

PLEASE LEAVE THIS INSTRUCTION
WITH THE USER

GB

Format System

*Installation and
servicing instructions*



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

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PRODUCT

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GASTEC

A stylized graphic element consisting of two overlapping, curved, grey shapes that resemble a swoosh or a stylized 'S' or 'Z' shape, positioned above the word "sime".
sime®



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 customer been fully advised on the correct use of the boiler, system and controls?
- Has the log book provided been completed?

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1 TECHNICAL FEATURES AND DIMENSIONS

1.1 INTRODUCTION

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

The appliance is supplied suitable for use with natural gas, LPG and provide central heating. Heat output is varied according to demand by the modulating gas control.

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 240V room thermostat (class II according to EN 60730.1). This booklet provides instructions for the boiler models: "FORMAT SYSTEM 24" - "FORMAT SYSTEM 30" with following features:

- electronic ignition,
- fully modulating,
- built in mechanical time clock.

1.2 DIMENSIONAL DETAILS

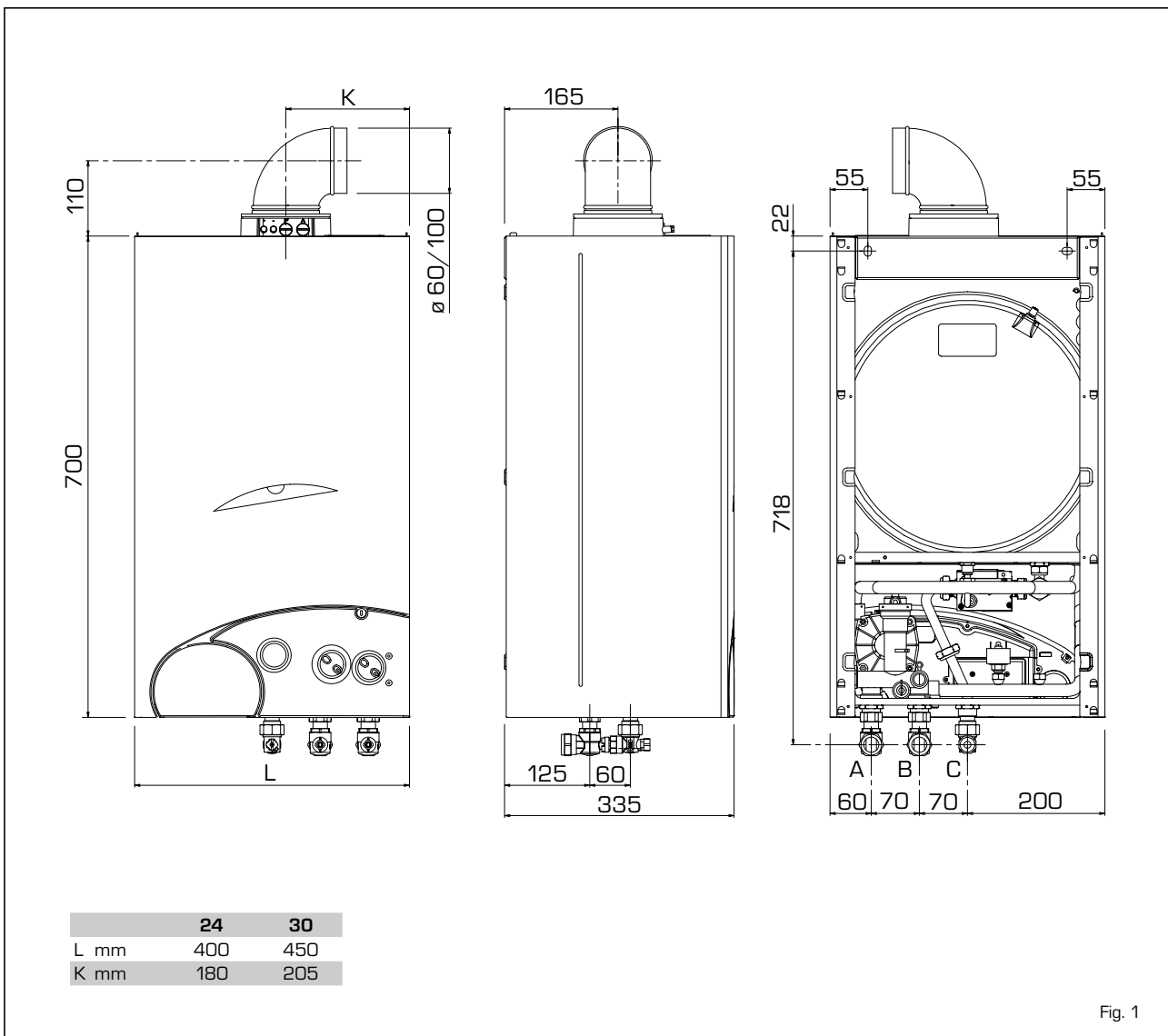


Fig. 1

TABLE 1 - Connections

A	C.H. return	22 mm	Compression
B	C.H. flow	22 mm	Compression
C	Gas connection	1/2 in	Bsp

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

TABLE 3a - Nominal boiler ratings (5 minutes after lighting) for "FORMAT SYSTEM 24"

MODE	OUTPUT		INPUT (G.C.V.)		BURNER PRESS. (Nat. gas)		BURNER PRESS. (Butane/Propane)	
	kW	Btu/h	kW	Btu/h	mbar	inwg	mbar	inwg
CENTRAL HEATING RANGE	9.0	31,000	12.0	42,000	2.4	0.9	5.9/7.7	2.4/3.1
	10.6	36,000	14.1	48,000	3.2	1.3	7.9/10.3	3.2/4.1
	12.3	42,000	16.2	55,000	4.1	1.7	10.2/13.2	4.1/5.3
	14.1	48,000	18.2	62,000	5.2	2.1	12.7/16.3	5.1/6.5
	X* (G20-G31)	15.9	54,000	20.3	69,000	6.3	2.5	15.4/19.6
X* (G30)	17.7	60,000	22.4	76,000	7.5	3.0	18.4/23.2	7.4/9.3
	19.6	67,000	24.5	84,000	8.9	3.6	21.5/26.9	8.6/10.8
	21.5	73,000	26.6	90,000	10.3	4.1	24.8/30.8	10.0/12.4
	23.4	80,000	28.7	98,000	11.8	4.7	28.5/36.5	11.4/14.7

* Factory setting

TABLE 3b - Nominal boiler ratings (5 minutes after lighting) for "FORMAT SYSTEM 30"

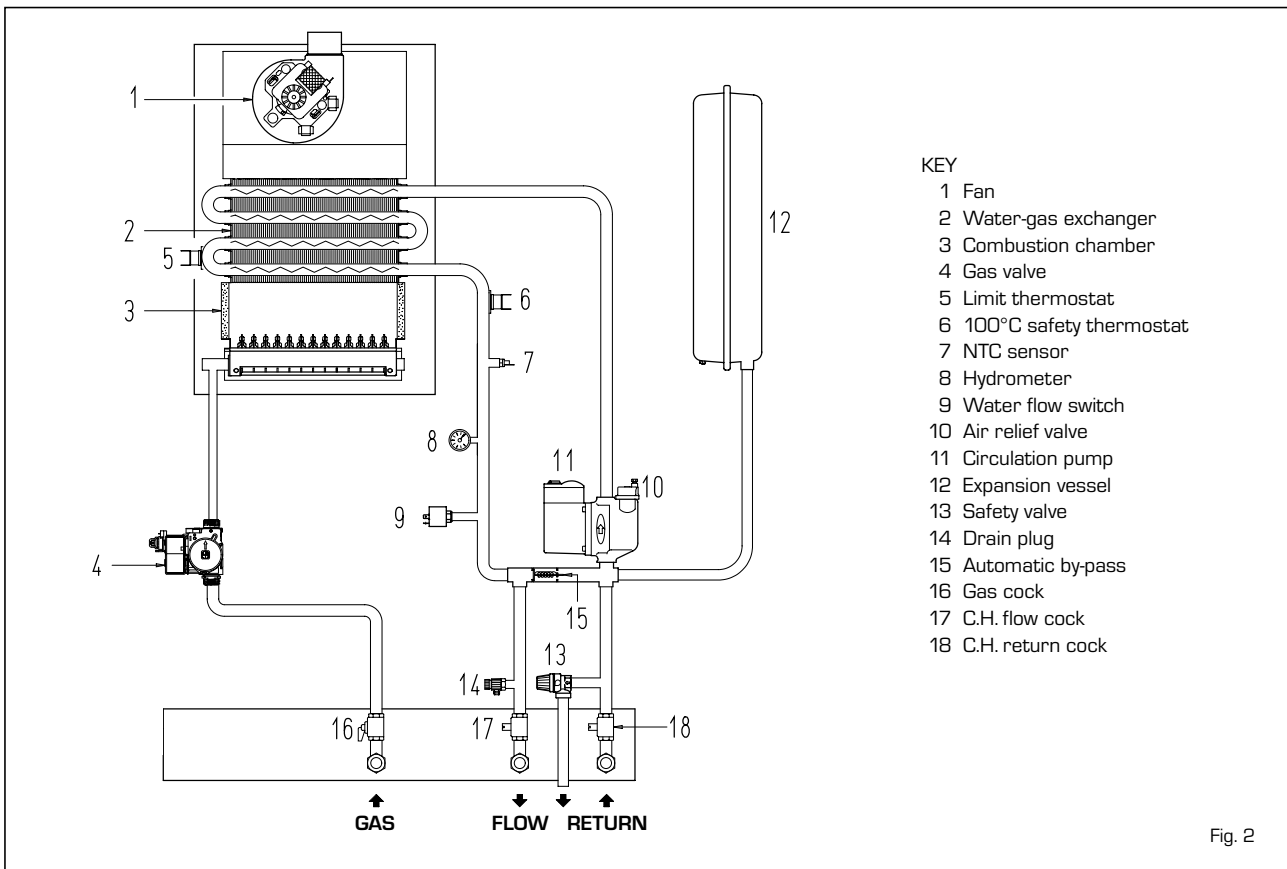
MODE	OUTPUT		INPUT (G.C.V.)		BURNER PRESS. (Nat. gas)		BURNER PRESS. (Butane/Propane)	
	kW	Btu/h	kW	Btu/h	mbar	inwg	mbar	inwg
CENTRAL HEATING RANGE	11.4	39,000	15.0	51,000	2.6	1.0	5.5/7.1	2.2/2.9
	13.5	46,000	17.5	60,000	3.5	1.4	7.4/9.4	3.0/3.8
	15.6	53,000	20.0	68,000	4.5	1.8	9.7/12.1	3.9/4.8
	17.7	60,000	22.5	77,000	5.6	2.3	12.2/14.9	4.9/6.0
X* (G20-G31)	19.8	68,000	25.0	86,000	6.8	2.7	14.9/18.0	6.0/7.2
X* (G30)	22.0	75,000	27.6	94,000	8.2	3.3	17.9/21.3	7.2/8.6
	24.2	83,000	30.1	103,000	9.6	3.8	21.2/24.8	8.5/10.0
	26.5	90,000	32.6	111,000	11.1	4.5	24.7/28.5	9.9/11.4
	28.8	98,000	35.1	120,000	12.7	5.1	28.5/36.5	11.4/14.7

