Glow•worm
Quality through design

221896C.04.02

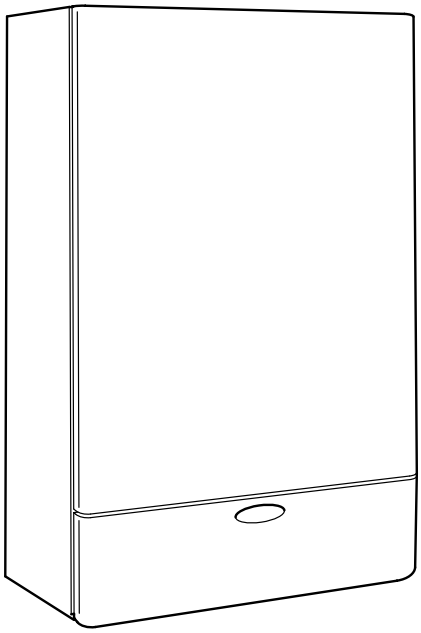
Instructions for Use
Installation and Servicing

To be left with the user

COMPACT 60

Fanned Flue System Boiler

G.C. No. 41 047 27



CE

benchmark
The code of practice for the installation, commissioning & servicing of gas central heating

This is a Cat I_{2H} Appliance

The instructions consist of three parts, User, Installation and Servicing Instructions, which include the Guarantee Registration Card. The instructions are an integral part of the appliance and must, to comply with the current issue of the Gas Safety (Installation and Use) Regulations, be handed to the user on completion of the installation.

Guarantee Registration

Thank you for installing a new Glow-worm appliance in your home.

Glow-worm appliances' are manufactured to the very highest standard so we are pleased to offer our customers' a Comprehensive First Year Guarantee.

In the centre pages are to be found your Guarantee Registration Card, which we recommend you complete and return as soon as possible.

If this card is missing you can obtain a copy or record your registration by telephoning the Heatcall Customer Service number 01773 828100.

Our Guarantee gives you peace of mind plus valuable protection against breakdown by covering the cost of:

- ***All replacement parts***
- ***All labour charges***
- ***All call-out charges***

REGISTER YOUR GLOW-WORM APPLIANCE FOR 1ST YEAR GUARANTEE PROTECTION

CALL 0208 247 9857

HEATCALL
One Contact Local Service

Customer Services:
Tel: (01773) 828100
Fax: (01773) 828070

Hepworth Heating Ltd.,
Nottingham Road, Belper, Derbyshire. DE56 1JT
General/Sales enquiries:
Tel: (01773) 824141 Fax: (01773) 820569

Important Information

Testing and Certification

This boiler is tested and certificated for safety and performance. It is therefore important that no alteration is made to the boiler, without permission, in writing, from Hepworth Heating Ltd.

Any alteration not approved by Hepworth Heating Ltd., could invalidate the certification, boiler warranty and may also infringe the current issue of the Statutory Requirements, see Section 1.4.

CE Mark

This boiler meets the requirements of Statutory Instrument No. 3083 The boiler (Efficiency) Regulations, and therefore is deemed to meet the requirements of Directive 92/42/EEC on the efficiency requirements for new hot water boilers fired with liquid or gaseous fuels.

Type test for purposes of Regulation 5 certified by: Notified body 0086.

Product/production certified by: Notified body 0086.

The CE mark on this appliance shows compliance with:

1. Directive 90/396/EEC on the approximation of the laws of the Member States relating to appliances burning gaseous fuels.

2. Directive 73/23/EEC on the harmonization of the Laws of the Member States relating to the electrical equipment designed for use within certain voltage limits.

3. Directive 89/336/EEC on the approximation of the Laws of the Member States relating to electromagnetic compatibility.

Substances Hazardous to Health

The adhesives and sealants used in this appliance are cured and give no known hazard in this state.

INSULATION PADS/CERAMIC FIBRE, GLASSYARN, MINERAL WOOL
These can cause irritation to skin, eyes and the respiratory tract.
If you have a history of skin complaint you may be susceptible to irritation. High dust levels are usual only if the material is broken.
Normal handling should not cause discomfort, but follow normal good hygiene and wash your hands before eating, drinking or going to the lavatory.
If you do suffer irritation to the eyes or severe irritation to the skin seek medical attention.

Spare Parts

REMEMBER, When replacing a part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Hepworth Heating Ltd.

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Instructions for Use

Introduction

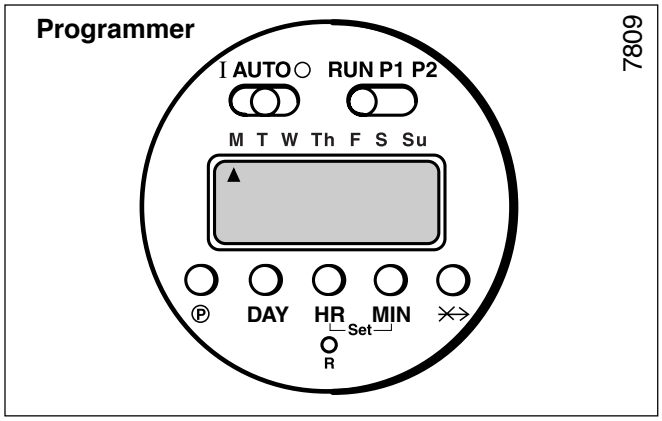
Please read these instructions and follow them carefully for the safe and economical use of your boiler.

This boiler must have been installed by a competent person in accordance with the current rules in force in the countries of destination at the time of installation.

The boiler is fully automatic in operation, having only one user control, the control thermostat.

The boiler being a fully pumped sealed system is able to provide room heating as part of a central heating system and indirect domestic hot water.

The boiler can be fitted with a programmer, which look like this:-



IMPORTANT NOTICE:

The User must always adhere to the warnings given in these instructions and those on the boiler. Under no circumstances must the User interfere with any sealed component as this could result in a potentially dangerous situation arising.

This boiler is for use only on G20 gas.

Gas Leak or Fault

If a gas leak or fault exists or is suspected, turn the boiler off and consult your local gas company or your local installation/ servicing company.

Electrical Supply

WARNING. The boiler must be earthed.

The boiler must be connected to a 230V~50Hz permanent supply.

Connection of the whole electrical system of the boiler and any heating system controls to the electrical supply, must be through one common isolator.

Isolation should preferably be by a double pole switched fused spur box. The fused spur box should be readily accessible and preferably adjacent to the appliance. It should be identified as to its use.

Alternatively a fused 3A 3 pin plug and shuttered unswitched socket may be used.

The colours of three core flexible cable are, blue - neutral, brown - live, green and yellow - earth.

As the markings on your plug may not correspond with these colours continue as follows:-

The wire coloured blue must be connected to the terminal marked “N” or “Black”.

The wire coloured brown must be connected to the terminal marked “L” or “Red”.

The wire coloured green and yellow must be connected to the terminal marked “E” or “Green” or the earth symbol ⏚.

PVC flexible cable having a conductor size of 0.75mm^2 (24/ 0.20mm) must be used within the boiler casing to connect to the boiler.

Electrical Supply Failure

The boiler will not work without an electrical supply.

Normal operation of the boiler should resume when the electrical supply is restored.

Note. The boiler safety cutoff may have operated, please refer to the following section to reset.

Reset any external controls, to resume normal operation of the central heating.

The digital programmer, has a lithium battery back up and will not need resetting. Unless it is without power for a considerable period.

Boiler Safety Cutoff Reset Button

The boiler is fitted with a safety cutoff device to protect the appliance and the user in the event of a fault occuring.

Should the main burner go out during a demand the red lockout light “F” will illuminate on the control fascia situated above the Reset Button “G”, see diagram 2.

The red light will not illuminate if there is no system demand.

Allow the boiler and system to cool down waiting at least a minimum of four minutes before pressing the Reset button “G”.

The boiler will take a few seconds to reset after the button is pressed.

If the problem persists, turn the boiler off and consult your installation/ servicing company.

The Gas Safety (Installation & Use) Regulations

In your interests and that of safety it is the law that ALL gas appliances are installed by competent persons in accordance with the current issue of the above regulations.

Setting Instructions for the 7 Day Digital Programmer

This is a 24 hour programmer, that is 1pm is 13:00, and has two sets of 8 “ON” and 8 “OFF” daily switching actions (P1 and P2).

It is fitted with a lithium battery back up which protects the programme in the event of an electrical failure. The battery should have a life of several years.

