

# Format B

## *Installation and servicing instructions*



*The code of practice for the installation,  
commissioning & servicing for central heating systems*



**Format 80 B:**  
*Gas Council number 47-283-07*

**Format 100 B:**  
*Gas Council number 47-283-08*

*These appliances comply with the S.E.D.B.U.K. scheme, band "D"*



**The code of practice for the installation,  
commissioning & servicing for central heating systems**

Please refer to commissioning instructions for filling in the log book

Note: All CORGI registered installers carry a CORGI ID Card.  
You can check your installer is CORGI Registered by calling 01256 372300

## **SIME COMBINATION BOILERS**

### **Installer checklist**

Please remember to carry out the following checks after installation. This will achieve complete customer satisfaction, and avoid unnecessary service calls. A charge will be made for a service visit where the fault is not due to a manufacturing defect.

- Has a correct by-pass been fitted and adjusted?
- Has the system been flushed in accordance with the guidelines given in BS7593 "Treatment of water in domestic hot water central heating systems"?
- Is the system and boiler full of water, and the correct pressure showing on the pressure gauge?
- Is the Auto Air Vent open?
- Has the pump been rotated manually?
- Is the gas supply working pressure correct?
- Is the boiler wired correctly? (See installation manual).
- Has the D.H.W. flow rate been set to the customer requirements?
- Has the customer been fully advised on the correct use of the boiler, system and controls?
- Has the log book provided been completed?

# CONTENTS

## 1 TECHNICAL FEATURES AND DIMENSIONS

1.1	INTRODUCTION .....	1
1.2	DIMENSIONAL DETAILS .....	
1.3	GENERAL DATA .....	2
1.4	HYDRAULIC CIRCUIT .....	3
1.5	INTERNAL VIEW .....	4
1.6	BOILER OPERATION .....	

## 2 GENERAL REQUIREMENTS FOR INSTALLATION

2.1	STATUTORY REQUIREMENTS .....	5
2.2	BOILER POSITION .....	
2.3	FLUE TERMINAL POSITION .....	
2.4	VENTILATION REQUIREMENTS .....	6
2.5	GAS SUPPLY .....	
2.6	ELECTRICITY SUPPLY .....	
2.7	EXTERNAL CONTROLS .....	
2.8	WATER SYSTEMS - GENERAL .....	
2.9	REQUIREMENTS FOR SEALED WATER SYSTEMS .....	
2.10	D.H.W. SYSTEMS .....	8

## 3 INSTALLING THE BOILER

3.1	FIXING THE WALL MOUNTING BRACKET .....	9
3.2	HANGING THE BOILER .....	
3.3	COAXIAL DUCT Ø 60/100 .....	
3.5	SEPARATE DUCTS .....	12
3.6	WATER CONNECTIONS .....	13
3.7	GAS CONNECTIONS .....	
3.8	SAFETY VALVE CONNECTION .....	
3.9	WIRING INSTRUCTIONS .....	

## 4 COMMISSIONING AND TESTING

4.1	FILLING THE WATER SYSTEM .....	15
4.2	COMMISSIONING THE BOILER .....	
4.5	FINAL CHECKS .....	16
4.6	USER'S INSTRUCTIONS .....	

## 5 ROUTINE SERVICING INSTRUCTIONS

5.1	MAIN BURNER ASSEMBLY .....	17
5.2	FAN ASSEMBLY .....	
5.3	BITHERMAL EXCHANGER .....	
5.5	CHIMNEY SWEEP FUNCTION .....	
5.6	RE-ASSEMBLY .....	18
5.7	RE-COMMISSIONING .....	

## 6 FAULT FINDING

6.1	EARTH CONTINUITY CHECK .....	19
6.2	SHORT CIRCUIT CHECK .....	
6.3	POLARITY CHECK .....	

6.4	RESISTANCE TO EARTH CHECK	
6.5	FAULT FINDING LEDS	
6.6	C.H. MODE - FAULT FINDING .....	20
6.7	D.H.W. MODE - FAULT FINDING .....	21
<b>7</b>	<b>WIRING &amp; FUNCTIONAL DIAGRAM</b>	
7.1	ILLUSTRATED FLOW WIRING DIAGRAM .....	22
<b>8</b>	<b>REPLACEMENT OF PARTS</b>	
8.1	BITHERMAL EXCHANGER .....	23
8.2	COMBUSTION CHAMBER INSULATION	
8.3	FAN ASSEMBLY	
8.4	MAIN BURNER	
8.5	IGNITION/DETECTION ELECTRODE	
8.6	GAS VALVE	
8.7	AIR PRESSURE SWITCH .....	24
8.8	SAFETY THERMOSTAT	
8.9	THERMISTOR	
8.10	DRIVER PCB	
8.11	PUMP MOTOR	
8.15	C.H. EXPANSION VESSEL	
8.16	PRESSURE/TEMPERATURE GAUGE .....	25
8.17	SAFETY VALVE	
8.18	AUTOMATIC AIR VENT	
8.19	TIME CLOCK	
<b>9</b>	<b>EXPLODED VIEWS .....</b>	<b>26</b>

# 1 TECHNICAL FEATURES AND DIMENSIONS

## 1.1 INTRODUCTION

The Sime **"FORMAT B"** are wall mounted, fan assisted balanced flue combination boilers.

The appliance is supplied suitable for use with natural gas, L.P.G. and provide central heating and instantaneous production of D.H.W. Heat output is varied according to demand by the modulating gas control on both D.H.W. and C.H. The appliance is supplied with a telescopic air/flue duct suitable for wall thicknesses up to 635 mm (25 in) although extension duct kits are available (see details in section 3.4). The combined flue and air duct can exit the boiler from either side or from the rear of the appliance. A vertical extension

and additional flue elbow may be fitted. If required, the boilers can also be fitted with a separate flues kit (see section 3 for details).

The boiler is designed for use with sealed primary water systems and is supplied fully assembled and equipped with complete valve packs.

The boiler can be used with a 24V room thermostat (class II according to EN 60730.1).

This booklet provides instructions for the boiler models: **"FORMAT 80 B - FORMAT 100 B"** with following features:

- electronic ignition,
- fully modulating.

## 1.2 DIMENSIONAL DETAILS

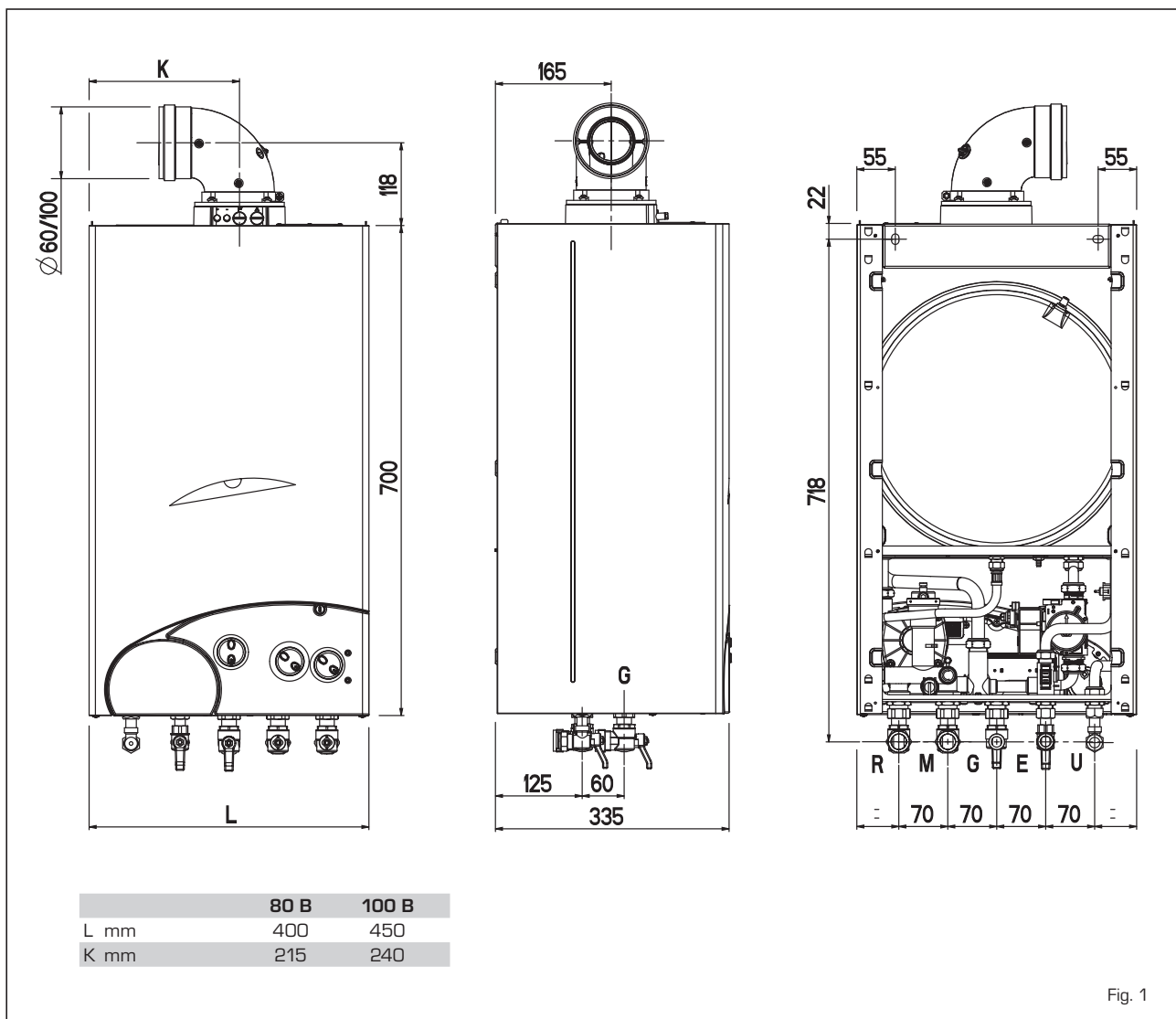


TABLE 1 - Connections

R	C.H. return	22 mm	Compression
M	C.H. flow	22 mm	Compression
G	Gas connection	15 mm	Compression
E	Cold water	15 mm	Compression
U	Hot water	15 mm	Compression

TABLE 2 - Minimum clearances

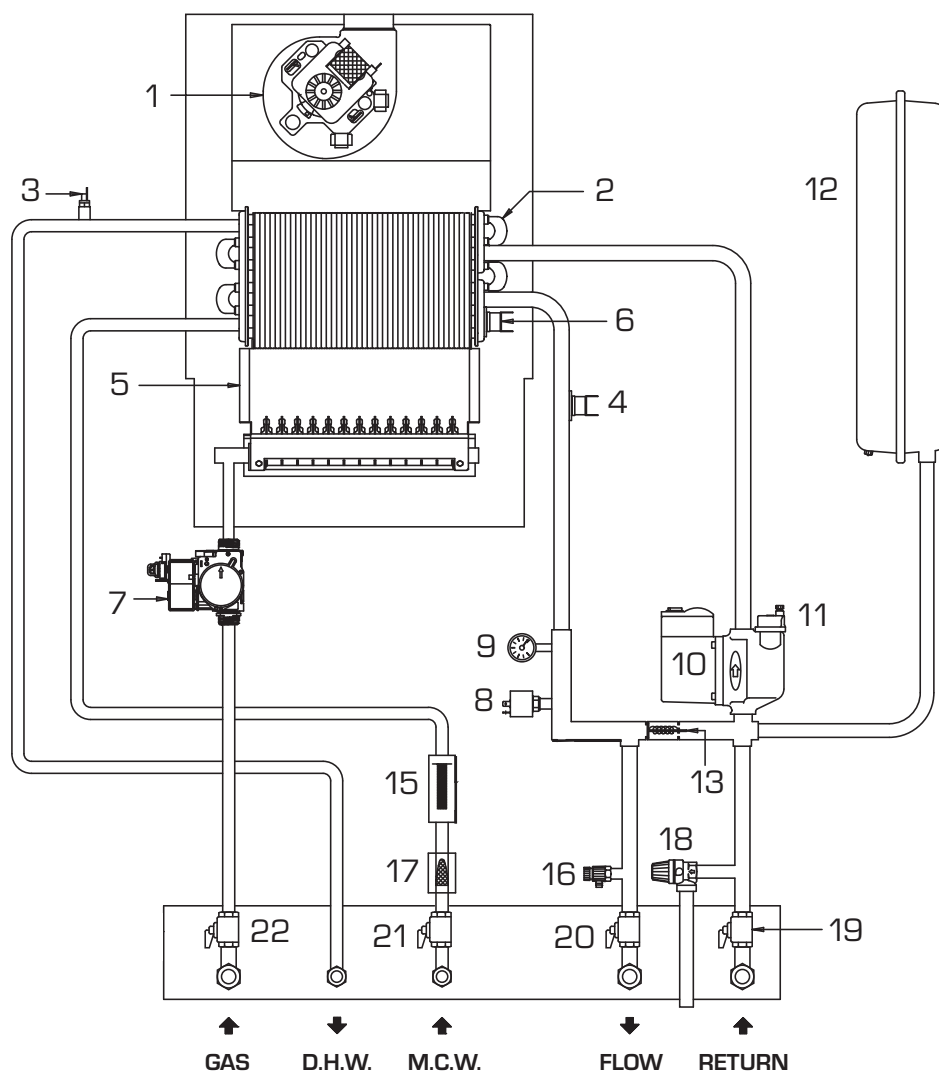
	For ventilation	For servicing
ABOVE THE APPLIANCE CASING	200 mm	300 mm
AT THE R.H.S.	15 mm	15 mm
AT THE L.H.S.	15 mm	15 mm
BELOW THE APPLIANCE CASING	200 mm	200 mm
IN FRONT OF THE APPLIANCE	350 mm	500 mm

### 1.3 GENERAL DATA

		25 BF	30 BF
<b>Heat output</b>			
Nominal	kW	23.8	30.8
Minimum	kW	8.9	11.8
<b>Heat input</b>			
Nominal	kW	25.5	33.0
Minimum	kW	10.2	13.5
<b>Thermal efficiency (CEE 92/42 directive)</b>		★★★	★★★
<b>Class NOx</b>		3	3
<b>Water content</b>	l	2.2	2.4
<b>Adsorbed power consumption</b>	W	120	165
<b>Electrical protection grade</b>		IPX4D	IPX4D
<b>Maximum water head</b>	bar	3	3
<b>Maximum temperature</b>	°C	85	85
<b>Expansion vessel</b>			
Water content/Preloading pressure	l/bar	7/1	8/1
<b>C.H. setting range</b>	°C	30÷80	30÷80
<b>D.H.W. setting range</b>	°C	30÷60	30÷60
<b>D.H.W. flow rate (EN 625)</b>	l/min	11.3	14.5
<b>Continuous D.H.W. flow rate <math>\Delta t</math> 30°C</b>	l/min	11.4	14.7
<b>Minimum D.H.W. flow rate</b>	l/min	2.2	2.2
<b>D.H.W. pressure</b>			
Minimum/Maximum	bar	0.1/7	0.2/7
<b>Smokes temperature</b>	°C	90/102	105/129
<b>Smokes flow</b>	gr/s	15.6/16.9	20.2/22.0
<b>Losses after shutdown to 50°C</b>	W/h	78	79
<b>Category</b>		II <sub>2H3+</sub>	II <sub>2H3+</sub>
<b>Type</b>		B22-52/C12-32-42-52-82	B22-52/C12-32-42-52-82
<b>Electrical supply</b>		230V - 50 hz, fused at 3 A	230V - 50 hz, fused at 3 A
<b>Internal fuse</b>		Line: F1.6A	Line: F1.6A
<b>Weight</b>	kg	38	40
<b>Main burner nozzle</b>			
Quantity	n°	12	14
Natural gas (G20)	ø mm	1.30	1.30
LPG (G30 - G31)	ø mm	0.77	0.80
<b>Gas consumption *</b>			
Natural gas (G20)	m <sup>3</sup> /h	2.70	3.49
Butane (G30)	kg/h	2.01	2.60
Propane (G31)	kg/h	1.98	2.56
<b>Burner gas pressure</b>			
Natural gas (G20)	mbar	2.0÷11.8	2.5÷14.5
Butane (G30)	mbar	4.8÷28.5	4.7÷28.2
Propane (G31)	mbar	6.3÷36.5	6.0÷36.2
<b>Gas supply pressure</b>			
Natural gas (G20)	mbar	20	20
Butane (G30)	mbar	28 - 30	28 - 30
Propane (G31)	mbar	37	37

\* Gas consumption figures express the lowest calorific power of pure gas under standard conditions at 15°C - 1013 mbar; this figure may differ from the actual figure, which is dependent on gas composition and environmental conditions.