* Factory setting

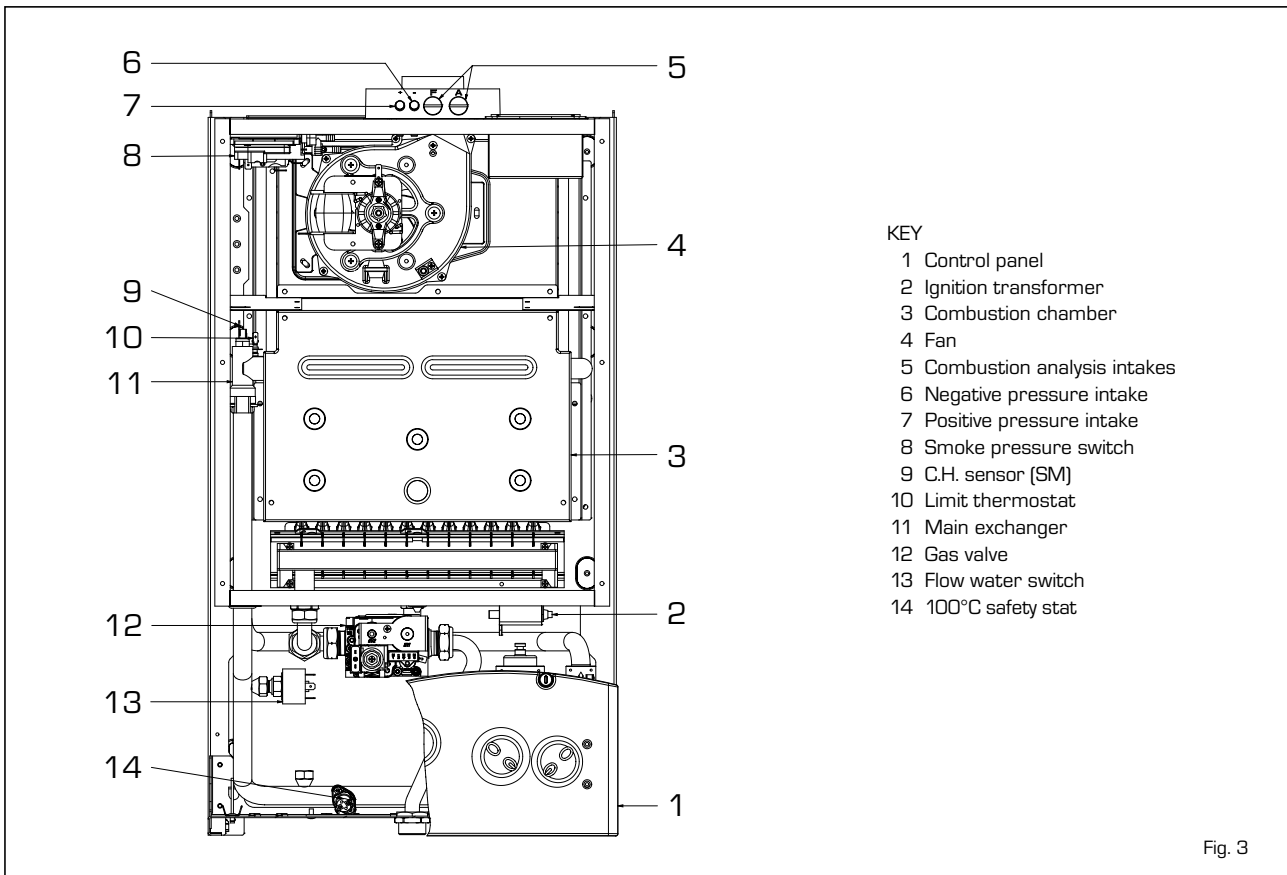
TABLE 4 - General specifications

			24	30
Main burner injectors	No off		12	14
	Dia for Natural gas	mm	1.3	1.3
	Dia for LPG	mm	0.77	0.78
Water capacity		l (gal)	3.4 (0.75)	4.7 (1.00)
Static head	Minimum	bar (psi)	0.5 (7.3)	0.5 (7.3)
	Maximum	bar (psi)	3.0 (43.5)	3.0 (43.5)
Weight	Empty	kg (lb)	38 (84)	40 (88)
	Total (full)	kg (lb)	41.4 (91)	44.7 (98)
Electrical supply	230 V - 50 Hz, Fused at 3 A			
Internal fuse	Line: F 1.6 A			
Maximum power consumption		Watt	150	160
Maximum gas consumpt. (Natural gas)		m ³ /h (ft ³ /h)	2.73 (96)	3.34 (118)
Maximum gas consumpt. (Butane - Propane)		kg/h (lb/h)	2.02 - 1.99 (4.45 - 4.39)	2.48 - 2.44 (5.47 - 5.38)
Max. working temperature		°C (F)	95 (203)	95 (203)
Integral exp. vessel capacity		l (gal)	6 (1.32)	8 (1.76)

1.4 HYDRAULIC CIRCUIT



1.5 INTERNAL VIEW



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.

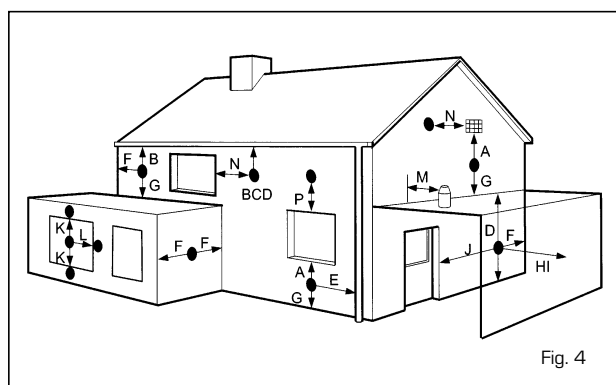


Fig. 4

- 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 Table 4.
- 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 mm² (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 240 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.

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 BetzDearborn Sentinel X300 or X400, or Fernox Superfloc. Full instructions are supplied with the products, but for immediate information please contact BetzDearborn (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 BetzDearborn Sentinel X100, or Fernox MB-1 or Copal is dosed in accordance with the guidelines given in BS 7593.

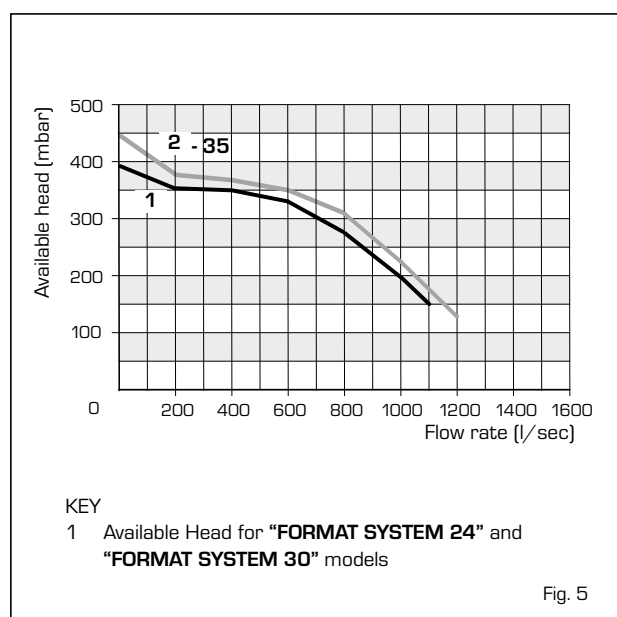
Failure to flush and add inhibitor to the system may invalidate the appliance warranty.

- 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).

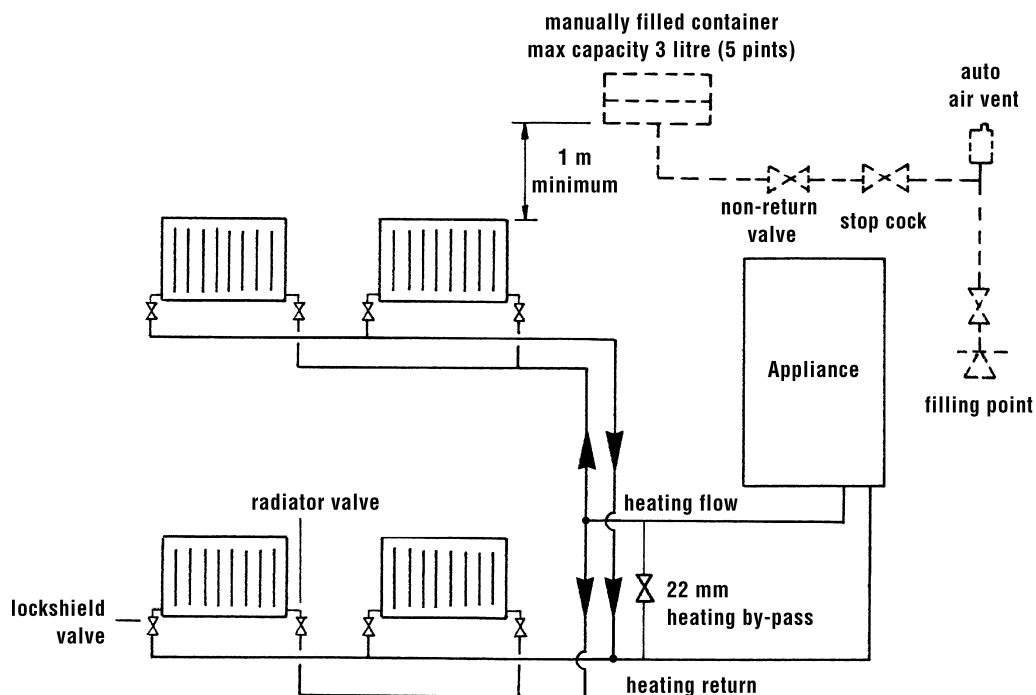
2.9 REQUIREMENTS FOR SEALED WATER SYSTEMS

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

- The available pump head is given in fig. 5.
- The 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

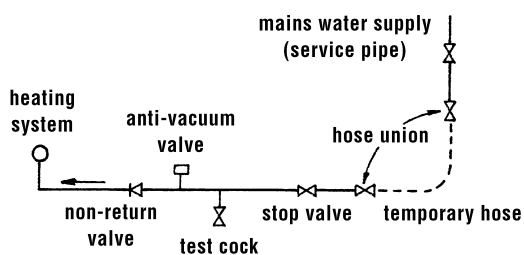


NOTE: A drain cock should be installed at the lowest point of the heating circuit and beneath the appliance.

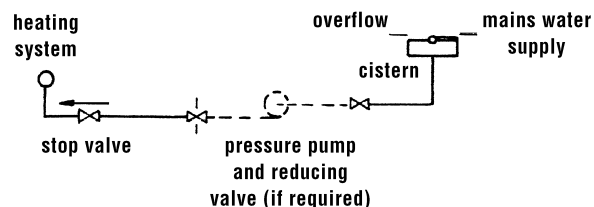
Fig. 6

ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM

METHOD 1 (complies with BS6798:1987)



METHOD 2 (complies with BS6798:1987)



NOTES:

- When it is not possible to avoid a situation where the initial system pressure and static head are equal a manually fitted top up container should be fitted as shown above. Take note of the requirements relative to container capacity: height above system, inclusion of a non-return valve, stop cock and automatic air vent in the feed pipe, as shown in fig. 6. Note also the feed pipe connection is made to the heating return as close to the appliance as possible.
- The Local Water Undertaking MUST approve ALL connections between the system and a water storage cistern or water main supplying D.H.W.

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	0.5	1.0	1.5
	psi	7.3	14.5	21.8
Total water content of system using 8 l (1.76 gal) capacity expansion vessel supplied with appliance	l	96	74	51
	gal	21.1	16.2	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.

3 INSTALLING THE BOILER

Appliance package:

- 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;
 - 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.

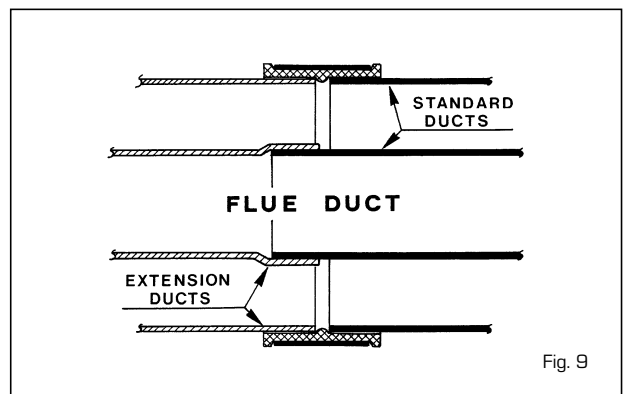
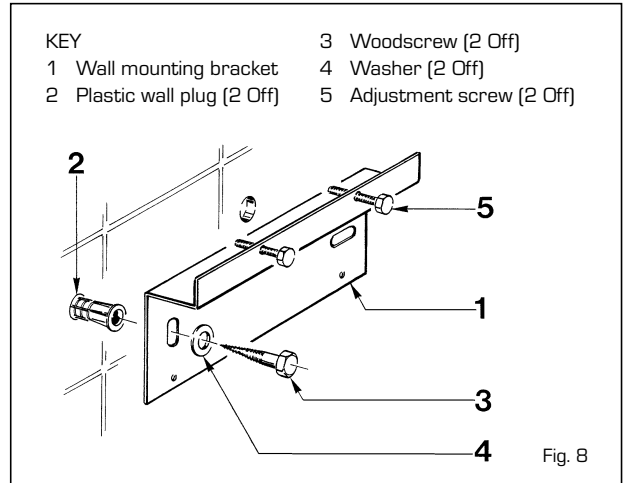
3.2 HANGING THE BOILER

- 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 FLUE DUCTS PREPARATION

3.3.1 Flue/air duct lengths

- Determine whether an extension duct is required with reference to the Z dimension shown in figs. 10-11.
- If no extension ducts are required, proceed to 3.4.
- If an extension duct or ducts is/are to be used, the flue and air ducts should be joined before proceeding to the next section. The extension ducts should be joined to each other and to the standard ducts using the following procedure (fig. 9);
- For the flue ducts in turn, push the plain end of the standard and (if using two or three extensions) extension duct into the swaged end of the extension duct(s).

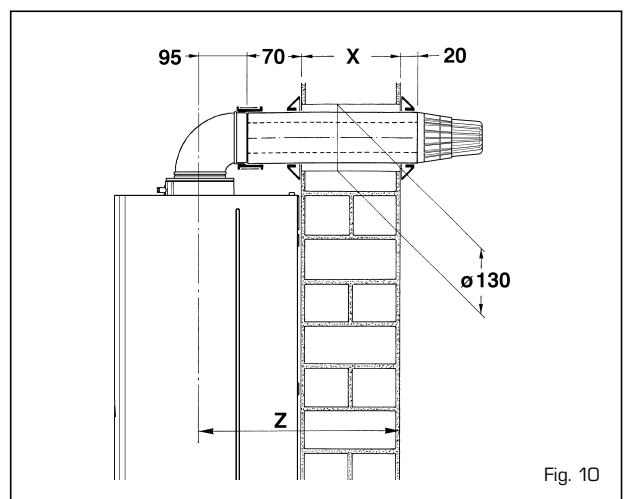


- Push an air duct in to the clamp. Join the air ducts (larger ducts) and tighten the screws on the clamp to connect them.

3.3.2 Cutting the flue/air duct extension to the correct length

Rear flue outlet (Only - fig. 10)

- Select the air duct (larger duct) and starting at the formed end, 'mark off' the length to be cut which is the wall thickness X + 90 mm (3 1/2 in).