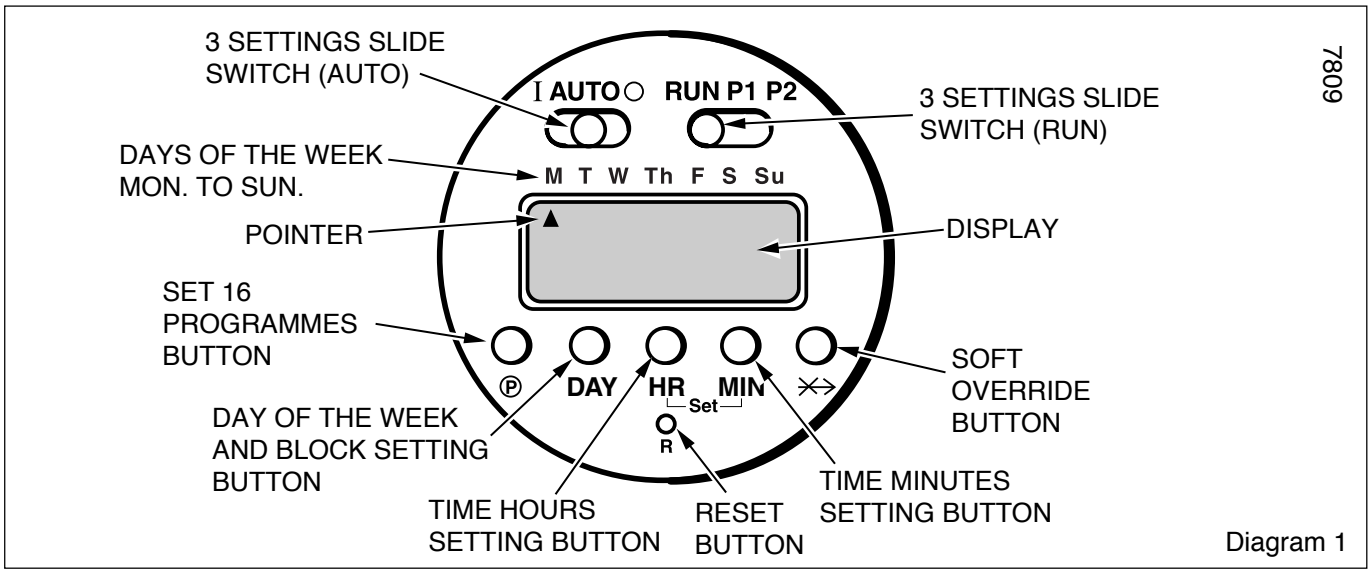


Diagram 1

Setting the Programmer - Diagram 1

1. With both AUTO and RUN switches set, press R reset button, the display will flash.

2. Press and hold HR and MIN until display stops flashing.

3. Set day of week or block setting by pressing button DAY.

4. Set time of day by pressing buttons HR and MIN.

5. When set if no buttons are pressed for 15 seconds, colon will flash, this indicates the programmer is set.

With the programmer set, the factory preset programme shown below will operate.

MON / SUN

ON - 6:30
OFF - 8:30
ON - 12:00
OFF - 12:00
ON - 16:30
OFF - 22:30

Setting Timed Programmes

With the programmer set to the correct time, see SETTING THE PROGRAMMER paragraphs 1-4, and then continue as follows:

1. Set RUN switch to P1 or P2, the display will indicate the 1st (ON) preset programme and the symbol .

2. Set day of week to be programmed by pressing the DAY button.

   Note: The days can be selected individually or as groups:

   Mon-Fri., Sat/Sun., Mon-Sat., Mon-Sun.

   An arrow or arrows will be displayed under the day or days selected.

3. Set time of day by pressing the buttons HR and MIN.

4. Press button Ⓟ to confirm programmes, the display will indicate the 2nd (OFF) preset programme and subsequently, 3rd to16th.

5. Repeat procedures 2, 3 and 4 until desired programmes are set.

   Note. It is not a requirement to use the 8 on/off programmes.

6. Set the RUN switch, your appliance will now operate at the programmed times.

General Notes.

With the AUTO switch in the I position the central heating will operated constantly ON.

With the AUTO switch in the O position the central heating will not operate.

Soft Override button indicated by the symbol ⤫⟷, this function will override the current central heating programme for the next available.

ON time programmes are indicated by the symbol .

To Light the Boiler

1. Check the two isolating valves are open, the levers in line with the valve body, see diagram 3.

2. Open the controls cover door and familiarize yourself with the controls, see diagram 2.

3. Set “C”, programmer (if fitted) and any remote controls as required.

4. CAUTION. A sealed pressurised system must be filled and pressurised by a competent person.

Only operate the boiler when you are sure that the system has been filled and pressurised. Check this by looking at the pressure gauge “A”, it should read 0.7bar minimum when the boiler is switched off. If you are in any doubt about the boiler being filled with water contact your installation/servicing company or the local gas company.

5. Check that the electrical supply to the boiler is ON at the external isolator.

6. Set switch “B” to 1, situated on the control fascia, light “E” on the fascia will illuminate.

7. If the red light “F” comes “ON”, the boiler WILL NOT WORK. Depress the boiler safety cutoff reset button “G” if the red light stays “ON”, you MUST contact your installation/servicing company.

The boiler lighting operation is automatic if the external controls or programmer, if fitted, are calling for heat.

The fan operates, followed by an ignition spark, the burner lights.

Light “D” on the fascia will illuminate.

When the boiler switches off, the burner will go out.

The automatic lighting sequence will operate again when heat is required.

8. Adjust the control thermostat knob “J” to desired setting.

Close the controls cover door.

To Turn the Boiler Off

Set switch “B” to 0. To relight follow the lighting sequence given above.