## 1.4 HYDRAULIC CIRCUIT



### KEY

- |                                  |                      |
|----------------------------------|----------------------|
| 1 Fan                            | 11 Air relief valve  |
| 2 Bithermal exchanger            | 12 Expansion vessel  |
| 3 D.H.W. probe (SS)              | 13 Automatic by-pass |
| 4 100°C safety stat              | 15 Water flow switch |
| 5 Combustion chamber             | 16 Drain plug        |
| 6 C.H. sensor (SM)               | 17 D.H.W. filter     |
| 7 Gas valve                      | 18 Safety valve      |
| 8 Water pressure switch          | 19 C.H. return cock  |
| 9 Temperature and pressure gauge | 20 C.H. flow cock    |
| 10 Circulation pump              | 21 D.H.W. cock       |
|                                  | 22 Gas cock          |

Fig. 2

## 1.5 INTERNAL VIEW

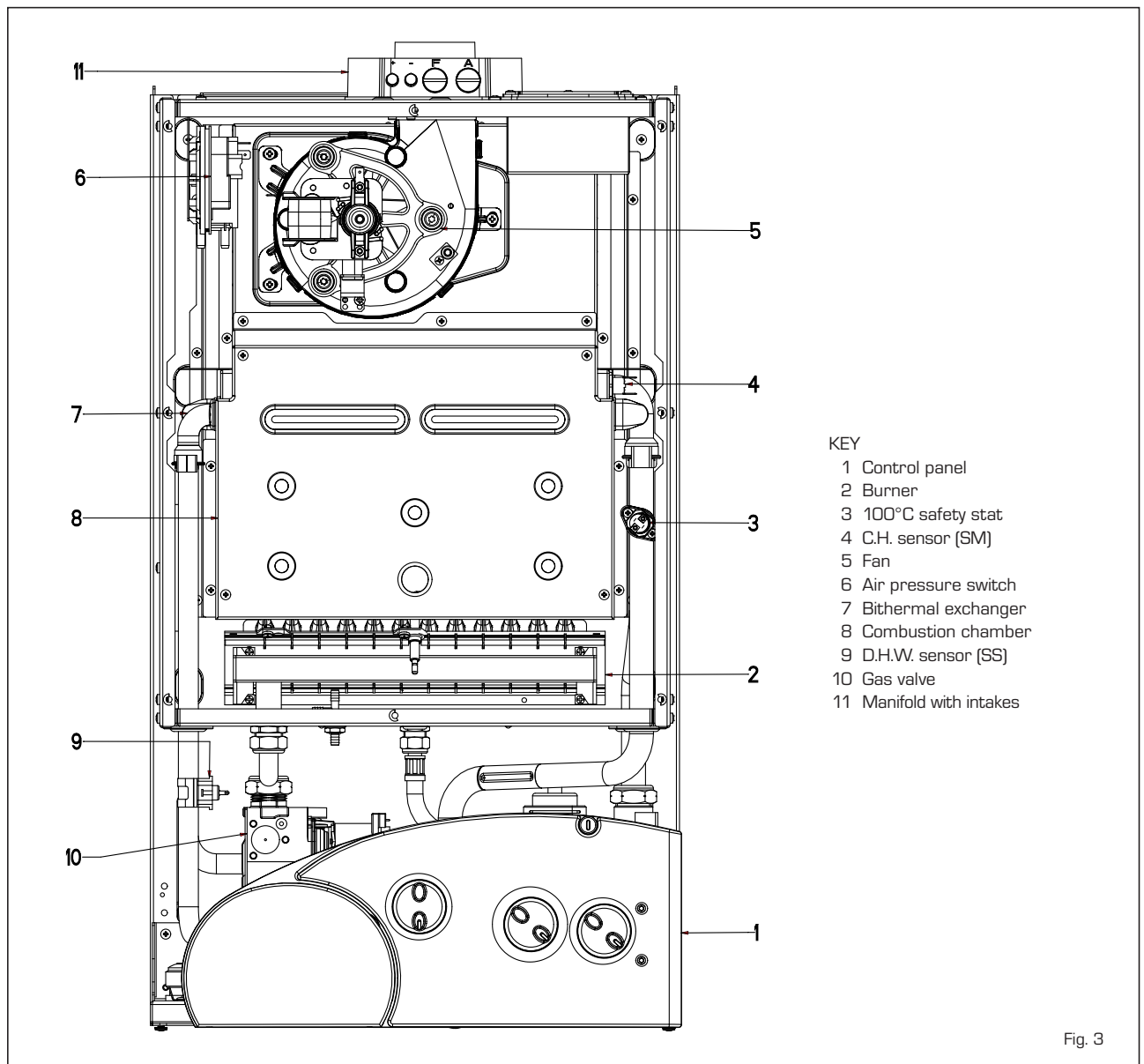


Fig. 3

## 1.6 BOILER OPERATION

The boiler operating mode is controlled by the selector switch on the control panel. When set to winter (❄) it will operate in the Domestic Hot Water and Central Heating modes. For Domestic Hot Water only the selector switch should be set to summer (☀). Domestic hot water supply always takes priority over central heating. If a demand for hot water is required during a central heating period, the boiler will automatically switch to hot water mode until the demand is satisfied.

### 1.6.1 Central Heating mode

If there is a call for central heating the pump will start to circulate the primary heating water and the fan will run at full speed; once the air pressure switch has been proved the burner will light. The burner output then automatically adjusts to suit the system demand; as the temperature of the heating

water in the boiler approaches that set by the adjustable central heating control knob the burner output is reduced. When this set temperature is reached, the burner extinguishes and the fan stops. The pump continues to run for 30 seconds to prevent residual heat build up in the boiler. The burner will not relight for 3 minutes unless there is a demand for domestic hot water during this period.

### 1.6.2 Domestic Hot Water mode

The pump does not operate on a DHW demand, the fan runs and once the air pressure switch has proved the boiler will light.

The burner output then automatically adjusts to suit the demand required to raise the temperature set by the adjustable domestic hot water control knob.

When the hot water demand has been satisfied, it passes to the operation in C.H., if the selector is set to winter (❄) and there is a C.H. demand, otherwise the burner will extinguish.



# 2 GENERAL REQUIREMENTS FOR INSTALLATION

## 2.1 STATUTORY REQUIREMENTS

GAS SAFETY (INSTALLATION AND USE) REGULATIONS (as amended). It is the law that all gas appliances are installed by a registered person, in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure that the law is complied with.

In addition to the above regulations, this appliance must be installed in accordance with the current IEE Wiring Regulations (BS 7671), Local Building Regulations, the Building Standards (Scotland) (Consolidation) Regulations, Byelaws 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: BS5449, BS5546, BS5440:1, BS5440:2, BS6798, BS6891, and BG.DM2, BS7074, and BS5482 for propane installations.

**Manufacturer's instructions must NOT be taken in any way as over-riding statutory obligations.**

## 2.2 BOILER POSITION

In siting the combination boiler, the following limitations MUST be observed:

- 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 (section 2.4).
- This position MUST allow for a suitable flue termination to be made. The combination boiler must be installed on a flat vertical wall which is capable of supporting the weight of the appliance, and any ancillary equipment.
- If the combination boiler is to be fitted in a timber framed building it should be fitted in accordance with the Institute of Gas Engineers document for Gas Installations In Timber Frame Housing, Reference 16E/UP/7: 1998. If in doubt, advice must be sought from the gas supplier.
- If the appliance is installed in a room containing a bath or shower, any electrical switch or control utilising mains electricity must be so situated that it cannot be touched by a person using the bath or shower. Attention is drawn to the requirements of the current I.E.E. Wiring Regulations (BS 7671), and in Scotland the electrical provisions of the Building Regulations applicable in Scotland.

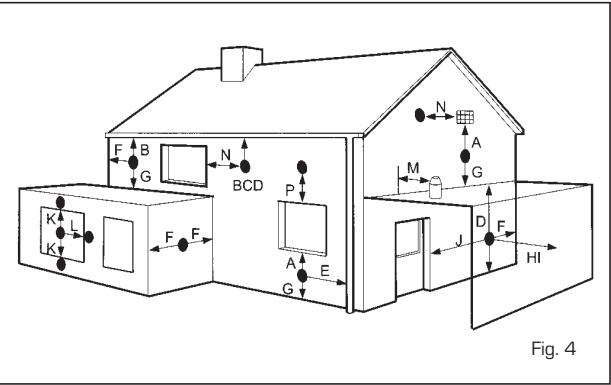


Fig. 4

- 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.
- Where installation will be in an unusual location, special procedures may be necessary. BS6798 gives detailed guidance on this aspect.

## 2.3 FLUE TERMINAL POSITION

Detailed recommendations for flue installation are given in BS5440:1. The following notes are for general guidance:

- The boiler MUST be installed so that the terminal is exposed to the external air.
- It is important that the position of the terminal allows free passage of air across it at all times.
- It is ESSENTIAL TO ENSURE, in practice 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. If this does occur, the appliance MUST be turned OFF IMMEDIATELY and the gas supplier consulted.
- **The minimum acceptable dimensions from the terminal to obstructions and ventilation openings are specified in fig. 4.**
- 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 (78 in) 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.
- Where the terminal is fitted within 850 mm (34 in) of a plastic or painted gutter, or 450 mm (18 in) of painted eaves, an aluminium shield at least 1,500 mm (59 in) long must be fitted to the underside of the painted surface.
- The air inlet/outlet flue duct MUST NOT be closer than 25 mm (1 in) to combustible material.
- In certain weather conditions the terminal may emit a plume of steam. This is normal but positions where this would cause a nuisance should be avoided.

TABLE 5

Terminal position	Minimum spacing in mm
A Directly below an openable window, air vent or any other ventilation opening	300
B Below guttering, drain pipes or soil pipes	25 *
C/D Below eaves, balconies or carport roof	25 *
E From vertical drain pipes or soil pipes	75
F From internal or external corners	25
G Above adjacent ground, roof or balcony level	300
H From a surface facing the terminal	600
I From a terminal facing the terminal	1,200
J From an opening in the carport (e.g. door, window into dwelling)	1,200
K Vertically from a terminal on the same wall	1,500
L Horizontally from a terminal on the same wall	300
M Horizontally from a vertical terminal to a wall	300
N Horizontally from an openable window or other opening	300
P Above an openable window or other opening	300

\* With "heat shield" installed in accordance to BS 5440 Pt1.

## 2.4 VENTILATION REQUIREMENTS

Detailed recommendations for air supply are given in BS5440:2. The following notes are for general guidance:

- It is not necessary to have a purpose provided air vent in the room or compartment in which the appliance is installed.

## 2.5 GAS SUPPLY

- The gas installation should be in accordance with BS6891. The gas required for the boiler is specified in section 1.3.
- Ensure that the pipework from the meter to the appliance is of adequate size.
- The governor at the meter must give a constant outlet pressure of 20 mbar (8 inwg) for natural gas and 30 - 37 mbar (12 - 15 inwg) for LPG, when the appliance is running.
- The gas supply line should be purged.

**NOTE: Before purging open all doors and windows, also extinguish any cigarettes, pipes, and any other naked flames.**

- The complete installation must be tested for gas soundness.

## 2.6 ELECTRICITY SUPPLY

**The appliance MUST be earthed. A mains supply of 230 V - 50 Hz single phase is required. All external controls and wiring MUST be suitable for mains voltage.**

Wiring should be in 3 core PVC insulated cable NOT LESS than 0.75 mm<sup>2</sup> (24 x 0.2 mm) to BS6500, Table 16. Wiring external to the boiler MUST be in accordance with current I.E.E. Wiring Regulations (BS 7671) and local regulations. The supply connection to the flying lead provided MUST be made to a fused double pole switch, having a 3 mm (1/8 in) contact separation in both poles, serving only the boiler and system controls; the fuse rating should be 3 amp. This connection should be readily accessible and be made adjacent to the boiler (except in the case of bathroom installations for domestic boilers where the point of connection to the mains MUST be outside of the bathroom).

## 2.7 EXTERNAL CONTROLS (Refer to section 3.9)

The boiler is intended for use with a 24 V room thermostat. The connection is made inside the control box as described in section 3.9.

## 2.8 WATER SYSTEMS - GENERAL

- This appliance is designed for connection to sealed central heating water systems.
- Check that the mains water pressure is sufficient to produce the required D.H.W. flow rate, but does not exceed the maximum D.H.W. pressure (1.3 point).

**Where mains pressure exceed 6 bar a pressure reducing valve must be fitted in the D.H.W. inlet.**

### 2.8.1 Treatment of water circulating systems

- All recirculatory systems will be subject to corrosion unless

an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.