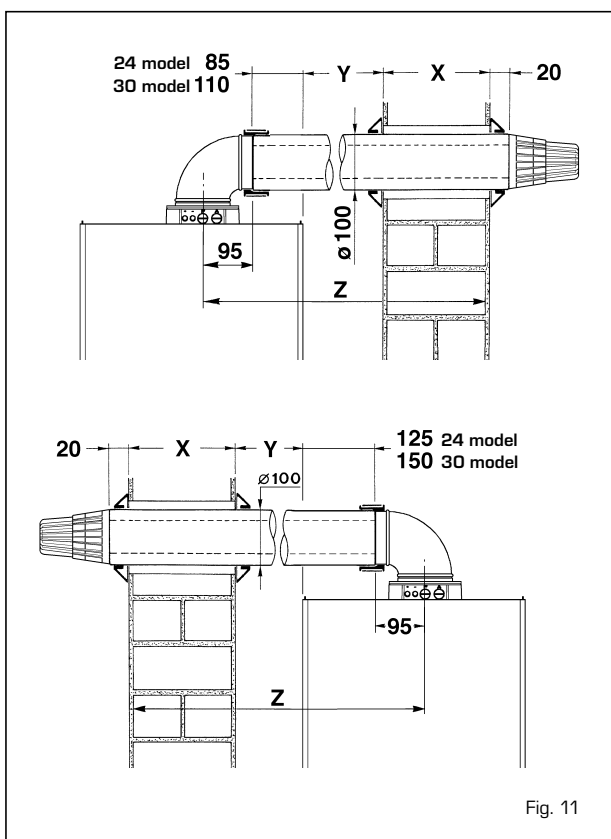
Side flue outlet (Only - fig. 11)

Right hand side

- Select the air duct (larger duct) and starting at the formed end, 'mark off' the length to be cut which is the wall thickness X + the clearance Y plus 105 mm ($4\frac{1}{8}$ in) for the "FORMAT SYSTEM 24" model and 130 mm ($5\frac{1}{8}$ in) for the "FORMAT SYSTEM 30" model.

Left hand side

- Select the air duct (larger duct) and starting at the formed end, 'mark off' the length to be cut which is the wall thickness X + the clearance Y plus 145 mm ($5\frac{3}{4}$ in) for the "FORMAT SYSTEM 24" model and 170 mm ($6\frac{3}{4}$ in) for the "FORMAT SYSTEM 30" model.



All installations

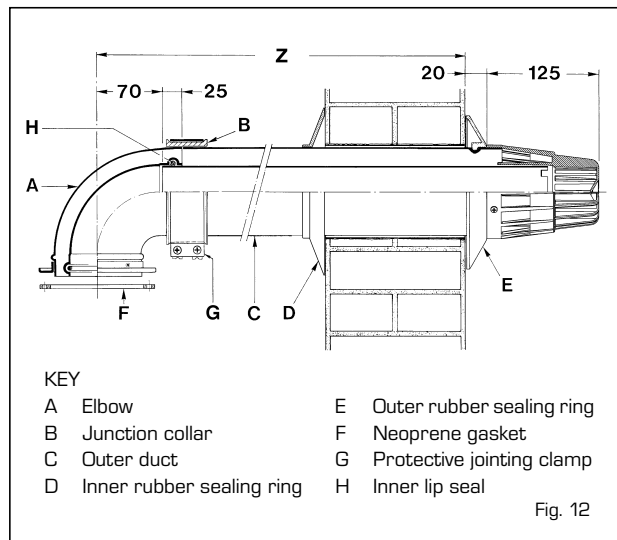
- Cut the air duct square to the mark and remove all burrs and sharp edges.
- Hold the air duct at the plain end, and slide the flue duct (small duct) inside the air duct (terminal first) until it stops against the terminal, then mark off the length to be cut which leaves 20 mm protruding flue duct.
- Remove and cut the flue duct square to the mark and remove all burrs and sharp edges.

3.4 FLUE AND TERMINAL INSTALLATION

3.4.1 Telescopic flue

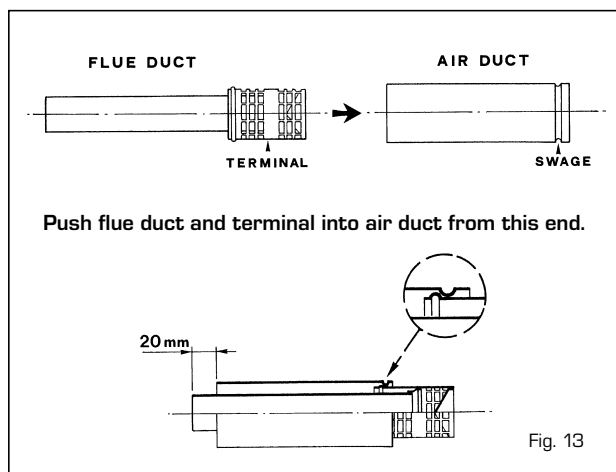
- Push the flue duct assembly into the air duct until it stops against the terminal.

- Fit the rubber sealing ring (E) into the swaged groove in the air duct as shown in fig. 12. Ensure that it is the correct way around.
- From inside or outside the building, slide the duct assembly into the wall until the sealing ring forms a good seal against the outside wall.
- With reference to fig. 12, slide on the rubber ring (D), check that the rubber sealing ring (E) is pulled up to the wall and that the duct assembly is horizontal.
- Push the junction collar (B) over the air duct until the air duct touches the inner part of the collar where the diameter becomes smaller.
- Push the elbow socket into the junction collar and onto the flue duct.
- Fit the jointing clamp (G) over the junction collar.
- Place the gasket (F) under the flange of the elbow and fit the elbow onto the flue manifold, taking care to ensure that the silicon seal on the elbow correctly engages and forms a seal at its joint with the manifold.
- Secure the elbow onto the air/exhaust manifold using the four screws provided.



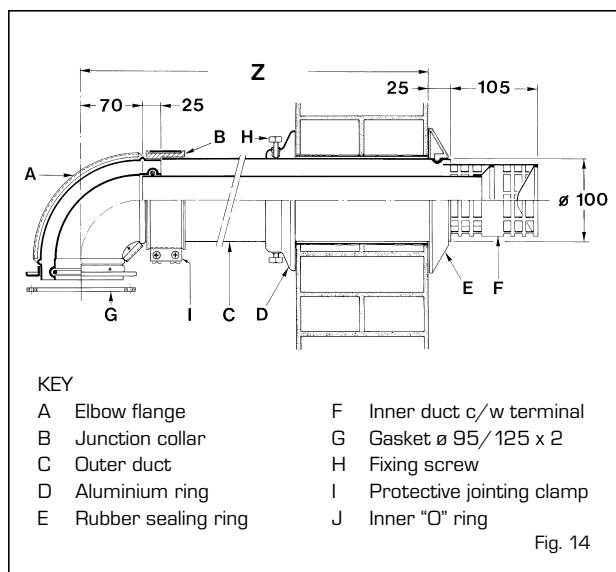
3.4.2 Standard flue

- Push the flue duct assembly into the air duct until the external swaged ring on the flue terminal stops against the internal swage on the air duct (fig. 13).
- Fit the rubber sealing ring into the swaged groove in the air duct as shown in fig. 14. Ensure that it is the correct way around.
- From inside or outside the building, slide the duct assembly into the wall until the sealing ring forms a good seal against the outside wall.
- With reference to fig. 14, slide on the aluminium retention ring (D), check that the rubber sealing ring (E) is pulled up to the wall and that the duct assembly is horizontal, then secure the aluminium retention ring to the air duct using the two screws (H) provided. Do not overtighten the screws.
- Push the junction collar (B) over the air duct until the air duct touches the inner part of the collar where the diameter becomes smaller.
- Push the elbow socket into the junction collar and onto the flue duct.
- Fit the jointing clamp (I) over the junction collar.
- Remove the six fixing screws securing the sealed chamber



front panel then remove the panel.

- Place the gasket (G) under the flange of the elbow and fit the elbow onto the top of the appliance, taking care to ensure that the silicon seal on the fan outlet correctly engages and forms a seal at its joint with the elbow. This must be checked from inside the sealed chamber.
- Secure the elbow onto the top of the appliance using the four screws and washers provided, and refit the sealed chamber front panel.



3.4.3 Coaxial flue diaphragm

The boiler is normally supplied with a Ø 87.5 diaphragm. Way of use and optional diaphragm to be used with vertical ducts is shown in fig. 15.

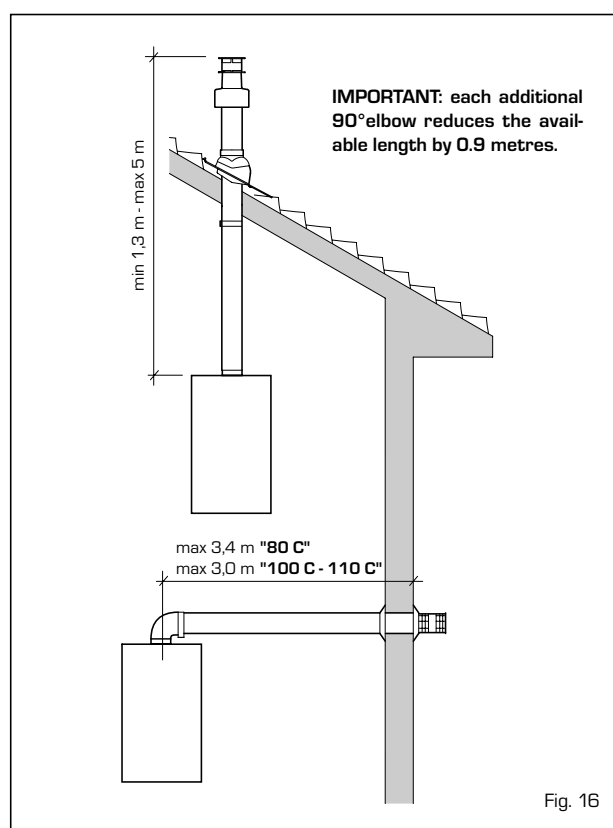
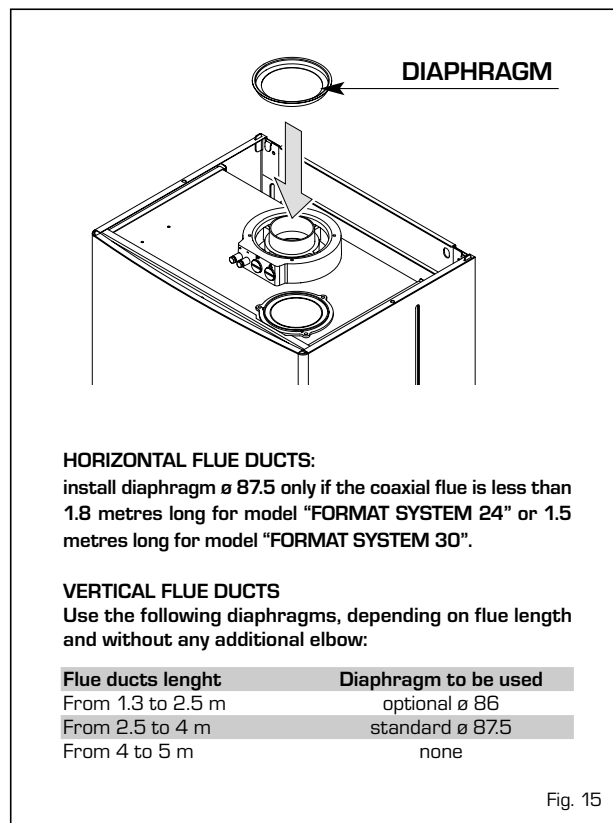
3.4.4 Coaxial flue specifications

With the elbow supplied in the kit the maximum length of the flue must not exceed following measures:

	Horizontal	Vertical
FORMAT SYSTEM 24	3.4	5.0
FORMAT SYSTEM 30	3.0	5.0

Each additional 90° elbow installed reduces the available length by 0.9 metres, each additional 45° elbow reduces the available length by 0.45 metres.

NOTE: Some flue systems are suitable for installation with SE-duct systems.



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/m³.

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

- 30 m for "FORMAT SYSTEM 24" model,
 - 35 m for "FORMAT SYSTEM 30" model
- For head losses in the fittings, refer to *Table 7*.

