

BAXI

LUNA 3 COMFORT

High efficiency gas fired wall mounted combination boiler
Chaudière murale à gaz à rendement élevé

WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS
 - Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

vapeurs ou liquides inflammables à proximité de cet

Ne touchez à aucun interrupteur; ne pas vous

installateur ou un service d'entretien qualifié ou par le

Installation and servicing instructions *Notice d'installation et d'entretien*



BAXI S.p.A., one of the leading European enterprises to produce central heating and hot water devices for domestic use (wall-mounted gas-operated boilers, floor-standing boilers, electrical water-heaters and steel heating plates) has obtained the QSC certificate of conformity to the UNI EN ISO 9001 norms. This certificate guarantees that the Quality System applied at the **BAXI S.p.A.** factory in Bassano del Grappa, where your boiler was produced, meets the standards of the UNI EN ISO 9001 norm, which is the strictest and concerns all organization stages and operating personnel involved in the production and distribution processes.

BAXI S.p.A., l'une des entreprises leader en Europe dans la production d'appareils de chauffage et sanitaires à usage domestique, (chaudières murales à gaz, chaudières au sol, chauffe-eau électriques, plaques de chauffe en acier), a obtenu la certification CSQ de conformité aux normes UNI EN ISO 9001. Ce certificat assure que le Système de Qualité en usage aux usines **BAXI S.p.A.** de Bassano del Grappa, où l'on a produit cette chaudière, satisfait la plus sévère des normes - c'est-à-dire la UNI EN ISO 9001 - qui concerne tous les stades d'organisation et le personnel intéressé du procès de production et distribution.

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"Should overheating occur or the gas supply fail to shut off, do not turn off or disconnect the electrical supply to the pump. Instead, shut off the gas supply at a location external to the appliance"

Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

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- WHAT TO DO IF YOU SMELL GAS
 - Do not try to light any appliance.
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 - If you cannot reach your gas supplier, call the fire department.
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1. INTRODUCTION

The Luna 3 310 Fi - 1.310 Fi boilers are wall hung, fan assisted room-sealed boilers. Heat output is controlled by a modulating gas valve.

The boilers, providing both central heating and domestic hot water at mains pressure, is designed for use with a fully pumped, sealed and pressurised heating system.

The boilers are supplied with a pump, diverter valve, pressure relief valve, expansion vessel and pressure gauge fully assembled and tested.

As supplied, the boilers will automatically modulate to provide central heating outputs between 10.4 and 31.0 kW (35 486 and 105 776 Btu/h).

The maximum output available for domestic hot water is 31.0 kW (105 776 Btu/h), capable of providing 2.8 gal/min. - 12.7 litres/min with a temperature rise of 63°F/35 °C.

IMPORTANT

It is the law that all gas appliances are installed by a competent person.

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

- The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/NFPA 54
Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.*
Safe lighting and other performance criteria were met with the gas manifold and control assembly provided on boiler when boiler underwent tests specified in ANSI Z21.13-latest edition.
- The installation should conform with CGA B149.1 INSTALLATION CODE and/or local installation Code, plumbing or waste water codes and other codes as applicable.
- Clearances from and protection of combustible material.
- Manufacturer's instructions must NOT be taken in anyway as over-riding statutory obligations.

2. TECHNICAL DATA

2.1 PERFORMANCE

Central Heating		MAX		MIN
		0÷2000 Ft 0÷610 m	2000÷4500 Ft 610÷1370 m	
Heat Input	Btu/h	126 249	120 107	45 040
(Gross)	kW	37	35.2	13.2
Heat Output (modulating)	Btu/h	105 776	100 658	35 486
	kW	31	29.5	10.4
Burner Pressure Setting	p.s.i.	0.203	0.186	0.0261
natural gas (A)	mbar	14.0	12.8	1.8
Gas Rate	ft³/h	124.2	118.2	44.5
natural gas (A)	m³/h	3.52	3.35	1.26
Burner Pressure Setting	p.s.i.	0.3541	0.3338	0.0479
LP gas (E)	mbar	24.4	23.0	3.3
Gas Rate	ft³/h	49.0	46.6	17.29
LP gas (E)	m³/h	1.39	1.32	0.49
CH Water Temp.	°F	185		
(Approx.)	°C	85		

Domestic Hot Water		MAX		MIN
		0÷2000 Ft 0÷610 m	2000÷4500 Ft 610÷1370 m	
Heat Input	Btu/h	126 249	120 107	45 040
(Gross)	kW	37	35.2	13.2
Heat Output (modulating)	Btu/h	105 776	100 658	35 486
	kW	31	29.5	10.4
Burner Pressure Setting	p.s.i.	0.203	0.186	0.0261
natural gas (A)	mbar	14.0	12.8	1.8
Gas Rate	ft³/h	124.2	118.2	44.5
natural gas (A)	m³/h	3.52	3.35	1.26
Burner Pressure Setting	p.s.i.	0.3541	0.3338	0.0479
LP gas (E)	mbar	24.4	23.0	3.3
Gas Rate	ft³/h	49.0	46.6	17.29
LP gas (E)	m³/h	1.39	1.32	0.49
Flow Rate (Can)	G.P.M.	2.4		
at 72°F/40°C Rise (USA)	G.P.M.	2.9		
	l/m	11.1		
Outlet Water Temp.	°F	149		
(Approx.)	°C	65		

2.2 SYSTEM

Central Heating (Sealed System)	
Max System Pressure	30 p.s.i. / 2.11 bar
Min System Pressure	7.25 p.s.i. / 0.5 bar
Max System temperature	185°F / 85°C
Pressure Relief Valve Setting	30 p.s.i. / 2.11 bar
Expansion Vessel Size	2.2 Gal / 10 l
(pre-charge press.)	at 11.6 p.s.i. / 0.8 bar
Flow Connection	3/4" / 22.2 mm
Return Connection	3/4" / 22.2 mm
Relief Valve Connection	3/4" / 22.2 mm
Recommended System Pressure (cold)	21.7 p.s.i. / 1.5 bar

Domestic Hot Water	
Max Mains Inlet Pressure	116 p.s.i. / 8 bar
Min Mains Water Pressure	2.9 p.s.i. / 0.2 bar
Min DHW Flow Rate	(Can) 0.55 GPM / 2.5 l/min
	(USA) 0.66 GPM / 2.5 l/min
Mains Inlet Connection	1/2" / 15.9 mm
DHW Outlet Connection	1/2" / 15.9 mm
Max DHW Temperature	149°F / 65°C
DHW Water Content	(Can) 0.05 Gal / 0.23 l
	(USA) 0.06 Gal / 0.23 l

2.3 COMPONENTS

Burner (15 blade)	Stainless Steel
Main Heat exchanger	Copper
DHW Heat exchanger	Stainless Steel
Injectors natural gas (A)	1.28 mm
Injectors LPG gas (E)	0.90 mm
Pump	Grundfos UPS 15-62/BX AO
Flue - Outer Duct	Epoxy coated
Flue - Inner Duct	Aluminium
Fan	MVL RLG 97/3400 - 3030LH
Gas Valve	SIT 845 SIGMA
Air Pressure Switch	HUBA
Diverter Valve	Baxi

2.4 INSTALLATION

Minimum Clearances for Servicing		
	Top	8.66 in / 220 mm
	Bottom	9.84 in / 250 mm
	Sides	1.77 in / 45 mm
	Front	17.71 in / 450 mm
Flue Terminal Size Concentric System		3.93 in / 100 mm
Flue Terminal Size 2-Pipe Flue System		3.14 in / 80 mm
Flue Terminal Protruding		4.52 in / 115 mm
Lift Weight		88 lb / 40 kg

2.5 GENERAL

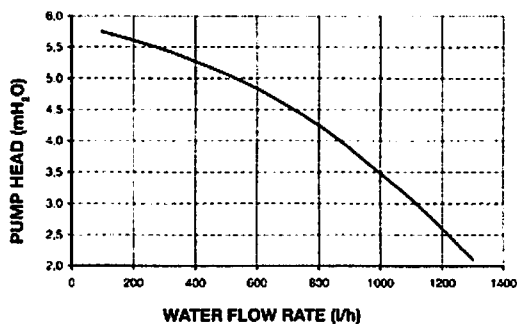
Dimensions	Height	30.04 in / 763 mm
	Width	17.71 in / 450 mm
	Depth	13.78 in / 350 mm
Gas Connection		3/4"
Primary Water Content		(Can) 0.33 Gal / 1.5 l (USA) 0.40 Gal / 1.5 l
Air Duct Diameter		3.93 in / 100 mm
Flue Duct Diameter		2.36 in / 60 mm

2.6 ELECTRICAL

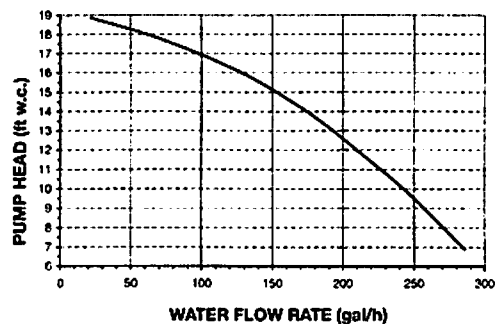
Supply	120 V 60 Hz
Power Consumption	563 Btu / h - 165 W
Internal Fuse	3.15 A
Electrode Spark Gap	2.5 to 3.5 mm

2.7 AVAILABLE PUMP HEAD FOR CENTRAL HEATING

This is a high static head pump fit for installation on any type of single or double-pipe heating systems. The air vent valve incorporated in the pump allows quick venting of the heating system.



Graph 1



2.8 SYSTEM VOLUME

Based on 30 p.s.i. / 2.11 bar safety valve setting

Vessel charge and initial system pressure	bar	0.5	1.0	1.5
	psi	7.25	14.5	21.7
Total water content of system using 2.2 gal / 10 l	Litres	120	91	64
capacity expansion vessel (Can)	gal	26.4	20	14
supplied with appliance (USA)	gal	31.7	24	16.9
For systems having a larger capacity MULTIPLY the TOTAL system capacity in litres (gallons) by the factor to obtain the TOTAL MINIMUM expansion vessel capacity required in litres (gallons)		0.0833	0.109	0.156

Note: When the boiler is operating at maximum operating temperature, providing heating with all radiators operating, the pressure gauge should not indicate more than 25.5 p.s.i. / 1.8 bar. If the reading exceeds this figure an additional expansion vessel is required.

2.9 BOILER SCHEMATIC

Central Heating Mode (Fig. 1)

1. With a demand for heating, the pump circulates water through the primary circuit. At a pre-determined flow rate the central heating flow switch operates, initiating the ignition sequence.
2. The main burner ignites at low rate, then the gas valve controls the gas rate to maintain the heating temperature measured by the temperature sensor.
3. When the flow temperature exceeds the setting temperature, a 3 minute delay occurs before the burner relights automatically (anti-cycling). The pump continues to run during this period.
4. When the demand is satisfied the burner is extinguished and the pump continues to run for a period of 3 minutes (Pump Overrun).

Central Heating Circuit

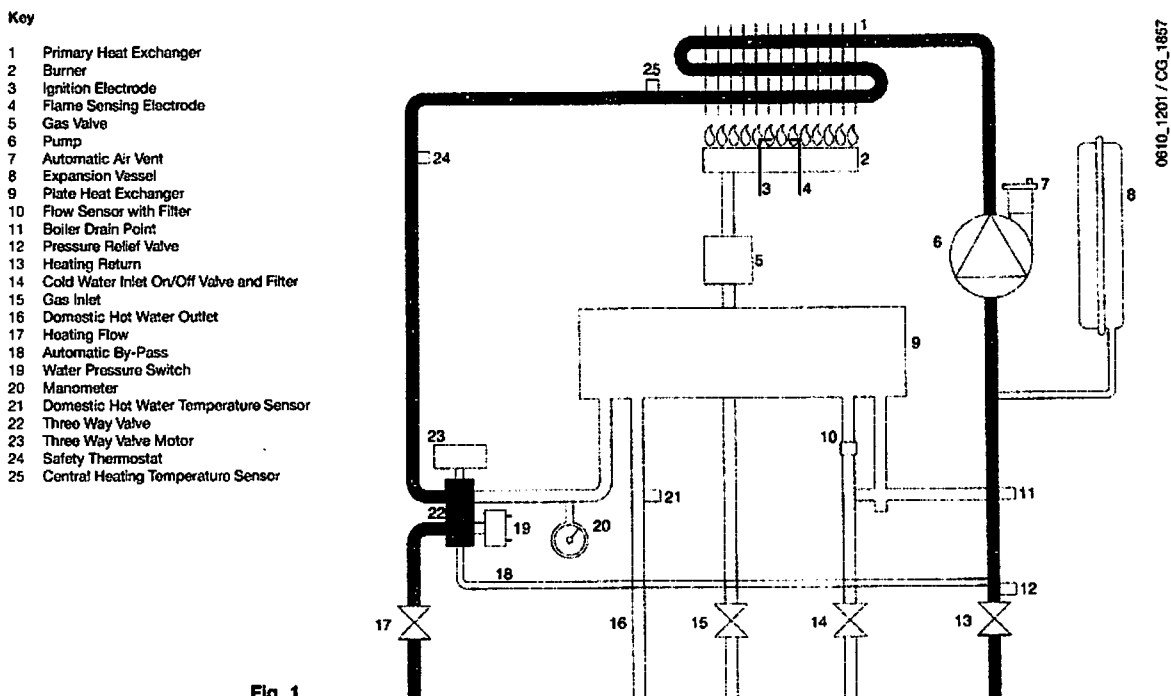


Fig. 1

2.9.1 BOILER SCHEMATIC FOR 1.310 Fi MODEL

Operating Mode (Fig. 1.1)

1. With a demand for heating, the pump circulates water through the primary circuit. At a pre-determined flow rate the central heating flow switch operates, initiating the ignition sequence.
2. The main burner ignites at low rate, then the gas valve controls the gas rate to maintain the heating temperature measured by the temperature sensor.
3. When the flow temperature exceeds the setting temperature, a 3 minute delay occurs before the burner relights automatically (anti-cycling). The pump continues to run during this period.
4. When the demand is satisfied the burner is extinguished and the pump continues to run for a period of 3 minutes (Pump Overrun).