- For optimum performance after installation this boiler and its associated central heating system must be flushed in accordance with the guidelines given in BS 7593 "Treatment of water in domestic hot water central heating systems".
- This must involve the use of a proprietary cleanser, such as Sentinel X300 or X400, or Fernox Superfloc. Full instructions are supplied with the products, but for immediate information please contact GE Betz (0151 420 9563) or Fernox (01799 550 811) directly.
- For long term protection against corrosion and scale, after flushing it is recommended that an inhibitor such as Sentinel X100, or Fernox MB-1 or Copal is dosed in accordance with the guidelines given in BS 7593.

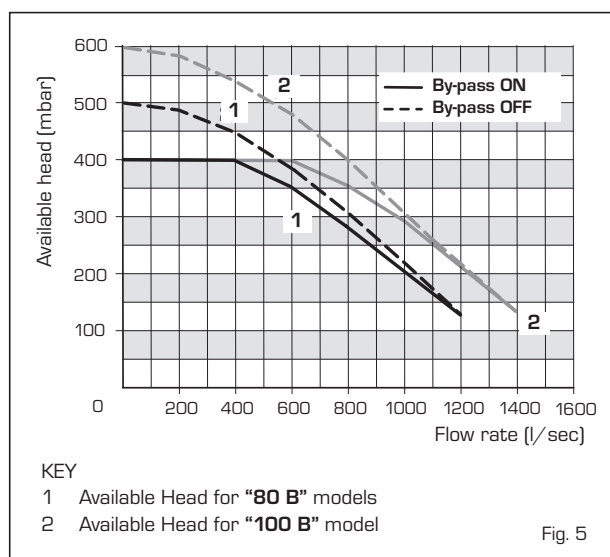
**Failure to flush and add inhibitor to the system may invalidate the appliance warranty.**

- It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the manufacturer's instructions. (Test kits are available from inhibitor stockists).

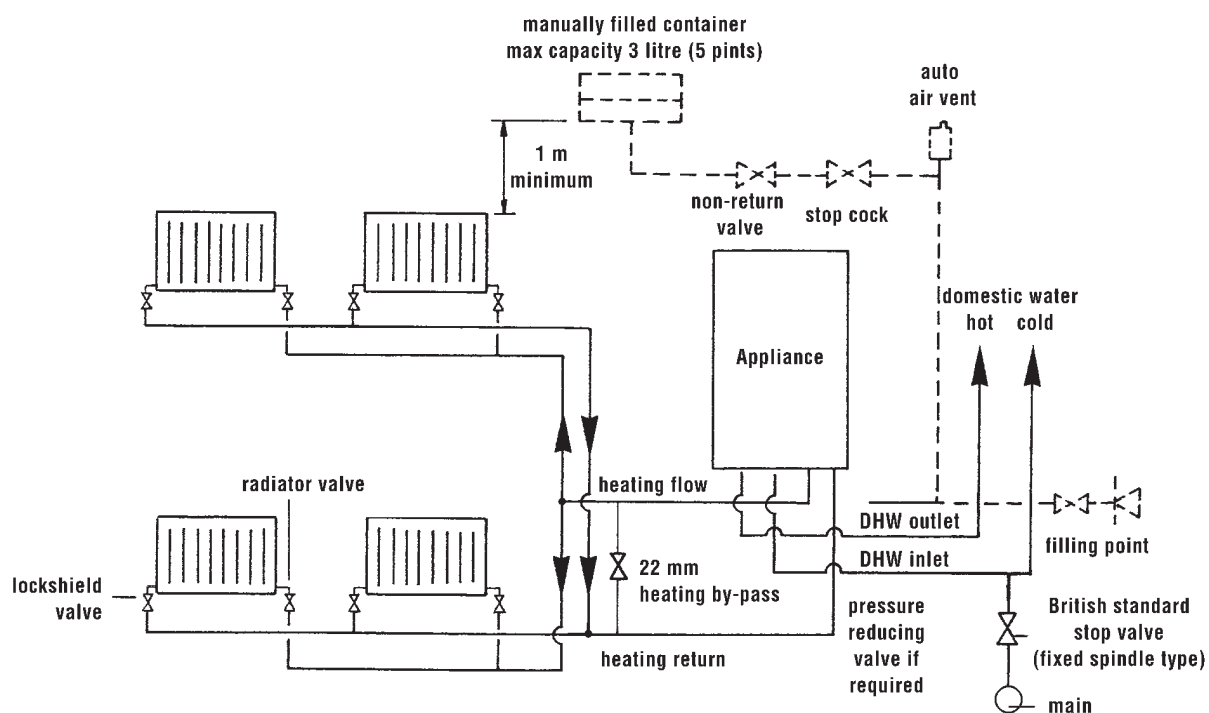
## 2.9 REQUIREMENTS FOR SEALED WATER SYSTEMS

The heating system design should be based on the following information:

- The available pump head is given in fig. 5.
- The burner starts when the C.H. flow reaches 400÷450 l/h. This safety condition is ensured by the flow switch.
- The appliance is equipped with an internal by-pass that operates with system heads (H) greater than 3 m. The maximum flow through the by-pass is about 300 l/h. If thermostatic radiator valves are to be installed, at least one radiator should be without a thermostatic valve (usually the bathroom radiator).
- A sealed system must only be filled by a competent person using one of the approved methods shown in fig. 7. The system design should incorporate the connections appropriate to one of these methods.
- The following paragraphs outline the specifications of the items fitted to the boiler:



### TYPICAL SYSTEM DESIGN



NOTE: A drain cock should be installed at the lowest point of the heating circuit and beneath the appliance.

Fig. 6

### ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM

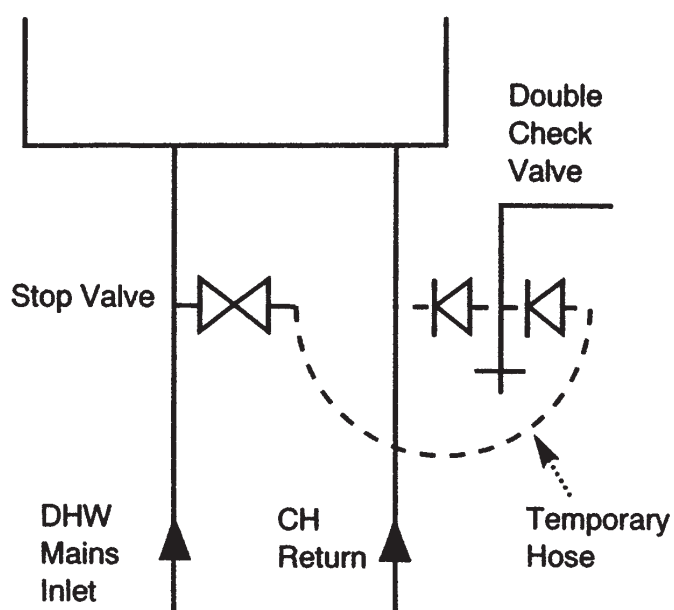


Fig. 7

### 2.9.1 Pump

The available head shown in fig. 5 is that in excess of the appliance hydraulic resistance, i.e. that available for the system at any given heating load up to the maximum output in C.H. mode. Never reduce the pump speed below maximum as this will reduce D.H.W. output. The pump speed is indicated on the side of the pump speed selector switch (if fitted).

### 2.9.2 System volume (total water content)

The following Table gives 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 BS5449 and BS6798.

**NOTE: If the pressure gauge indicates 2.65 bar or greater when the appliance is at maximum temperature with all radiators in circulation an extra expansion vessel is required.**

TABLE 6

Vessel charge and initial system pressure	bar psi	0.5 7.3	1.0 14.5	1.5 21.8
Total water content of system using 8 l (1.76 gal) capacity expansion vessel supplied with appliance	l gal	96 21.1	74 16.2	51 11.2
For systems having a larger capacity multiply the total system capacity in litres (gal) by the factor to obtain the total minimum expansion vessel capacity required litres (gal)		.0833	.109	.156

### 2.9.3 Pressure gauge

A pressure gauge is mounted on the appliance fascia panel.

### 2.9.4 Safety valve

A safety valve set at 3 bar (43.5 psi) is fitted to the appliance and a discharge pipe is routed to outside of the appliance. This discharge pipe should be extended to terminate safely away from the appliance and where a discharge would not

cause damage to persons or property but would be detected. The pipe should be able to withstand boiling water, be a minimum of 15 mm in diameter, and installed with a continuous fall.

## 2.10 D.H.W. SYSTEMS

- Check that the mains supply pressure is within the prescribed limits (1.3 point).  
If necessary, a pressure reducing valve should be fitted to the mains supply before the D.H.W. inlet connection.
- A maximum D.H.W. flow rate of:  
11.4 l/m (3.0 gpm) for "FORMAT 80 B" and 14.7 l/m (3.9 gpm) for "FORMAT 100 B" is recommended.  
Higher flow rates will not damage the appliance but may lower the water temperature below an acceptable level.
- If the appliance is installed in an area where the temporary hardness of the water supply is high, say over 150 ppm, the fitting of an in line scale inhibitor may be an advantage. Consult the Local Water Undertaking if in doubt.
- Devices capable of preventing the flow of expansion water: e.g. non return valves and/or loose-jumpered stop cocks should not be fitted unless separate arrangements are made for expansion water.
- For specific information relating to fittings (eg. Showers, washing machines etc.) suitable for connection in the D.H.W. circuit, consult the Local Water Undertaking, however the following information is given for guidance.

### 2.10.1 Domestic hot/cold water supply taps and mixing taps

All equipment designed for use at mains water pressure is suitable.

### 2.10.2 Showers

Any WRAS approved shower suitable for the mains water pressure available may be used.

A loose or flexible shower head type may require the fitting of an anti-syphon device to comply with water by-laws.

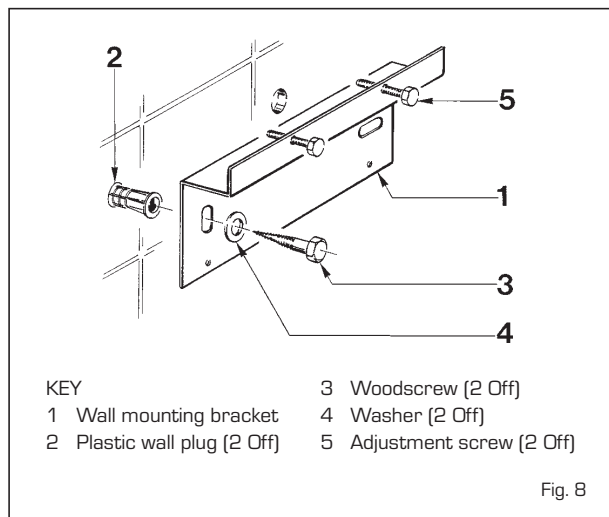
### 2.10.3 Bidets

Providing that the appliance is of the over-rim flushing type, the outlets are shrouded and it is impossible to attach a temporary hand held spray, no anti syphonage device is necessary.

### 3 INSTALLING THE BOILER

#### Appliance package:

- combination boiler (assembled);
- installation and servicing instructions;
- users instructions;
- wall mounting templates (paper);
- wall mounting bracket;
- fixing screws with wall plugs;
- plastic bags containing:
  - gas service cock;
  - C.H. F/R isolation valves;
  - D.H.W. isolation valve;
  - D.H.W. elbow connection;
  - associated fixing screws;
  - associated gaskets;
  - safety valve discharge pipe.



#### 3.1 FIXING THE WALL MOUNTING BRACKET

Before installing the appliance ensure that the chosen location is suitable (section 2.2) and that the requirements for flue position, (section 2.3), and minimum clearances, (Table 2) are satisfied. These minimum clearances are essential to provide access for servicing, and are included on the wall mounting templates.

- Open the paper wall mounting templates. If a rear flue is to be used, discard the side templates and secure the rear template in the desired position. For a side flue application, secure both the rear and appropriate side template in position.
- Mark the position of the two wall mounting bracket fixing holes and the flue/air duct hole on the appropriate wall(s).
- Remove the template(s) and drill the two fixing holes using a 10 mm masonry drill. Fit the plastic plugs provided.
- Cut the hole in the wall for the flue/air duct. The diameter should not be less than 100 mm (4 in) and must be horizontal. Refer to fig. 12-14.
- Accurately measure the wall thickness, and note this dimension for later use.
- Secure the wall mounting bracket in position using the

screws provided. Ensure that it is the correct way up, as indicated in fig. 8.

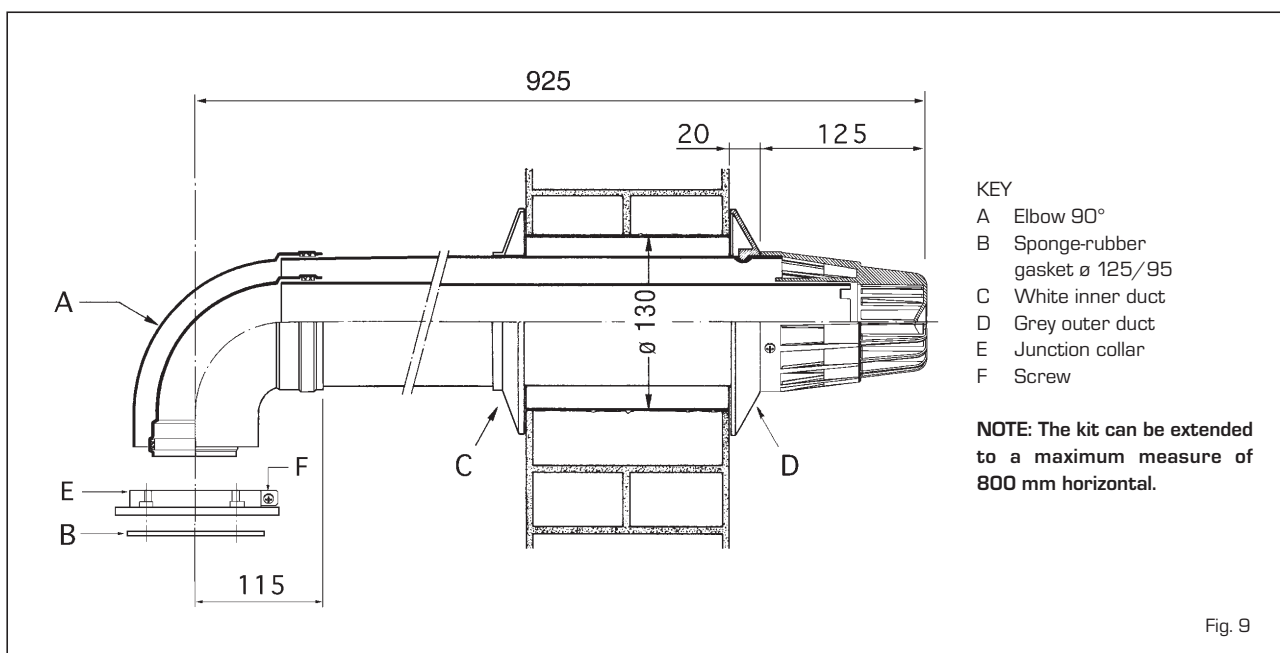
#### 3.2 HANGING THE BOILER

- Lift the appliance into position. The upper cross member locates onto the wall mounting bracket.
- Screw in the wall mounting bracket adjusting screws until the appliance is secure and vertical.