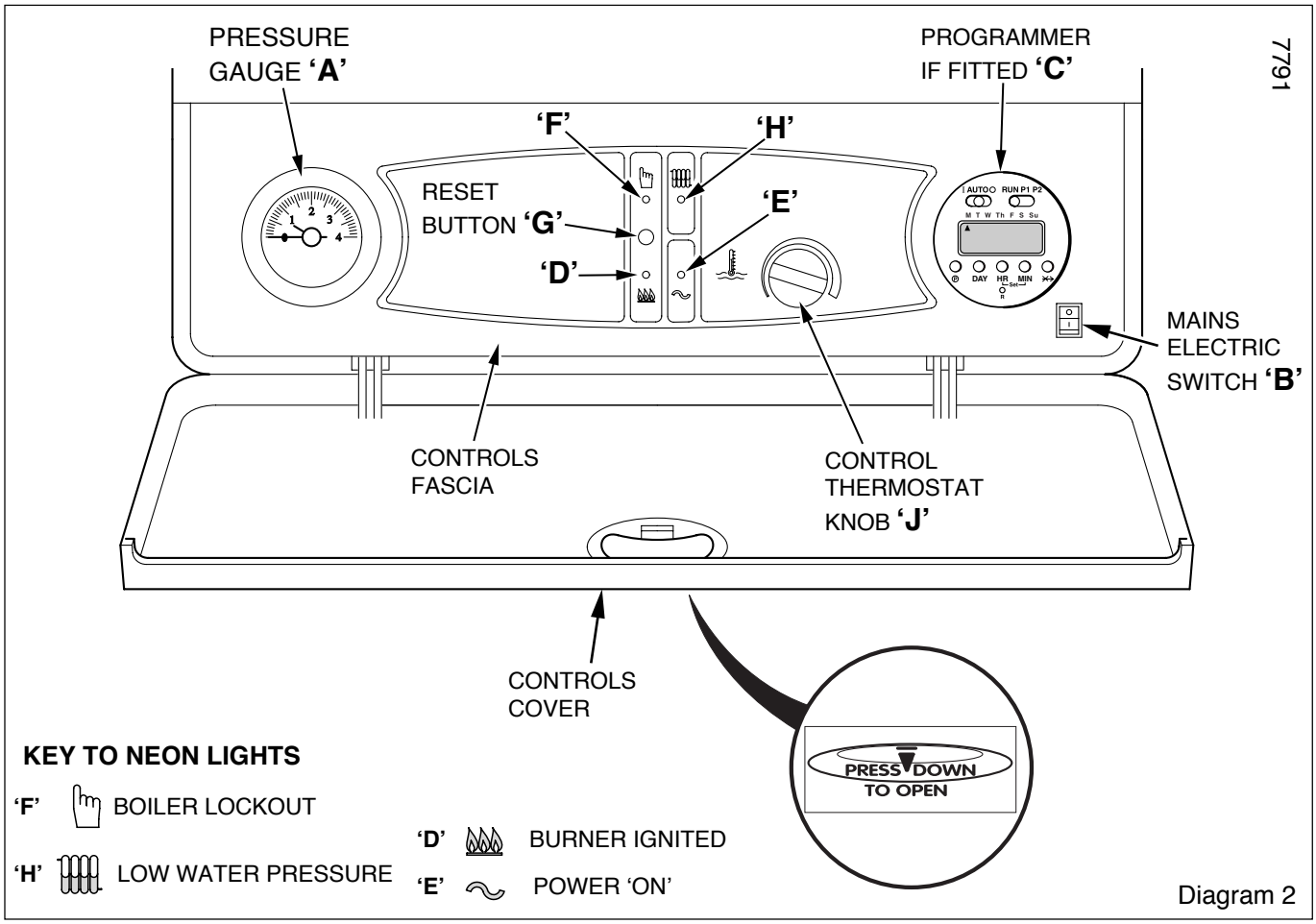


Diagram 2

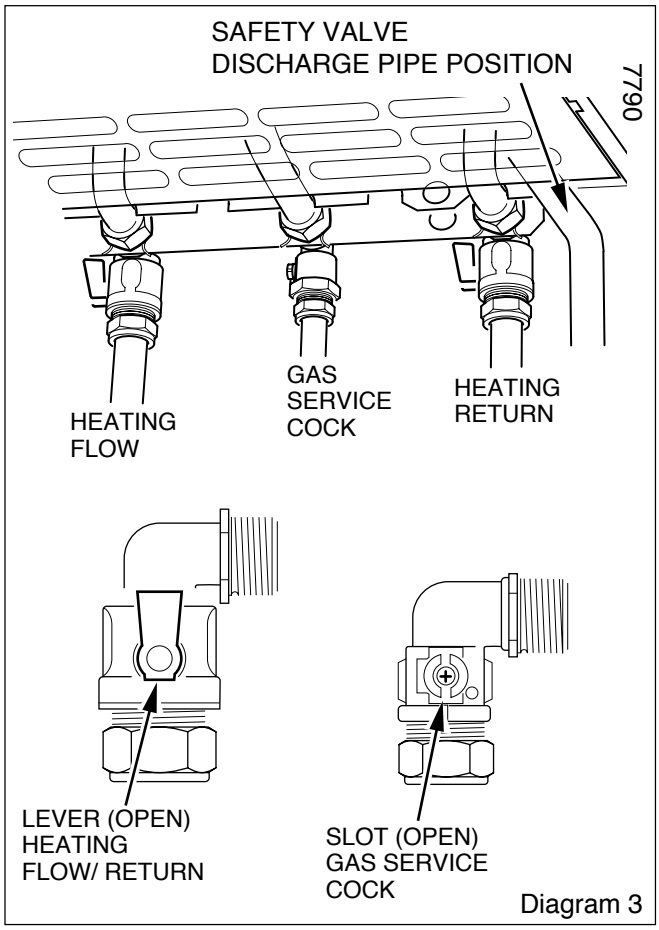


Diagram 3

Maintenance and Servicing

To ensure the continued efficient and safe 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 enough.

If this appliance is installed in a rented property there is a duty of care imposed on the owner of the property by the current issue of the Gas Safety (Installation and Use) Regulations, Section 35.

Servicing/maintenance should be carried out by a competent person in accordance with the rules in force in the countries of destination.

To obtain service, please call your installer or Heatcall (Glow-worm's own service organisation) using the telephone number behind the controls cover door.

Please be advised that the 'Benchmark' logbook should be completed by the installation engineer on completion of commissioning and servicing.

All CORGI Registered Installers carry a CORGI ID card, and have a registration number. Both should be recorded in your boiler Logbook. You can check your installer is CORGI registered by calling CORGI direct on :- 01256 372300.

Clearances

The boiler requires a clearance in front, below and at the sides of the casing for safety, servicing and maintenance access, see diagram 2.1.

Protection Against Freezing

The boiler has a 2 stage built in frost protection. Provided power and gas are available and there is adequate pressure in the system, if the water temperature within the appliance falls below 10°C approx. the pump only will come on. If the water temp continues to fall to 6°C approx. the main burner will fire at min rate until the water in the appliance is greater than 15°C approx. This function protects the appliance only.

Other system pipework external to the boiler may require frost protection.

If the boiler is to be out of use for any long periods during severe weather, it is recommended that the whole system, including the boiler, should be drained to avoid the risk of freezing. Make sure that, if fitted, the immersion heater in the cylinder is switched off.

If in doubt, contact you installation/servicing company for advice.

Draining and Filling

CAUTION. This boiler works in a pressurised system which must only be drained, refilled and pressurised by a competent person.

Note: If the pressure gauge indicates a loss of system pressure, that is, less than 0.7bar, YOU MUST CONTACT YOUR INSTALLER.

Pressure Relief Safety Valve

CAUTION. A pressure relief safety valve and discharge pipe is fitted to the boiler. This valve must not be touched. Should there be any discharge from the pipe, turn the boiler off, isolate from the electrical supply and contact your installation/servicing company.

Cleaning

WARNING. This appliance contains metal parts (components) and care should be taken when handling and cleaning with particular regard to edges.

The boiler casing can be cleaned using a mild liquid detergent with a damp cloth, then a dry cloth to polish.

Do not use any form of abrasive or solvent cleaner as you may damage the paint work

Boiler Casing

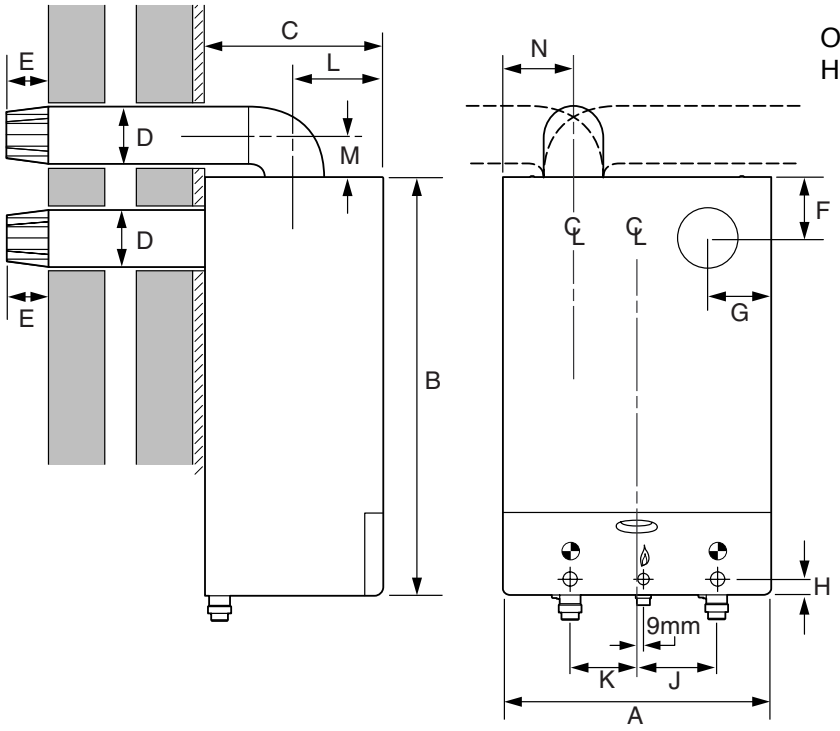
CAUTION. Do not remove or adjust the casing in any way, as incorrect fitting may result in incorrect operation or failure to operate at all. If in doubt seek advice from the local gas company or your installation/servicing company.

Replacement Parts

If replacement parts are required apply to your local supplier or British Gas.

Please quote the name of the appliance.

1 General Data



Optional flue kits are available
Horizontal top outlet and Vertical.

7792

22mm COMPRESSION CENTRAL HEATING

Ø15mm COMPRESSION GAS CONNECTION

Diagram 1.1

A	B	C	D	E	F	G	H	J	K	L	M		N
450	700	300	100	75	138	142	18	135	110	138	85 STD/EXD.	115 EASYFIT	103

1.1 Installation

Materials and equipment should be fit for their purpose and of suitable quality and workmanship.

1.2 Important Notice

This boiler is for use only on natural gas, G20.

1.3 Sheet Metal Parts

WARNING. When installing or servicing this boiler care should be taken when handling the edges of sheet metal parts to avoid any possibility of personal injury.

1.4 Requirements

The installation of this boiler must be carried out by a competent person in accordance with the current rules in force in the countries of destination at the time of installation.

Manufacturer's instructions, supplied.

Manufacturer's instructions must not be taken as overriding statutory requirements.

1.5 Data Label

The data label is on the inner case front, see diagram 1.2.

1.6 Data

See table 1 and diagrams 1.1, 1.2. & 1.3.

The Seasonal Efficiency Domestic Boilers UK (SEDBUK) is 79.5%.

The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated have been certified by B.S.I.

TABLE 1

Lift Weight	30Kgs (66lbs)
Total Weight	39.5Kgs (88lbs)
Gas connection	Ø 15mm compression
Heating and return	Ø 22mm compression
Safety valve	Preset 3bar (43.5lbf/in²)
Safety valve discharge	Ø 15mm copper
Water content	1.17 litres (.26 gallons)
■ **Expansion vessel capacity**	6 litres (1.32 gallons)
Heating cold fill pressure minimum	0.7bar (10.1lbf/in²)
■ **Maximum Heating system water content using fitted expansion vessel.**	60 litres (13.2 gallons) with a cold fill pressure of 0.7bar
Electrical supply	230V~50Hz
Electrical rating	150W fused 3A
Internal Fuse rating	1) Type T2A
Approximate Gas Rate at Maximum Input	1.86m³/h (65.78ft³/h)

■ For larger systems use an additional expansion vessel, see Section 4.

1.7 Gas Supply

The gas installation shall be in accordance with the rules in force in the countries of destination.

The supply from the governed meter must be of adequate size to provide a steady inlet working pressure of 20mbar (8in wg) at the boiler. With all other appliances operating.

1.8 Electrical Supply

WARNING. This boiler must be earthed.