Boiler Primary Circuit

Key

- 1 Primary Heat Exchanger
- 2 Burner
- 3 Ignition Electrode
- 4 Flame Sensing Electrode
- 5 Gas Valve
- 6 Pump
- 7 Automatic Air Vent
- 8 Expansion Vessel
- 9 Boiler Drain Point
- 10 Pressure Relief Valve
- 11 Boiler Return
- 12 Gas Inlet
- 14 Automatic By-Pass
- 15 Three Way Valve
- 16 Manometer
- 17 Boiler Flow
- 18 Three Way Valve
- 19 Three Way Valve Motor
- 20 Safety Thermostat
- 21 Temperature Sensor

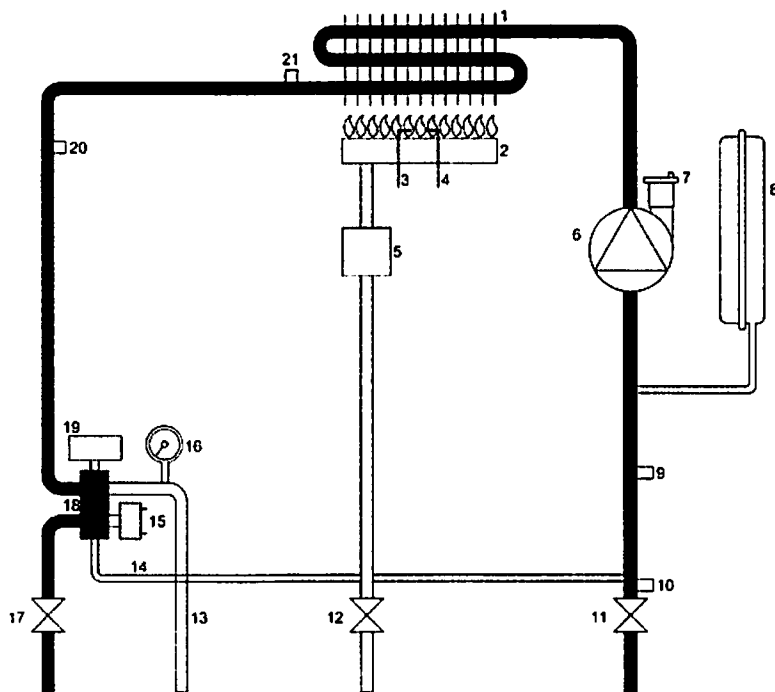
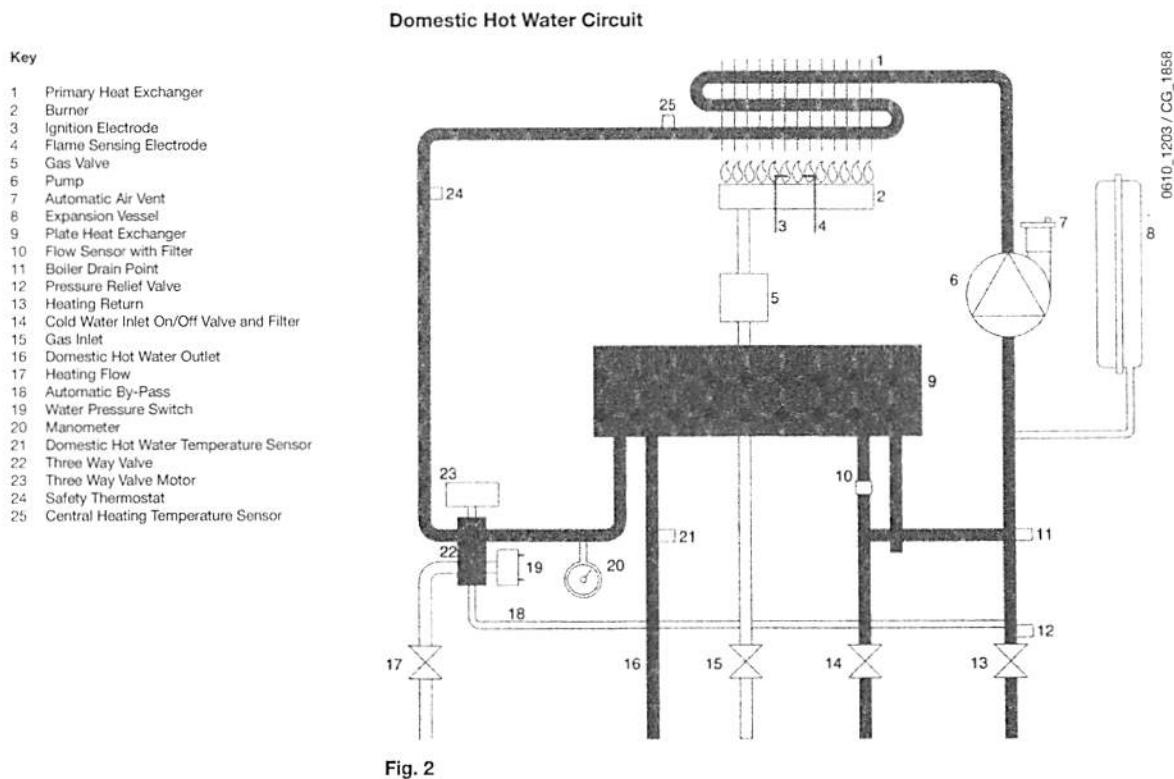


Fig. 1.1

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Domestic Hot Water Mode (Fig. 2)

1. Priority is given to the domestic hot water supply. A demand at a tap or shower will override any central heating requirement.
2. The flow of water will operate the DHW flow switch which requests the 3 way valve to change position. This will allow the pump to circulate the primary water through the DHW plate heat exchanger.
3. The burner will light automatically and the temperature of the domestic hot water is controlled by the temperature sensor.
4. When the domestic hot water demand ceases the burner will extinguish and the diverter valve will remain in the domestic hot water mode, unless there is a demand for central heating.



Frost Protection Mode

1. Boilers electronic management includes a "frost protection" function in the central heating system which operates the burner to reach a heating flow temperature of 30°C when the system heating flow temperature drops below 5 °C. This function is enabled when the boiler is connected to electrical supply, the gas supply is on and the system pressure is as required.

Pump Protection

1. In the event that no heat is required, the pump will automatically start up and operate for one minute during the following 24 hours. This function is operative when the boiler is powered.

3. GENERAL BOILER INFORMATION

3.1 GAS SUPPLY

The boiler requires a gas rate of 128.1 ft³/h - 3.63m³/h.

The meter and supply pipes must be capable of delivering this quantity of gas in addition to the demand from any other appliances in the house. The boiler requires at least a 3/4" gas supply pipe. The complete installation, including the meter, must be tested for gas leak and purged.

3.2 ELECTRICAL SUPPLY

The boiler requires a 120V 60Hz power supply. Ensure the electrical supply is polarised.

The boiler must be grounded.

There must only be one common isolator, providing complete electrical isolation, for the boiler and any external controls.

Using PVC insulated cable 18 AWG x3C 105 °C.

All wiring must be installed in accordance with requirements of National Electrical Code and any additional national, state, or local code requirements having jurisdiction. All wiring must be N.E.C. Class 1. Boiler must be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA No. 70-latest edition.

In Canada, installation must conform to CSA C22.1 Canadian Electrical Code Part 1 and any local codes.

3.2.1 Install Room Thermostat

Install room thermostat on an inside wall. Never install where it will be influenced by drafts, hot or cold water pipes, lighting fixtures, television, sun rays or near a fireplace.

3.3 AIR SUPPLY

The boiler does not require any air vents in the room in which it is installed, or when installed in a cupboard or compartment.

3.4 FLUE SYSTEM

WARNING :

If the heating is directly connected to a floor heating system, a safety overheating thermostat should be provided by the installer.

3.4.1 CONCENTRIC SYSTEM

The flue assembly supplied for the boiler is 2.64 ft / 0.75 m in length + terminal.

For horizontal flues a minor deviation from the horizontal is allowable, provided it results in a downward slope towards the terminal.

Additional flue components are available as follows:

3.28 ft / 1 m flue

90° bend

45° bend

Vertical flue terminal assembly. Refer to the separate installation instructions supplied with the assembly.

Notes: If an extra 90° bend is used, this reduces the maximum flue length by 3.28 ft / 1 m. Each 45° bend used reduces the maximum flue length by 1.64 ft / 0.5 m.

Under no circumstances must the flue length (including allowances for extra bends) exceed 4 m / 13.12 ft.

1. Locate the flue elbow on the adaptor at the top of the boiler. Set the elbow to the required orientation (rear, right or left).
2. Measure the distance from the outside wall face to the elbow (Fig. 3). This dimension will be known as 'X'.
3. Taking the air duct, mark dimension 'X' as shown (Fig. 4). Measure the length of waste material, and transfer the dimension to the flue duct (Fig. 4).
4. Remove the waste from both ducts. Ensure that the cut ends are square and free from burrs.
5. Remove the flue elbow from the adaptor.

IMPORTANT: Check all measurements before cutting. Clearance to combustible materials when using concentric system is zero.

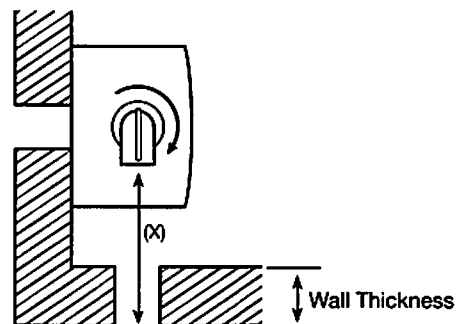
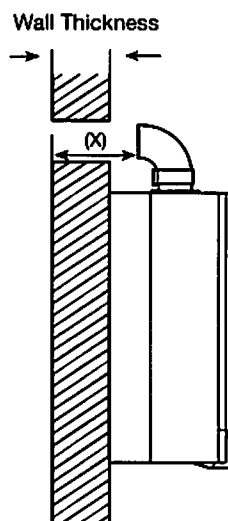


Fig. 3

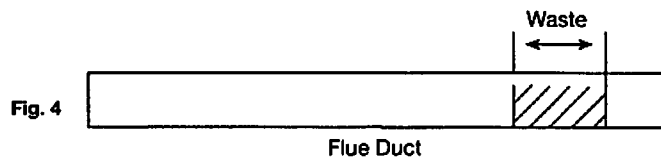
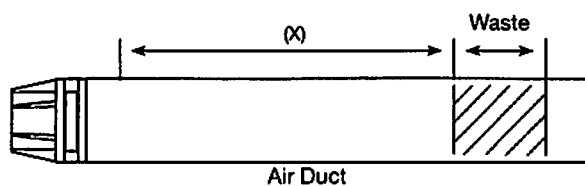


Fig. 4

IMPORTANT: If the equivalent flue length is greater than 1.5 m / 4.92 ft the restrictor **MUST** be removed from the adaptor (Fig. 5).

6. Insert the flue duct into the air duct and pass them through the hole in the wall.
7. Take one of the rubber seals and position it on the boiler flue adaptor. Engage the flue elbow on the adaptor and pull the sleeve up so that it equally covers the joint (Fig. 5).
8. Remove the screws from one of the clips provided. Prise the clip apart and fit it over the seal (Fig. 6). Set the elbow to the required angle.
9. Refit the screws to the clip and tighten them to secure the elbow. Take the second rubber seal and position it on the flue elbow.
10. Locate the flue duct clamp on the flue outlet elbow. Draw the flue duct out of the air duct, engage it in the clamp and tighten the screws (Fig. 7).
11. Draw the air duct out of the wall and align it with the elbow. Position the seal so that it equally covers the joint (Fig. 8).
12. Remove the screws from the second clip provided. Prise the clip apart and fit it over the seal. Refit the screws to the clip and tighten them (Fig. 8).
13. Where possible position the clips so that the screws are not visible.
14. Make good between the wall and air duct outside the building.

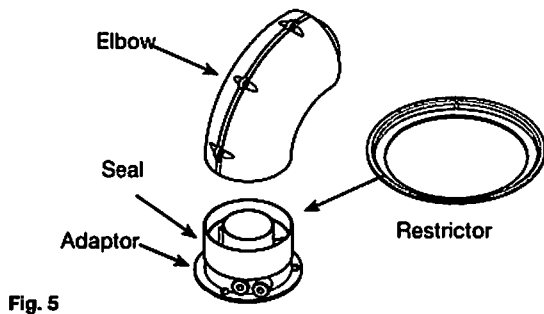


Fig. 5

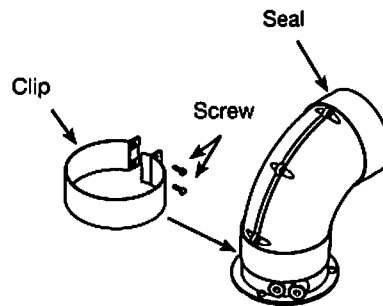


Fig. 6

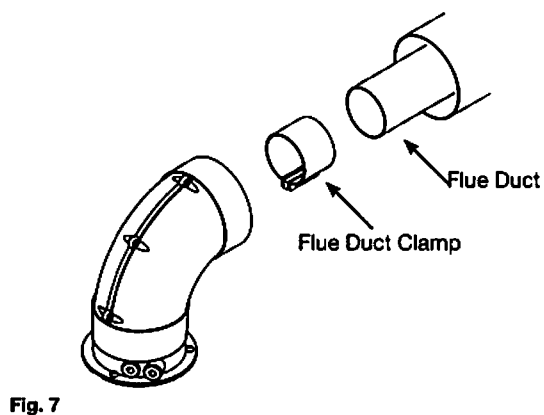


Fig. 7

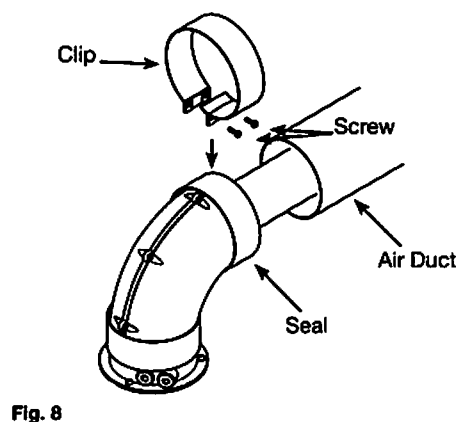


Fig. 8

Flue Options

1. The Baxi boiler can be fitted with flue systems as illustrated.
2. The standard flue is suitable only for horizontal applications.
3. Maximum permissible equivalent flue lengths are:

Concentric	4 m / 13.12 ft
Vertical	4 m / 13.12 ft

4. Any additional "in line" bends in the flue system must be taken into consideration.
Their equivalent lengths are:-
Concentric Pipes:

45° bend	0.5 m / 1.64 ft
90° bend	1.0 m / 0.82 ft

The elbow supplied with the standard horizontal flue is not included in any equivalent length calculations

5. The illustrations opposite show examples of maximum equivalent lengths.
6. Instructions for guidance and fitting are included in each kit.