#### 3.3 COAXIAL DUCT Ø 60/100

The air inlet-smoke outlet assembly Ø 60/100 is supplied in a kit code 8084811. For the assembly follow what is indicated in figure 9:

- Make a hole in the wall sufficiently large to allow an insertion of a PVC pipe 130 mm Ø of the same length as the thickness of the wall it has to pass through. Then fix the PVC pipe in place using cement mortar.
- Before to insert the duct in the wall hole fit in position the



- outer wall seal (D).
- Push the tube outwards until the gasket comes out. Pull the pipe inwards bringing the ring to rest on the wall.
- Slide the inner ring (C).
- Insert the inner/outer duct into the elbow (A) until the ducts touch the inner part of the elbow where the diameter becomes smaller.
- Fit the sponge-rubber gasket (B) to the collar (E).
- Secure the collar (E) to the sealed chamber using the four screws provided.
- Insert the elbow (A) into the collar (E) tightening the screw (F).

**With the curve supplied in the kit the maximum horizontal length of the flue must not exceed 3,6 metres.**

The diagrams in fig. 10 illustrate a number of examples of different coaxial outlets.

**NOTE: The air intake-flue outlet assembly must slope slightly downwards to prevent rain water getting into the boiler.**

### 3.3.1 Coaxial flue diaphragm ø 60/100

The boiler is supplied as standard with a ø 86 diaphragm. With outlet type C12, install diaphragm ø 86 only if the coaxial flue is less than 1 metres long.

For C32 discharge options, it is necessary to order the optional diaphragm separately ø 87,5 (cod. 6028624) and use it in accordance with the instructions provided in figure 11.

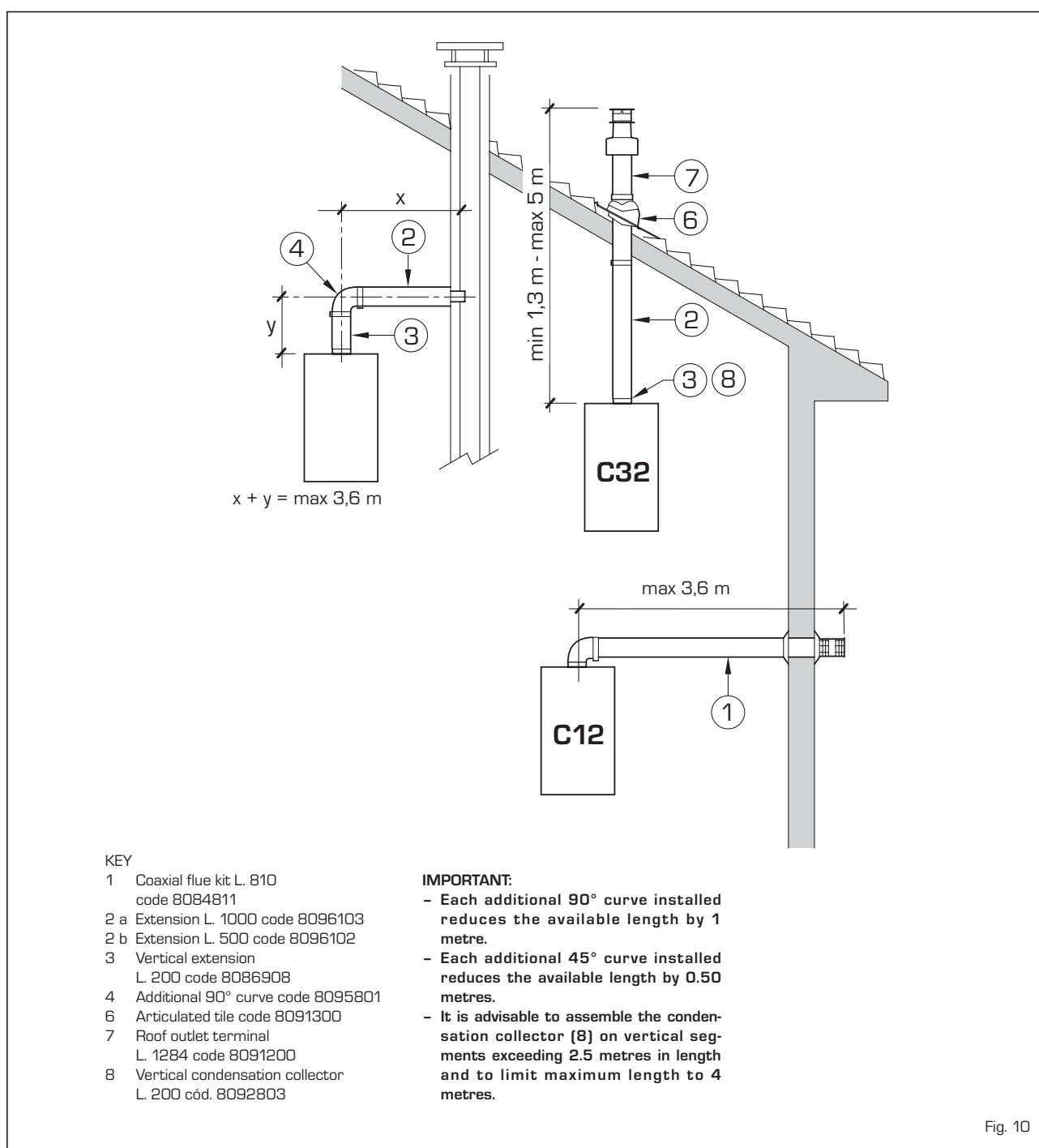
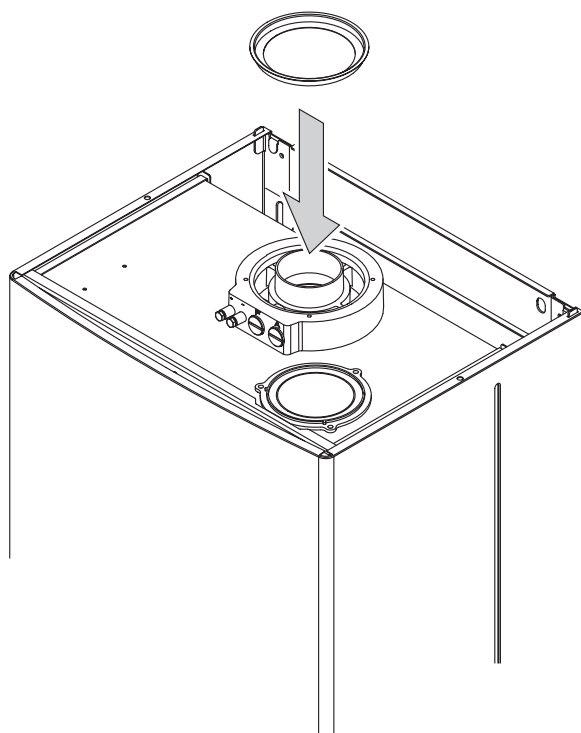


Fig. 10



With outlet type C12, install diaphragm  $\varnothing$  86 only if the coaxial flue is less than 1 metres long.

With outlet type C32, use the following diaphragms, depending on flue length and without any additional curves:

Installations with vetrical extension L. 200 code 8086908			Installations with vertical condensation collector code 8092803	
Diaphragm $\varnothing$ 86 (cod. 6028623)	Diaphragm optional $\varnothing$ 87,5 (cod. 6028624)	Without diaphragm	Diaphragm optional $\varnothing$ 87,5 (cod. 6028624)	None diaphragm
L min = 1,3 m L max = 2,5 m	L min = 2,5 m L max = 4 m	L min = 4 m L max = 5 m	L max = 2,5 m	L min = 2,5 m L max = 4 m

Fig. 11

### 3.5 SEPARATE DUCTS (Optional alternative twin pipe system)

When installing the separate ducts, comply with the requirements of the current standards, as well as the following practical pointers:

- With direct intake from outside, when the pipe is longer than 1 m, you are recommended to insulate the piping so as to prevent the formation of condensation on the outside of the piping during particularly cold periods of the year.
- With the outlet pipe outside the building or in cold indoor environments, insulation is necessary to prevent burner ignition failure. In such cases, provide for condensate

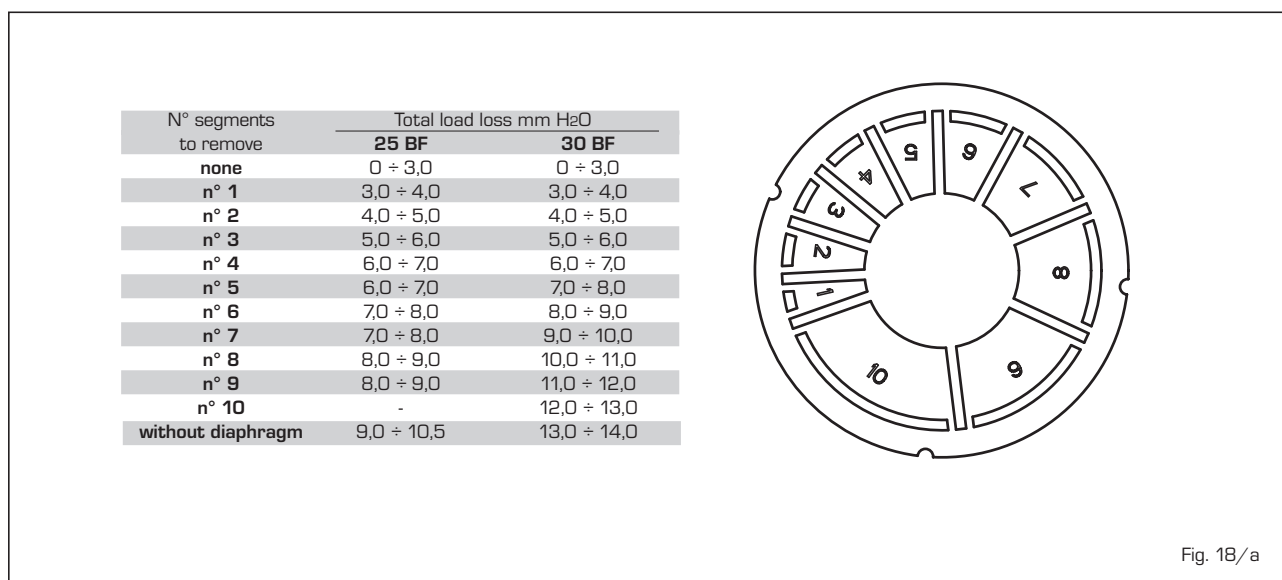
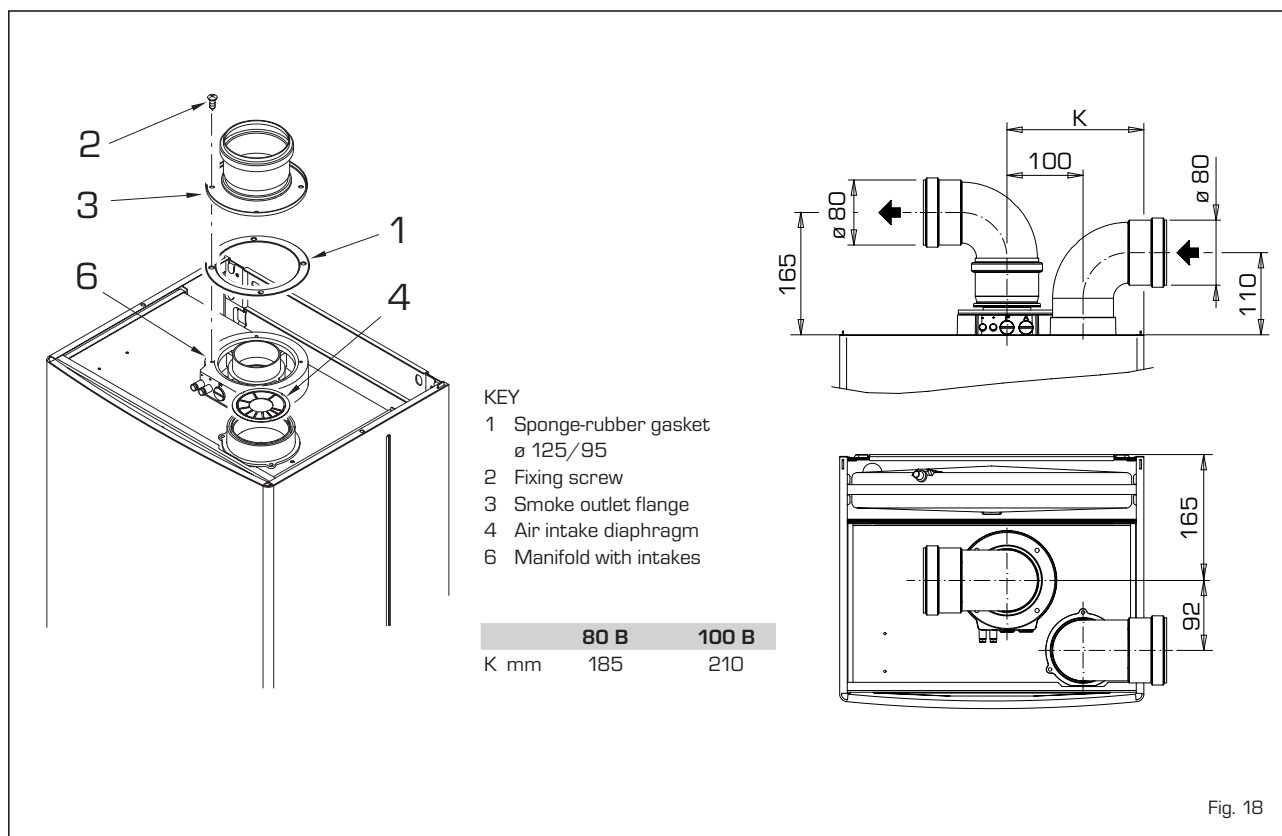
drainage.

- If a segment of the flue passes through a flammable wall, this segment must be insulated with a glass wool pipe insulator 30 mm thick, with a density of 50 kg/m<sup>3</sup>.

The maximum overall length of the intake and exhaust ducts depends on the head losses of the single fittings installed and can reach approximately the following horizontal measures:

- 15 m for "Format 80 B" model,
- 21 m for "Format 100 B" model.

For head losses in the fittings, refer to *Table 7*.