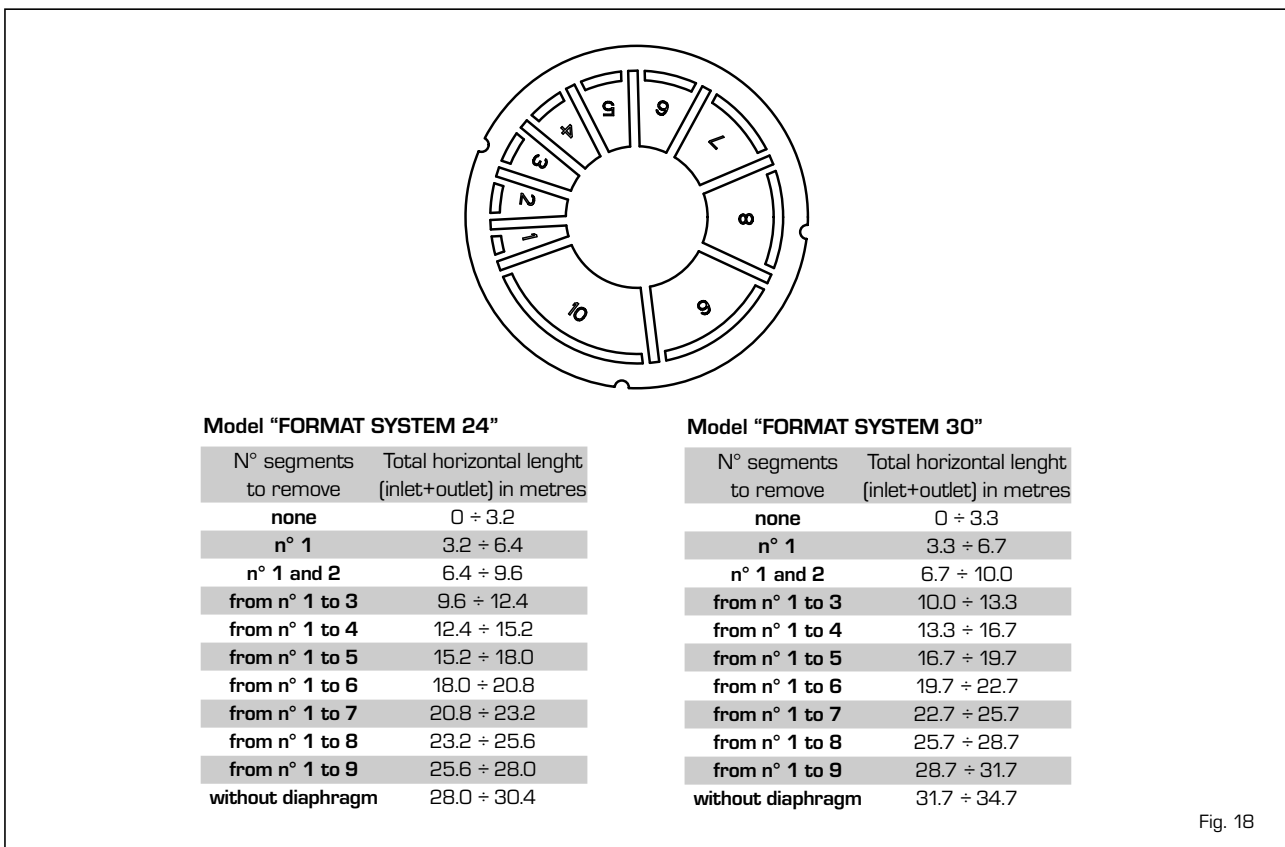
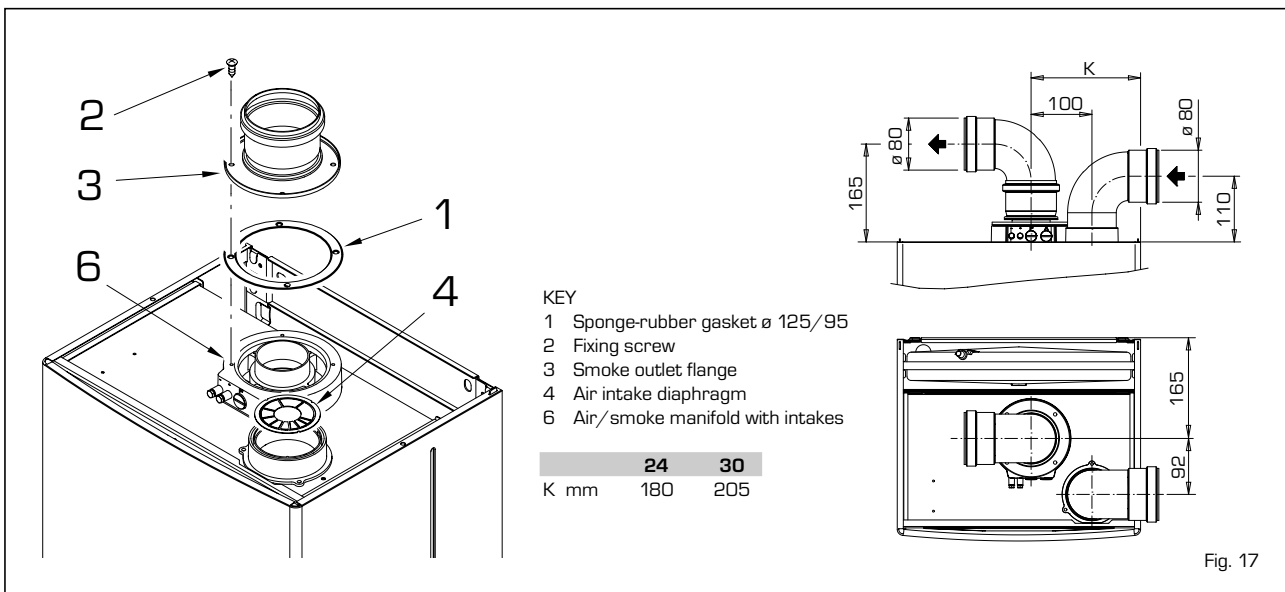


TABLE 7

Twin flue accessories ø 80	Head loss metres
90° elbow MF	1.5
45° elbow MF	0.7
Extension L. 1000 (horizontal)	1.0
Extension L. 1000 (vertical)	1.0
Outlet terminal	1.0
Intake terminal	0.3
Junction twin/concentric	0.7
Roof outlet terminal L1240	2.0
Tee condensation outlet	4.0

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.

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

3.6 WATER 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.

3.7 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)

- Disconnect the electric power supply before performing any work. **Warning: all components in the control panel are fed with 240V.**
 - 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).
 - 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.

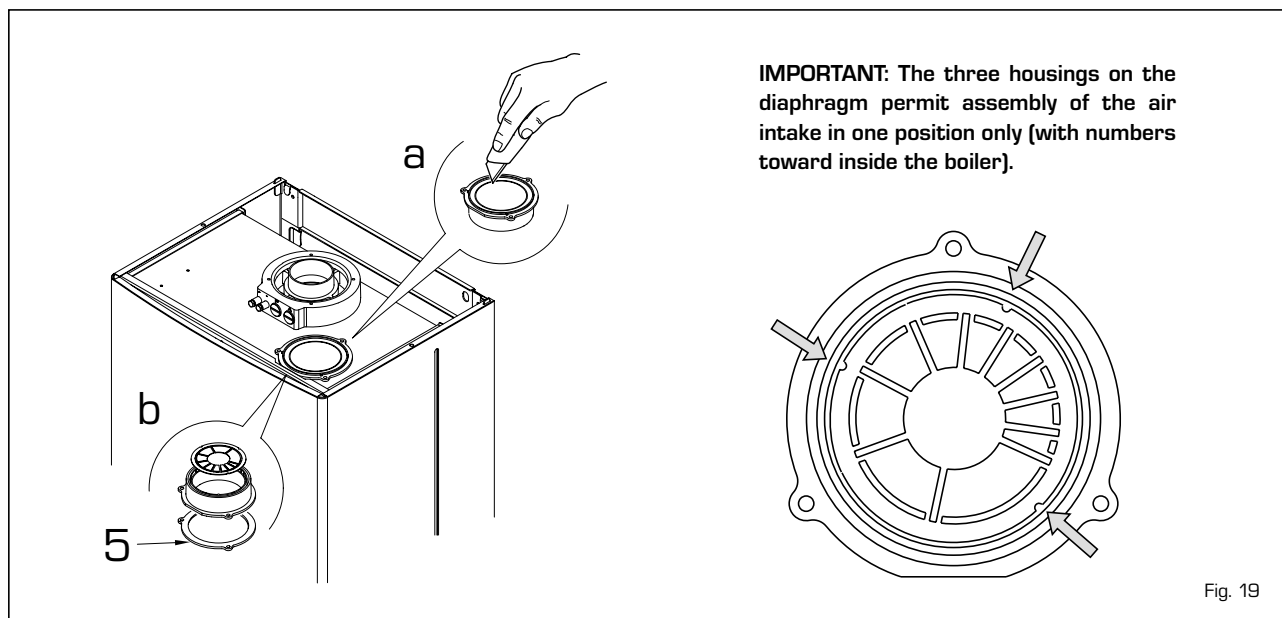
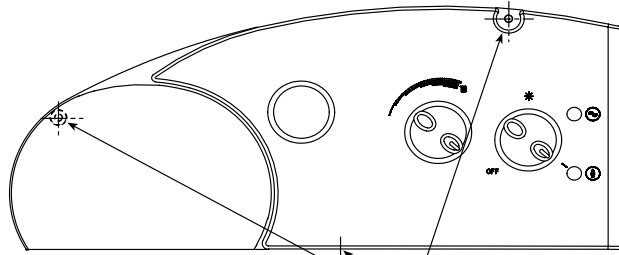
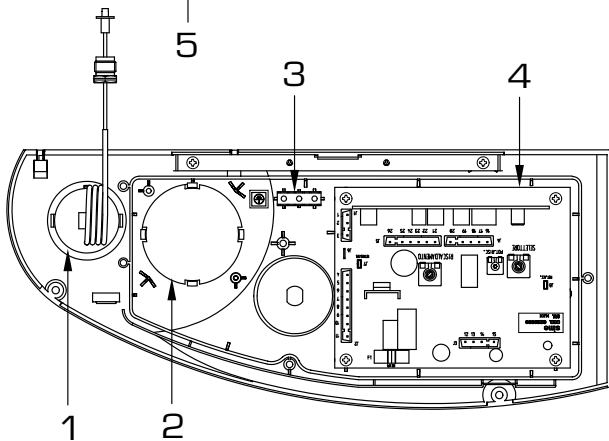
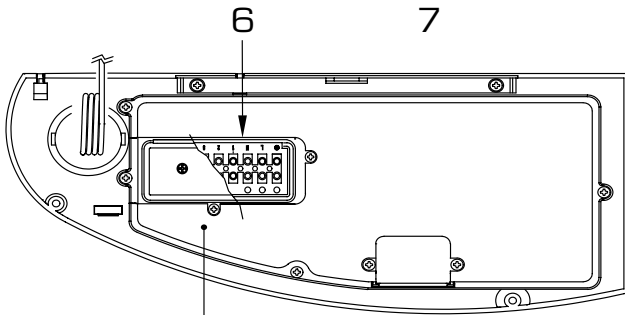


Fig. 19



KEY

- 1 Pressure gauge
- 2 Time programmer housing
- 3 Earth faston
- 4 Main PCB
- 5 Control panel protection
- 6 Terminal strip
- 7 Fixing screws



ATTENTION: After having removed the three fixing screws, tilt the panel downward to gain access.

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.

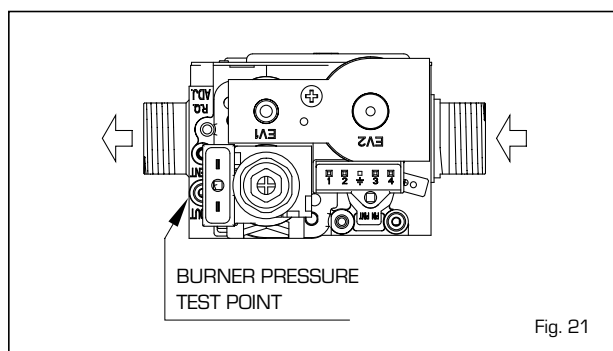
IMPORTANT: open all doors and windows, extinguish naked lights, and DO NOT SMOKE whilst purging the gas line. Before commencing the commissioning procedure, ensure that the gas service cock is turned on, the electricity supply is isolated, and that the C.H. isolation valves are in the closed position.

4.1 FILLING THE WATER SYSTEM

- Open the flow and return valves (17 - 18 fig. 2).
- Loosen the automatic air vent cap (9 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 forget 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.

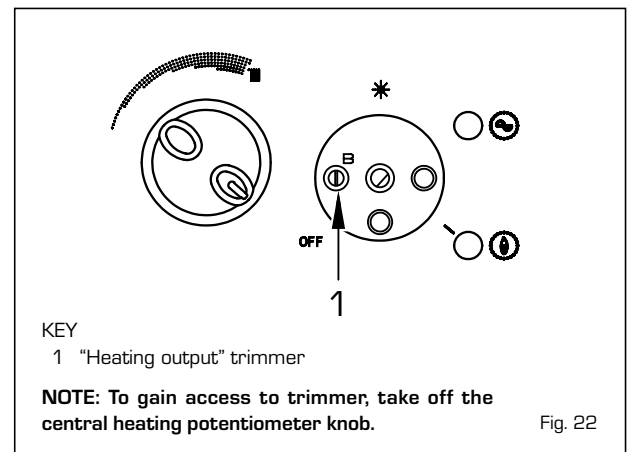
4.2 COMMISSIONING THE BOILER

- Remove the screw and connect a pressure gauge to the burner pressure test point on the gas valve (fig. 18).
- Remove (pull forwards) the C.H. knob to gain access to the potentiometer of the heating output and rotate the potentiometer fully clockwise with a screwdriver (refer to fig. 19).
- Ensure that heating programmers or room thermostats are calling for heat and that there is an adequate circulation in the system. Turn the C.H. knob to maximum and the rotary switch to ON. Turn on the electrical supply 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. If the burner pressure is low, check that the appliance has not begun to modulate. Check also the inlet pressure with the burner alight; this should be 20 mbar (8 in.wg) +/- 2.5 mbar (1 in.wg) for natural gas and 30 - 37 mbar (12 - 15 in.wg) +/- 2.5 mbar (1 in.wg) for LPG. If it is necessary to adjust the D.H.W. burner pressure the method is described in section 8.6.