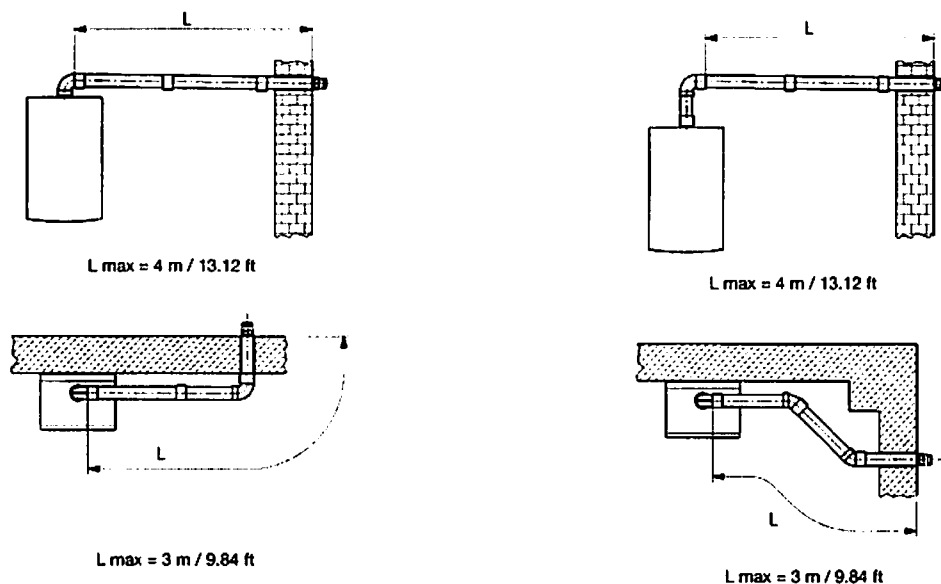
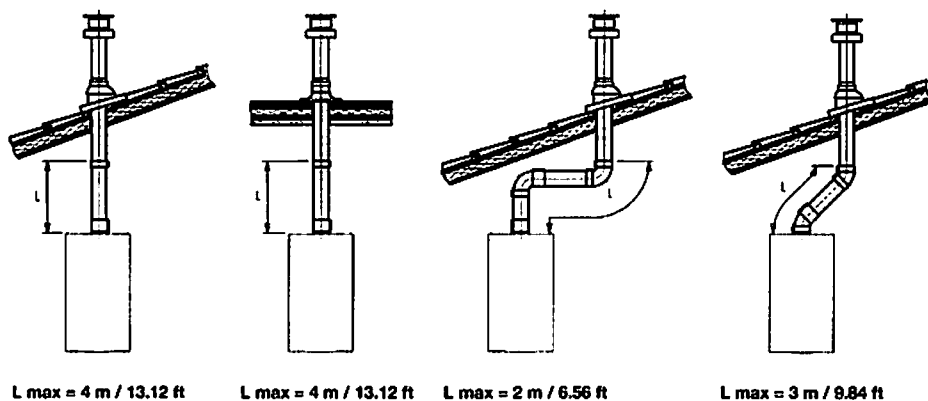


Fig. 9a



3.4.2 TWO PIPE SYSTEM

This type of ducting allows to disengage exhaust flue gases both outside the building and into single flue ducts. Comburant air may be drawn in at a different site from where the flue terminal is located. The splitting kit consists of a flue duct adaptor (100/80) and of an air duct adaptor; the latter may be placed either on the left or on the right of the flue terminal according to installation requirements. For the air duct adaptor fit the screws and seals previously removed from the cap. The restrictor must be removed in case you install separated flue and air duct terminals.

IMPORTANT: All parts of the exhaust flue duct must be at least 1 in / 25.4 mm from any combustible materials or zero mm to combustibles if mylar sleeve is used.

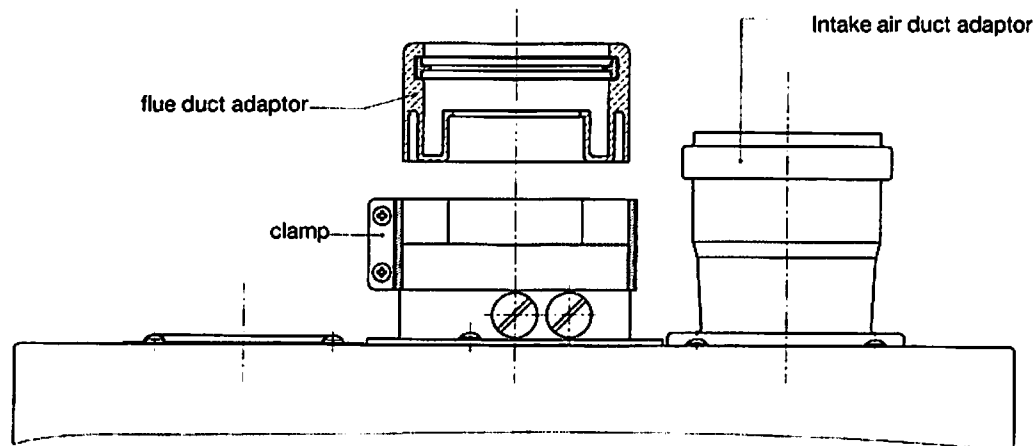


Fig. 10

The 90° bend allows to connect the boiler to flue-air ducting regardless of direction as it can be rotated by 360°. It can moreover be used as a supplementary bend to be coupled with the duct or with a 45° bend.

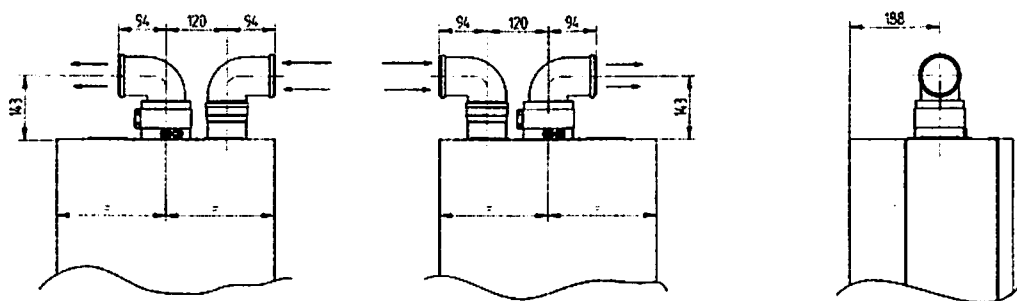


Fig. 11

A 90° bend reduces the total duct length by 0.5 m / 1.64 ft.

A 45° bend reduces the total duct length by 0.25 m / 0.82 ft.

Separated horizontal flue terminals installation options

IMPORTANT: Ensure a minimum downward slope of 1 cm / 0.39 in toward the outside per each metre of duct length. In the event of installation of the condensate collection kit, the angle of the drain duct must be directed towards the boiler.

The maximum length of the suction duct must be 10 m / 32.80 ft.

If the flue duct exceeds 6 m / 19.68 ft, the condensate collection kit (supplied as an accessory) must be fitted close to the boiler.

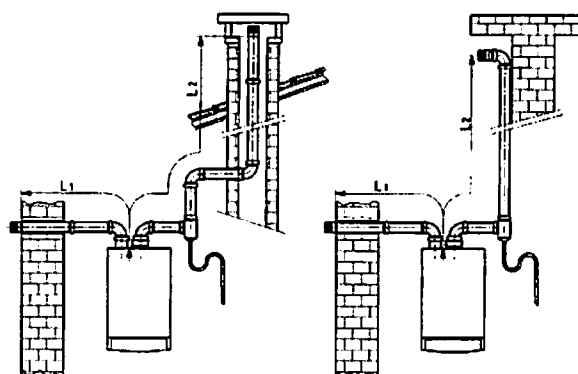
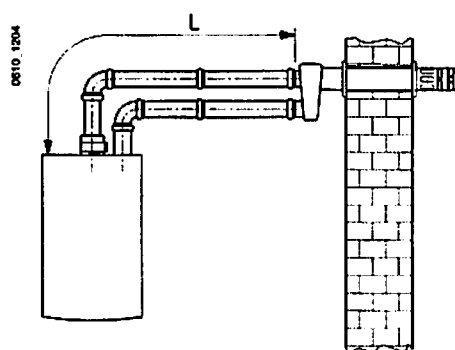


Fig. 12

(L1 + L2) max = 25 m / 0.82 ft



L max = 8 m / 26.24 ft

Fig. 13

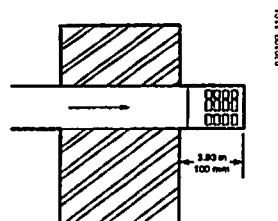


Fig. a

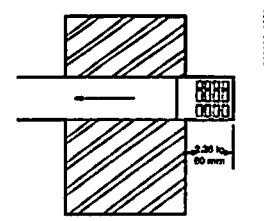


Fig. b

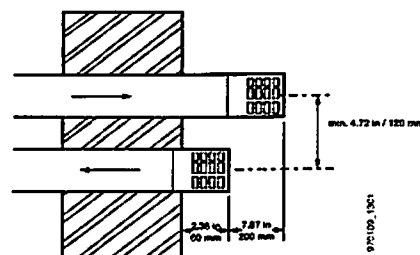


Fig. c

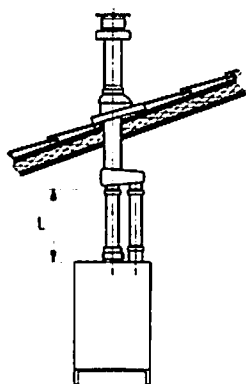
Separated vertical flue terminals installation options

Important: if fitting a single exhaust flue duct, ensure it is adequately insulated (e.g.: with glass wool) wherever the duct passes through building walls.

For detailed instructions concerning the installation of fittings refer to the technical data accompanying the fittings.

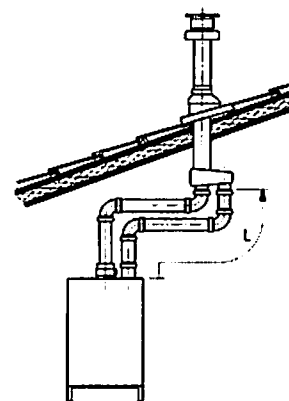
Split flue air control adjustment

The adjustment of this control is required to optimise performance and combustion parameters. The air suction coupling which may be mounted on the left or right of the flue duct can be rotated to adjust excess air according to the total length of the flue and intake ducts for the combustion air.



L max = 12 m / 39.36 ft

Fig. 14

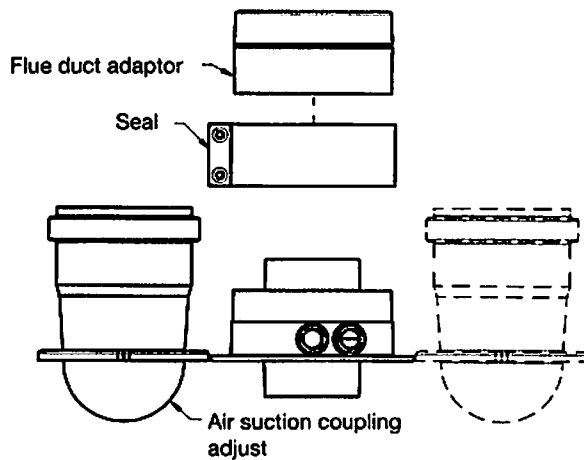


L max = 11 m / 36.08 ft

Turn this control clockwise to decrease excess combustion air and anticlockwise to increase it.

To improve optimisation a combustion product analyser can be used to measure the CO₂ contents of the flue at maximum heat output, gradually adjusting air to obtain the CO₂ reading in the table below, if the analysis shows a lower value.

To properly install this device, also refer to the technical data accompanying the fitting.



004/2301/C31776

(L1+L2) MAX	CONTROL POSITION	CO ₂ %	
		G20	G31
0 ÷ 2	1	7,4	8,5
2 ÷ 10	2		
10 ÷ 25	3		

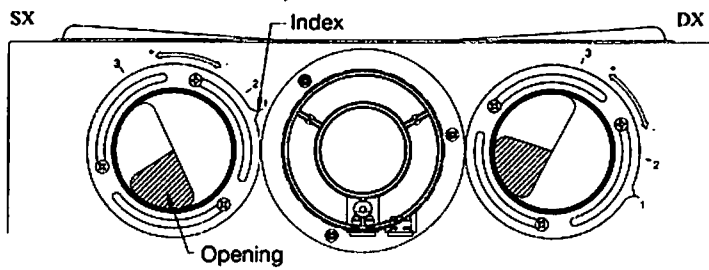


Fig. 15

3.5 FLUE TERMINAL LOCATION

Fig. 16 IN COMPLIANCE WITH CGA B149

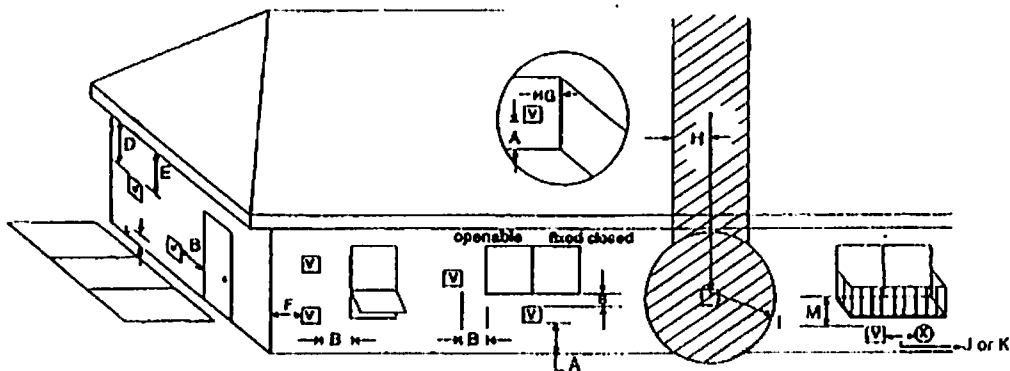


Fig. 16

= VENT TERMINAL

= AIR SUPPLY INLET

= AREA WHERE TERMINAL IS NOT PERMITTED

Vent Termination Minimum Clearances

A = 12"	clearances above grade, veranda, porch, deck or balcony
B = 12"	clearances to window or door that may be opened
D = 18"	vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (60 cm) from the centre line of the terminal
E = 18"	clearance to unventilated soffit
F = 9"	clearance to outside corner
G = 6"	clearance to inside corner
H = 4 ft. (U.S.A.)	not to be installed above a gas meter/regulator assembly within H horizontally from the centre line of the regulator
I = 3 ft. (U.S.A.) 6 ft. (Canada)	clearance to service regulator vent outlet
J = 9" (U.S.A.)	clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance
K = 3 ft. (U.S.A.) 6 ft. (Canada)	clearance to a mechanical air supply inlet
* L = 7 ft.	clearance above paved side-walk or a paved driveway located on public property
** M = 18"	clearance under veranda, porch, deck or balcony

- * a vent shall not terminate directly above a side-walk or paved driveway which is located between two single family dwellings and serves both dwellings unless terminated 7ft above sidewalk.
- ** only permitted if veranda, porch, deck or balcony is fully open on a minimum of 2 sides beneath the floor.

Note: local Codes or Regulations may require different clearances.

The flue terminal must be exposed to the external air and the position must allow the free passage of air across it at all times. In certain weather conditions the terminal may emit a plume of steam. Avoid positioning the terminal where this may cause a nuisance.