**TABLE 7**

Accessories ø 80	Load loss (mm H <sub>2</sub> O)		
	"80 B/100 B"		
	Intake	Outlet	Roof out. Intake
90° curve MF	0.30/0.30	0.40/0.50	-
45° curve MF	0.20/0.20	0.30/0.40	-
Extension L. 1000 (horizontal)	0.20/0.20	0.30/0.40	-
Extension L. 1000 (vertical)	0.30/0.30	0.20/0.30	-
Outlet terminal	-	0.30/0.40	-
Intake terminal	0.10/0.10	-	-
Manifold	0.20/0.30	-	-
Roof outlet terminal L1390	-	-	0.50/0.60
Condensation collection T	-	1.00/1.10	-

### 3.5.1 Separate flue accessories

Part No 8089904 is supplied for this purpose. The sectored diaphragm is to be used according to the maximum head loss allowed in both pipes, as given in fig. 18/a.

### 3.5.2 Use of air intake [fig. 19]

To use the air intake in this type of outlet you must perform the following operations:

- Remove the base of the air intake, using a tool to cut it off (a);
- Overturn the air intake (b) and replace the seal (5) with the seal supplied in the kit code 8089904;
- Insert the intake diaphragm supplied in the kit code 8089904, pushing it in until it is in contact with the seat;

You can now insert the extension or curve in its housing to complete the intake (you need not use any seat or sealant).

## 3.6 WATER CONNECTIONS

### 3.6.1 Central heating connections

- Fit the two C.H. isolation valves using the gaskets supplied to the flow and return connections as shown in fig. 2. The pipe connections are labelled on the lower part of the boiler.

- Connect the C.H. pipework as required.

### 3.6.2 D.H.W. connections

- Fit the D.H.W. isolation valve to the cold water inlet connection as shown in fig. 2.
- Fit the union connection to the D.H.W. outlet.
- Connect the D.H.W. pipework as required.

## 3.7 GAS CONNECTIONS

- Screw the gas cock into the internal thread in the gas inlet connection using a suitable jointing compound.
- Connect the gas supply pipe.

## 3.8 SAFETY VALVE CONNECTION

- The appliance safety valve is located towards the R.H.S. of the boiler and the discharge pipe is supplied loose. Remove the two selftapping screws and lower the control box to improve access.
- Connect the discharge pipe to the valve outlet, and extend the pipe to ensure that any discharge from the safety valve is safely routed to a drain. The discharge pipe should be a minimum of 15 mm copper, and must avoid sharp corners or upward pipe runs where water may be retained.

## 3.9 WIRING INSTRUCTIONS

[Refer to sections 2.6 - 2.7 and fig. 20]

- Support the valve whilst tightening the nut and olive to avoid damage to the technil assembly.
- Disconnect the electric power supply before performing any work.
- Remove the three screws (9) locking the control panel in place and pull the panel forward until it can be tilted downward.
- To access the components of the electrical panel, unscrew the four screws holding the protective guard in place (6).

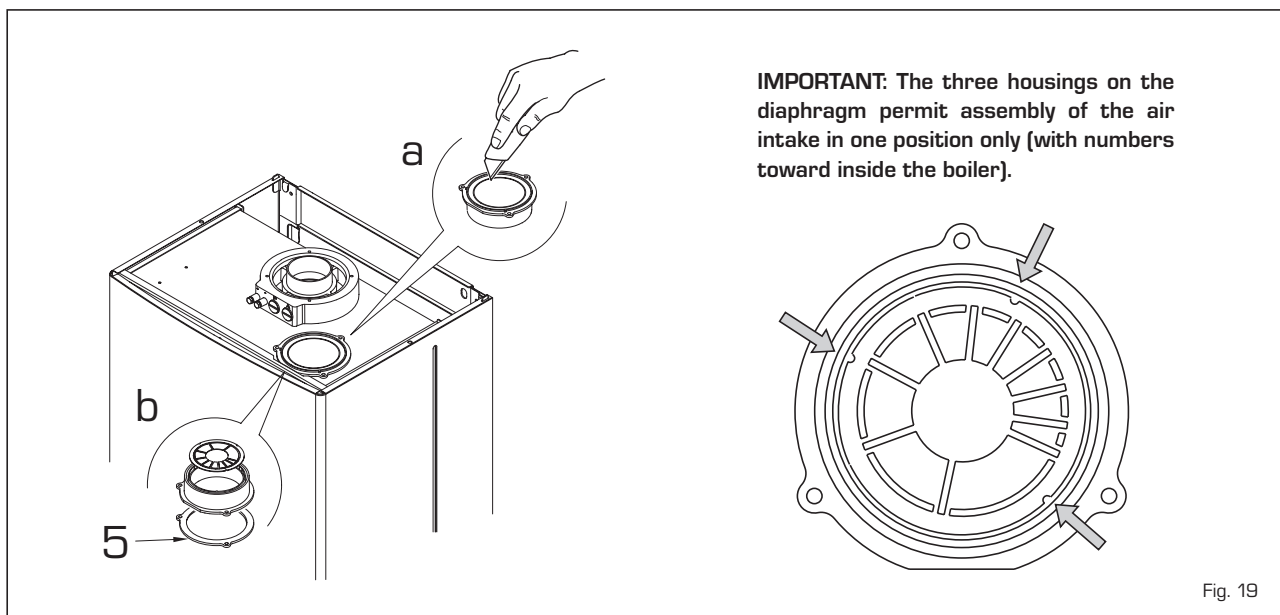


Fig. 19

- To gain access to connector "TA", remove the control panel cover (7) and connect the room stat to the terminals 10-11 after having removed the jumper.

**The thermostat or timer-thermostat, recommended for better room temperature control, must be class II as specified by standard EN 60730.1 (clean contact).**

- Carry out electrical system checks through a suitable test meter: earth continuity, polarity, resistance to earth and short circuit.
- Re-secure control box.
- Ensure sufficient length of cable to allow access to control panel.

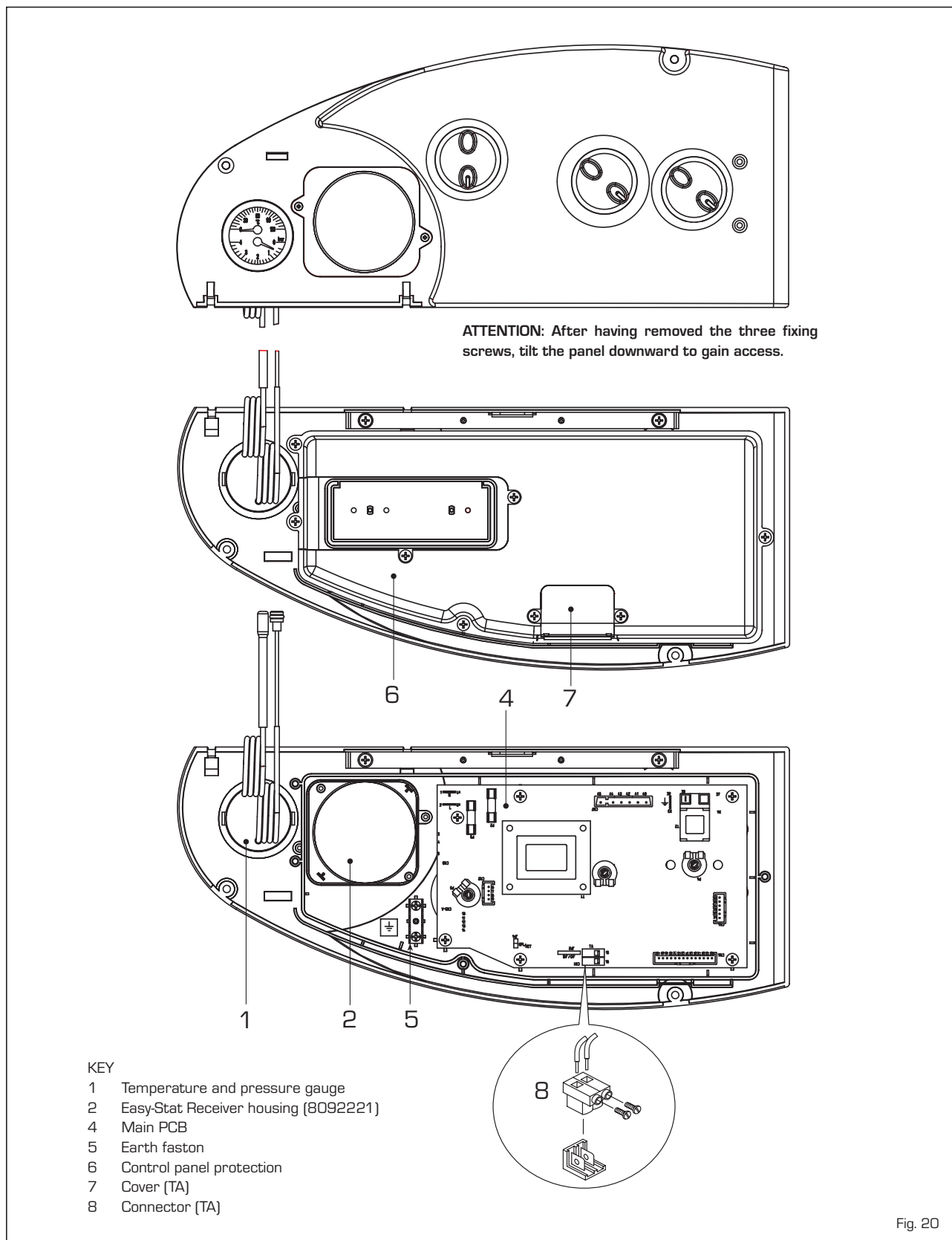


Fig. 20

## 4 COMMISSIONING AND TESTING

### SIME SUPPORT THE BENCHMARK INITIATIVE

All relevant sections of the logbook must be filled in at the time of installation and thereafter service information on the back page of the logbook. Commissioning of the boiler is not complete until the logbook is filled in.

Before commissioning the appliance, the whole gas installation including the meter **MUST** be purged and tested for gas soundness in accordance with BS6891.

**IMPORTANT:** 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 D.H.W. and C.H. isolation valves are in the closed position.**

#### 4.1 FILLING THE WATER SYSTEM

- Open the C.H. flow and C.H. return valves (20 - 19 fig. 2).
- Loosen the automatic air vent cap (11 fig. 2).
- Open all radiator valves and system air vents. Fill the system with water using one of the approved methods described in section 2.9 to about 0.5 bar greater than the system design pressure. Close all air vents. Do not close the A.A.V. the one near the pump!
- Check the system for water soundness.
- Completely drain the appliance and heating system, thoroughly flush the system, and refill the system design pressure to BS 7593.
- Open the D.H.W. inlet valve, open any hot tap, clear of air

bubbles. Close hot tap.

#### 4.2 COMMISSIONING THE BOILER

- Loosen the screw and connect a pressure gauge to the burner pressure test point on the gas valve (fig. 21).
- Ensure that the rotary switch on the facia panel is set to the summer position "☼" (D.H.W. Only), turn the D.H.W. thermostat to maximum (fully clockwise), and turn on the electrical supply. Fully open any D.H.W. tap and the burner will light.
- Allow the boiler to run for at least 5 minutes and check that the burner pressure is as stated in section 1.3. The D.H.W. burner pressure is factory set and should not require adjusting. If the burner pressure is low, check that the appliance has not begun to modulate (this will occur if the D.H.W. flow rate is low. If modulation is suspected, open all D.H.W. taps to maximise flow and recheck burner pressure). Check also the inlet pressure with the burner alight; this should be 20 mbar +/- 1.0 mbar standing pressure & the working inlet pressure limited to a loss no greater than 1.0 mbar for natural gas. If it is necessary to adjust the D.H.W. burner pressure the method is described in section 8.6.
- Reduce the D.H.W. draw off rate to the minimum necessary to maintain the burner alight by carefully adjusting the D.H.W. inlet valve and check that the burner pressure decreases in response to D.H.W. temperature rise. Fully open the inlet valve.
- Close the D.H.W. tap and ensure that the burner is extinguished and the pump stops.

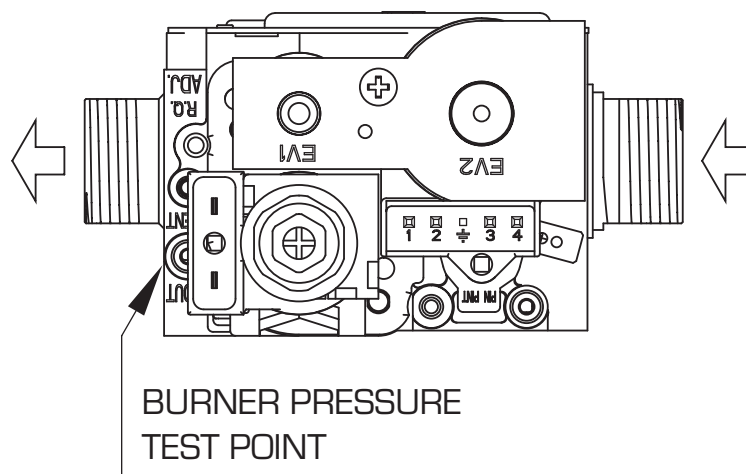


Fig. 21

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#### 4.5 FINAL CHECKS

- Re-light and test for gas soundness.
- Re-fit the casing front panel and securing brackets.
- Set the C.H. and D.H.W. potentiometers to the required settings.
- Ensure that the time clock is set at the desired time periods. Set the room thermostat (if fitted) to the required setting.

#### 4.6 USER'S INSTRUCTIONS

Upon completion of commissioning and testing the system, the installer should:

- Give the "Users Instructions" to the householder and

emphasise their responsibilities under the "Gas Safety (Installation and Use) Regulations 1996 (as amended)".

- 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 D.H.W. and C.H.
- 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 overheat thermostat, and how to reset it.

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.

## 5 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 registered personnel (C.O.R.G.I.). Before commencing any service operation, ISOLATE the mains electrical supply, and TURN OFF the gas supply at the main service cock. Service the appliance by following the full procedure detailed below.

### 5.1 MAIN BURNER ASSEMBLY

- Remove the casing as showed in fig. 23.
- Remove the 8 fixing screws securing the sealed chamber front panel then remove the panel.
- Unscrew the 7 screws securing the combustion chamber front panel and remove the panel, taking care not to damage the insulation.
- Remove the electrode by unscrewing it from the burner manifold.
- Unscrew the burner manifold union and locking nut. Lift the front of the burner to disengage manifold thread and then lift the burner clear.
- Remove the burner manifold by disconnecting the four screws.
- Inspect and if necessary, clean the injectors, electrodes, and the main burner bars.

