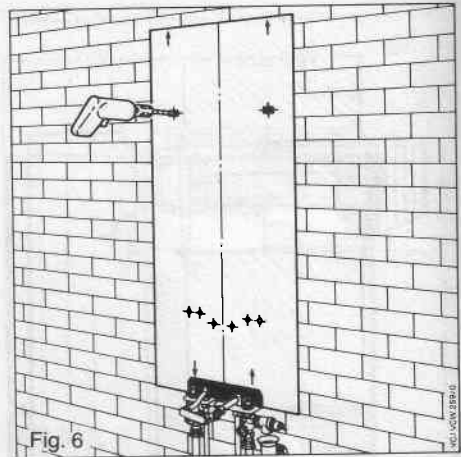


### 4.3.1 Installation aids

#### 4.3.1.1 Open flued combi boiler

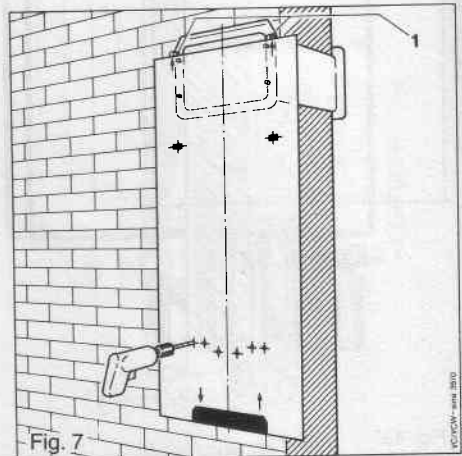
After fixing the connecting group to the wall put the template in position and mark positions of fixing holes.

The type of fixing used will depend on the type of wall.



#### 4.3.1.2 Room sealed combi boiler

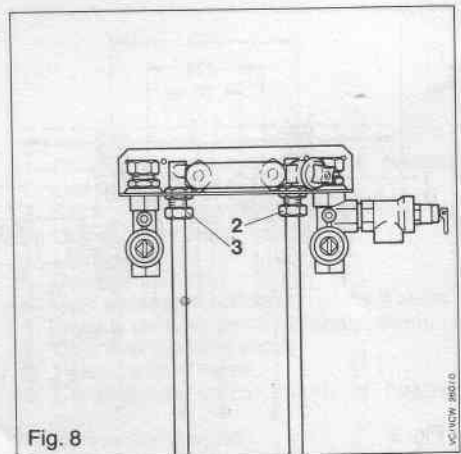
After installing the terminal/duct assembly, hang the template on the fixing bolts (1) and drill the 3 holes with 8 mm (5/16 inches) diameter to fit the connecting group. Use the alternative fixing holes where necessary.



### 4.3.2 Domestic cold and hot water connection

- Flush out all foreign matter from the supply pipe before connecting to the connecting group.
- Fit the domestic mains water pipe to the right hand compression union (2) and the hot water pipe to the left hand compression union (3).
- In hard water area the mains supply to union (2) should be via a scale reducer.
- Check domestic water system for soundness.

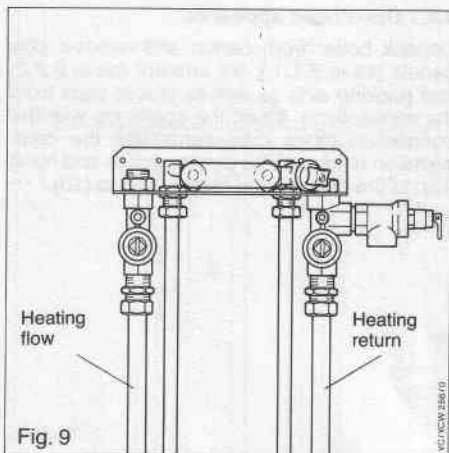
N.B. The combi boiler has a maximum working pressure of 10 bar. If water pressure exceeds this a pressure reducing valve will have to be fitted to cold water inlet.



### 4.3.3 Connection of heating system

Heating system flow and return should be in 22 mm copper pipe and connected to the connecting group as shown in fig. 9.

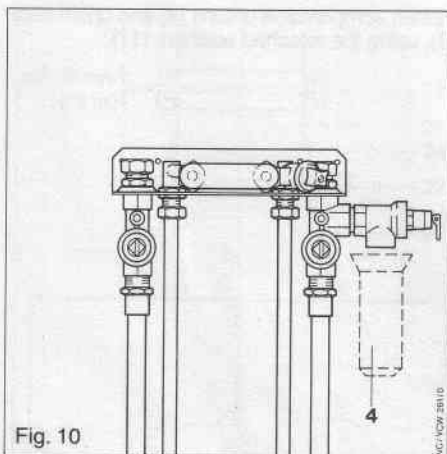
Fill the heating system and test for soundness.



### 4.3.4 Pressure relief valve and overflow

The pressure relief valve, required for a sealed system, is included into the connecting group.

- Screw in the overflow (4) below the pressure relief valve into the drain line.  
(To be available as an optional extra.)



### 4.4 Fitting the appliance

Close service cocks (5), unscrew union nuts (6) and take off the olive-shaped plastic plugs. Refit union nuts (6) with brass compression rings (7). Close mains water service cock (8) and unscrew the union nuts (9).