If the terminal is fitted less than 6.56 ft / 2 m above a surface to which people have access, the terminal must be protected by a terminal guard.

3.6 BOILER LOCATION

The boiler is not suitable for external installation.

The boiler must be installed on a flat vertical wall which is capable of supporting the weight of the boiler.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current electrical provisions with respect to the installation of the boiler in a room or internal space containing a bath or shower. Where a room-sealed boiler is installed in a room containing a bath or shower, it must not be possible for a person using the bath or shower to touch any electrical switch or boiler control utilising mains electricity.

The boiler may be installed in a cupboard or compartment, provided it is correctly designed and sufficiently ventilated for that purpose.

3.7 CENTRAL HEATING SYSTEM - FIG. 17

The boiler is designed for use in a sealed central heating system.

Refer to Technical Data, section 2.8, for details of the heating system volume.

The system should be designed to operate with flow temperatures of up to 185 °F / 85°C. When designing the system, the pump head, expansion vessel size, mean radiator temperature, etc. must all be taken into account. Refer to the pump performance table for guidelines.

The boiler is supplied with the following components built in:

Pressure relief valve - set to operate at 43 p.s.i. / 3 bar. The discharge pipe must be routed clear of the boiler to a drain, in such a manner that it can be seen, but cannot cause injury to persons or property.

Manual operation of relief valve at least once a year.

- WARNING:**
1. Avoid contact with hot water coming/out
 2. Prevent water damage

Pressure gauge - to indicate the system pressure to be maintained.

Expansion vessel - with a capacity of 2.2 gal / 10 l and pre-charged to a pressure of 7.25 p.s.i. / 0.5 bar.

By-pass - The boiler incorporates an automatic by-pass. However, where all radiators are fitted with thermostatic radiator valves, an external by-pass must be fitted.

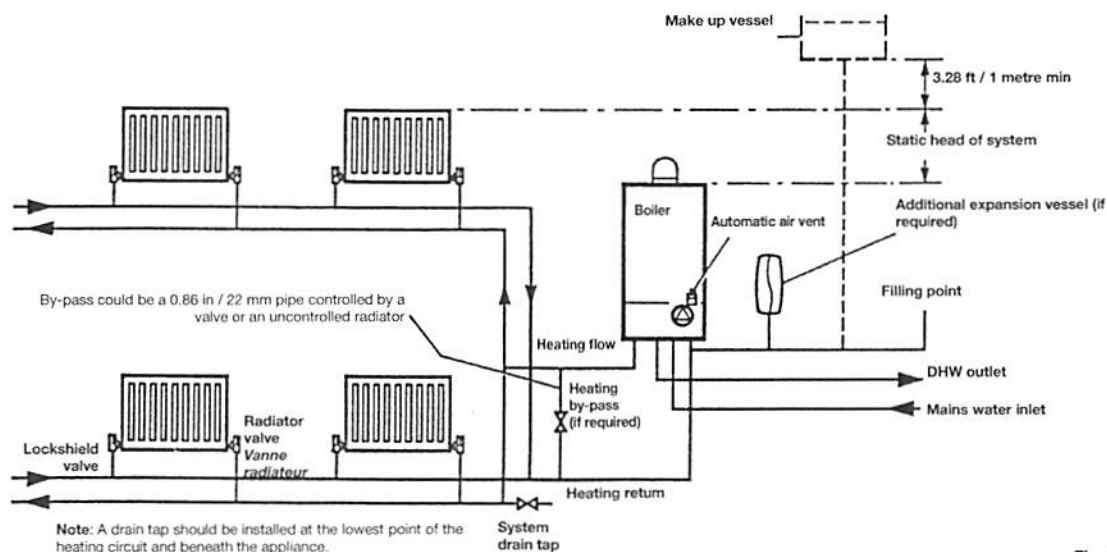


Fig. 17

3.8 - FILLING THE CENTRAL HEATING SYSTEM

The system design pressure (cold) should be set to (7.25-14.5) p.s.i. / (0.5-1) bar. This pressure is equivalent to the maximum static head (see Fig. 17) in bar + 0.3 (14.5 p.s.i. = 1 bar = 10.2 metres of water).

Filling of the system must be carried out in a manner approved by the local Water Undertaking. The system may be filled as shown in Fig. 18-19.

Drain taps must be used to allow the system to be completely drained.

The heating system should be thoroughly flushed before the boiler is connected and again after the first heating.

310 Fi

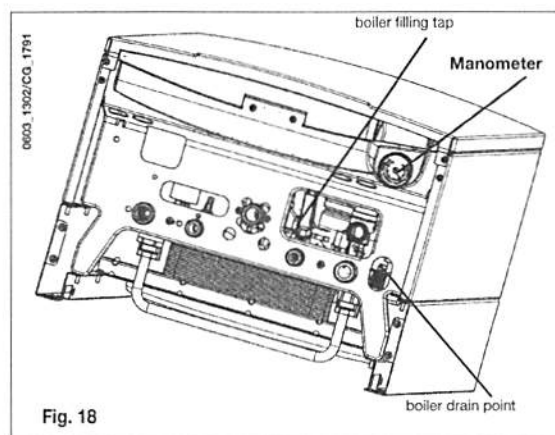


Fig. 18

1.310 Fi

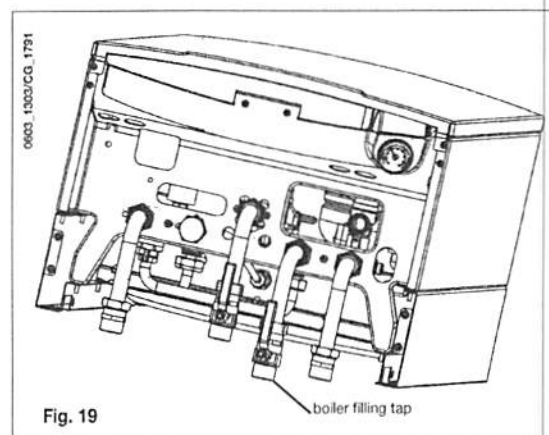


Fig. 19

3.9 - TOXIC CHEMICAL

Toxic chemicals, such as used for boiler treatment, shall not be introduced into the potable water used for space heating.

3.10 - HEATING SYSTEM AND REFRIGERATION SYSTEM

The boiler, when used in connection with a refrigeration system, must be installed so the chilled medium is piped in parallel with the boiler with appropriate valves to prevent the chilled medium from entering the boiler.

The boiler piping system of a hot water boiler connected to heating coils located in air handling units where they may be exposed to refrigerated air circulation must be equipped with flow control valves or other automatic means to prevent gravity circulation of the boiler water during the cooling cycle.

4. INSTALLATION

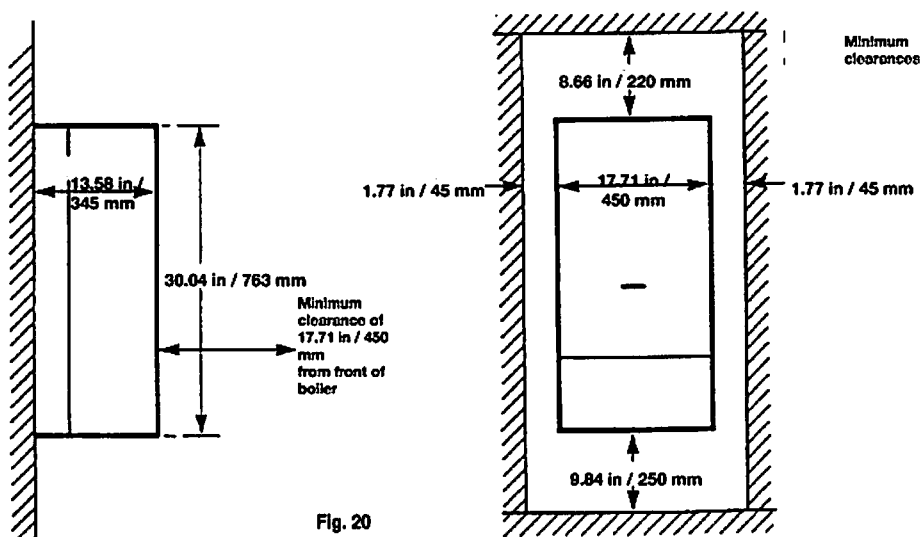
4.1 - UNPACKING

1. The boiler is supplied in four boxes, as follows:

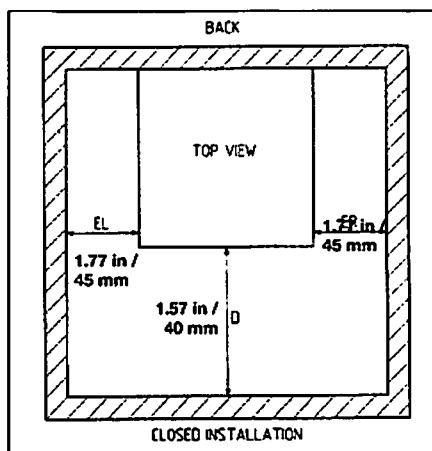
- Box 1 Cased boiler
Water and gas valves plus washers
Water fittings.
Screws and wall plugs
Wall template
- Box 2 90° flue bend with clamp (not required for vertical flue)
- Box 3 2.64 ft / 0.75 m flue (for side and rear flue) with terminal

- 2. Unpack boiler and remove loose items packs.
- 3. Remove the two screws at the top of the front casing. Slide it up

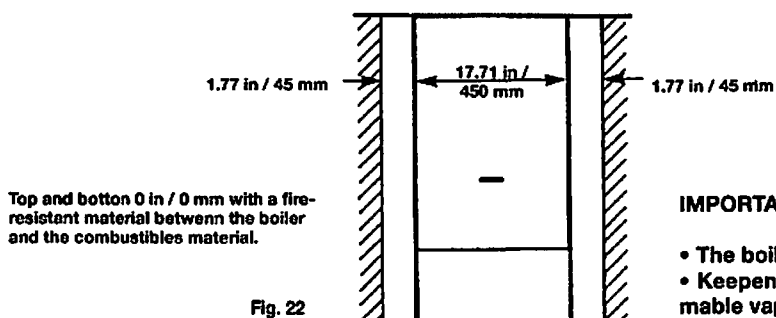
4.2 - CLEARANCES REQUIRED FOR SERVICING (FIG. 20)



4.2.1. CLEARANCES REQUIRED FOR CLOSET INSTALLATION



4.2.2 CLEARANCES FOR COMBUSTIBLES



IMPORTANT:

- The boiler must not be installed on carpeting.
- Keeping boiler area clear and free from flammable vapors and liquid.

4.3 - PREPARE THE WALL

- 1 Decide upon the position of the boiler taking into account the clearances required for servicing and the flue terminal position.
- 2 Tape the template to the wall (ensure it is level and the right way up) and mark the position of the holes for the boiler mounting bracket and bottom fixings. If rear exit flue is used, mark the position of the hole for the flue.
- 3 If side exit flue is to be used, continue the horizontal centre line of the flue across the wall to the side wall, then along the side wall (ensure the lines are horizontal). This will give the position of the centre of the hole for the flue.
- 4 Cut the 4.33 in / 110 mm diameter hole in the wall for the concentric flue.

4.4 - FIT THE BOILER

- 1 Lift the boiler and locate it on the wall.
- 2 Adjust the position of the boiler, as necessary. Fit the screws to secure the boiler in position.

4.5 - CONNECT THE PIPEWORK

- 1 Thoroughly flush out all the water pipework.

Note: Ensure that all the plastic caps are removed from the boiler connections.

- 2 Secure all the valves/fittings to the boiler- use the washers supplied, ensuring they are facing the rear wall. Fit the union bends to the valves.

Note:

- a. If soldering to the boiler union bends, ensure that the bends are not connected to the valves, otherwise the internal seals may be damaged.
- b. Ensure the 3/4" / 22.2 mm isolating valve with the filter is fitted to the heating return connection.
- c. Fit the pressure relief valve connection before the isolating valves.

- 3 Connect the system pipework to the boiler.

Note: Do not forget that the pressure relief valve discharge pipe must be routed clear of the boiler to a drain in such a manner that it may be seen, but cannot cause injury to persons or property.

- 4 Ensure that all the valves are closed (spindle flats at right angles to valve) and do not turn on the water or gas supplies at this stage.

IMPORTANT

The boiler and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

The boiler must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (3.5 kPa).

The boiler shall be installed such that the gas ignition system components are protected from water (dripping, spraying, rain, etc.) during appliance operation and service (circulator replacement, condensate trap, control replacement, etc.)

4.6 - CONNECT THE MAINS SUPPLY

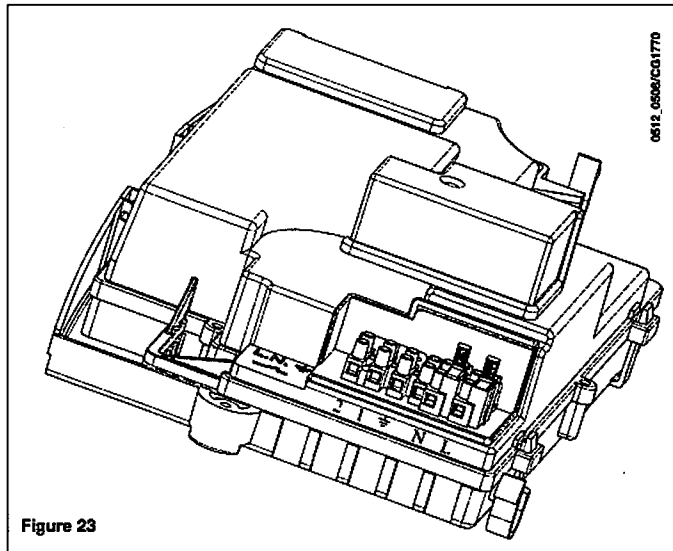
...Access to the power supply terminal block

- 1 isolate the electrical supply to the boiler by the double-pole switch;
- 2 unscrew the two screws securing the control board to the boiler;
- 3 rotate the control board;
- 4 unscrew the lid and gain access to the wiring (Figure 23).

The 2A fast-blowing fuses are incorporated in the power supply terminal block (to check or replace the fuses, pull out the black fuse carrier).

IMPORTANT: be sure to connect polarities correctly L (LIVE) - N (NEUTRAL).

- (L) = Live (brown)
(N) = Neutral (blue)
(\oplus) = Ground (yellow/green)
(1) (2) = Room thermostat terminal



WARNING: If the heating is directly connected to a floor heating system, a safety overheating thermostat should be provided by the installer.