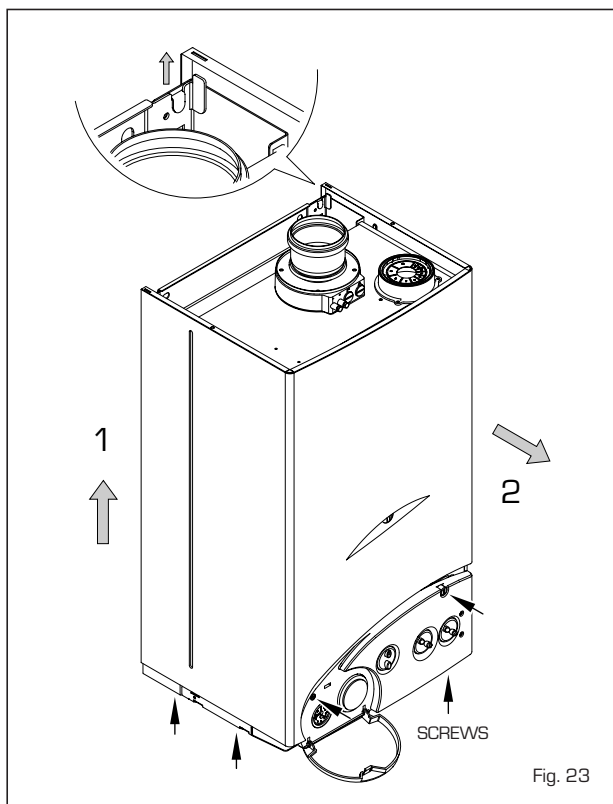


Fig. 23

### 5.2 FAN ASSEMBLY

- Disconnect the electrical connections to the fan. Note the position of the earth conductor.
- Remove the three screws securing the fan.

- Tilt the fan forwards and remove in a downwards direction.
- Inspect the fan assembly and clean if necessary.

### 5.3 BITHERMAL EXCHANGER

- Inspect the bithermal exchanger, and clean if necessary.

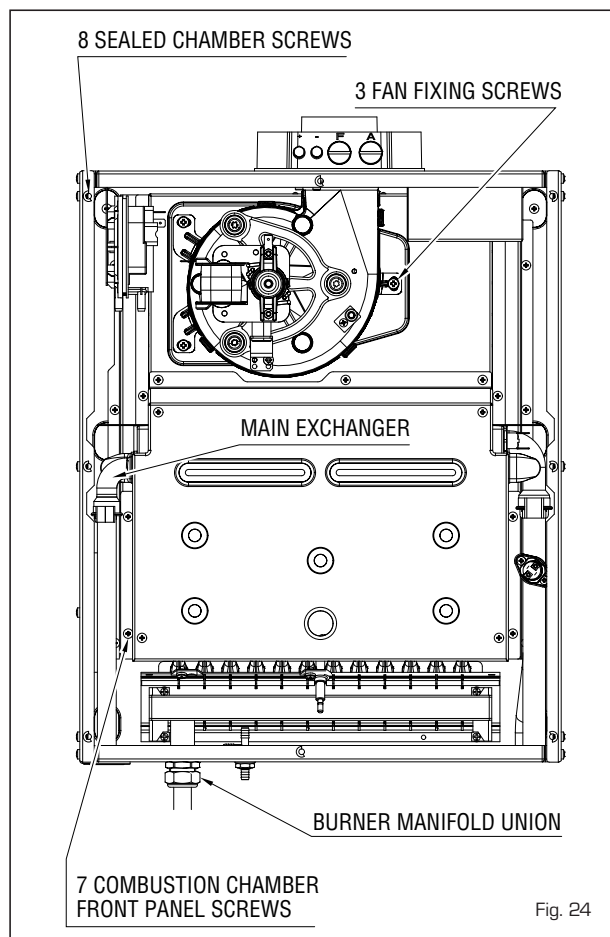


Fig. 24

### 5.5 CHIMNEY SWEEP FUNCTION (combustion analysis)

To carry out the verification of combustion in the boiler turn the selector and stop on the position ( ) until the green/orange led starts to flash intermittently. From that moment the boiler will start functioning in heating mode at the maximum power, with switching off at 80°C and restarting at 70°C.

**Before activating the chimney sweep function make sure that the radiator valves or eventual zone valves are open.**

The test may be carried out also during D.H.W. mode.

To do so it is enough, after having activated the chimney sweep function, to take some hot water from one or more outlets.

Even in this condition the boiler functions at the maximum temperature always with the primary controlled between 80°C and 70°C. During the entire duration of the testing the hot water taps must remain open.

After verifying the combustion the boiler should be switched off by placing the selector on the **OFF** position; then return the selector to the desired function.

---

**ATTENTION:** After about 15 minutes, or once the hot water request has been fulfilled, the chimney sweep function automatically deactivates.

## 5.6 RE-ASSEMBLY

- Re-assemble all the components in reverse order and replace all the gaskets fitted in the gas line.  
Ensure that all seals are correctly fitted and that the pressure sensing line is correctly fitted.  
Check that the fan earth connection is correctly re-fitted.  
Note that the fan polarity (Line and Neutral) is immaterial.
- Check for gas soundness before fitting the casing.

## 5.7 RE-COMMISSIONING

- Turn on the gas supply, and check for gas soundness whilst

the appliance is running.

- Check the operation of the appliance in both C.H. and D.H.W. mode and ensure in both cases that the burner pressure after at least 5 minutes running is as stated on the data plate or in *Table 3*.  
Adjust if necessary as described in section 8.

When any service or replacement of electrical components which has required the breaking and re-making of electrical connections has taken place, the following tests must be repeated:

- earth continuity;
- short circuit;
- polarity;
- resistance to earth.

## 6 FAULT FINDING

### 6.1 EARTH CONTINUITY CHECK

Appliances must be electrically disconnected, meter set on  $\Omega$  (ohm) x 1 scale and adjust zero if necessary. Tests leads from any appliance earth point (e.g. inside control box) see wiring diagrams (section 7) to earth pin on plug. Resistance should be less than  $1\Omega$  (ohm). If the resistance is greater than  $1\Omega$  (ohm) check all earth wires for continuity and all contacts are clean and tight. If the resistance to earth is still greater than  $1\Omega$  (ohm) then this should be investigated further.

### 6.2 SHORT CIRCUIT CHECK

Switches turned FULL ON - meter set on  $\Omega$  (ohms) x 1 scale. Test leads from L to N on appliance terminal block, if meter reads 0 then there is a short circuit. Meter set on  $\Omega$  (ohm) x 100 scale. Repeat it with leads from L to E. If meter reads less than infinity ( $\infty$ ) there is a fault.

**NOTE:** Should it be found that the fuse has failed but no fault is indicated, a detailed continuity check (i.e. by disconnecting and checking each component) is required to trace the faulty component.

It is possible that a fault could occur as a result of local burning/arcing but no fault could be found under test. However, a detailed visual inspection should reveal evidence of burning around the fault.

### 6.3 POLARITY CHECK

Appliance reconnected to mains supply and meter set on 300 V ac scale. Test at appliance terminal block.

- Test leads from L to N meter reads approx.: 240 V ac.
- Test leads from L to E " $\frac{1}{2}$ " meter reads approx. 240 V ac.
- Test leads from N to E " $\frac{1}{2}$ " meter reads from 0 to 15 V ac.

### 6.4 RESISTANCE TO EARTH CHECK

Appliance must be disconnected from main supply and meter on  $\Omega$  (ohm) x 100 scale.

All switches including thermostat on test leads from L to E - if meter reads other than infinity ( $\infty$ ) there is a fault which should be isolated. A detailed continuity check is required to trace the faulty component.

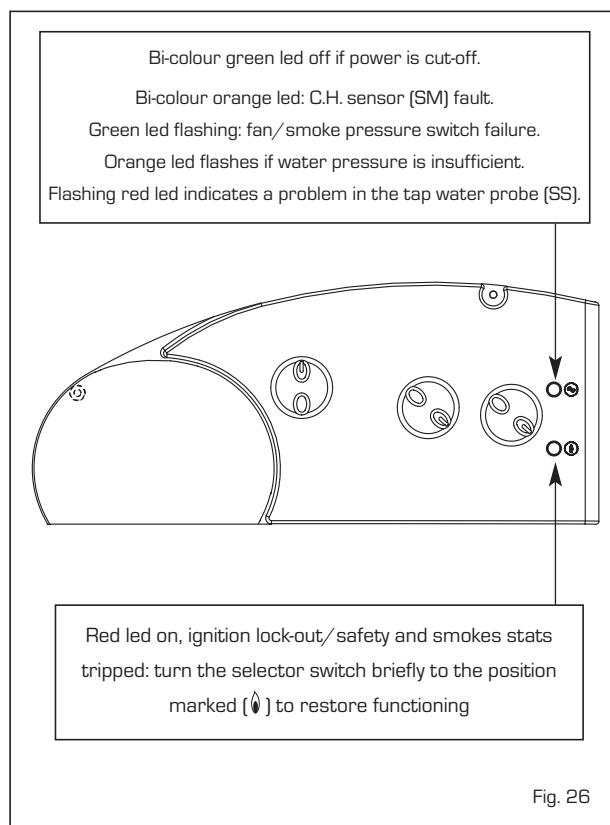
#### IMPORTANT:

These series of checks are the first electrical checks to be carried out during a fault finding procedure. On completion of the service/fault finding task which has required the breaking and remaking of electrical connections then the checks 6.1 Earth continuity, 6.3 Polarity and 6.4 Resistance to earth must be repeated.

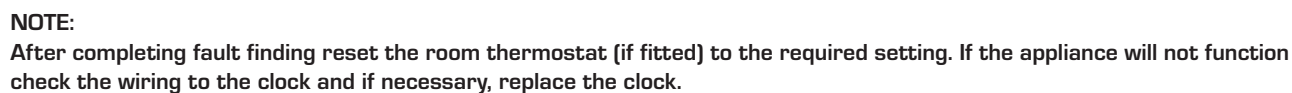
### 6.5 FAULT FINDING LEDS

The indicator leds signalling irregular and/or incorrect operation of the equipment are indicated in fig. 26.

Before commencing any service operation, ISOLATE the mains electrical supply, and TURN OFF the gas supply at the main service cock. It is the law that any service work must be carried out by registered personnel (C.O.R.G.I.).



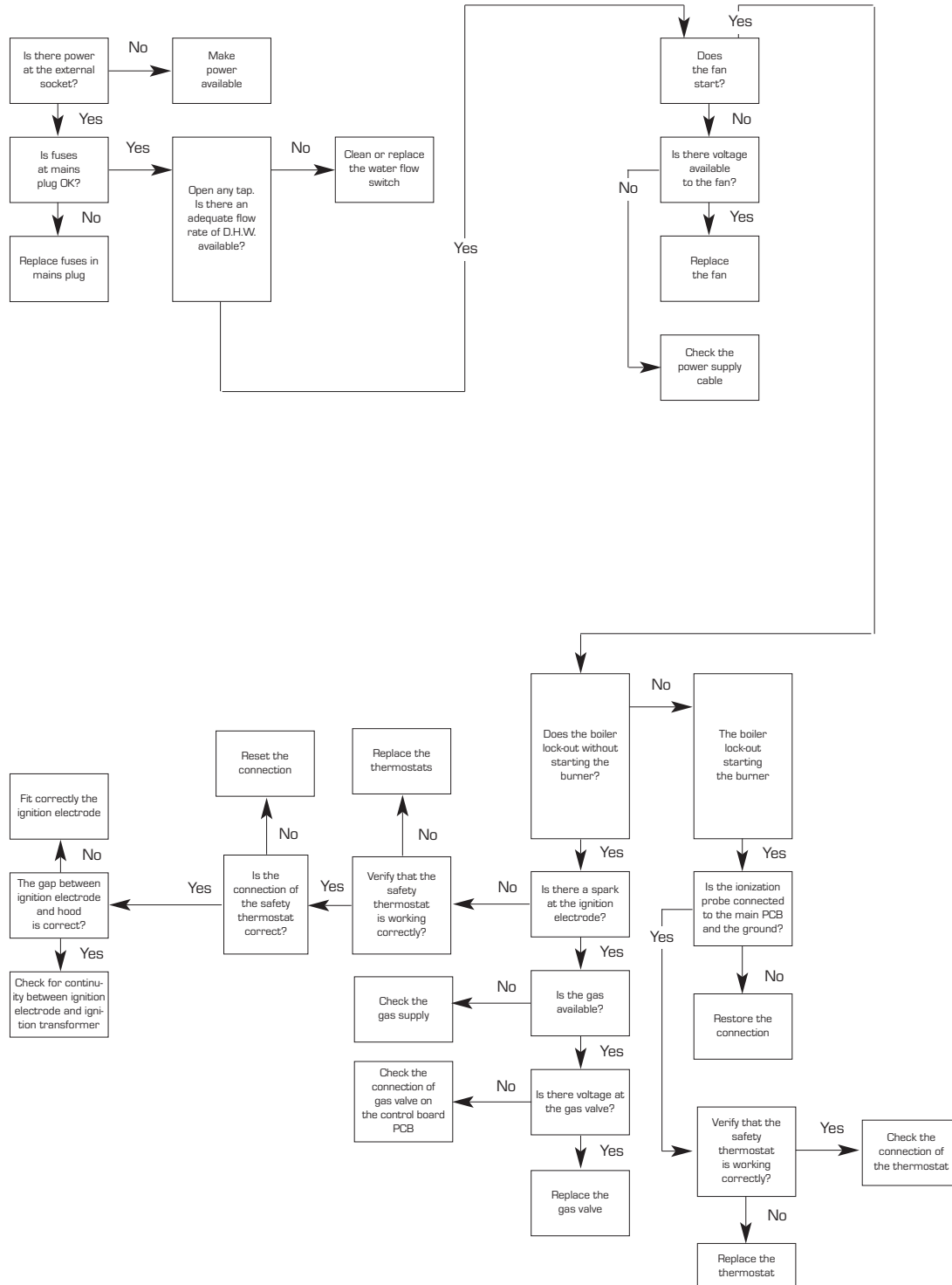
Start from cold    Rotary switch set to WINTER position.  
                          Room thermostat (if fitted) calling for heat and all D.H.W. taps off.  
                          C.H. thermostat set to maximum position.  
                          Clock in the on position.





## 6.7 D.H.W. MODE - FAULT FINDING

Start from cold - rotary switch set to SUMMER position, D.H.W. thermostat set to maximum, and all D.H.W. taps OFF.