All system components shall be of an approved type.

The electrical installation shall be in accordance with the current rules in force in the countries of destination at the time of installation.

Connection of the whole electrical system of the boiler and any heating system controls to the electrical supply, must be through one common isolator.

The appliance isolation should be by a double pole switched fused spur box, having a minimum contact separation of 3mm in each pole. The fused spur box should be readily accessible and preferably adjacent to the appliance. It should be identified as to its use.

Alternatively, a fused 3A 3pin plug and unswitched socket may be used, provided they are not used in a room containing a bath or shower.

The mains supply cable and other cables connected to the boiler must be the PVC flexible type of at least 0.75mm^2 (24/ 0.20mm) .

1.9 Heating System Controls

The heating system should have installed: a timer and room thermostat controlling the boiler.

Thermostatic radiator valves may be installed, however they must not be fitted in a room where the room thermostat is located.

Note: All systems must have at least one radiator not fitted with a thermostatic valve.

Note: For further information, see the current issue of the Building Regulations, approved document L1, and the references:

1) GIL 59, 2000: Central heating system specification (CheSS) and

2) GPG 302, 2001: Controls for domestic central heating system and hot water. BRECSU.

Glow-worm HEPWORTH HEATING LTD., BELPER,DERBYS. DE56 1JT

COMPACT SYSTEM 60 GC No. 41-047-27

Electrical Supply 230V ~ 50Hz 150W Fused at 3A For use on I_{2H} G20 - 20 mbar. This boiler is intended exclusively to be installed on a gas supply with a governed meter.	TYPE : C_{12} - C_{32} NOx Class 2 CE 0086 GB IE 86/BL/656

HEATING CIRCUIT PMS = 2.5 bar

INJECTOR: 3.6mm PART No. 205771

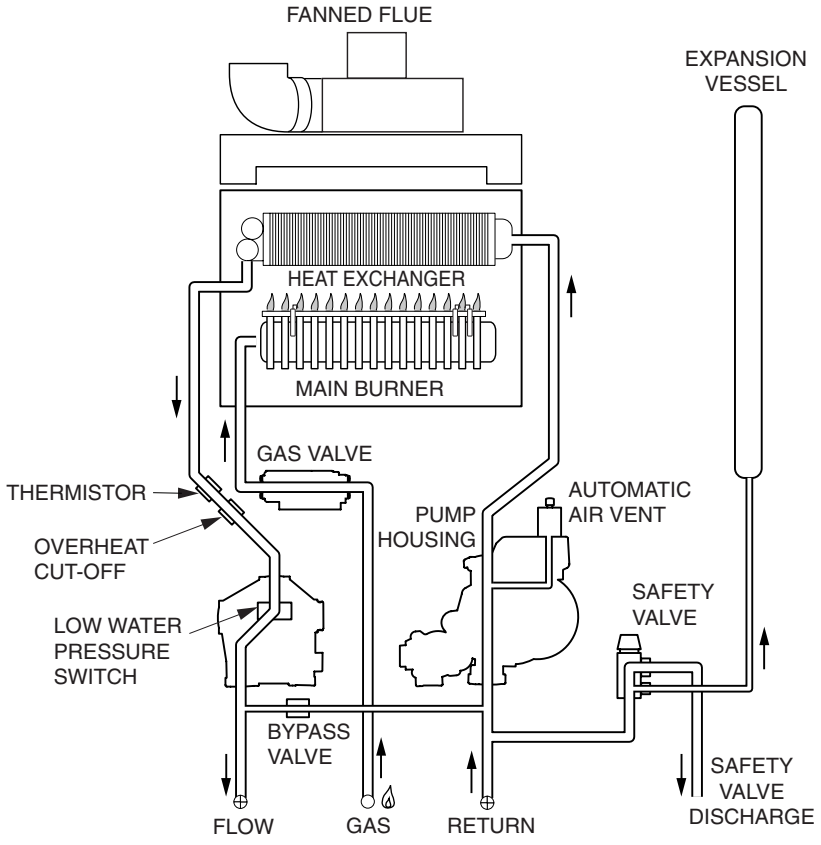
	MAX.	MIN
COLD BURNER PR - mbar	14.9	3.5
HEAT INPUT NETT Q - kW	19.56	10.42
HEAT OUTPUT P - kW	17.58	8.79

SERIAL No. 457651

7861

The appliance flue type is a C_{12} and C_{32}. This refers to a concentric flue where the fan is downstream of the heat exchanger. The C_{12} is a horizontal flue termination, and the C_{32} is a vertical flue termination.

Diagram 1.2



7793

Diagram 1.3

2 Boiler Position

2.1 Location

This boiler must be installed in accordance with the rules in force in the countries of destination.

This boiler is not suitable for fitting outside.

Any electrical switch must be positioned so that it cannot be touched by a person using the bath or shower.

The boiler must be mounted on a flat wall which is sufficiently robust to take its weight, refer to Table 1, “Data”.

Note: It is important that the wall hanging bracket and the service cock bracket are fitted to a flat and true wall area for correct alignment with the boiler. Where this can not be achieved it is acceptable to pack out the service cock bracket to obtain the correct alignment with the wall hanging bracket.

If the location of the boiler or any part of the system is subject to severe cold weather conditions, it is recommended that a frost thermostat is fitted. Any part of the system that may be vulnerable to freezing must be protected.

2.2 Boilers in a compartment

Where the installation of the boiler will be in an unusual position, the current issue of BS6798 gives detailed guidance on these requirements.

An existing cupboard or compartment modified for the purpose may be used, providing minimum clearances are maintained. Details of essential requirements for cupboard or compartment design are given in the current issue of BS6798.

The door way opening should be of sufficient size to allow for easy removal of the boiler.

Where the boiler is fitted in a cupboard or compartment, permanent ventilation is not required.

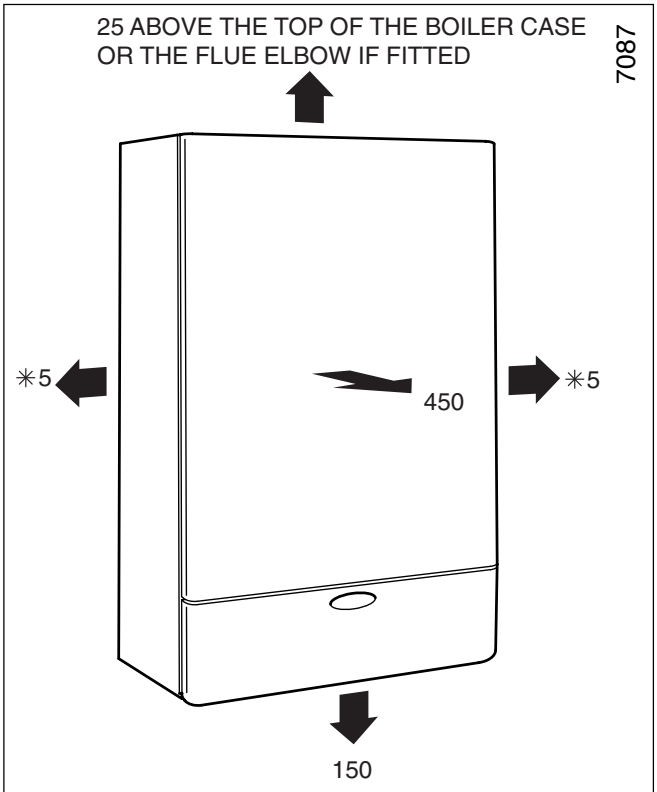
Any existing compartment air vents must not be removed or blocked off.

2.3 Clearances

The boiler should be positioned so that at least the minimum operational and servicing clearances are provided, see diagram 2.1. Additional clearances may be required around the boiler for installation.

2.4 Timber Frame Buildings

If the boiler is to be installed in a timber frame building it should be fitted in accordance with the Institute of Gas Engineers document IGE/UP/7/1998. If in doubt seek advice from the local gas undertaking or Hepworth Heating Ltd.



✳To achieve minimum "Installation" clearance of 5mm. The side panels will have to be fitted prior to boiler mounting.

DIMENSIONS IN MILLIMETRES

Diagram 2.1

3 Flue and Ventilation

3.1 General

The flue must be installed in accordance with the rules in force in the countries of destination.

3.2 Terminal Position

The minimum acceptable siting dimensions for the terminal from obstructions, other terminals and ventilation openings are shown in diagram 3.1.

The terminal must be exposed to the external air, the position allowing free passage of air across it at all times.

Car port or similar extensions of a roof only, or roof and one wall, require special consideration with respect to any openings, doors, vents or windows under the roof. Care is required to protect the roof if made of plastic sheeting. If the car port comprises of a roof and two or more walls seek advice from the local gas undertaking before installing the boiler.

If the terminal is fitted within 600mm below plastic guttering, an aluminium shield 1500mm long should be fitted immediately beneath the guttering or eaves. If the terminal is fitted within 450mm below painted eaves or a painted gutter, an aluminium shield 750mm long should be fitted immediately beneath the guttering or eaves.