5. COMMISSIONING

5.1 - FILL THE SYSTEM

- 1 The boiler is fitted with an automatic air vent positioned on the pump (see Fig. 1). The vent is fitted with a non-sealing cap.
- 2 Open the central heating flow and return valves (spindle flats in-line with valve).
- 3 Open the fill point valve on the filling system until water is heard to flow. To aid venting, the boiler drain point may be opened until water flows out. Close the drain point as soon as water appears.
- 4 In systems using radiators to remove the air - Vent each radiator in turn, starting with the lowest in the system.
- 5 It is important that the pump is properly vented to avoid it running dry and damaging its bearings. Unscrew and remove the cap from the centre of the pump. Using a suitable screwdriver rotate the exposed spindle about half a turn, then replace the cap.
- 6 Check the operation of the heating pressure relief valve by turning the head anti-clockwise until it clicks. The click is the valve lifting off its seat allowing water to escape from the system - check that this is actually happening.
- 7 Continue to fill the system until the pressure gauge indicates 14.5 p.s.i. / 1 bar. Close the fill point valve and check the system for water soundness, rectifying where necessary.
Water may be released from the system by manually operating the drain point until the system design pressure is obtained.
The system design pressure (cold) should be between 7.25 p.s.i. / 0.5 bar and 14.5 p.s.i. / 1 bar.
Refer to section 2.8, System volume.
- 8 Open the mains water inlet valve (see Fig. 18-19). Turn on all hot water taps and allow water to flow until no air is present. Turn off taps.

5.2 - TEST FOR GAS SOUNDNESS AND PURGE THE SUPPLY

- 1 With the boiler gas service cock closed (spindle flats at right angles to valve). Pressure test the gas supply and inlet pipework connection to the boiler gas service cock for soundness.
- 2 Loosen the gas inlet pressure test point screw on the gas valve (see Fig. 25). Ensure the gas supply is on and open the boiler service cock to purge.
- 3 Retighten the test point screw and test for gas soundness. Close the boiler gas service cock.

5.3 - BOILER CONTROLS

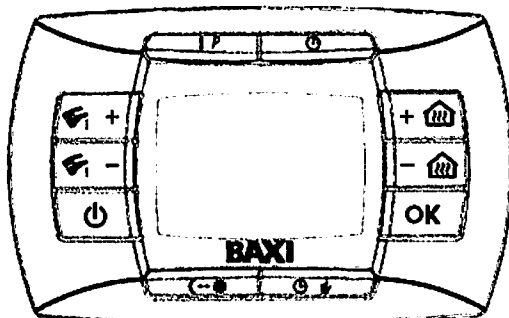
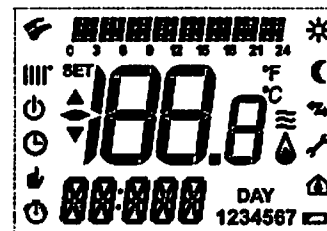


Fig. 24








Note: see the instructions for the user for keys

5.4 - INITIAL LIGHTING

Refer to Fig. 24

Note: Remove the protective plastic coating from the boiler painted panels before lighting.

- 1 Ensure that the gas and electrical supplies to the boiler are off and that the mains water inlet valve and the central heating flow and return valves are open.
- 2 Turn on the gas and electrical supplies to the boiler.
- 3 Ensure all external controls are calling for heat.
- 4 Press the  button to enable the SUMMER mode (DHW only), the display shows the  symbol.
- 5 Open a hot water tap, the burner will light and the boiler will provide hot water. Close the tap and the burner will go out.
- 6 Press the  button to enable the HEATING ONLY () mode (CH only) or WINTER () mode (CH and DHW). The boiler will now run in the central heating mode. The pump will start, the fan will start; once the pressure switch is proved, the main gas valve solenoid will open allowing the burner to light from the ignition electrodes

5.5 - GAS CHANGE MODALITIES

A Qualified Service Engineer may adapt this boiler to operate with natural gas (A) or with LP gas (E). The procedure for calibrating the pressure regulator may vary according to the type of gas valve fitted (HONEYWELL or SIT; see figure 25).

Carry out the following operations in the given sequence:

- A) *substitute the burner injectors;*
- B) *change the modulator voltage;*
- C) *proceed with a new max. and min. setting of the pressure adjusting device.*

A) Substitute the main burner injectors

- carefully pull the main burner out of its seat;
- substitute the main burner injectors and make sure you tighten them to avoid leakage. The diameters of the injectors are specified in table 1.

B) Change the modulator voltage

- setting F02 parameter according to the gas used as described in section 19.

C) Pressure adjusting device setting (see Figure 25)

- connect the positive pressure test point of a differential (possibly water-operated) manometer to the gas valve pressure test point (Pb); connect, for sealed chamber models only, the negative pressure test point of the manometer to a "T" fitting in order to join the boiler adjusting outlet, the gas valve adjusting outlet (Pc) and the manometer. (The same measurement can be carried out by connecting the manometer to the pressure test point (Pb) after removing the sealed chamber front panel);
If you measure the pressure of burners in a different way you may obtain an altered result in that the low pressure created in the sealed chamber by the fan would not be taken into account.

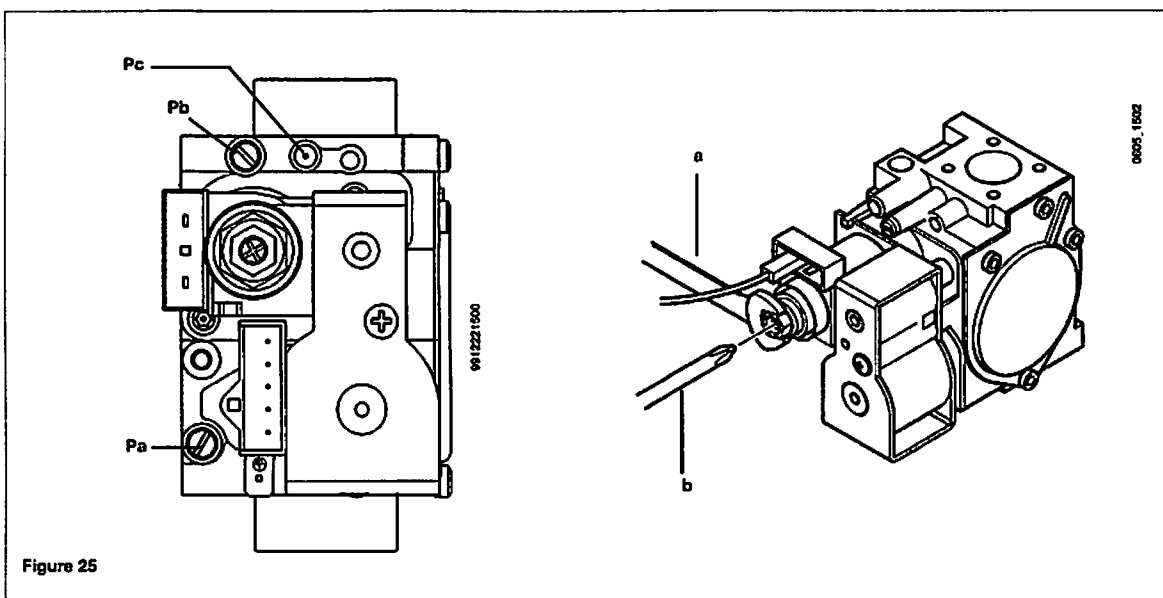



Figure 25

C1) Adjustment to nominal heat output

- open the gas tap;
- press  button (figure 1) and set the boiler in winter mode;
- open a hot water tap to reach a minimum 10 l/min (2.20 gal/min) flow rate or ensure that maximum heating requirements are set;
- remove the modulator cover;
- adjust the tube brass screw (a) to obtain the pressure settings shown in table 1;
- check that boiler feeding dynamic pressure, as measured at the inlet gas valve pressure test point (Pa) is correct;

C2) Adjustment to reduced heat output

- disconnect the modulator feeding cable and unscrew the (b) screw to reach the pressure setting corresponding to reduced heat output (see table 1);
- connect the cable again;
- fit the modulator cover and seal.

C3) Final checks

- apply the additional dataplate, specifying the type of gas and settings applied.

Natural gas (A)				LP gas (E)					
0+2000 Ft 0+610 m		2000+4500 Ft 610+1370 m		0+2000 Ft 0+610 m		2000+4500 Ft 610+1370 m		Output rate	
in w.c.	mbar	in w.c.	mbar	in w.c.	mbar	in w.c.	mbar	kW	Btu/h
0,72	1,8	0,72	1,8	1,32	3,3	1,32	3,3	10,4	35.486
1,00	2,5	1,00	2,5	1,53	3,8	1,53	3,8	11,7	40.000
1,26	3,1	1,26	3,1	2,19	5,5	2,19	5,5	14,7	50.000
1,81	4,5	1,81	4,5	3,15	7,9	3,15	7,9	17,6	60.000
2,46	6,1	2,46	6,1	4,29	10,7	4,29	10,7	20,5	70.000
3,21	8,0	3,21	8,0	5,60	14,0	5,60	14,0	23,4	80.000
4,07	10,1	4,07	10,1	7,09	17,7	7,09	17,7	26,4	90.000
5,14	12,8	5,14	12,8	9,23	23,0	9,23	23,0	29,5	100.658
5,62	14,0	-	-	9,80	24,4	-	-	31,0	105.776

5.6 - FINAL COMMISSIONING

- 1 Allow the heating system to heat up, then balance the system to achieve the necessary temperature difference across the heating flow and return pipes at the boiler and check the system volume and pressure. (Refer to Technical Data, sections 2.7 and 2.8).
- 2 Turn off the boiler.
- 3 Thoroughly flush out the water pipework and clean the filters in the heating return and mains water isolating valves.
- 4 Re-pressurise the system as described in section 5.1.

5.7 - FINAL ASSEMBLY

- 1 Raise the control panel and secure in position with the screws previously removed.
- 2 Place the front casing in position over the boiler ensuring the bottom is located behind the control panel and secure in position at the top using the screws previously removed.
- 3 If the boiler is to be left in service with the User, set the controls, clock (if fitted) and room thermostat (if fitted).
- 4 If the boiler is not to be handed over immediately, close the boiler gas service cock and switch off the electrical supply.
- 5 If there is any possibility of the boiler being left during frost conditions, then the boiler and system should be drained. (Refer to Component Replacement, section 14.1).
It is recommended that a label is attached to the boiler drawing attention to the fact that the system has been drained.
- 6 Complete the details of the installation on the back page of this manual.

5.8 - USER INFORMATION

The User must be advised (and demonstrated if necessary) of the following important points:


- 1 How to light and turn off the boiler and how to operate the system controls.
- 2 The importance of annual servicing of the boiler to ensure safe and efficient operation.
- 3 That any servicing or replacement of parts must only be carried out by qualified personnel.
- 4 Ensure that the boiler controls and room thermostat (if fitted) are set to the User's requirements.
- 5 Tell the User about the sealed system pressure.
- 6 Tell the User that if the boiler has not operated for 24 hours for heating or hot water, the pump will automatically operate for 5 minutes.
- 7 Explain to the User that an internal frost thermostat is fitted in the boiler, and that electrical supply to the boiler must be left on for the thermostat to operate.
- 8 Show the User the position of the pressure relief valve discharge pipe.
- 9 Hand the User's instructions to the User.
- 10 Leave these Installation and Servicing instructions with the User for use on future calls.

6. BOILER OPERATION


To set the boiler operation, see the user's instructions manual.

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 the hot water mode until the demand is satisfied. This interruption in the central heating is only when the demand for hot water is present and should not be noticed by the User.

6.1 - CENTRAL HEATING MODE

If there is a central heating demand, the pump will start to circulate the central heating water, operating the flow switch. The fan will run; once the air pressure switch is proved the burner will light. The burner output then automatically adjusts to suit the system demand; as the temperature of the water in the boiler approaches that set by the adjustable temperature button +/-  (see the user's instruction manual), the burner output is reduced. When the set temperature is reached, the burner is turned off and the fan stops. The pump continues to run for three minutes to remove residual heat build up in the boiler. The burner will not relight for 3 minutes (it depends on the F18 parameter setting - see section 19). If the CH sensor has not registered the pre-set temperature but the room thermostat is satisfied the burner is turned off, the fan stops and the pump continues to run for three minutes. In this instance there is no 3 minutes delay before the burner will relight. If there is a demand for DHW during the 1 minute burner delay, the boiler will operate to provide DHW until the tap is closed; the boiler will then immediately revert to provide CH if there is a demand.

6.2 - DOMESTIC HOT WATER MODE

When a demand for hot water (by opening a hot tap, etc.) is sensed by the flow switch, the pump starts and the burner lights at its middle output, increasing to its maximum output. Water in the boiler is then diverted from the central heating system to the domestic hot water heat exchanger, heating the incoming mains water. The burner output is varied to maintain the temperature of the hot water as that set by the adjustable temperature button +/-  (see the user's instruction manual). When the flow switch senses that the hot water is no longer required the burner is turned off and the boiler immediately returns to the central heating mode.

In both modes the fan operates at full speed before the burner lights, remaining at that speed until the demand is satisfied.

6.3 - FROST THERMOSTAT

The boiler incorporates a built in frost thermostat which automatically turns on the boiler and pump if the water in the boiler falls below 5°C. The boiler will operate until the water temperature in the system reaches approximately 30°C.

6.4 - PUMP

If the boiler has not operated for 24 hours for heating or hot water, the pump will operate automatically for five minutes every 24 hours.

6.5 - LWC LOW WATER CUT OFF

This device protects the primary exchanger from damage by not allowing the boiler to run in a LOW water condition.

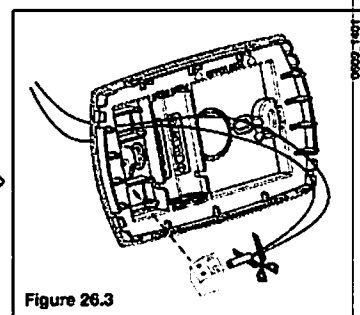
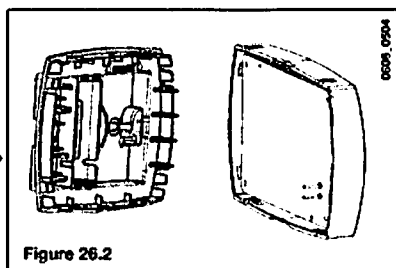
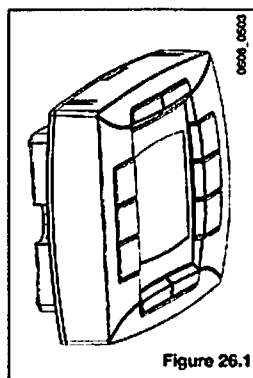
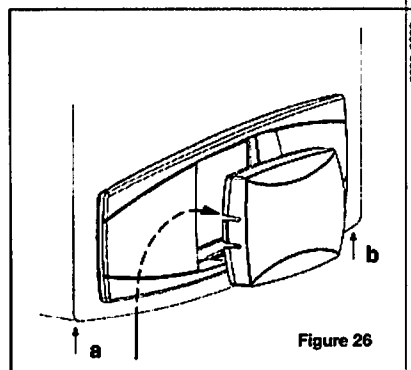
7. REMOTE CONTROL INSTALLATION

The remote control can be installed directly on the boiler or in the wall.