4.3 SETTING THE C.H. OUTPUT

- Turn the rotary switch to the ON position and ensure that the room thermostat of heating programmer (if fitted) is calling for heat. Turn the C.H. thermostat knob to maximum (fully clockwise) and the burner will light.
- Allow the boiler to run for at least 5 minutes and check the burner pressure. The heating output is factory set as stated in Table 3.
- If the heating output is to be adjusted, proceed as follows:
 - refer to section 1.3 and establish the desired burner pressure;
 - remove (pull forwards) the C.H. knob protecting the potentiometer;
 - set the burner pressure as required using a small screwdriver on potentiometer (1 fig. 19). Rotate the screw anti-clockwise to reduce the burner pressure;
 - operate the rotary switch between ON and OFF a few times and check that the correct burner pressure is maintained.
- Replace the C.H. knob over potentiometer.
- To set the time clock proceed as follows:
 - push in the setting tabs around the clock dial at the times corresponding to when the heating is desired ON;
 - set the clock to the correct time by rotating the dial clockwise until the arrow corresponds to the current time.



4.4 FINAL CHECKS

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

4.5 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.
- 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 shown 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

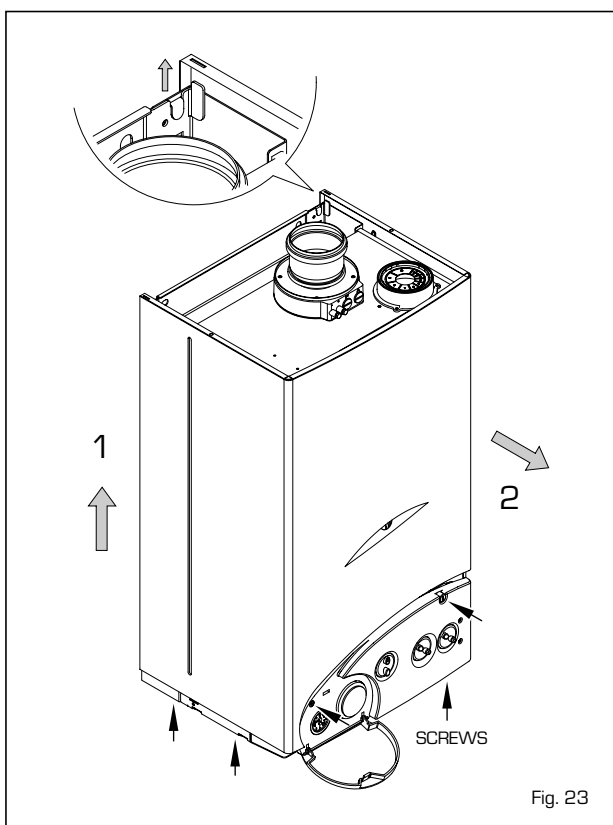


Fig. 23

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.

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 HEAT EXCHANGER

- Inspect the heat exchanger, and clean if necessary.

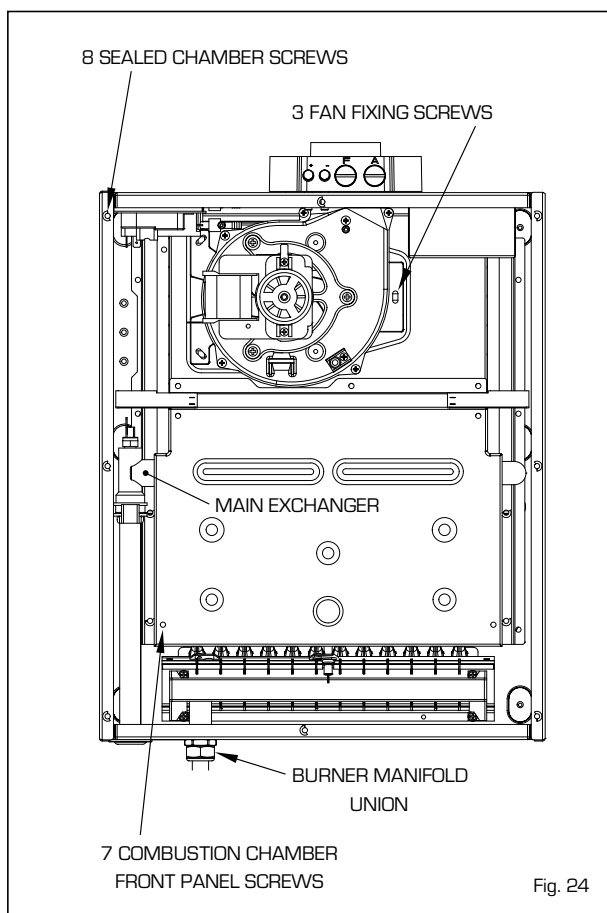


Fig. 24

5.4 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.

5.5 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.

6 FAULT FINDING

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.

6.1 EARTH CONTINUITY CHECK

Appliances must be electrically disconnected, meter set on Ω (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 Ω (ohm). If the resistance is greater than 1 Ω (ohm) check all earth wires for continuity and all contacts are clean and tight. If the resistance to earth is still greater than 1 Ω (ohm) then this should be investigated further.

6.2 SHORT CIRCUIT CHECK

Switches turned FULL ON - meter set on Ω (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 Ω (ohm) x 100 scale. Repeat it with leads from L to E. If meter reads less than infinity (∞) 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 Ω (ohm) x 100 scale.

All switches including thermostat on test leads from L to E - if meter reads other than infinity (∞) 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. 25.

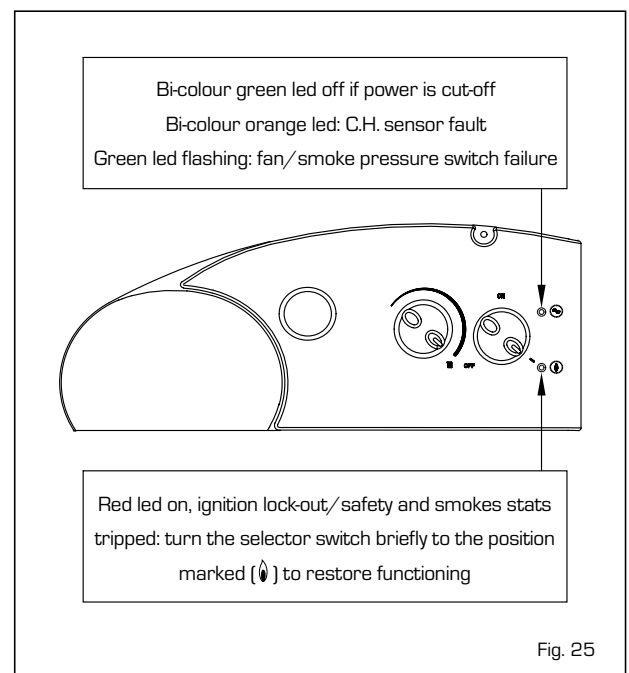
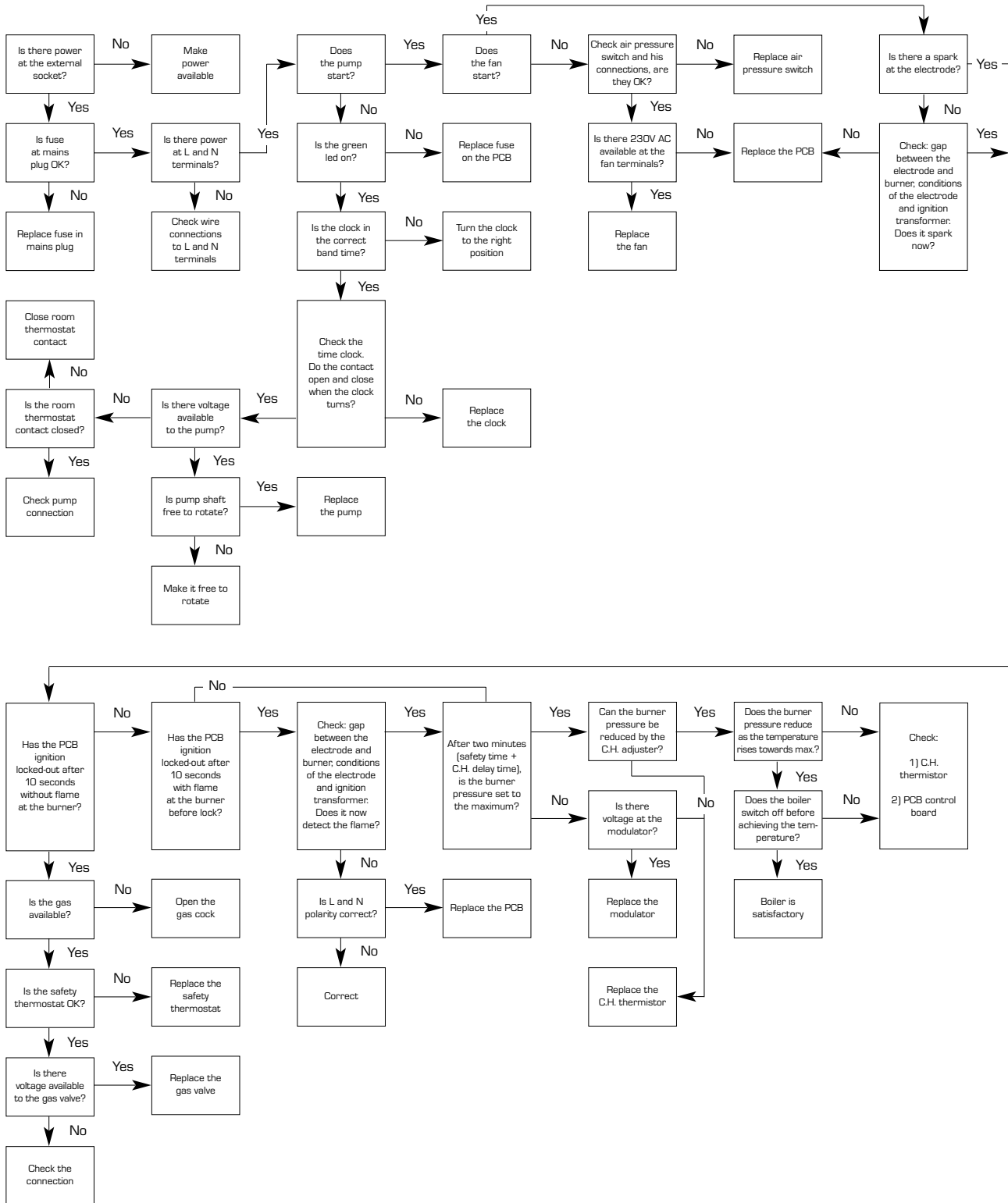


Fig. 25

6.6 C.H. MODE - FAULT FINDING

Start from cold Selector switch set to ON position.
 Room thermostat (if fitted) calling for heat.
 C.H. thermostat set to maximum position.
 Clock in the ON position.



NOTE:

After completing fault finding reset the room thermostat (if fitted) to the required setting. If the appliance will not function check the wiring to the clock and if necessary, replace the clock.

7 WIRING & FUNCTIONAL DIAGRAMS

7.1 ILLUSTRATED FLOW WIRING DIAGRAM

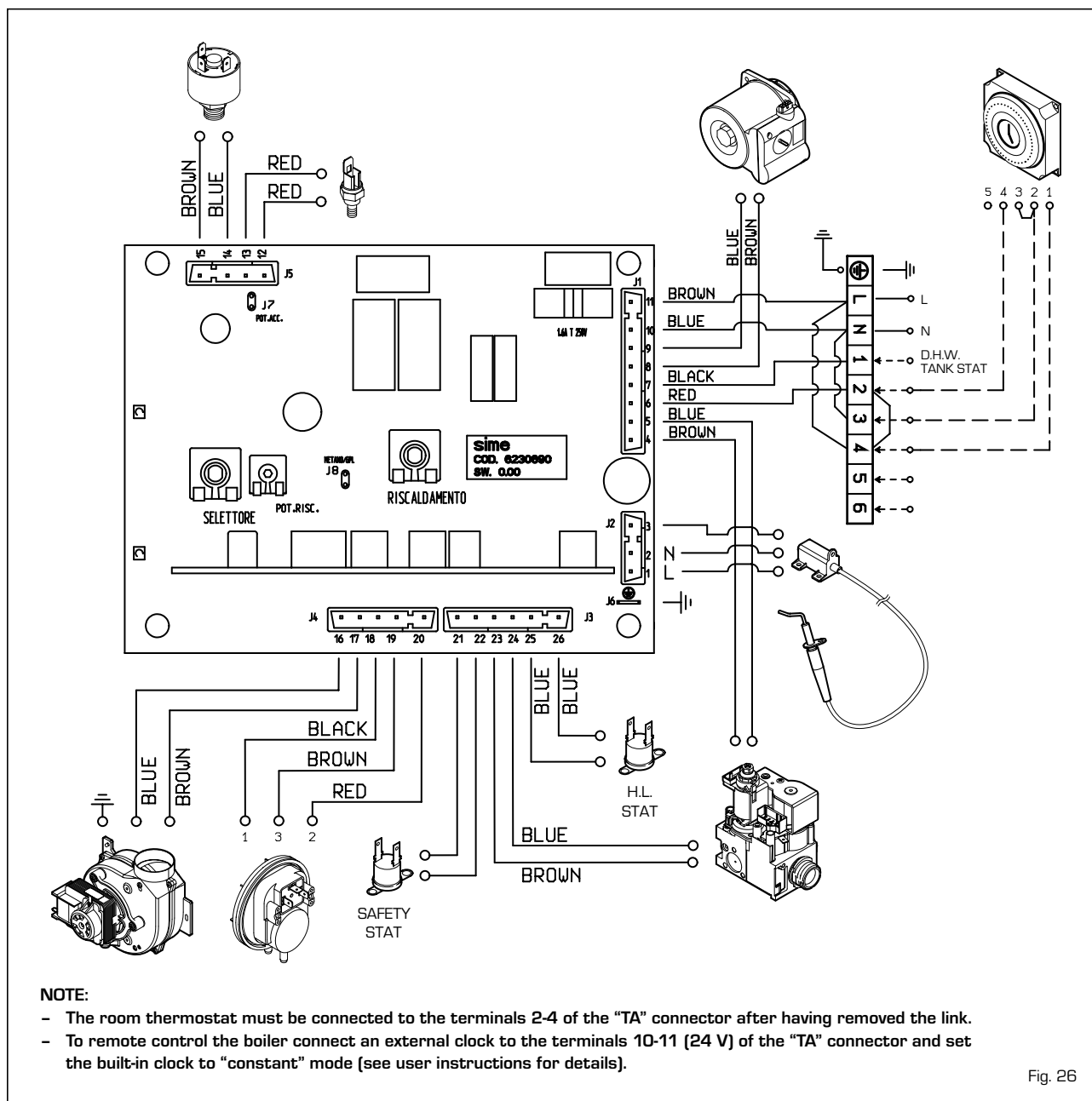


Fig. 26

7.2 TIME PROGRAMMER (optional)

The control panel is designed to allocate a timer-programmer; code 8092208, which can be supplied upon request. To fit the timer, remove the housing blanking piece from the control panel and, with the panel open, fit the timer to the panel using the screws supplied therein (see fig. 27). Connect the unit as shown in the wiring diagram (fig. 26).