3.3 Flue Options

There are various flue systems to choose from, as follows:

Standard Top Outlet Flue Pack - Pt.No. 230483

Easyfit Top Outlet Flue Pack - Pt. No. 232057

Standard Rear Outlet Flue Pack - Pt.No. 230482

Extended Top Outlet Flue Pack - Pt. No. 230487

1 Metre Extension Kit - Pt. No. 230484

Optional Wall Liner Kit No. 900862

A Flue Bend Kit or Vertical Flue Kit can be supplied, see Hepworth Heating "Flue Options Guide" for configurations available.

45° Flue Bend Pack - Pt. No. 230485

90° Flue Bend Pack - Pt. No. 230486

In Line Flue Adapter Kit - Pt. No. 230488

Vertical Flue Kit No. 458115

3.4 Internal Access Flue

All flue assemblies are designed for internal installation, given that there is sufficient clearances opposite to the flue for the installation of the flue.

If there is insufficient clearance the flue can be installed from outside.

For a wall thickness up to 300mm, provided that there is sufficient space and the optional wall liner kit is used, the flue can be installed from the inside.

For a wall thickness of over 300mm the external flue hole will need to be made good from the outside, this also applies if you use the flue kit without the optional wall liner kit, irrespective of wall thickness.

3.5 Terminal Guard

A terminal guard is required if persons could come into contact with the terminal or the terminal could be subject to damage.

If a terminal guard is required, it must be positioned to provide a minimum of 50mm clearance from any part of the terminal and be central over the terminal.

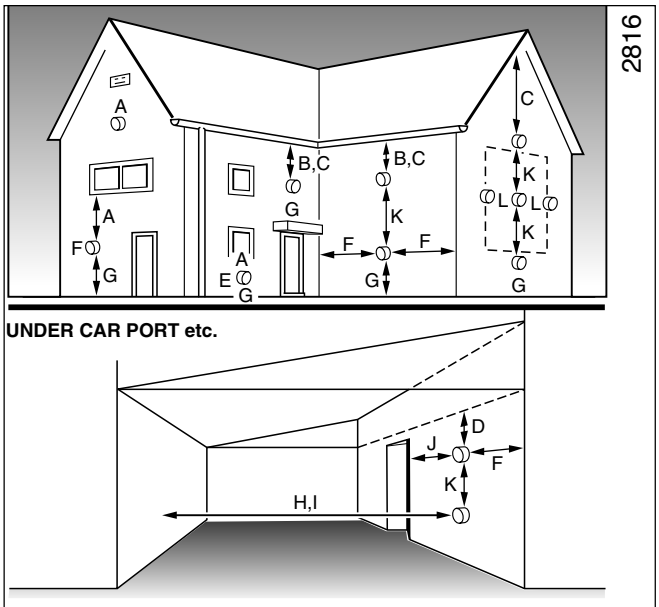
The guard should be similar to that shown in diagram 3.1 .

3.6 Room Ventilation

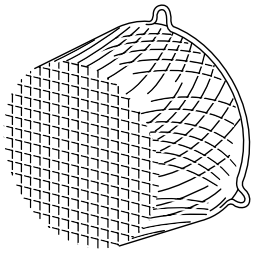
Ventilation must be provided in accordance with the rules in force in the countries of destination. The boiler is room sealed, so where the boiler is fitted in a room or space, a permanent air vent is not required.

3.7 Cupboard/Compartment Ventilation

If the boiler is to be fitted in a cupboard or compartment. Refer to Section 2.2.



MINIMUM SITING DIMENSIONS FOR FANNED FLUE TERMINALS POSITION		MINIMUM SPACING mm
A	DIRECTLY BELOW, ABOVE OR HORIZONTALLY TO AN OPENING, AIR BRICK, OPENING WINDOWS, AIR VENT OR ANY OTHER VENTILATION OPENING.	300
B	BELOW GUTTER, DRAIN/SOIL PIPE	25
C	BELOW EAVES	25
D	BELOW A BALCONY OR CAR PORT	25 200
E	FROM VERTICAL DRAIN PIPES AND SOIL PIPES	25
F	FROM INTERNAL OR EXTERNAL CORNERS	25
G	ABOVE ADJACENT GROUND OR BALCONY LEVEL	300
H	FROM SURFACE FACING THE TERMINAL	600
I	FACING TERMINALS	1200
J	FROM OPENING (DOOR/WINDOW) IN CAR PORT INTO DWELLING	1200
K	VERTICAL FROM A TERMINAL	1500
L	HORIZONTALLY FROM A TERMINAL	300



TERMINAL GUARD TYPE K3
SUPPLIED BY :
Tower Flue Components Ltd.
Morley Road
Tonbridge
Kent
TN9 1RA

Diagram 3.1

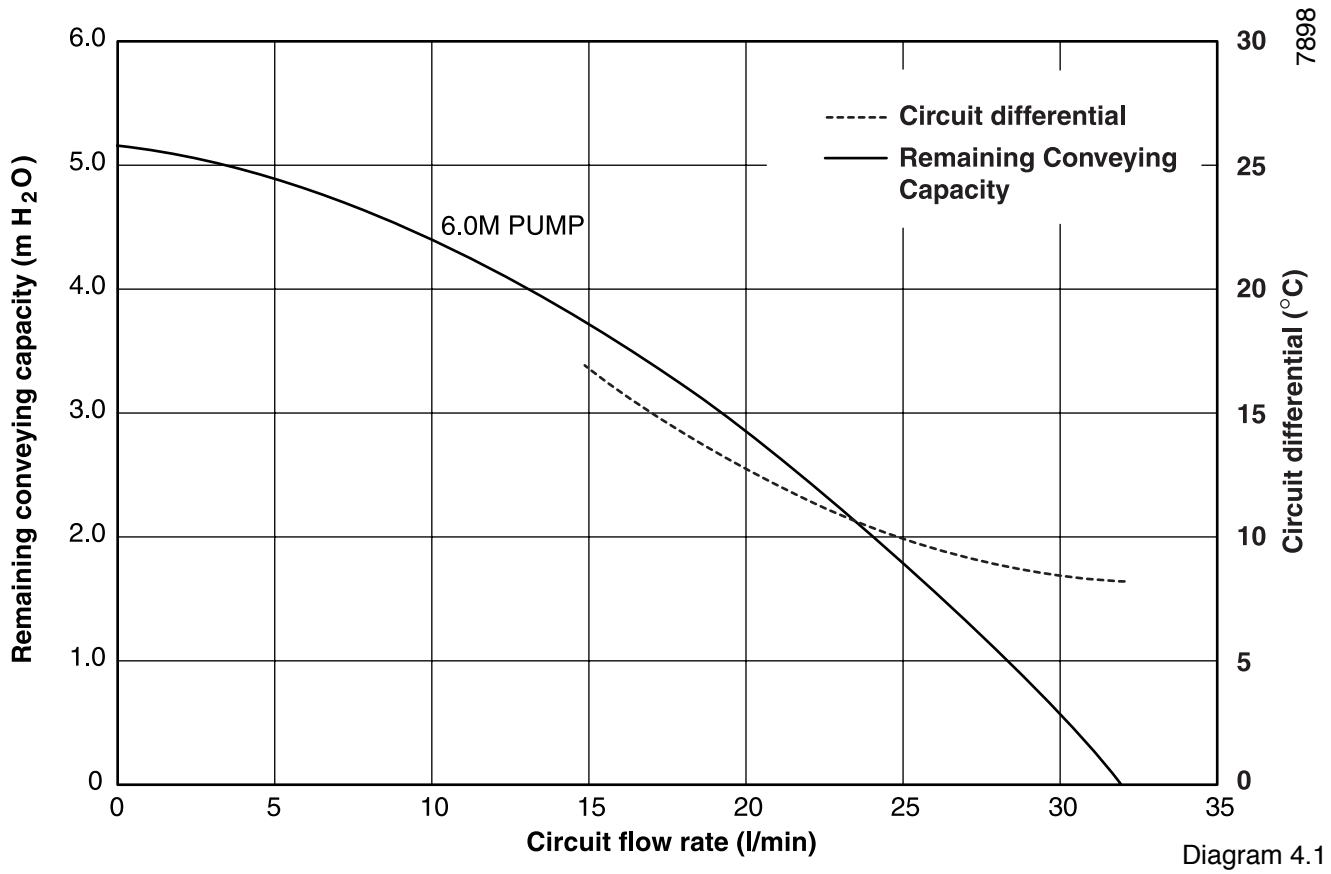


Diagram 4.1

4.1 General Notes

The boiler is intended for use in a sealed system only.

4.2 Safety Valve

The safety valve is an integral part of the boiler.

It cannot be adjusted but has a manual test device.

4.3 Pressure Gauge

A pressure gauge is incorporated into the boiler to indicate the system pressure.

The gauge has a cold fill set pointer.

4.4 Pump

The circulation pump is integral with the boiler.

The remaining circulating pressure head available from the boiler is shown in diagram 4.1, Glow-worm pump.