7.1 INSTALLING THE REMOTE CONTROL ON THE BOILER FRONT PANEL

To fit the remote control inside the boiler front control panel, proceed as follows:

1. Undo the two screws (a-b figure 26) fixing the casing to the boiler;
2. Lift the casing slightly and with one hand push the front panel cover on the outside (figure 26);
3. Pass the blue wire, coming from the terminal block M2 (located behind the casing), through the special hole in the remote control and cut it as shown in figure 26.3)
4. Open the remote control (there are no screws) by prising with hands and connect the red wire (figure 26.3);



5. Fit the remote control inside the special housing on the front control panel without forcing;
6. close the casing and fix it to the boiler with the screws (figure 26).

WARNING: the remote control is a Low Tension appliance. Do not connect it to a 120 V power supply. For the electrical connection refer to section 10.1 and 20.

PARAMETER SETTING

- set both "MODUL" and "AMBON" parameters = 0, as described in section 18.1;
- set F10 = 02 parameter as described in section 19.


°C/°F CHANGE MODALITY

To change the unit of measurement from °C to °F and vice versa, see parameter "CH SL" described in section 18.1.



ROOM THERMOSTAT CONNECTION

- Access the power supply terminal block (figure 23);
- connect the room thermostat cables to terminals (1) e (2);
- provide power supply to the boiler;

DESCRIPTION OF BUTTON

The  button does not operate as described in section 4.1 of the instructions for the user (ECONOMY-COMFORT function).

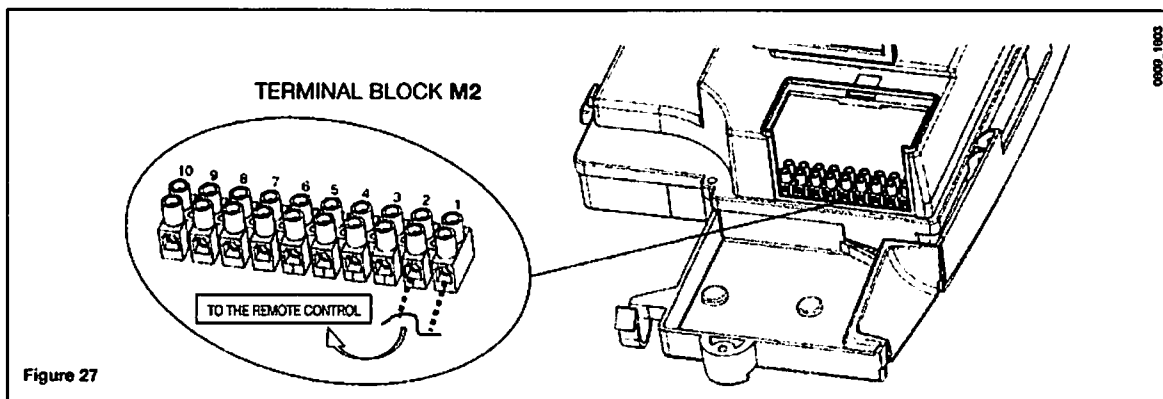
The gas boiler operates when both the programmed time slot and the room thermostat required heating.

By pressing the  button during a room thermostat heating request, it is possible "to forced" a Heating request even if the programmed time slot does not required Heating. This is a "manual forced" mode and the display shows the symbol  flashing. This mode terminates at the next "not request" time change over of the time slot Heating.

7.2 REMOTE CONTROL WALL MOUNTING

To wall-mount the remote control, proceed as follows:

1. Undo the two screws (a-b figure 26) fixing the casing to the boiler;
2. access the terminal block M2 as shown in the figure 27;
3. remove the two blue wires from the terminals 1-2 and connect the two wires coming from the remote control.

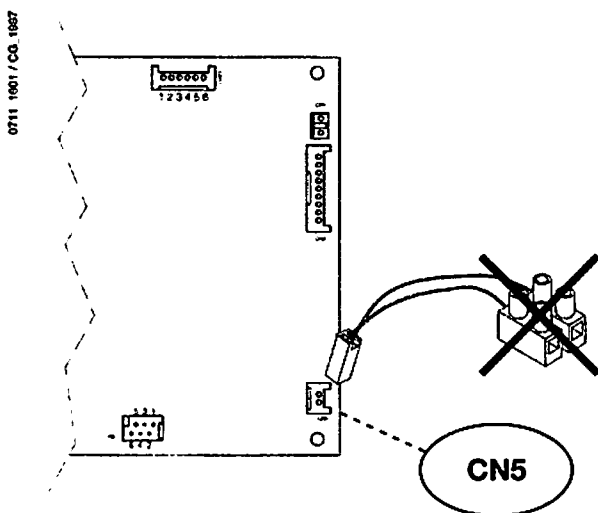
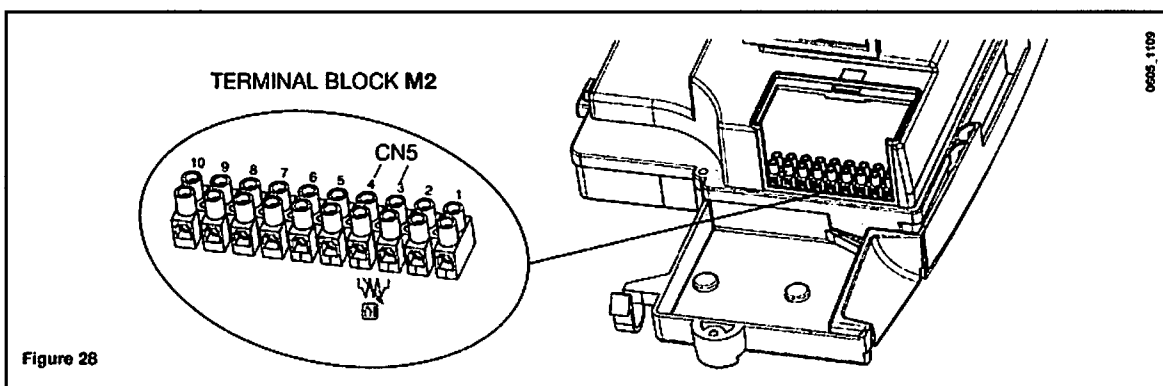


IMPORTANT: After installing the remote control, switch the power on to the appliance, making sure that the remote control works properly.

8. CONNECTION OF THE EXTERNAL SENSOR PROBE

The boiler is prearranged for connection of an external probe (supplied as accessory).

For the connection, refer to the figure below (terminals 3-4) and the instructions supplied with the probe.



Connect the cable, supplied as an accessory together with the external probe, to the CN5 connector of the boiler electronic board, as illustrated in figure 28.1.

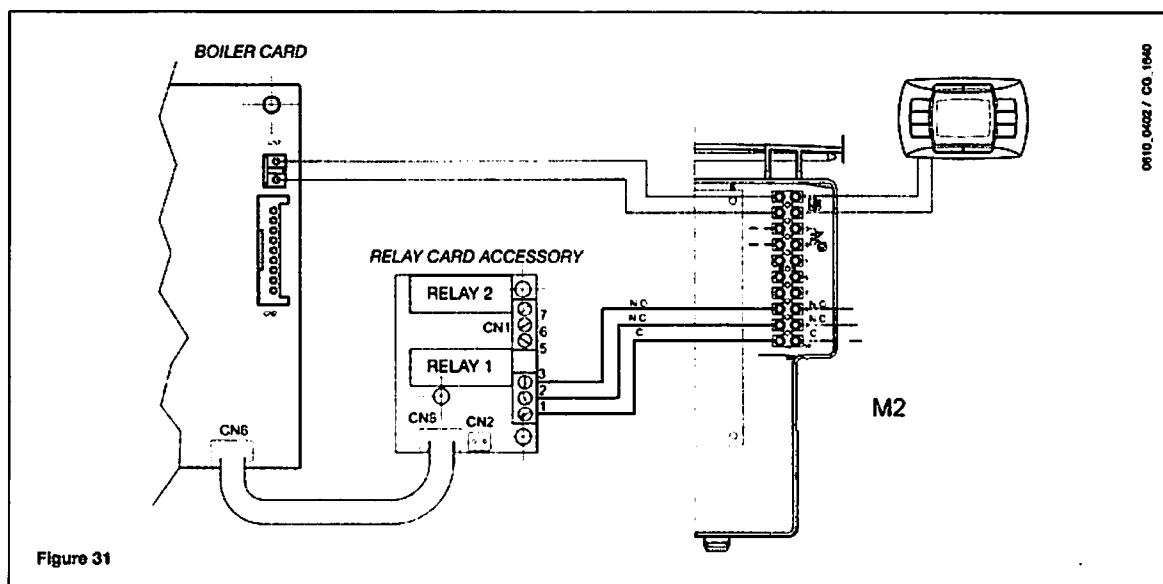
Remove the two-pin terminal block connected to the cable and connect the terminals to terminals 3-4 on the M2 terminal block, as illustrated in figure 28.

10. ELECTRICAL CONNECTIONS TO A MULTI-ZONE SYSTEM

10.1 - RELAY CARD CONNECTION (SUPPLIED AS AN ACCESSORY)

The relay card is not included but is supplied as an accessory.

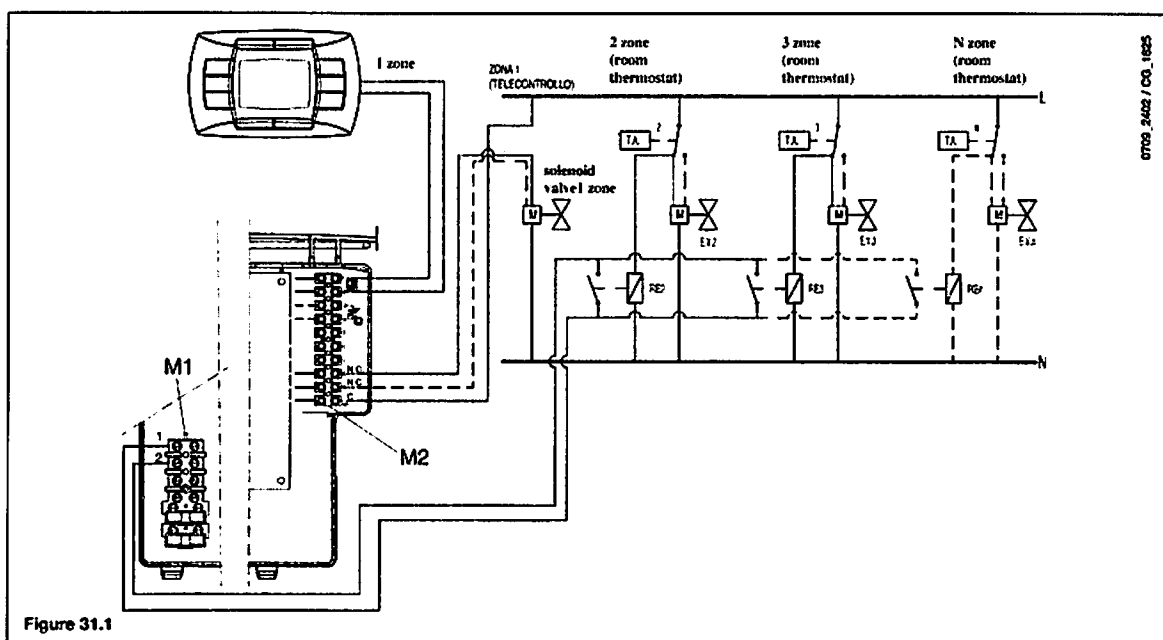
Connect terminals 1-2-3 (common-normally closed - normally open) of connector CN1 to terminals 10-9-8 of the boiler terminal block M2 (figure 31).



10.2 - CONNECTION OF ZONES

Connect the switch controlling those zones not controlled by the remote control in parallel to the "TA" terminals 1-2 of terminal board M1 as shown in figure below. The zone controlled by the remote control is supplied by the zone 1 solenoid valve, as shown in figure 31.1.

The remote control automatically controls room temperature in its own zone.



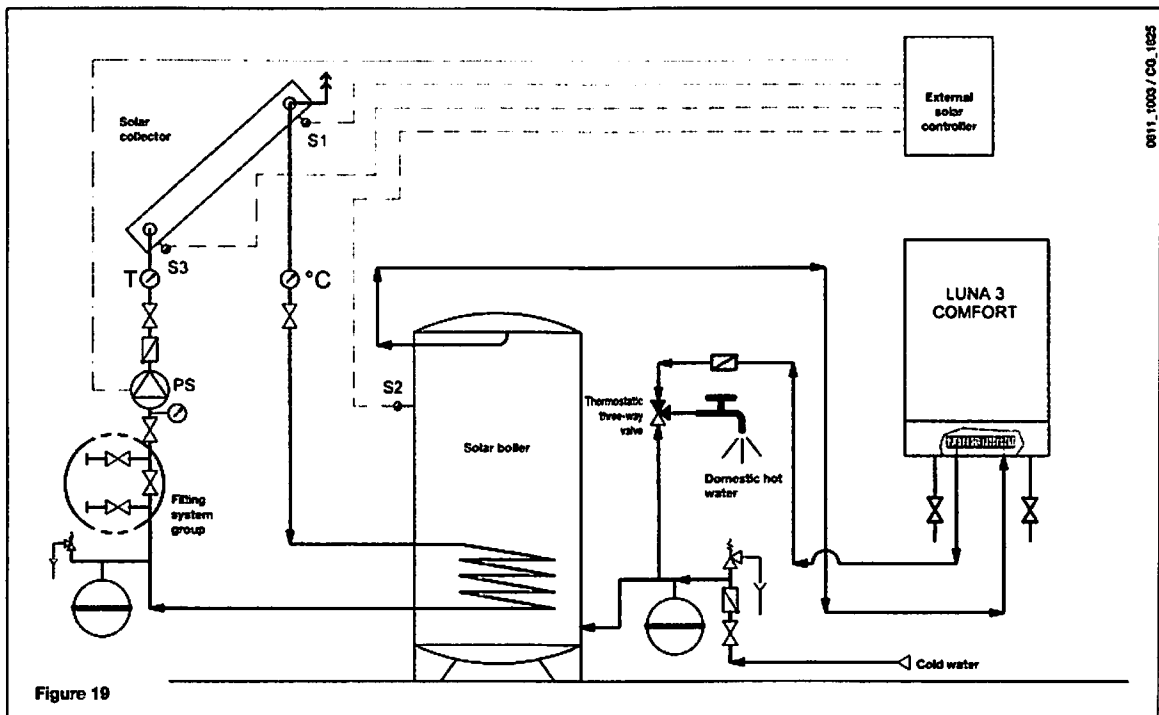
IMPORTANT: For a multi-zone system be sure that parameter F04 = 2 (see section 19).