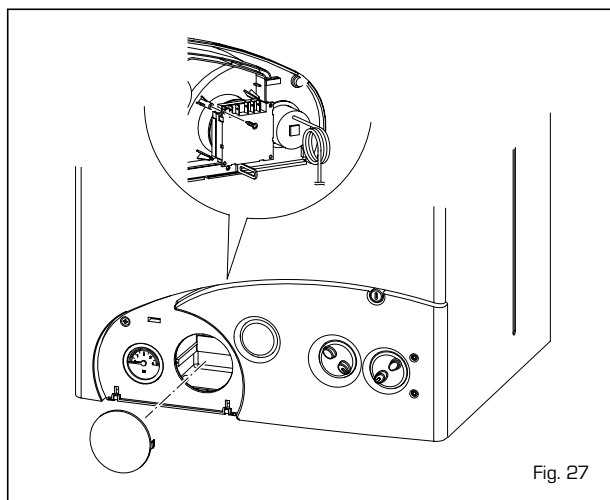


Fig. 27

7.3 FUNCTIONAL DIAGRAM WITH TWO ZONE VALVES OR THREE WAY VALVE

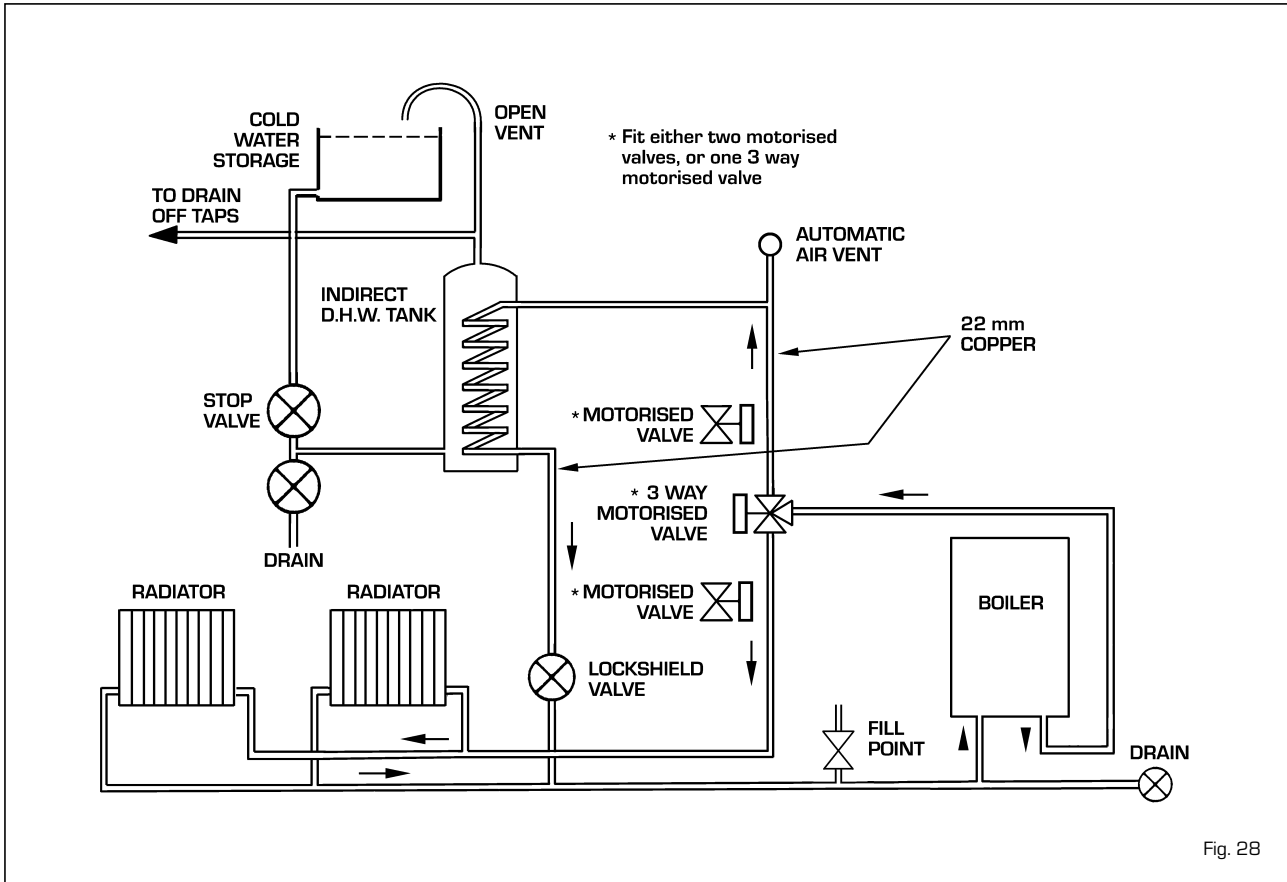


Fig. 28

7.4 SYSTEM USING MID POSITION ZONE VALVE

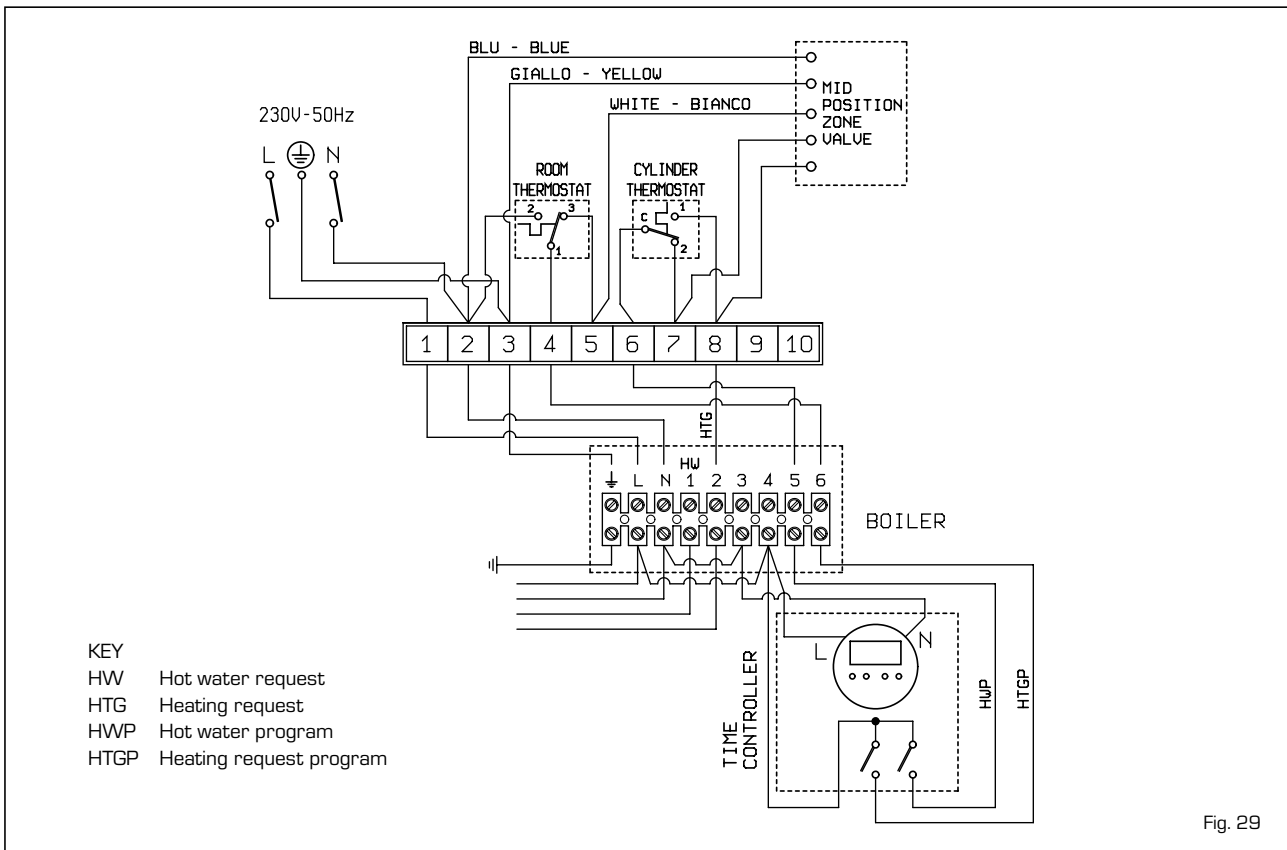


Fig. 29

7.5 SYSTEM USING A THREE WAY VALVE

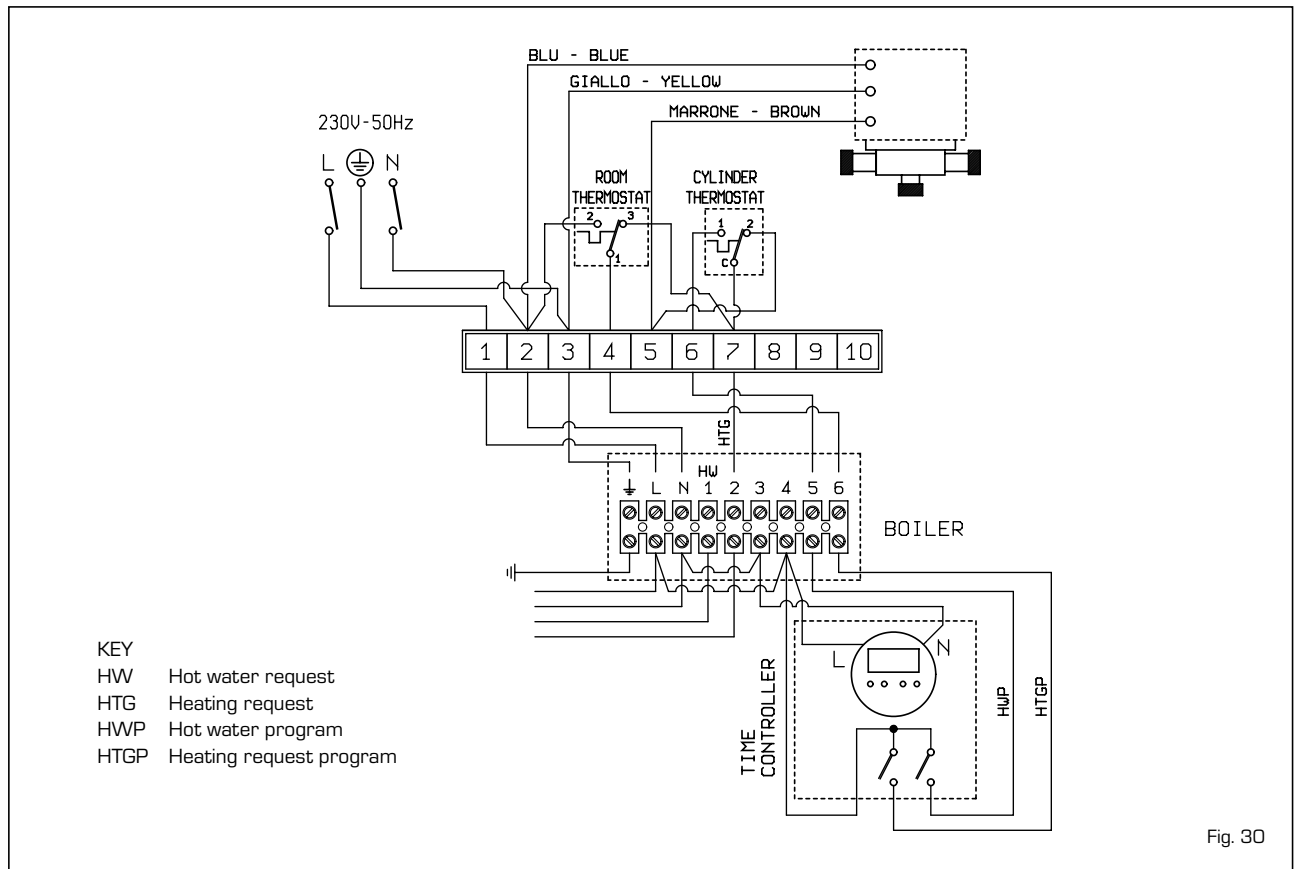


Fig. 30

7.6 SYSTEM USING TWO ZONE VALVES

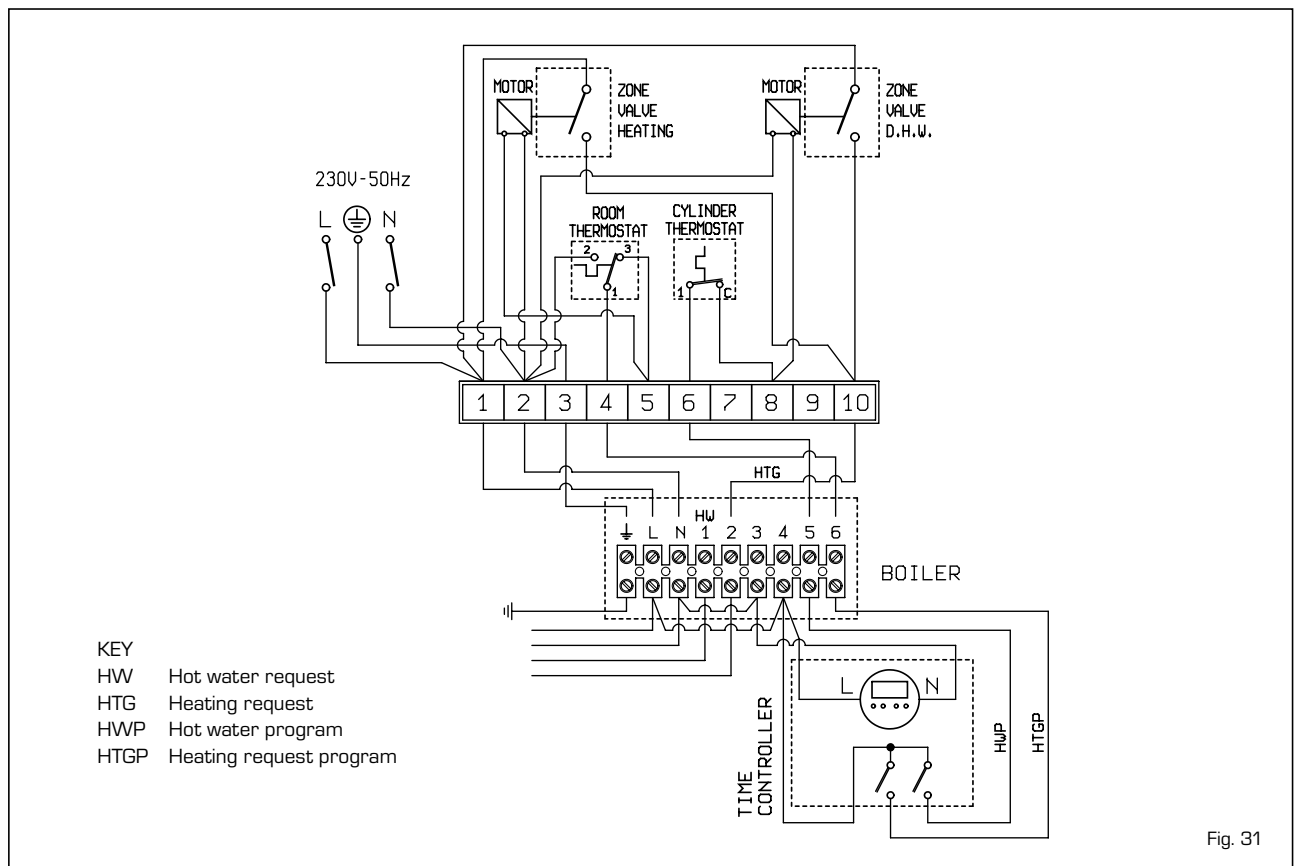


Fig. 31

8 REPLACEMENT OF PARTS

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.).

8.1 HEAT 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 heat exchanger using the drain cock (at the bottom RHS of the appliance)
- Unclip the heat 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 heat 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 recommission the system as described in section 4.

8.3 FAN ASSEMBLY

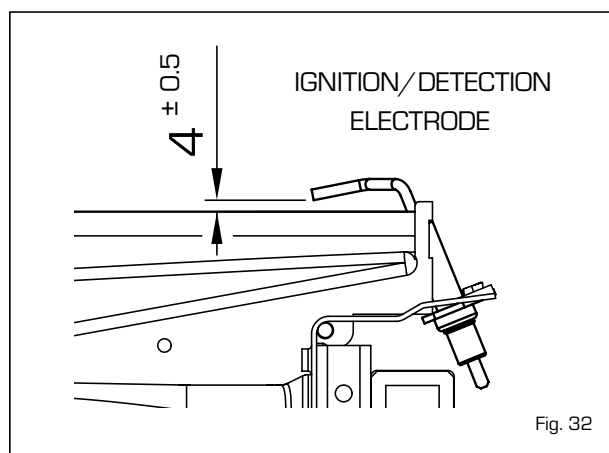
- Remove the casing front panel and sealed chamber front panel as described in section 5.1.
- Disconnect the electrical connections and the pressure sensing pipes to the fan. Note the position of the earth conductor.
- Unscrew the three screws securing the fan.
- Drop and tilt the fan forwards and remove 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. 32) 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

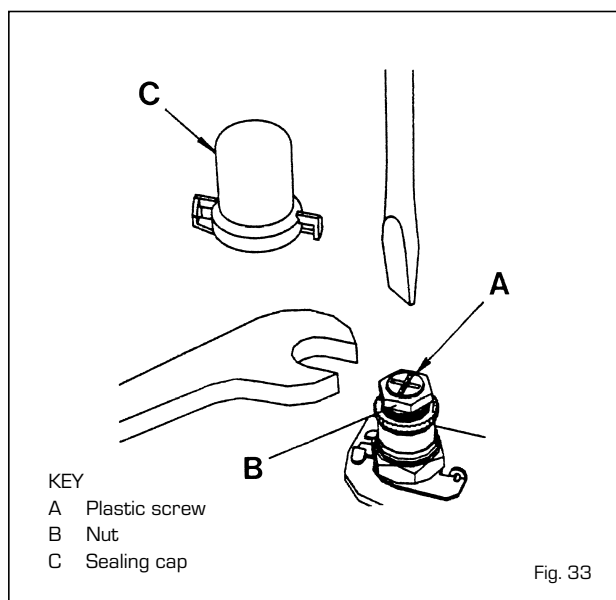
- Remove the casing front panel as described in section 5.1.
- Disconnect the two leads from the modulating solenoid and disconnect the valve connector (one screw).
- Unscrew the nut between the inlet pipe and the valve.
- Unscrew the burner manifold nut underneath the sealed chamber, and withdraw the 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 C.H. heat output, with reference to fig. 33, 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.
- Remove (pull forwards) the C.H. knob to gain access to the potentiometer of the heating output and rotate the potentiometer fully clockwise with a screwdriver (refer to fig. 22).

- Ensure that heating programmers or room thermostats are calling for heat and that there is an adequate circulation in the system. Turn the C.H. knob to maximum and the rotary switch to ON. Turn on the electrical supply and the burner will light.
- 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 rotary switch on and off a few times 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 let the boiler start.
- 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 rotary switch 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).
- Adjust the Central Heating maximum pressure as described in section 4.3, then complete the re-commissioning as described in 4.4.



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 dia-