4.5 Expansion Vessel

The boiler has an integral expansion vessel with a capacity of 6 Litres. If the system water content exceeds the maximum quoted in Table 1, Data, an additional vessel should be connected into the system as close as possible to the central heating return connection of the boiler, see diagram 4.2.

The charge pressure shall not be less than the static head at the point of connection, that is, the height of the top point of the system above the expansion vessel.

4.6 Flow Rate

A valve must be incorporated in the main flow or return of the system, valve “A” shown in the flow diagram 4.2. This valve must be lockable and positioned so that inadvertent closure or unauthorised interference is not possible.

4.7 Bypass

The bypass is an integral part of the boiler.

4.8 Water Make Up

Provision should be made for replacing water lost from the system using a make up bottle mounted in a position higher than the top point of the system, connected through a non-return valve to the return side of the heating circuit, see diagram 4.2.

Alternatively, provision for make up can be made using a filling loop.

4.9 Filling Sealed Systems

Provision for filling the system at a low level must be made. Three methods of filling are shown in diagram 4.3.

There must be no permanent connection to the mains water supply, even through a non-return valve.

NOTE: It is important that fittings used for connection to potable water comply with the water undertakers requirements.

4 Water System

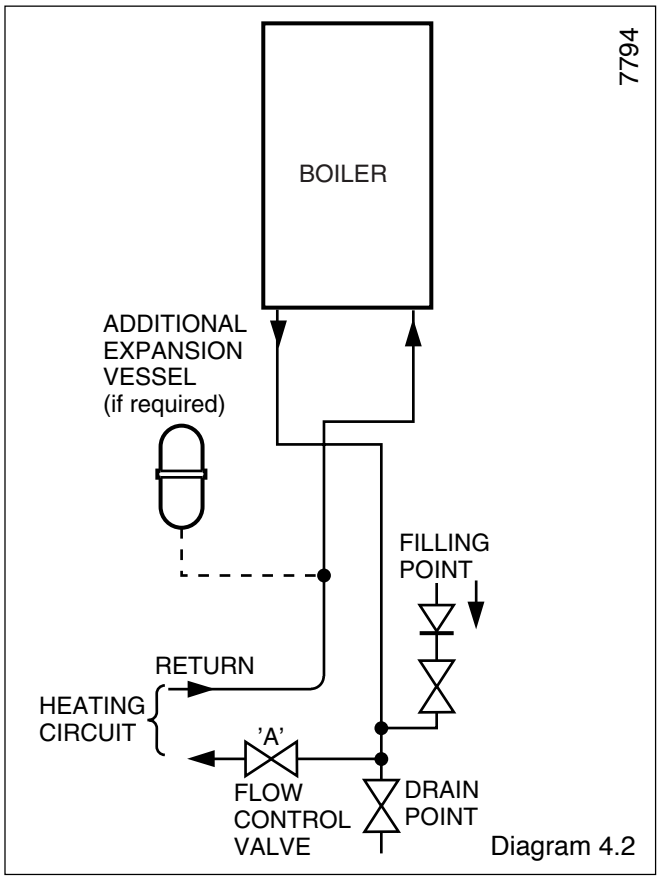


Diagram 4.2

4.10 Corrosion Inhibitor

If an inhibitor is to be used in the system, contact the inhibitor manufacturer so that they can recommend their most suitable product.

When fitting the boiler into an existing system, special care should be taken to drain the entire system, including radiators, then thoroughly cleaning out before fitting the boiler whether or not adding an inhibitor.

4.10 Draining

A draining tap must be provided at the lowest points of the system, which will allow the entire system to be drained. An additional draining tap MUST be fitted close to the boiler.

The flow and return isolation valves are provided with drain points for boiler heat exchanger drainage.

ALTERNATIVE METHODS OF FILLING

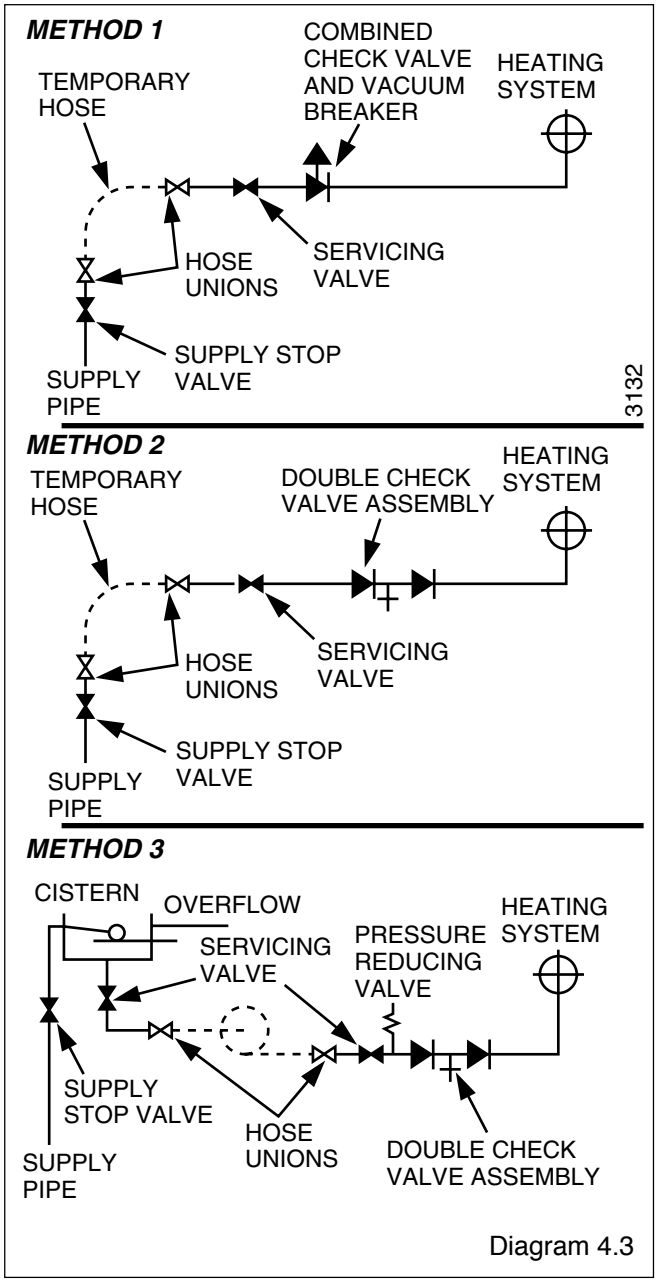


Diagram 4.3

5 Domestic Hot Water

General

The domestic hot water service must be in accordance with the current issue of BS5546, refer also to the current issue of BS6700.

5.1 Domestic Hot Water Cylinder

SINGLE FEED INDIRECT CYLINDERS ARE NOT SUITABLE AND SHOULD NOT BE USED.

The domestic hot water cylinder must be of the indirect coil type. It must be suitable for a working at a gauge pressure of 0.35bar above the safety valve setting.

5.2 Domestic Hot Water System - Unvented

Where a storage system will not have a vent to atmosphere the installation must comply with Building Regulations and local Water Company bye-laws, see also the current issue of BS6700.

If fitting into an existing system the local authority should be informed.

6 Installation Preparation and Gas / Water Connections

The installation requires the following components :-

1. Plumbing jig Carton
2. Boiler Carton
3. Flue Pack

6.1. Plumbing Jig

Remove from the wall template, then follow the instructions given on the template.

Note: Leaving the service cock bracket (lower jig) fixing screws loose will make the fitting of the boiler service elbows on to the service cocks easier. Once the service connections are made, tighten service cock bracket (lower jig) fixing screws. It is important that the wall hanging bracket and the service cock bracket (lower jig) are fitted to a flat and true wall area for correct alignment with the boiler. If this cannot be achieved it is acceptable to pack out the service cock bracket (lower jig) to obtain the correct alignment with the wall hanging bracket.

6.2 Gas Connection

Provision is made for the gas supply to be connected from below the boiler, see diagrams 1.1 and 6.1 for position.

Refer also to “Gas Supply”, Section 1.7.

Make the gas supply connection to the gas service cock. While making the connection, do not subject the gas service cock to heat as you may damage the seals.

6.3 Water Connections

Provision is made for the flow and return pipes to be connected from below or through an internal wall at the rear of the boiler, see diagram 1.1 and 6.1 for position. Provision is also made for the flow and return to be connected from above, passing down either side of the boiler. Take care that any pipework connected from above will clear the expansion vessel. Refer to the wall template. If connecting from above a piping kit 457620 is available and is recommended.

NOTE: Top rear flue outlet is not possible with a vertical piping kit.

Refer also to Section 4.11.

If necessary, temporarily fit the boiler.

Flush out the system before connecting the boiler.

Make the connections to the flow and return by means of the isolating valves, see diagram 6.1.

While making the connections. Do not subject any of the isolating valves to heat as you may damage the seals.