11. SOLAR FUNCTION

(only for 310 Fi model)

This function allows the gas boiler to operate with a solar system to produce domestic hot water.

- Select parameter **F03** as described in section 19;
- Set parameter **F03=10**



12. PRE-HEAT FUNCTION

(only for 310 Fi model)

This function ensures a better sanitary comfort. After a domestic hot water request, the primary circuit is maintained in temperature for one hour. The primary circuit temperature depends on the D.H.W. temperature value setting.

- Select parameter **F03** as described in section 19;
- Set parameter **F03=03**

To enable/disable the function, proceed as described in section 3.7 of the "instructions for the user" manual and set the HW PR parameter as follows:

HW PR = 0 pre-heat function disabled;
 HW PR = 1 pre-heat function enabled;
 HW PR = 2 pre-heat function enabled during the programmed time slots.

13. ROUTINE SERVICING

To ensure efficient operation of the boiler 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 per year should be adequate.

The manufacturer recommends that any service work must be carried out by a licensed technician.

"Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation."

13.1 - IMPORTANT NOTES PRIOR TO SERVICING

- 1 Check the flue terminal outside and ensure it is not blocked.
- 2 Run the boiler and check the operation of its controls.
- 3 Ensure that all system connections and fittings are sound. Remake any joints and check the tightness of any fittings that may be leaking.
- 4 It is recommended that the operation of the safety valve is checked by turning the head counter clockwise until it clicks. The click is the valve lifting off its seat allowing water to escape from the system - check that this is actually happening.
- 5 Refill, vent and re-pressurise the system as necessary. (Refer to Commissioning, section 5.1).

Record details of the service in the Service History section on last page of this manual.

Warning: Before servicing the boiler, isolate the electrical supply and close the boiler gas service cock. Allow the boiler to cool.

Always test for gas soundness after servicing any gas carrying components.

13.2 - CLEANING THE BOILER

- 1 Remove any deposits from heat exchanger using a suitable soft brush. Do not use a brush with metallic bristles.
- 2 Check the condition of the combustion chamber insulation panels. Any damaged panels must be replaced.
- 3 Check the condition of the burner injectors on the manifold, carefully clean them with a soft brush if necessary. Do not use a brush with metallic bristles as this might damage the injectors.
- 4 Remove any fallen deposits from the bottom of the inner case.
- 5 Unscrew and replace any injector that appears damaged.
- 6 Clean the top of the burner with a soft brush and check that the flame ports are clear. Blockages may be removed with a stiffer brush. Tap the burner, open end down, to remove any deposits from inside.
- 7 Check the condition of the electrodes.
- 8 Check the spark gap, positioning and height of the electrodes.
- 9 Check that the fan impeller is clean and free to rotate.

14. COMPONENT REPLACEMENT OR PERIODIC CLEANING

It is the law that any service work must be carried out by a competent person.

Warning: Before replacing any boiler components, isolate the electrical supply and close the boiler gas service cock. Allow the boiler to cool.

Always test for gas leaks after replacing any gas carrying components or disturbing any gas connections.

Check the operation of the boiler. (Refer to Boiler Operation, section 6). Ensure that all the controls are returned to their original settings.

14.1 - DRAINING THE BOILER

Isolate the electricity supply and close the boiler gas service cock (see Fig. 18-19). Allow the boiler to cool.

1 Heating circuit

Close the central heating flow and return valves (see Fig. 18-19).

Connect a suitable pipe to the drain point and route it to a suitable container. Open the drain tap.

2 Hot water circuit

Close the mains water inlet valve. Open any hot tap below the level of the boiler to allow as much draining as possible.

Note: Some water will remain in the components and care must be taken when removing them.

14.2 - HEAT EXCHANGER

1. Note the positions of the two sensing tubes on the outlet elbow and three wires on the fan motor and remove them.
2. Slacken the screws on the outlet sealing collar. Ease the collar upwards as far as possible.
3. Remove the four screws securing the combustion box door and remove the door.
4. Remove the spring clips retaining the air box side baffle plates. Disengage the tabs on the baffles from the slots in the fan hood.
5. Undo the screws securing the fan hood to the appliance back panel, and draw the fan and hood assembly forwards.
6. Drain the primary circuit. Prise the two pipe connecting clips off the joints in the flow and return pipes.
7. Lift the heat exchanger to disconnect the flow and return pipe joints. Withdraw it from the appliance, taking care not to damage the rear insulation piece.
8. Fit the new heat exchanger.
9. Reassemble in reverse order of dismantling, and repressurise the system.

14.3 - BURNER (FIG. 32)

1. Remove the four screws securing the combustion box door and remove the door.
2. Undo the screws securing the burner to the injector manifold. Draw the burner out of the combustion box, pulling the electrode grommets from the slots in the combustion box lower panel.
3. Disconnect the electrode leads and grommets from the electrodes. Completely remove the burner.
4. Undo the screws securing the electrodes to the burner. Examine the condition of the electrodes, replacing if necessary. Fit the electrodes to the new burner.
5. Engage the burner location brackets over the studs on the injector manifold and reassemble in reverse order.

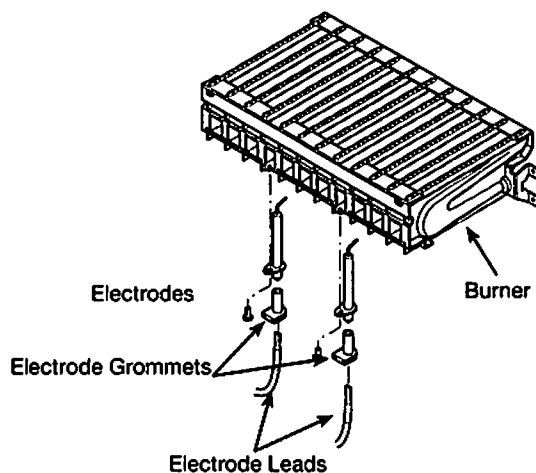


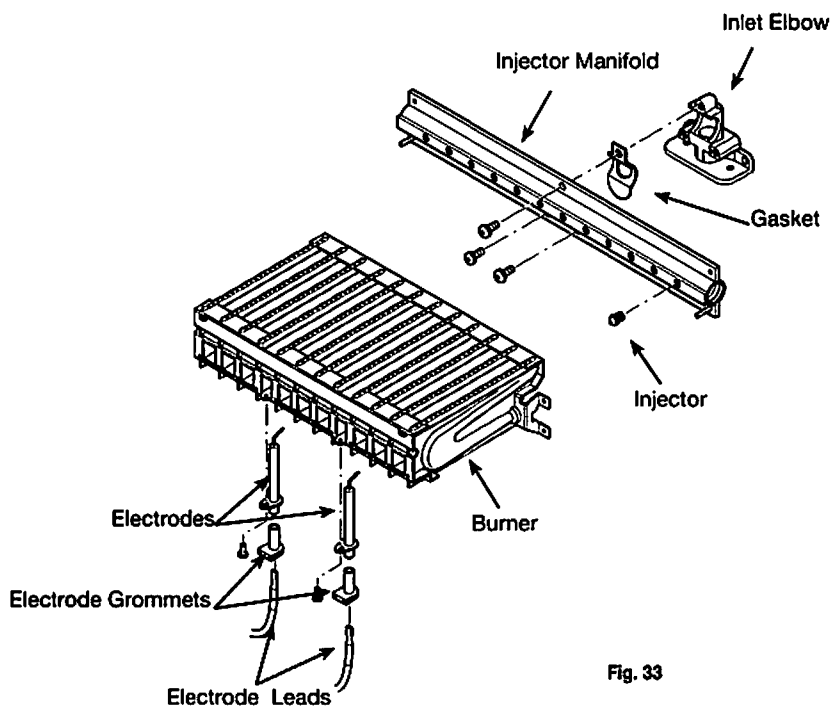
Fig. 32

14.4 - INJECTORS (FIG. 33)

1. Remove the burner as described in Section 14.3.
2. Undo the screws securing the injector manifold to the inlet elbow and remove the manifold.
3. Unscrew and replace injectors as required and examine the sealing gasket, replacing as necessary. Reassemble in reverse order.

14.5 - ELECTRODES (FIG. 33)

1. Remove the four screws securing the combustion box door and remove the door.
2. Undo the screws securing the burner to the injector manifold. Draw the burner out of the combustion box, pulling the electrode grommets from the slots in the combustion box lower panel.
3. Disconnect the lead and grommet from the electrode being replaced. Undo the securing screw and withdraw the electrode to the burner.
4. Reassemble in reverse order.



14.6 - PLATE HEAT EXCHANGER

1. Drain the primary circuit.
2. While supporting the heat exchanger undo the screws securing it to the brass manifolds.
3. Withdraw the heat exchanger upwards and to the left of the gas valve, taking care not to damage any wires or controls.

14.7 - SEALS

1. There are four rubber seals between the manifolds and heat exchanger which may need replacement.
2. Ease the seals out of the manifold. Replace carefully, ensuring that the seal is inserted into the manifold parallel and pushed fully in.
3. When fitting the new heat exchanger note that the left hand location stud is offset towards the centre more than the right hand one.
4. Reassemble in reverse order.

15. HOW TO PURGE THE DHW SYSTEM FROM LIMESTONE DEPOSITS

(Not fitted on 1.310 Fi model)

To clean the DHW system it is not necessary to remove the DHW heat exchanger if the assembly is equipped with the appropriate taps (supplied on demand) placed on the hot water outlet and inlet.

To carry out the purge it is necessary to:

- close the cold water inlet
- drain the DHW system from the water contained therein by means of a hot water tap
- close the DHW outlet
- unscrew the two stop cocks caps
- remove the filters.

In case the appropriate tap is not supplied it is necessary to disassemble the DHW heat exchanger, as described in the following section, and do the purge aside. We recommend you also purge from limestone deposits the DHW heat exchanger seat and the NTC sensor fitted on the DHW system.

To purge the exchanger and/or the DHW system we suggest the use of Cillit FFW-AL or Beckinser HF-AL.

16. HOW TO DISASSEMBLE THE DHW HEAT EXCHANGER

(Not fitted on 1.310 Fi model)

The stainless steel plate-type DHW heat exchanger is easily disassembled with a screwdriver by operating as described below:

- drain, if possible, only the boiler system, through the drain tap;
- drain the DHW system from water;
- remove the two screws (right in front of you) securing the DHW heat exchanger and pull it off its seat (figure 34).

17. CLEANING THE COLD WATER FILTER

(Not fitted on 1.310 Fi model)

The boiler is equipped with a cold water filter placed on the hydraulic assembly. To clean it do the following:

- drain the DHW system from water;
- unscrew the nut on the flow sensing assembly (Figure 34);
- pull out the flow sensing device and its filter;
- remove the impurities.

Important: in the event of replacements and/or cleaning of the O-rings on the hydraulic unit, do not use oil or grease as lubricant but exclusively Molykote 111.

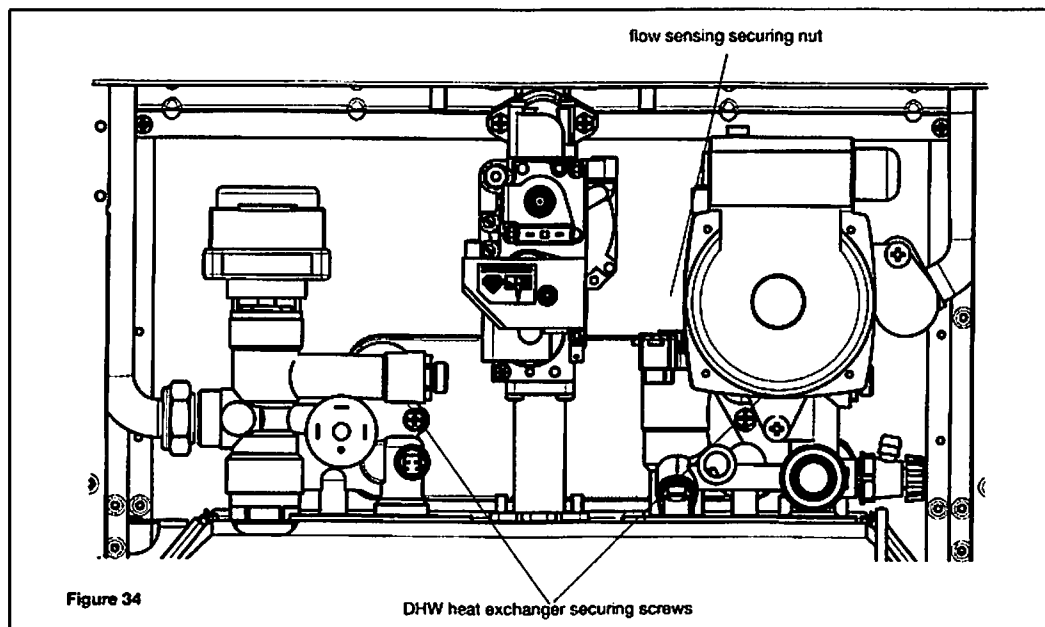


Figure 34

DHW heat exchanger securing screws

0004_2703 / CO_1039


18. PARAMETERS DISPLAY

18.1 INFORMATION AND ADVANCED SETTING MODE


To access the Information and Advanced Setting mode, it is necessary to press, for at least 3 seconds, the IP button; in INFO mode the display shows "INFO".

To escape the INFO mode briefly press the IP button. In this mode press the OK button to scroll the windows; to set parameters press the +/-  button.

CENTRAL HEATING (CH)

- "CH SL" Max. heating circuit setpoint, value settable with the buttons +/- .
WARNING: to change the unit of measure from °C to °F and vice versa, press the (←→) button.
- "EXT °C" Outside temperature (with external sensor connected).
- "CH O>" Maximum Heating flow temperature.
- "CH R<" Return heating temperature (unplanned).
- "CH S^" CH temperature setpoint.
- "CH MX" Maximum CH temperature setpoint (max. settable value).
- "CH MN" Minimum CH temperature setpoint (min. settable value).





DOMESTIC HOT WATER (D.H.W.)

- "HW O>" D.H.W. flow temperature.
- "HW S^" Maximum setpoint temperature value setting. Press the +/-  buttons to set the value.
- "HW MX" Maximum D.H.W. temperature setpoint (max. settable value).
- "HW MN" Minimum D.H.W. temperature setpoint (min. settable value).

ADVANCED INFORMATION

- "PWR %" Power level/modulating flame (%).
- "P BAR" Water pressure heating circuit (bar).
- "F L/M" Water flow rate (l/min).