grams (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 OVERHEAT THERMOSTAT

The overheat thermostat is situated on the flow pipe, below the sealed chamber (14 fig. 2).

- Remove the casing front panel as described in section 5.1.
- Tilt downward the control panel.
- Disconnect the plug from the safety thermostat.
- 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 (17 - 18 fig. 2), and drain the appliance through the drain plug (14 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 (Ω) that are obtained on the sensor as the temperature varies.

TABLE 8

Temperature (°C)	Resistance (Ω)
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 three fixing screw and remove the cover protecting the wirings (two screws).
- Pull off the knobs.
- Release the PCB (four screws), transfer all connections onto the new PCB, and re-assemble in reverse order.
- Re-set the CH burner pressure as described in section 4.3.

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 (17 - 18 fig. 2), and drain the appliance through the drain plug (14 fig 2).
- Unscrew the four fixing screws on the motor.
- Replace the pump motor and re-assemble in reverse order.
- Refill and commission the system as described in section 4.1.

8.12 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 (17 - 18 fig. 2), and drain the appliance through the drain plug (14 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.

8.13 PRESSURE GAUGE

- Remove the casing front panel as described in section 5.1.
- Isolate the C.H. flow and return valves (17 - 18 fig. 2).
- Drain the appliance through the drain point (14 fig. 2).
- Remove the circlip securing the pressure sensor to the hydraulic group and pull out the sensor.
- 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.

8.14 SAFETY VALVE

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

- Isolate the C.H. flow and return valves (17 - 18 fig. 2).
- Drain the appliance through the drain point (14 fig. 2)
- Remove the circlip securing the valve to the hydraulic group and remove the valve assembly.
- Mount the ogive, locking nut and discharge pipe onto the new valve.
- Fit the new safety valve assembly and re-assemble in reverse order. Refill and re-commission the system as described in section 4.1.

8.15 AUTOMATIC AIR VENT

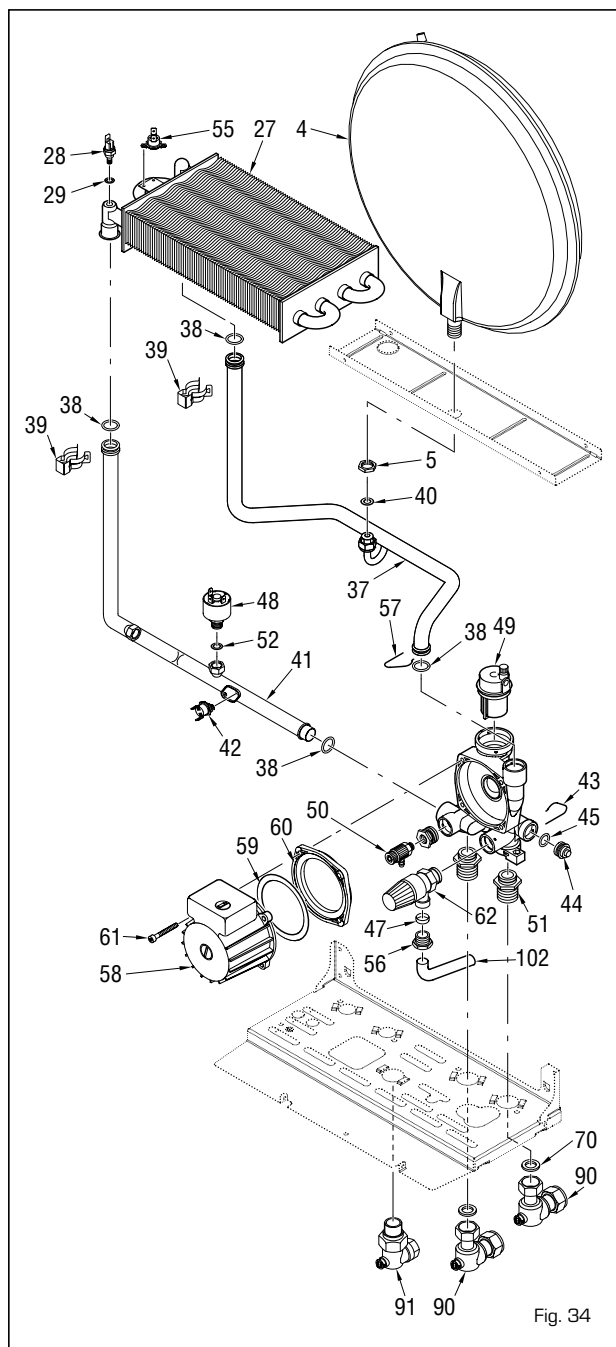
- Remove the casing front panel as described in section 5.1.
- Isolate the C.H. flow and return valves (17 - 18 fig. 2).
- Drain the appliance through the drain point (14 fig. 2).
- Remove the circlip securing the automatic air vent to the hydraulic group.
- Fit the new automatic air vent and re-assemble in reverse order. Refill and re-commission the system as described in section 4.1.