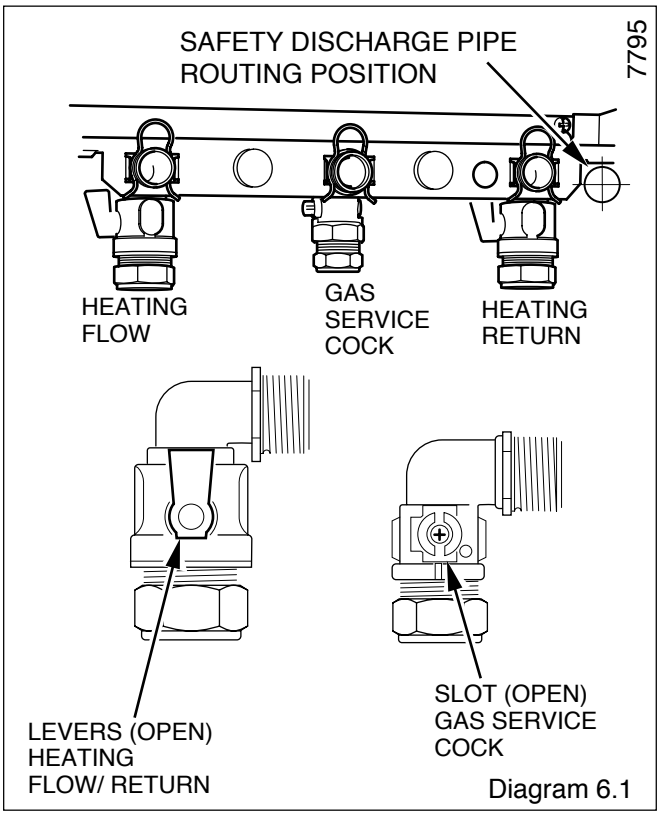


Diagram 6.1

Make sure that the drain and operating screw heads on the isolating valves are accessible.

6.4 Safety Valve Discharge

WARNING. It must not discharge above an entrance or window or any type of public access area.

A short discharge pipe is supplied loose with the boiler, which when fitted to the safety valve, will end below the boiler the position is next to the heating return, for position see diagram 6.1.

This must be extended, using not less than 15mm od metal pipe, to discharge, in a visible position, outside the building, facing downwards, preferably over a drain. The pipe must have a continuous fall and be routed to a position so that any discharge of water, possibly boiling, or steam cannot create any danger to persons, damage to property or external electrical components and wiring.

Note. To ease future servicing it is advisable to use a compression type fitting to extend the discharge pipe.

7 Flue Preparation

7.1 Flue Position and Length

Determine flue application, length and terminal position before starting, refer to diagram 7.1.

Note: The Standard Top Outlet Flue Pack, the Easyfit Top Outlet Flue Pack and the Extended Top Outlet Flue Pack contains a flue duct extension piece complete with "O" rings, this should be discarded.

If you are using a Flue Bend or a Vertical Flue Kit, please follow the instructions supplied with the kit.

To make a neat finish to the flue outlet a flue collar kit, part No. 443286, with instructions, is available, see diagram 7.2.

Note: If required an optional wall liner kit, part no. 900862, is available complete with instructions.

7.2 Flue Assembly

Extend the telescopic flue to the required length, making sure that the minimum overlap is no less than 25mm, and that the flue terminal projects 15mm minimum beyond wall face, see diagram 7.1.

Carefully drill though air duct pilot hole and secure with self tapping screw provided in fittings pack, see diagram 7.1.

Seal the joint with the tape provided.

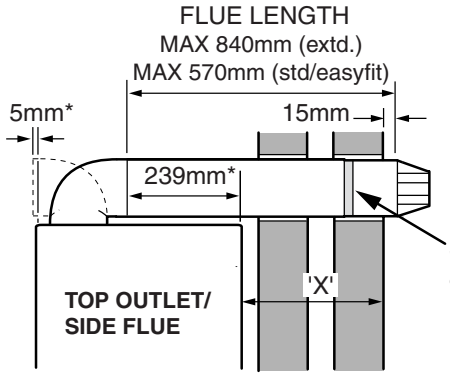
If the flue system requires the addition of flue extension kits, drill, seal and secure them with the self tapping screw and tape provided.

Note: Should any one of the flue sections require cutting to obtain desired flue system length, cut at the end opposite the expanded end.

If the boiler is not to be fitted for some time cover the hole in the wall.

7 Flue Preparation

TOP OUTLET FLUE PACK

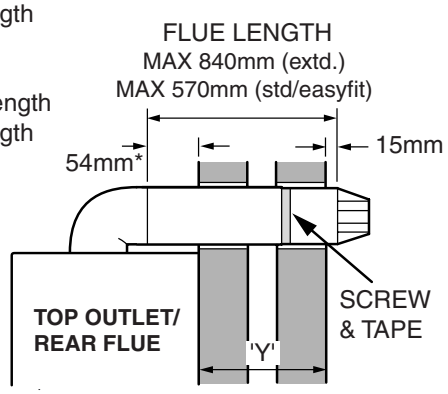


STD/EXTD
'X' plus 254mm (RH) = flue length
'X' plus 10mm (LH) = flue length

EASYFIT
'X' plus 282mm (RH) = flue length
'X' plus 38mm (LH) = flue length
(must include 50mm min.
side clearance)

*STD/EXTD flue only

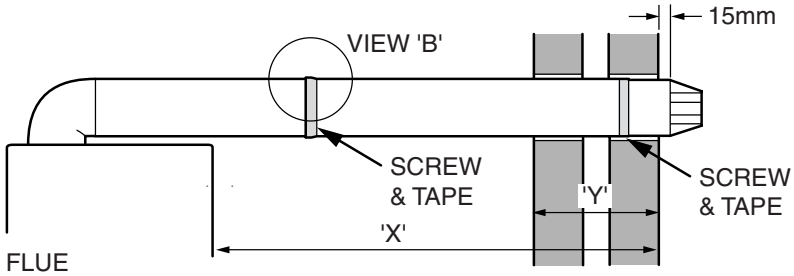
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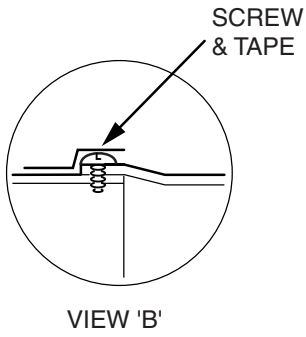


STD/EXTD 'Y' plus 69mm = flue length
EASYFIT 'Y' plus 97mm = flue length

EASYFIT/STD./EXTD. TOP OUTLET FLUE PACK & 1 METRE EXTENSION

3 x 1 metre extension kits may be joined together.

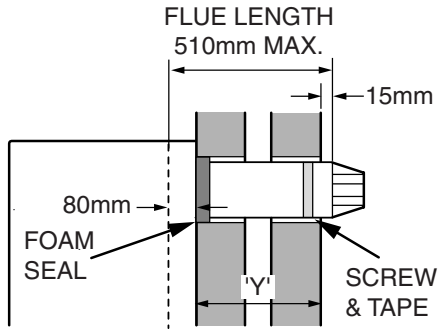




SIDE FLUE
STD/EXTD
'X' plus 254mm (RH) = flue length
'X' plus 10mm (LH) = flue length
EASYFIT: 'X' plus 282mm (RH) 'X' plus 38mm (LH) = flue length

REAR FLUE
STD/EXTD 'Y' plus 69mm = flue length
EASYFIT 'Y' plus 97mm = flue length

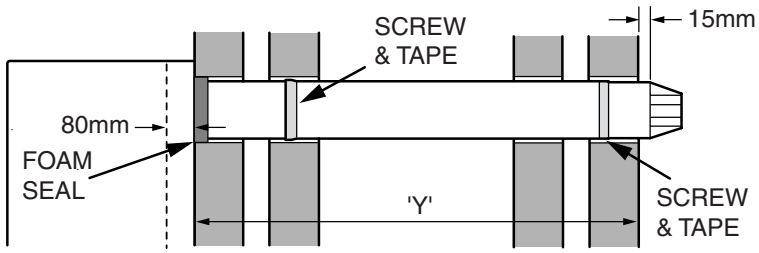
REAR OUTLET FLUE PACK



'Y' plus 95mm = FLUE LENGTH

REAR OUTLET FLUE PACK & 1 METRE EXTENSION KIT

3 x 1 metre extension kits may be joined together.



'Y' plus 95mm = FLUE LENGTH

FLUE PACKS	MINIMUM WALL THICKNESS	MINIMUM FLUE LENGTH	MAXIMUM FLUE LENGTH	MAXIMUM DISTANCE FROM "Y" BOILER MOUNTING FACE TO EXTERNAL WALL FACE	MAXIMUM DISTANCE FROM "X" BOILER CASING TO EXTERNAL WALL FACE
TOP STD/ EASYFIT					
REAR	75	144	570	500	-
SIDE R.H.	75	334	570	-	316
SIDE L.H.	75	90	570	-	560
TOP EXTD.					
REAR	75	144	840	770	-
SIDE R.H.	75	334	840	-	586
SIDE L.H.	75	90	840	-	830
REAR STD.					
REAR	75	170	510	415	-

NOTE :
IF IT IS NECESSARY TO CUT THE DUCTS TO ACHIEVE THE "FLUE LENGTH" MAKE SURE THAT THE OVERLAPS ARE AS FOLLOWS :-
THE OVERLAP FOR AIR DUCT = 25mm
THE OVERLAP FOR FLUE DUCT = 50mm

THE MAXIMUM LENGTHS CAN BE INCREASED BY AN ADDITIONAL 2 METRES WITH THE USE OF THE 1 METRE EXTENSION KITS.
NOTE :THIS APPLIES TO STANDARD KITS ONLY.