PARAMETERS SETTING


- "K REG" Central Heating setting constant (0,5...6,5 - factory setting 3 - Refer to section 8 - Graph 3).
Press +/-  buttons to set the value. An high value setting involves a high flow temperature. To set a correct value of the Central Heating constant K REG, involves the room temperature to match the CH setpoint with external temperature changes over.
- "BUILD" A parameter that takes into account the degree of building insulation (1..10 - factory setting 5). When the outside temperature varies, the room temperature changes at different rates, depending on the building thermal storage capacity. An high value setting involves a heavy building structures (the room temperature will respond slower to outside temperature variations; buildings with thick walls or with external insulation). A low value setting involves a light building structures (the room temperature will respond quicker to outside temperature variations; buildings with a light envelope).
Press +/-  buttons to set the value.
- "YSELF" CH flow temperature auto setting function Enabled/Disabled (1/0). Factory setting 1. With function enable, the constant "K REG" is modified to match the room temperature comfort. This function operates with the external sensor connected.
Press +/-  buttons to set the value.
- "AMBON" Room temperature influence Enabled/Disabled (1/0). Factory setting 1. In this case, the rooms temperature regulation it depends on the flow temperature set ("CH SL").
Press +/-  buttons to set the value.
Note: Refer to the summary table of possible AMBON and MODUL combinations.

- **"MODUL"** Enable/disable Modulation of flow temperature depending on the room temperature and external temperature value (with external sensor connected). (with Room Sensor enabled). A value equal to 1 indicates enabling of delivery setpoint modulation; a value equal to 0 indicates disabling.

The above value can be modified with the buttons +/- .




Note: Refer to the summary table of possible **AMBON** and **MODUL** combinations.

Combination table between **AMBON** and **MODUL** functions:

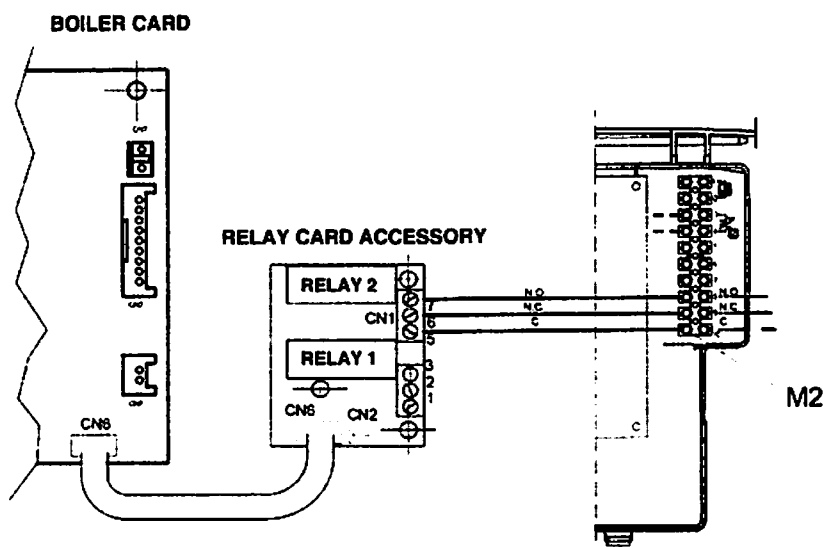
AMBON	MODUL	BUTTONS FUNCTION +/- 
1	1	Room temperature adjustment (modulating flow temperature)
0	1	with external sensor : KREG curve adjustment without external sensor : Calculated flow temperature adjustment. (It is advisable to set MODUL = 0).
0	0	Flow temperature adjustment
1	0	Room temperature adjustment (fixed flow temperature)

- **"HW PR"** Enabling the DHW programmer (only for boilers connected to an external hot water tank). Factory setting 1.
0: Disabled
1: Always enabled
2: Enabled with DHW weekly program ("HW PR" refer to section 3.7 of the "Instruction for the user" manual).
- **"NOFR"** Frost protection Enabled/Disabled (1/0). Factory setting 1.

WARNING: this value must be always enable (1).




- **"COOL"** Summer temperature control Enable/Disable (factory set = 0). By setting this parameter = 1 the function is enabled and a new boiler operation mode **"SUMMER+COOL"** is available. This function is added to the ones described on section 3.2 of the "instructions for the user" manual: **SUMMER - WINTER - SUMMER+COOL - HEATING ONLY - OFF**.
To enable the function, press the  button until the display shows the  symbol on the right side of the hour. The aim of this function is to enable the remote control to adjust the room temperature in summertime by controlling one or more external cooling devices such as a condition machine. In this way, the boiler relay card enables the external condition system when the room temperature is higher than the remote control temperature set value.
When the function operates, the display shows the  symbol flashing.
See the following figure and refers to the SERVICE instruction manual.

Note: to enable the relay 2 of the relay card (supply as an accessory), set parameter **F05=13** as described in section 19.





19. PARAMETERS SETTING

To access the Parameters setting mode proceed as follows:

- press, for at least 3 seconds, the IP button;
- press first the  button then press together the   button.

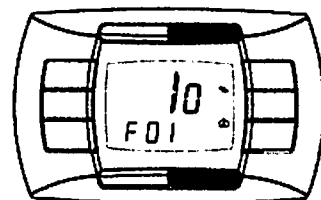
When the function is activated, the display shows "F01" with the value of the selected parameter.

Parameters setting

- Press +/-  buttons for scrolling parameters;
- Press +/-  buttons to change the single parameter value;

Note: the value is automatic saved after about 3 seconds.

(Do not press any button as long as the value does not flash again).



0007_1903

	Description of parameter	Default value	
		310 Fi	1.310 Fi
F01	Type of gas boiler 10 = sealed chamber - 20 = atmospheric chamber	10	
F02	Type of gas 00 = natural (metane) - 01 = LPG	00 or 01	
F03	Hydraulic system 00 = instantaneous appliance 05 = appliance with external water tank 08 = only heating appliance	00	08
F04	Programmable relay 1 setting 2 = zone system (See Service instructions)	02	
F05	Programmable relay 2 setting 13 = Cool function (See Service instructions)	04	
F06	External sensor programmable input setting (See Service instructions)	00	
F07..F09	Manufacture information	00	
F10	Remote control installation 00 = wall mounting (section 7.2) 01 = not used 02 = boiler front panel (section 7.1)	00	
F11..F12	Manufacture information	00	
F13	CH max. heating output (0-100%)	100	
F14	D.H.W. max. heating output (0-100%)	100	
F15	CH min. heating output (0-100%)	00	
F16	Maximum temperature setpoint setting 00 = 85°C - 01 = 45°C	00	
F17	Pump overrun time (01-240 minutes)	03	
F18	Minimum burner pause in central heating mode (01-10 minutes) - 00=10 seconds	03	
F19	Manufacture information	07	
F20	Manufacture information	00	
F21	Anti-legionella function 00 = Disabled - 01 = Enabled	00	
F22	Manufacture information	00	
F23	Maximum D.H.W. setpoint	60	
F24	Manufacture information	35	
F25	Lack of water safety device	00	
F26..F29	Manufacture information (only read parameters)	--	
F30	Manufacture information	10	
F31	Manufacture information	30	
F32..F41	Diagnostics (See Service instructions)	--	
Last parameter	Controller stop function activation (See Service instructions) 00 = Disabled - 01 = Enabled	00	

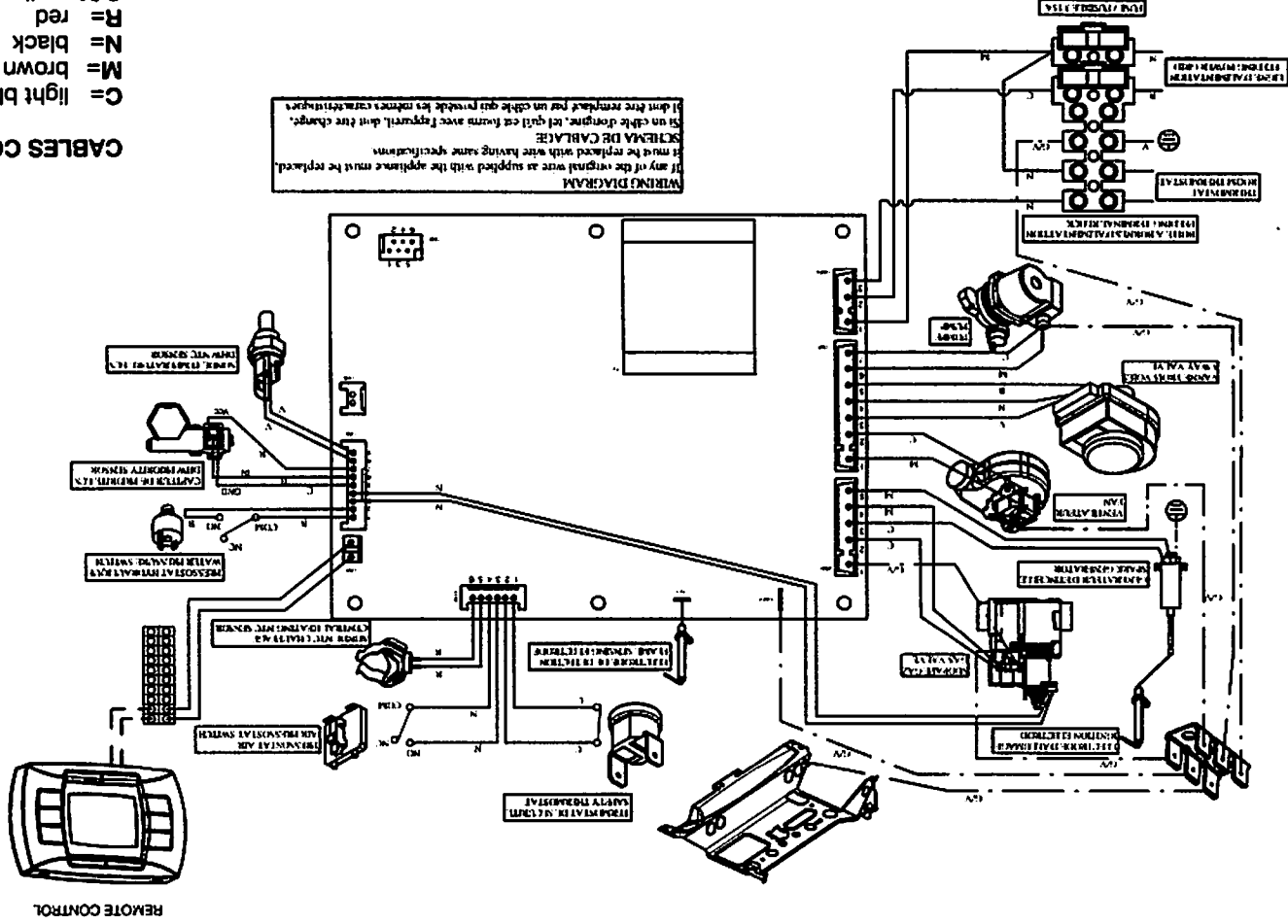
WARNING: do not modify the values of the "Manufacture information" parameters.

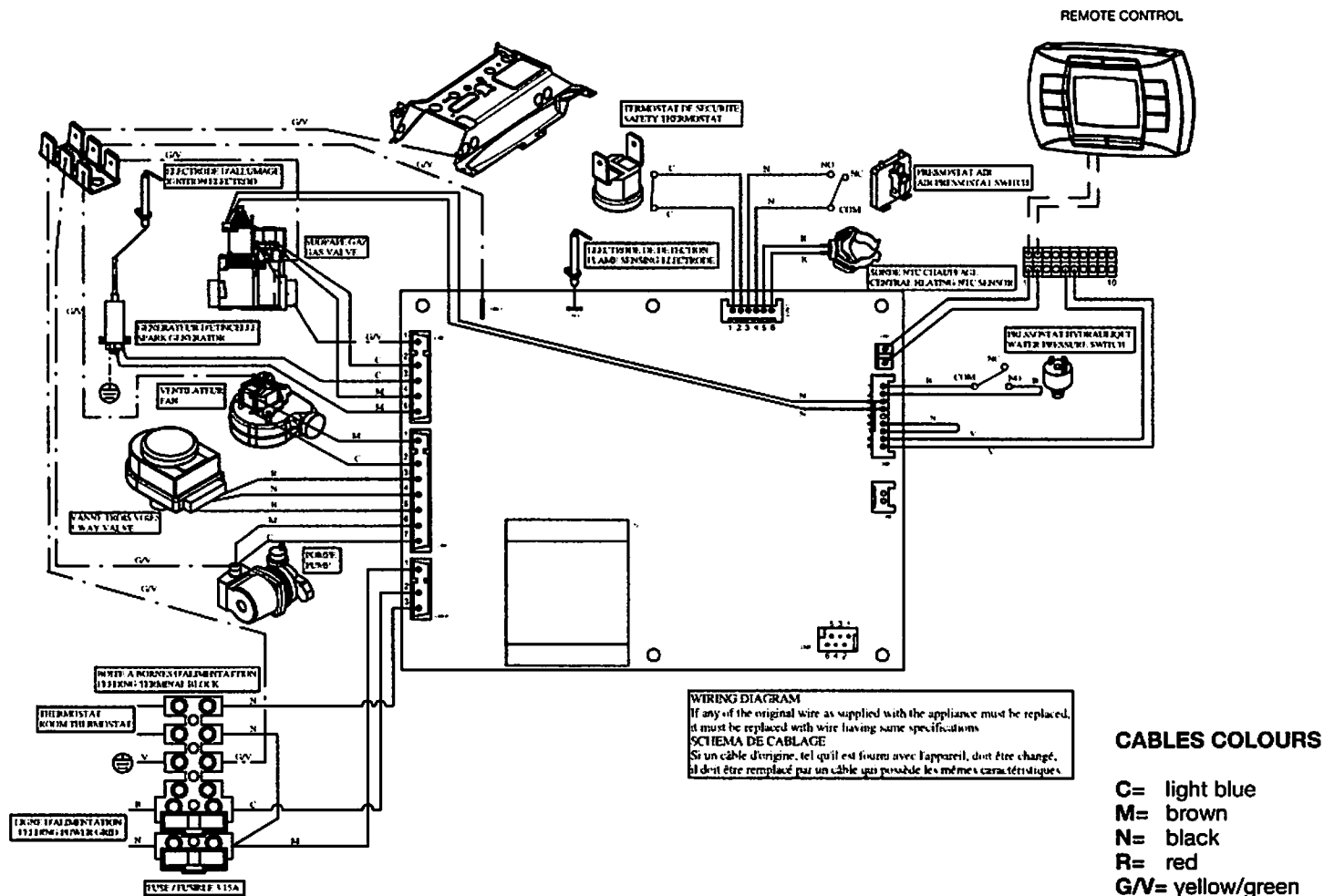
20. ILLUSTRATED WIRING DIAGRAM

310 Fi model

CABLES COLOURS

C= light blue
M= brown
N= black
R= red
G/V= yellow/green
B= white
V= green





21. SERVICE HISTORY

DETAILS OF BOILER INSTALLATION

Date of Installation:.....

Name of Installer:

Address:

Postcode:

Telephone No:

Boiler Serial Number:

(see data label on inside of left hand case panel)

DETAIL OF BOILER SERVICE HISTORY

[illegible]