8.16 TIME CLOCK (if fitted)

- Remove the casing front panel as described in section 5.1.
- Tilt downward the control panel.
- Open the control panel protecting cover by removing the three fixing screw and remove the cover protecting the wirings (two screws).
- Pull off the electrical connections at the back of the clock.
- Remove the two screws securing the time clock to the fascia panel 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

9.1 HYDRAULIC CIRCUIT



Position	Code	Description	Model
4	• 5139140	Expansion vessel 1.8 - 3/8" M	24
4 A	• 5139130	Expansion vessel 1.8 - 3/8" M	30
5	6146305	Brass Nut 3/8"	
27	• 6174234	Heat exchanger	24
27 A	• 6174235	Heat exchanger	30
28	• 6231351	Plunged sensor	
29	• 6022010	Sensor gasket	
37	6264825	C.H. return pipe	24
37 A	6264826	C.H. return pipe	30
38	• 6226412	O-ring 3068	
39	• 6226601	Spring for heat exchanger connection	
40	2030226	Gasket Ø 10,2x14,8x2	
41	6264734	C.H. flow pipe	24
41 A	6264735	C.H. flow pipe	30
42	6146720	102°C safety stat	
43	• 6226602	Pipe fixing spring	
44	6119370	Plastic plug	
45	• 6226414	O-ring 117 Ø 13,1x2,62 EP851	
47	6100202	Ogive for pipe Ø 15	
48	• 6037502	Water pressure switch	
49	• 6013101	Automatic air vent	
50	• 6017210	Manual air vent 1/4"	
51	6281500	Straight fitting 3/4"	
52	2030225	Gasket Ø 5,5x11x2	
55	• 6146700	Limit stat auto reset	
56	6168401	Locking nut for pipe Ø 15	
57	6226607	Pipe fixing spring	
58	• 6272301	Circulating pump VA 55 Dab motor	
59	• 6028705	Gasket EP709 for Dab	
60	6281521	Flange + OR for Dab pump	
61	2000201	Screw M5x40	
62	• 6040201	Pressure relief valve	
70	2030228	Gasket Ø 17x24x2	
90	6177505	Ball cock 3/4" x 22	
91	6177504	Gas cock 1/2" x 1/2"	
102	6157602	Pressure relief valve drain pipe	

• Recommended stock parts

9.2 COMBUSTION CIRCUIT

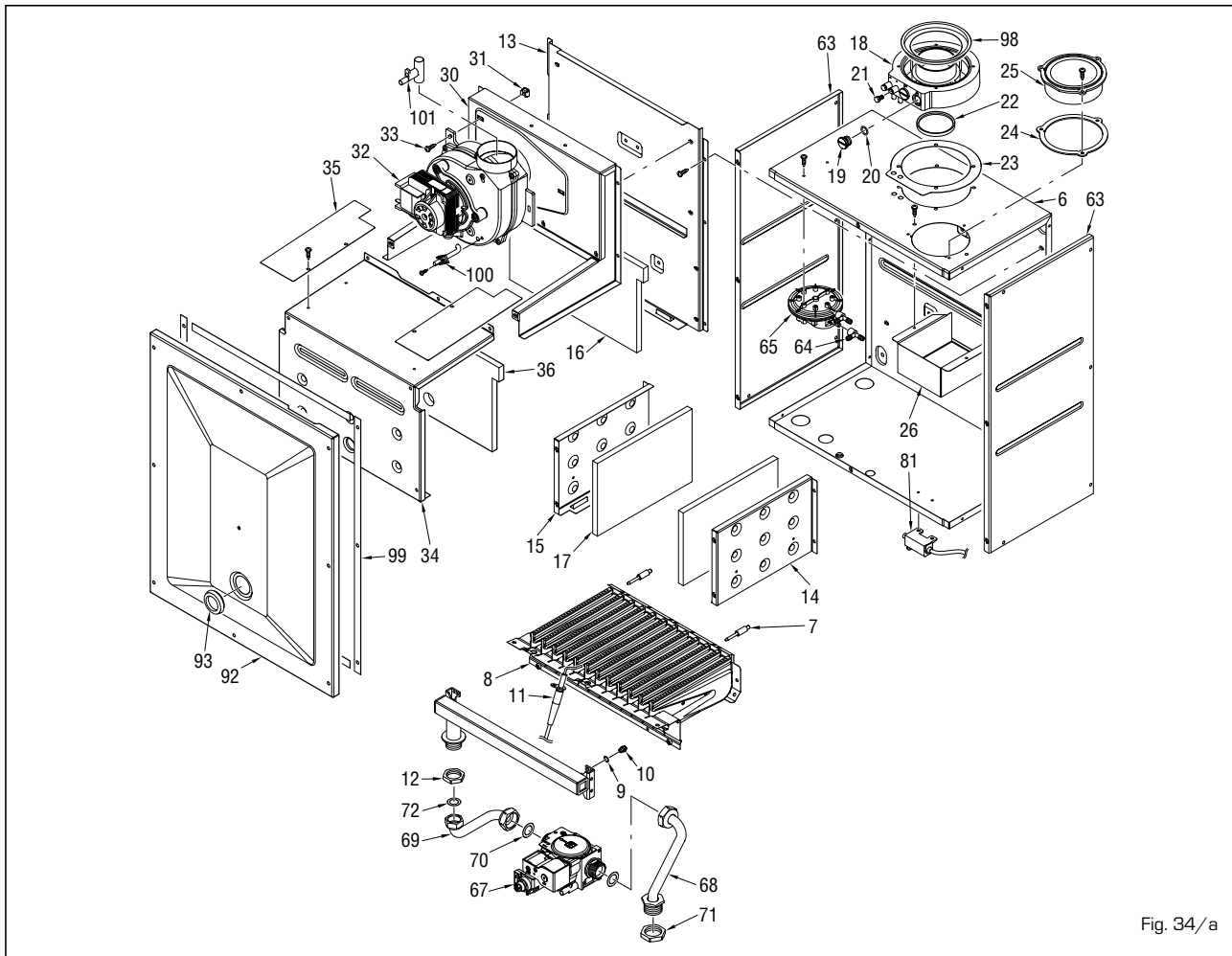


Fig. 34/a

Position	Code	Description	Model	Position	Code	Description	Model
6	6288100	Sealed chamber rear panel	24	30 A	5190610	Smoke chamber assembly	30
6 A	6288110	Sealed chamber rear panel	30	31	2016020	Locked nut M4	
7	6223200	Burner centering pin		32	• 6225621	Fan	24
8	5190700	Main burner assembly	24	32 A	• 6225622	Fan	30
8 A	5190750	Main burner assembly	30	33	2000705	Screw M4x12	
9	6022004	Copper washer Ø 6		34	6288700	Combustion chamber front panel	24
10	6154402	Main burner nozzle NP 130 natural gas		34 A	6288710	Combustion chamber front panel	30
10 A	6154410	Main burner nozzle NP 77 GLP	24	35	6257511	Air deflector	
10 B	6154414	Main burner nozzle NP 78 GLP	30	36	6139770	Combustion chamber front insulation	24
11	• 6235929	Ignition-ionisation electrode		36 A	6139771	Combustion chamber front insulation	30
12	6146301	Brass nut 1/2"		63	6288200	Sealed chamber side panel	
13	6288400	Combustion chamber rear panel	24	64	• 6280510	3-ways junction	
13 A	6288410	Combustion chamber rear panel	30	65	• 5192100	Air pressure switch	
14	6288500	Comb. chamber right hand side panel	24	67	• 6243810	SIT gas valve type 845 SIGMA	
14 A	6288510	Comb. chamber right hand side panel	30	68	6226856	Gas inlet pipe	
15	6288600	Comb. chamber left hand side panel	24	69	6226945	Pipe connecting gas valve-main burner	
15 A	6288610	Comb. chamber left hand side panel	30	70	2030228	Gasket Ø 17x24x2	
16	6139772	Combustion chamber rear insulation	24	71	6146302	Brass nut 3/4"	
16 A	6139773	Combustion chamber rear insulation	30	72	2030227	Gasket Ø 12x18x2	
17	6139774	Combustion chamber side insulation		81	• 6098305	Ignition transformer	
18	6287900	Air/smoke manifold		92	6288350	Sealed chamber front panel	24
19	6147406	Air/smoke manifold plug M14x1.5		92 A	6288360	Sealed chamber front panel	30
20	• 6226417	O-ring 3043		93	6001210	Peephole	
21	6242602	Air/smoke manifold screw		98	6028624	Air diaphragm Ø 87.5	
22	6248803	Lip seal for Ø 60 pipe		99	5192200	Gasket for sealed chamber	
23	6028706	Air/smoke manifold gasket		100	6263905	Fan pressure test point	
24	6028707	Air intake gasket		101	6223351	Venturi	24
25	6288000	Air intake		101 A	6223352	Venturi	30
26	6257512	Air deflector for separate ducts					
30	5190600	Smoke chamber assembly	24				

• Recommended stock parts

9.3 STRUCTURAL COMPONENTS AND CONTROL & REGULATIONS

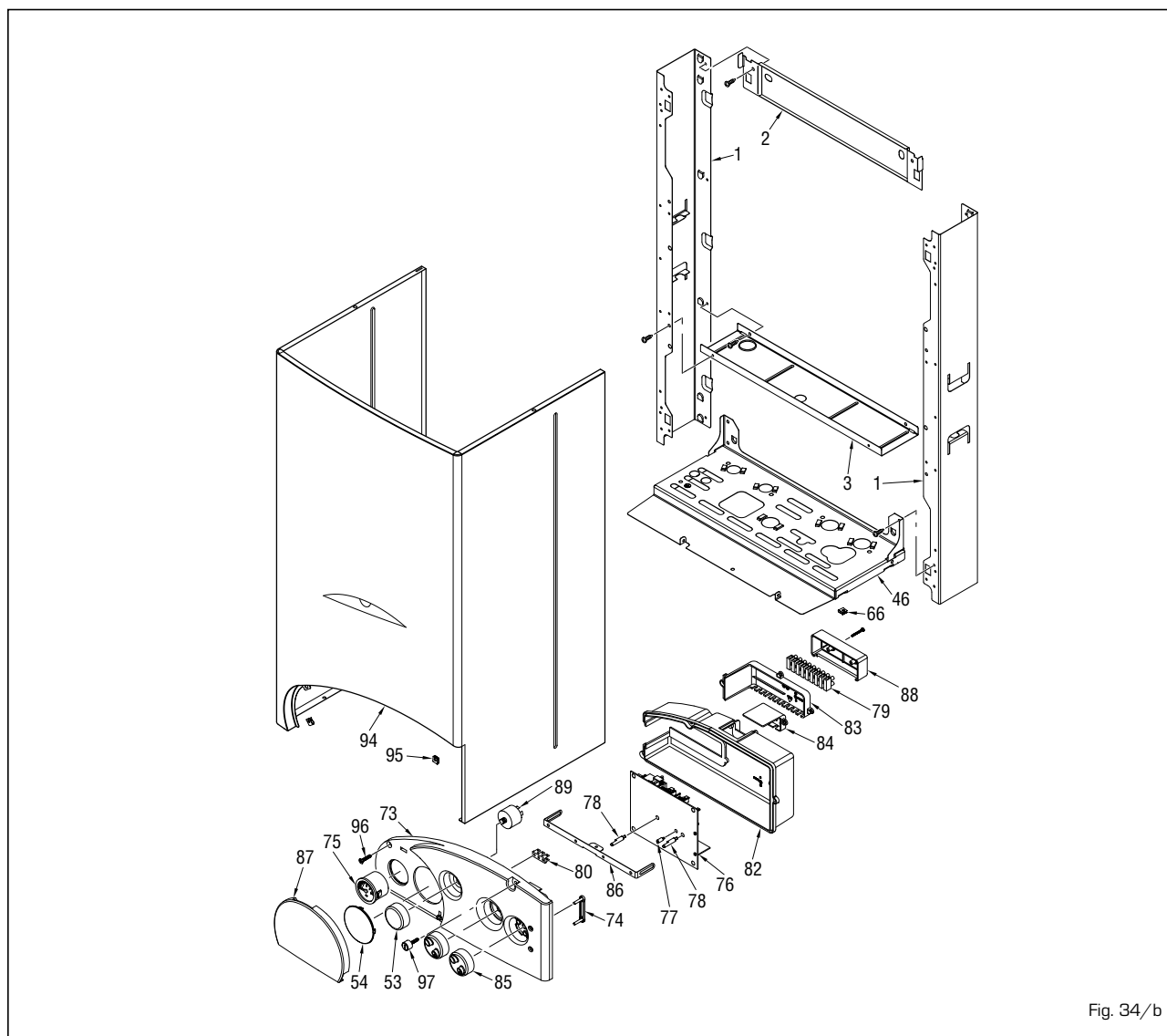


Fig. 34/b

Position	Code	Description	Model
1	6138570	Side frame part	
2	6138770	Frame assembly upper support	24
2 A	6138771	Frame assembly upper support	30
3	6255430	Expansion vessel lower support	24
3 A	6255431	Expansion vessel lower support	30
46	6138870	Frame assembly lower side	24
46 A	6138880	Frame assembly lower side	30
53	6247326	Cap for knob hole	
54	6247327	Cap for time programmer	
66	2013303	Fastener for self tapping screw	
73	6289802	Control panel	
74	6273210	Guidelight - 2 ways out	
75	6146130	Hydrometer	
76	6230690	Main PCB with ignition	
77	• 6201501	Trimmer spindle Ø 5	
78	• 6201505	Trimmer spindle Ø 6	
79	2211004	Terminal strip	
80	2211610	Earth faston	
82	6289900	Control panel protecting cover	
83	6290300	Control panel cable cover	
84	6290200	Room stat connection cover	
85	6290100	Knob Ø 40	
86	6009585	Control panel bracket	
87	6290003	Flap door	
88	6290350	Terminal strip protection cover	
89	6266902	Anti-jamming filter	
94	6287321	Casing	24
94 A	6287331	Casing	30
95	• 2013302	Fastener for self tapping screw	
96	2004510	Screw 8Px7/8"	
97	6112420	Control panel screw	

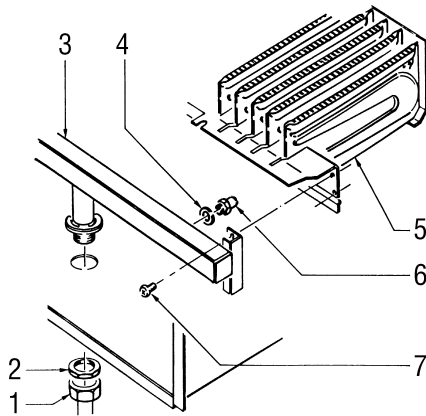
• Recommended stock parts

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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