## 7 WIRING & FUNCTIONAL DIAGRAMS

### 7.1 ILLUSTRATED FLOW WIRING DIAGRAM

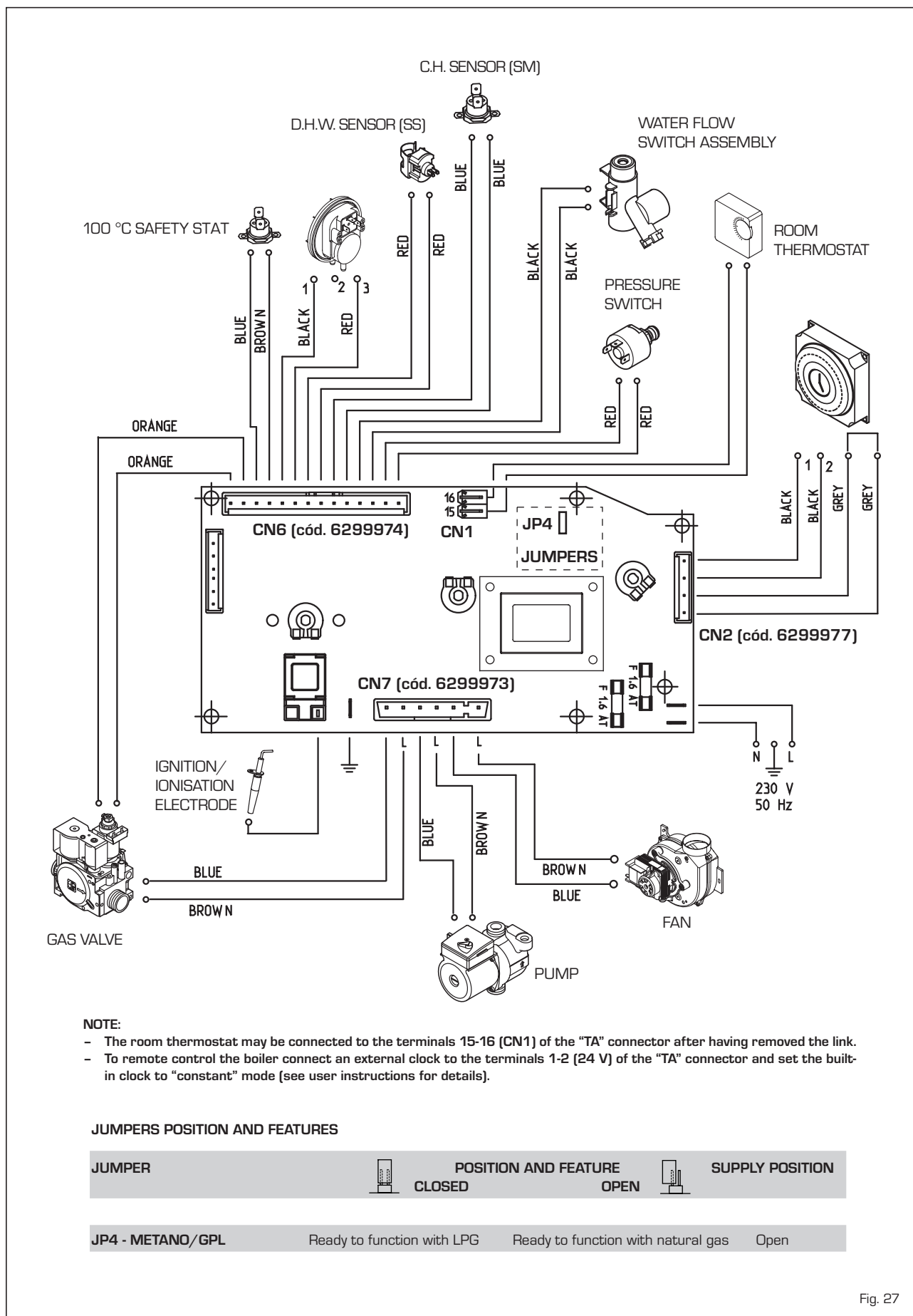


Fig. 27

## 8 REPLACEMENT OF PARTS

### 8.1 BITHERMAL EXCHANGER

- Remove the fan as described in section 8.3.
- Disconnect the pressure sensing pipe from the flue box, lift the collector hood assembly, tilt forwards, and remove the hood.
- Isolate the C.H. flow and return valves.
- Drain the bithermal exchanger using the drain cock (at the bottom RHS of the appliance)
- Unclip the bithermal exchanger securing clips and unscrew completely the expansion vessel nut.
- Disconnect the pipes from the exchanger and lift out the heat exchanger.
- Re-assemble in reverse order, ensuring that the bithermal exchanger seals and clips are correctly located and that the pressure sensing pipe is correctly re-fitted. The fan polarity is not important except the earth conductor (G/Y which is marked on the appliance).
- Refill, and re-commission the system as described in section 4.

### 8.2 COMBUSTION CHAMBER INSULATION

The design of this appliance is such that the rear and side insulation should not require replacement unless mechanically damaged.

**IMPORTANT: When handling insulation panels, take care to avoid producing or inhaling dust particles. When removing old or damaged insulation panels, dampen with water to minimise dust.**

To replace the insulation front panel, proceed as follows:

- remove the combustion chamber front panel as described in section 5.1;
- replace the front insulation panel and glue it into position on the front panel using the glue supplied. Re-assemble in reverse order.

Should the rear or side panels become damaged, replace them as follows.

- remove the heat exchanger as described in section 8.1;
- remove the side insulation panels followed by the rear panel;
- re-assemble in reverse order; refill, and re-commission the system as described in section 4.

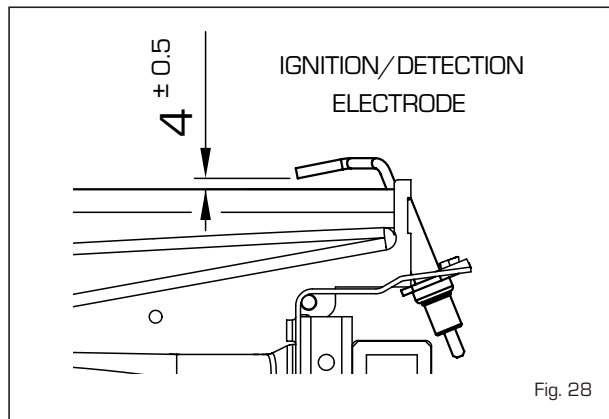
### 8.3 FAN ASSEMBLY

- Remove the casing front panel and sealed chamber front panel as described in section 5.1.
- Disconnect the electrical connections and the pressure sensing pipes to the fan. Note the position of the earth conductor.
- Unscrew the three screws securing the fan.
- Drop and tilt the fan forwards and remove in a downwards direction.
- Re-assemble in reverse order. Ensure that the earth connection is correctly refitted. Note that the polarity (Line and Neutral) is immaterial.

### 8.4 MAIN BURNER

- Remove the main burner by following section 5.1.

- Transfer the ignition electrode onto the new burner assembly.
- Re-assemble in reverse order. Check the electrode gaps (fig. 28) and test for gas soundness.
- Re-commission the appliance as described in section 4.



### 8.5 IGNITION/DETECTION ELECTRODE

- Remove the casing front panel and sealed chamber front panel as described in section 5.1.
- Unscrew the single screw securing the electrode in position, and release the electrode from the burner.
- Remove the electrode and disconnect its cable from the ignition transformer.
- Replace the electrode and re-assemble in reverse order.

### 8.6 GAS VALVE

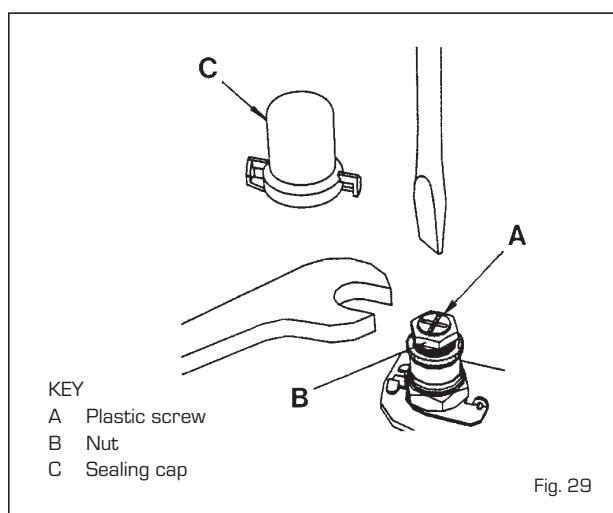
- Remove the casing front panel as described in section 5.1.
- Disconnect the two leads from the modulating solenoid and disconnect the valve connector (one screw).
- Unscrew the nut between the inlet pipe and the valve.
- Unscrew the burner manifold nut underneath the sealed chamber, and withdraw the gas valve complete with outlet pipe.
- Transfer the outlet pipe onto the new gas valve, using a new gasket (supplied with the valve).
- Fit the new gas valve assembly into the appliance using the other new gasket supplied on the valve inlet, and re-assemble in reverse order.
- Re-light the appliance, check for gas soundness, and re-commission in accordance with section 4.

In addition it will be necessary to set the D.H.W. and C.H. heat inputs, with reference to fig. 29, as follows:

Note that it is necessary to set the **MAXIMUM PRESSURE FIRST**.

- Connect a pressure gauge to the burner pressure test point.
- Remove the sealing cap of the proportioning unit (C) by rotating it/turn anticlockwise.
- Adjust DHW potentiometer to maximum, then fully open any DHW tap to light the boiler.
- Using a 10 mm spanner, turn nut (B) to attain the maximum pressure in *Table 3*.  
Turn the nut clockwise to increase or anti-clockwise to decrease the burner pressure.

- Turn the main selector switch on and off a few times (with the hot tap still open) and check that the pressure returns to the correct (set) maximum value (as in *Table 3*).
- Set the minimum burner pressure by first isolating the electricity supply and disconnecting one of the modulating solenoid leads, then restore the electricity supply and fully open a DHW tap to light the appliance at minimum gas rate.
- Set the minimum pressure with reference to *Tables 3* by holding nut (B) in position with a 10 mm spanner and rotating the plastic screw (A) with a screwdriver until the correct pressure is obtained. Turn the screw clockwise to increase the pressure or anti-clockwise to decrease it. It is essential that the max pressure has been set prior to adjusting the minimum pressure. Check that the minimum pressure is correctly set by turning on and off the D.H.W. inlet valve several times and ensuring that the pressure returns to that previously adjusted;
- Isolate the power supply, re-connect the modulation lead, restore the power and re-check the maximum pressure, then re-fit the plastic cover (1).
- Reduce the D.H.W. draw off rate to the minimum necessary to maintain the burner alight by carefully adjusting the D.H.W. Inlet valve and check that the burner pressure decreases in response to D.H.W. temperature rise. Fully open the inlet valve;
- Close the D.H.W. tap and ensure that the burner is extinguished and the pump stops.
- Adjust the Central Heating maximum pressure as described in section 4.3, then complete the re-commissioning as described in 4.4 and 4.5.



## 8.7 AIR PRESSURE SWITCH

- Remove the casing front panel and sealed chamber front panel as described in section 5.1.
- Disconnect the pressure sensing pipe from the switch.
- Remove the switch (two screws) and fit the new one.
- Transfer the electrical connections one at a time (to ensure that they are not incorrectly re-fitted) to the new switch.
- Re-assemble in reverse order referring to the wiring diagrams (section 7) if necessary. Ensure that the pressure sensing lead is correctly connected to the low pressure connection on the pressure switch (marked P2).

## 8.8 SAFETY THERMOSTAT

The safety thermostat is situated on the flow pipe (3 fig. 3).

- Remove the casing front panel as described in section 5.1.
- Disconnect the two limit thermostat wires.
- Unscrew the two limit thermostat fixing screws and remove the thermostat.
- Replace the thermostat and spread heat sink compound (supplied) over the base of the new one.
- Re-assemble in reverse order (Polarity is immaterial).

## 8.9 THERMISTOR

The thermistor is placed over the main exchanger:

- Remove the casing front panel as described in section 5.1.
- Isolate the C.H. flow and return valves (20 - 19 fig. 2), and drain the appliance through the drain plug (16 fig. 2).
- Pull off the electric connection, and unscrew the thermistor from the exchanger.
- Replace the thermistor and re-assemble in reverse order.

*Table 8* shows the resistance values ( $\Omega$ ) that are obtained on the sensor as the temperature varies.

TABLE 8

Temperature ( $^{\circ}\text{C}$ )	Resistance ( $\Omega$ )
20	12,090
30	8,313
40	5,828
50	4,161
60	3,021
70	2,229
80	1,669

## 8.10 DRIVER PCB

- Remove the casing front panel as described in section 5.1.
- Open the control panel protecting cover by removing the four fixing screw.
- Pull off the potentiometer knobs.
- Release the PCB (6 screws), transfer all connections onto the new PCB, and re-assemble in reverse order.

## 8.11 PUMP MOTOR

- Remove the casing front panel as described in section 5.1.
- Unplug the electrical connection plug.
- Isolate the C.H. flow and return valves (20 - 16 fig. 2), and drain the appliance through the drain plug (16 fig. 2).
- Unscrew the four fixing screws on the motor.
- Replace the pump motor and re-assemble in reverse order. If the new pump is fitted with a speed adjuster, ensure that the speed is set to maximum.
- Refill and commission the system as described in section 4.1.

## 8.15 C.H. EXPANSION VESSEL

Replacement is not recommended if a rear flue outlet is used or if the clearance above the casing is less than 300 mm.

- Remove the casing front panel as described in section 5.1.

- Isolate the C.H. flow and return valves (20 - 19 fig. 2), and drain the appliance through the drain plug (16 fig. 2).
- Unscrew the expansion vessel union on the C.H. return pipe.
- If a rear flue outlet is used it is necessary to disengage the flue and air duct temporarily. Refer to section 3.5.
- Remove the adjusting screws on the wall mounting bracket thereby allowing the appliance to move slightly forwards at the top.
- Lift the expansion vessel out of the appliance through the top.
- Replace the expansion vessel and re-assemble in reverse order. Re-pressurise and re-commission the system as described in section 4.1.

#### **8.16 PRESSURE/TEMPERATURE GAUGE**

- Remove the casing front panel as described in section 5.1.
- Isolate the C.H. flow and return valves (20 - 19 fig. 2).
- Drain the appliance through the drain point (16 fig. 2).
- Remove the circlip securing the pressure sensor to the hydraulic group and pull out the sensor.
- Remove the fixing spring of the thermometer bulb from the C.H. flow pipe.
- Squeeze the gauge to depress the retaining clips, then ease the gauge forwards.
- Reassemble in reverse order.  
Refill and re-commission the system as described in section 4.1.

#### **8.17 SAFETY VALVE**

- Remove the casing front panel as described in section 5.1.

- Isolate the C.H. flow and return valves (20 - 19 fig. 2).
- Drain the appliance through the drain point (16 fig. 2)
- Remove the circlip securing the valve to the hydraulic group and remove the valve.
- Fit the new safety valve and re-assemble in reverse order. Refill and re-commission the system as described in section 4.1.

#### **8.18 AUTOMATIC AIR VENT**

- Remove the casing front panel as described in section 5.1.
- Isolate the C.H. flow and return valves (20 - 19 fig. 2).
- Drain the appliance through the drain point (16 fig. 2).
- Remove the circlip securing the automatic air vent to the hydraulic group.
- Fit the new automatic air vent and re-assemble in reverse order. Refill and re-commission the system as described in section 4.1.

#### **8.19 TIME CLOCK**

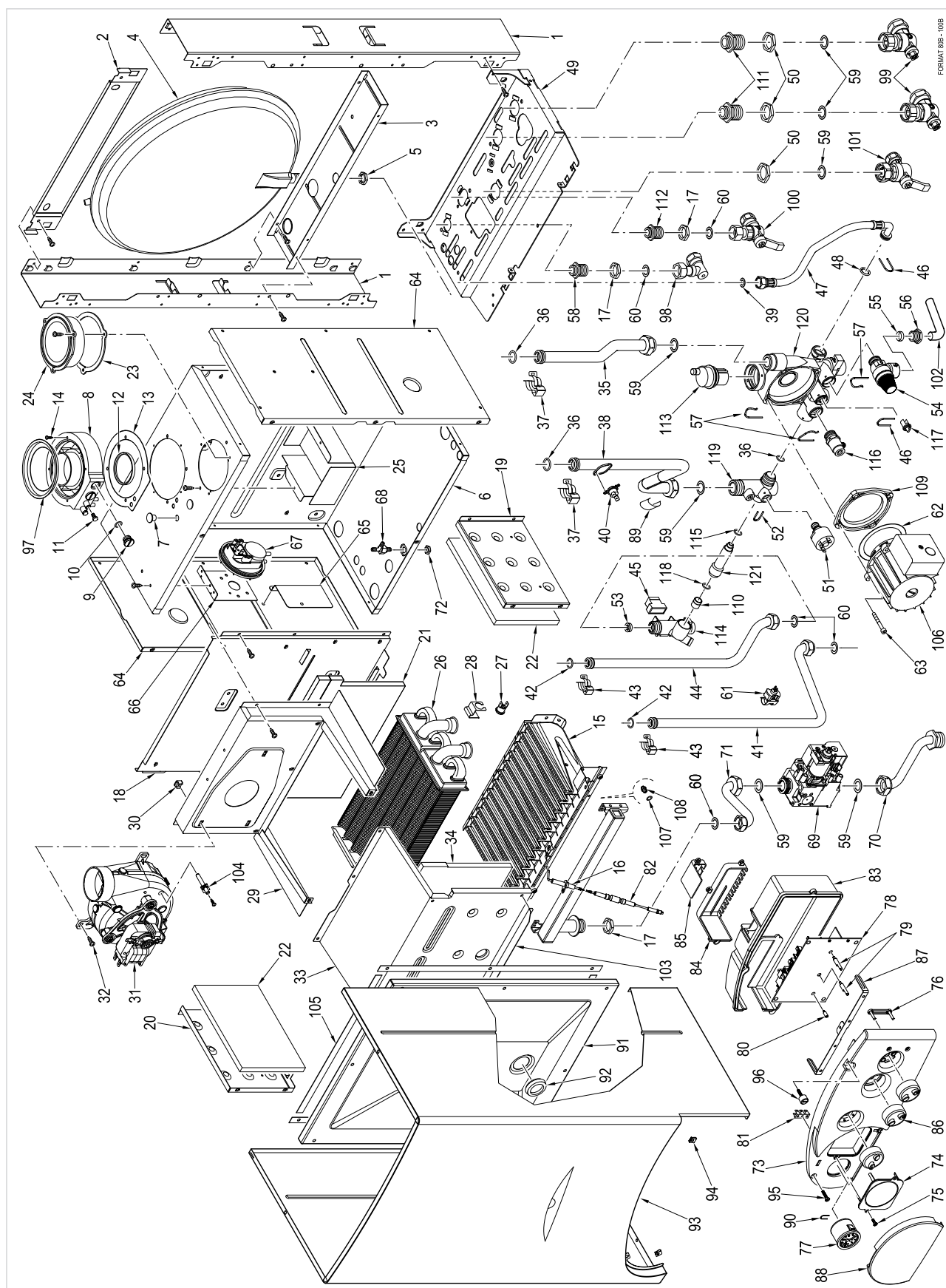
- Pull off the electrical connections at the back of the clock.
- Remove the two screws securing the plastic frame of the time clock to the fascia panel.
- Remove the plastic frame and pull out the time clock.
- Re-assemble in reverse order and test the operation of the new clock.
- Set it to the desired settings as described in section 4.3.

## 9 EXPLODED VIEWS

COD. **3820086/293**

TYPE **FORMAT 80B - 100B**

DATE **03.04.2007** PAGE **1/4**



POSITION	CODE	DESCRIPTION	MODEL	NOTE
1	6138570	Side frame part		
2	6138770	Frame assembly upper support		80
2 A	6138771	Frame assembly upper support		100
3	6255430	Expansion vessel lower support		80
3 A	6255431	Expansion vessel lower support		100
4	• 5139140	Expansion vessel I.7 - 3/8" M		80
4 A	• 5139130	Expansion vessel I.8 - 3/8" M		100
5	6146305	Brass Nut 3/8"		
6	6288105	Sealed chamber rear panel		80
6 A	6288115	Sealed chamber rear panel		100
7	6119313	Plastic cap		
8	6287900	Air/smoke manifold		
9	6147406	Air/smoke manifold plug M14x1.5		
10	• 6226417	O-ring 3043		
11	6242602	Air/smoke manifold screw		
12	6248803	Lip seal for Ø 60 pipe		
13	6028706	Air/smoke manifold gasket		
14	2000716	Screw T.C.B. M4x8		
15	5190700	Main burner assembly		80
15 A	5190752	Main burner assembly		100
16	• 6235931	Ignition-ionisation electrode		
17	6146301	Brass nut 1/2"		
18	6288415	Combustion chamber rear panel		80
18 A	6288416	Combustion chamber rear panel		100
19	6288500	Combust. chamber right hand side panel		80
19 A	6288510	Combust. chamber right hand side panel		100
20	6288600	Combust. chamber left hand side panel		80
20 A	6288610	Combust. chamber left hand side panel		100
21	6139789	Combustion chamber rear insulation		80
21 A	6139790	Combustion chamber rear insulation		100
22	6139774	Combustion chamber side insulation		80
22 A	6139792	Combustion chamber side insulation		100
23	6028707	Air intake gasket		
24	6288000	Air intake		
25	6257512	Air deflector for separate ducts		
26	6174249	Gas/Water heat exchanger		80
26 A	6174250	Gas/Water heat exchanger		100
27	6231356	Temperature sensor		

• Recommended stock parts

POSITION	CODE	DESCRIPTION	MODEL	NOTE
28	6272504	Temperature sensor fixing spring		
29	5190601	Smoke chamber assembly		80
29 A	5190611	Smoke chamber assembly		100
30	2016020	Locked nut M4		
31	• 6225632	Fan		80
31 A	• 6225624	Fan		100
32	2000715	Screw TCB M4x10 AISI 304		
33	6288701	Combustion chamber front panel		80
33 A	6288711	Combustion chamber front panel		100
34	6139787	Combustion chamber side insulation		80
34 A	6139788	Combustion chamber side insulation		100
35	6264836	C.H. return pipe		80
35 A	6264837	C.H. return pipe		100
36	• 6226412	O-ring 3068		
37	• 6226601	Spring for heat exchanger connection		
38	6264767	C.H. flow pipe		80
38 A	6264768	C.H. flow pipe		100
39	2030226	Gasket Ø 10,2x14,8x2		
40	• 6146701	100°C safety stat		
41	6227012	D.H.W. outlet pipe		80
41 A	6227013	D.H.W. outlet pipe		100
42	• 6226444	O-Ring Ø 13,64x 2,62		
43	• 6226617	Spring for heat exchanger connection		
44	6227111	D.H.W. inlet pipe		80
44 A	6227112	D.H.W. inlet pipe		100
45	6131430	Magnetic sensor		
46	6226612	Pipe fixing double spring		
47	6017310	Flexible pipe		
48	6226414	O-ring 117 Ø 13,1x2,62 EP851		
49	6138870	Frame assembly lower side		80
49 A	6138880	Frame assembly lower side		100
50	6146302	Brass nut 3/4"		
51	• 6037504	Water pressure switch		
52	6226611	Water rate adjuster fixing spring		
53	6281410	Water rate adjuster 11 l/min		80
53 A	6281411	Water rate adjuster 15 l/min		100
54	• 6040201	Pressure relief valve		
55	6100202	Ogive for pipe Ø 15		



POSITION	CODE	DESCRIPTION	MODEL	NOTE
56	6168401	Locking nut for pipe Ø 15		
57	• 6226602	Pipe fixing spring		
58	6120510	Nipple 1/2"x1/2" OT		
59	2030228	Gasket Ø 17x24x2		
60	2030227	Gasket Ø 12x18x2		
61	• 6231357	D.H.W. temperature sensor		
62	6028705	Gasket EP709 for Dab		
63	2000201	Screw M5x40		
64	6288200	Sealed chamber side panel		
65	6215220	Cables protection bracket		
66	6229101	Smoke pressure switch bracket		
67	6225724	Air pressure switch 52-62 Pa		
67 A	• 6225710	Air pressure switch 35-45 Pa		80
68	6280500	3-ways junct. with press. test nipple		100
69	6243820	SIT gas valve type 845 SIGMA		
70	6226873	Gas inlet pipe		
71	6226952	Pipe connecting gas valve-main burner		
72	6146303	Brass Nut 1/8"		
73	6289817	Control panel		
74	6247360	Cap for time programmer		
75	2005201	Screw "H-LO" TSP 3x12		
76	6273210	Guidelight - 2 ways out		
77	6217005	Temperature and pressure gauge		
78	6230630	Main P.C.B.		
79	• 6201505	Trimmer spindle Ø 6		
80	• 6201502	Trimmer spindle Ø 6		
81	2211610	Earth faston		
82	• 6269810	Ignition cable		
83	6289900	Control panel protecting cover		
84	6290300	Control panel cable cover		
85	6290200	Room stat connection cover		
86	6290100	White knob Ø 40		
87	6009585	Control panel bracket		
88	6290015	Flap door		
89	2051100	Retaining spring		
90	6226605	Fixing spring		
91	6288300	Sealed chamber front panel		80
91 A	6288310	Sealed chamber front panel		100

POSITION	CODE	DESCRIPTION	MODEL	NOTE
92	6001210	Peephole		
93	6287321	Casing		80
93 A	6287331	Casing		100
94	2013302	Fastener for self tapping screw		
95	2004510	Screw 8Px7/8"		
96	6112420	Control panel screw		
97	• 6028623	Air diaphragm Ø 86		
98	6142330	Quarter bend 1/2" x 15		
99	6177505	Ball cock 3/4" x 22		
100	6177506	Ball cock 1/2" x 15		
101	6177530	Gas cock 3/4" F x 15		
102	6157602	Pressure relief valve drain pipe		
103	6257523	Air deflector		100
104	6263911	Fan pressure test point		80
104 A	6263906	Fan pressure test point		100
105	5192200	Gasket for sealed chamber		
106	• 5192600	Dab VA55 pump kit		80
106 A	• 5192601	Dab VA65 circulating pump kit		100
107	6022004	Copper washer Ø 6		
108	6154402	Main burner nozzle NP 130 natural gas		
108 A	6154410	Main burner nozzle NP 77 GLP		80
108 B	6154406	Main burner nozzle NP 0.80		100
109	6281521	Flange + OR for Dab pump		
110	• 6228050	No-return valve		
111	6281500	Straight fitting 3/4"		
112	6281501	Straight fitting 1/2"		
113	• 6013101	Automatic air vent		
114	• 6149312	Flow water switch assembly		
115	6226446	O-ring Dalmar R7		
116	• 6017250	Manual air vent 1/4"		
117	6296916	By-pass		
118	• 6226421	O-ring Dalmar R12		
119	6281529	Flow manifold group + OR		
120	6281530	Flow/return manifold group		
121	6301900	Flow water switch-flow manifold pipe		
	5187352	Technyl hydraulic group		
	5191210	Control panel assembly		

• Recommended stock parts



POSITION	CODE	DESCRIPTION	MODEL	NOTE	POSITION	CODE	DESCRIPTION	MODEL	NOTE
	6127210	Main cable L=2000							
	6299973	14 pole Lumberg cable connector CN6							
	6299974	6 pole Stocko connector CN7							
	6299977	4 pole Lumberg cable connector CN2							
	• 5144712	Conversion kit to LPG		80					
	• 5144716	Conversion kit to LPG		100					
	• 6233500	Fuse 1.6A main P.C.B.							
	5184817	Fitting cocks kit							
Products reference:									
	8105400:	Format 80B Natural gas							
	8105401:	Format 80B L.P.G.							
	8105402:	Format 100B Natural gas							
	8105403:	Format 100B L.P.G.							
Check the correspondence with the boiler data plate.									

• Recommended stock parts

## GAS CONVERSION

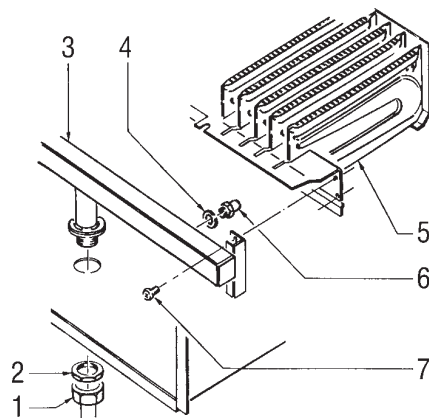
A kit is supplied upon request complete with the necessary change-over materials for operation with butane gas (G30) or propane gas (G31). Operate in the following manner for changing over from one gas to another:

- Close the gas cock.
- Slide out the burner unit.
- Replace the main nozzles (6) supplied in a kit, inserting the copper washer (4). Use a  $\varnothing 7$  spanner to perform this operation.
- Remove the "MET/GPL" connector link on the main board and set it on "GPL".
- To set the values of maximum and minimum gas pressure, follow the instructions given in section 8.6.

**When the working pressures have been adjusted, reseal the regulators.**

- After the conversion of the boiler, please stick onto the casing panel the plate showing the relevant feeding gas which is included in the kit.

**NOTE: When reassembling components which you have removed, replace gas seals; test all gas connections after assembly using soapy water or a product made specifically for the purpose, being sure not to use open flame. Conversion must be performed by authorised personnel only.**



### KEY

- 1 Swivel connection 1/2"
- 2 Locknut 1/2"
- 3 Burner manifold
- 4 Washer  $\varnothing 6.1$
- 5 Burners
- 6 Nozzle M6
- 7 Screw





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