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Diagram 7.1

7.3 Internal Access Flue

If access to the outside wall is not practical, the flue system can be installed from inside. Use of the optional wall liner kit is required.

7.4 Rear Outlet Flue Fixing

Fit the self adhesive foam seal provided in the flue pack around the air duct at the position shown in diagram 7.1.

Make good around the flue outside after installation of the boiler.

Important: If the wall liner kit is used, the self adhesive foam seal included in the wall liner kit must be used in place of the one supplied with the flue pack, see diagram 7.3 for position of self adhesive seal.

7.5 Top Outlet Side or Rear Flue Fixing

Make good the area around the flue inside and outside after installation of the boiler.

Important: If the wall liner kit is used, the self adhesive foam seal included in the wall liner kit must be used in place of the one supplied with the flue pack, see diagram 7.3 for position of self adhesive seal.

7.6 Flue Positioning

Push the flue assembly into and through the hole such that it is within the wall, and does not stick out into the room. Do not push the flue assembly too far into the hole as it has to be pulled back into the boiler and secured.

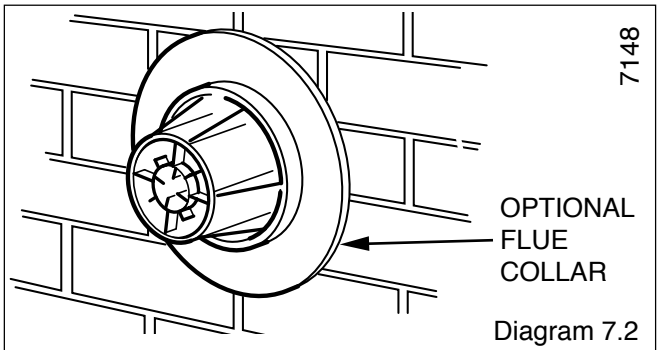


Diagram 7.2

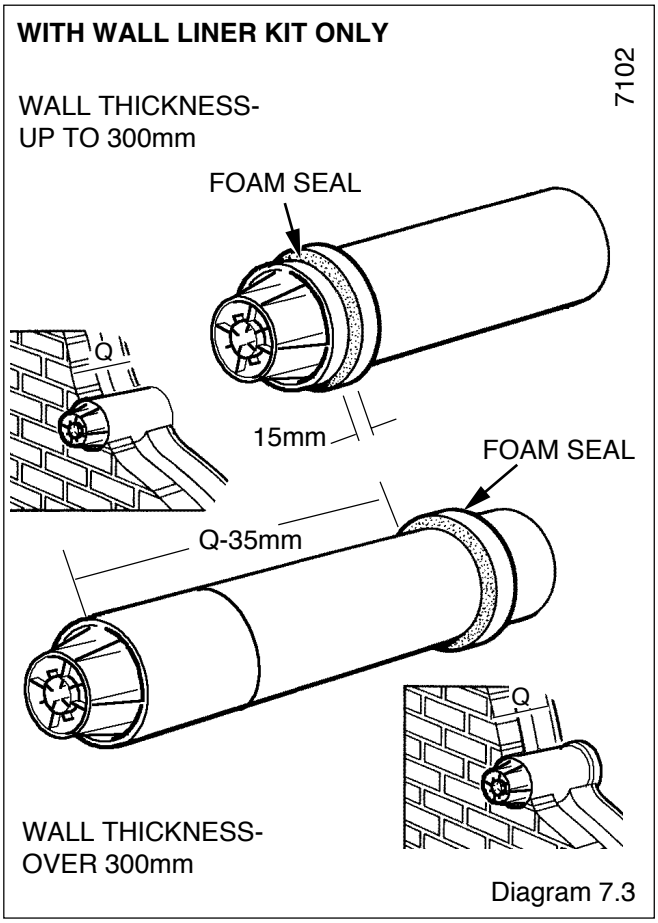


Diagram 7.3

8 Mounting the boiler

8.1 Boiler Mounting

Remove the inner case front, secured by two clamps at the bottom lift up and unhook from the threaded lugs at the top, see diagram 8.1.

Remove the combustion chamber panel transit screws, see diagram 8.2. (It will not be necessary to refit these).

Slide the combustion chamber panel upwards to disengage from the retaining lugs, pull forward to remove, see diagram 8.2.

Remove the fan electrical connections by pulling the plastic boots not the wires. Remove the tubes from fan, noting the colour tubes positions. see diagram 8.3.

Remove the fan and flue collector assembly by pulling it forward see, diagram 8.3.

Remove the rear outlet restrictor plate and retain if using the rear flue outlet, see diagram 8.4.

REAR FLUE ONLY Fit the flue spigot supplied separately, see diagram 8.5.

TOP FLUE ONLY Remove the blanking plate and foam gasket from the top of the boiler and use to blank the hole where the rear restrictor plate (discard) was fitted.

Note: Should the side clearances be less than 30mm. It will be necessary to fit the side panels before mounting the boiler. Refer to Section 10.6 for fitting.

Remove the protective caps from the boiler water pipes.

Fit the sealing washers (supplied in the fittings) to the boiler water pipes by inserting them into the tubing nuts (the nipples on the washers will hold them in positions), see digram 8.8.

Lift the boiler into position on the top mounting brackets use hand holes provided, see diagram 8.6.

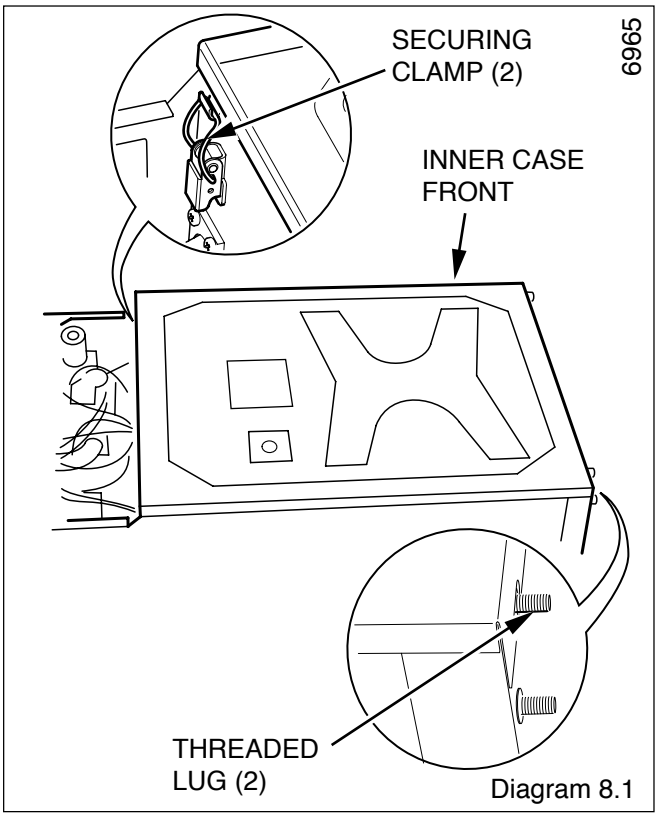


Diagram 8.1

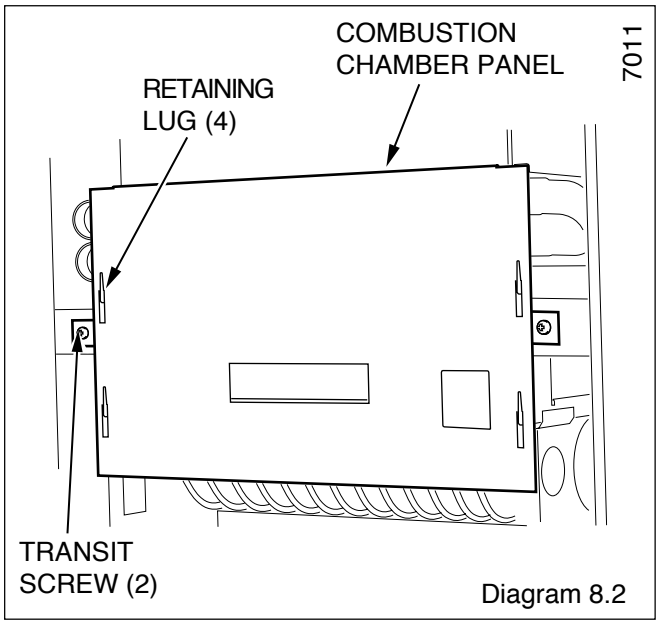


Diagram 8.2

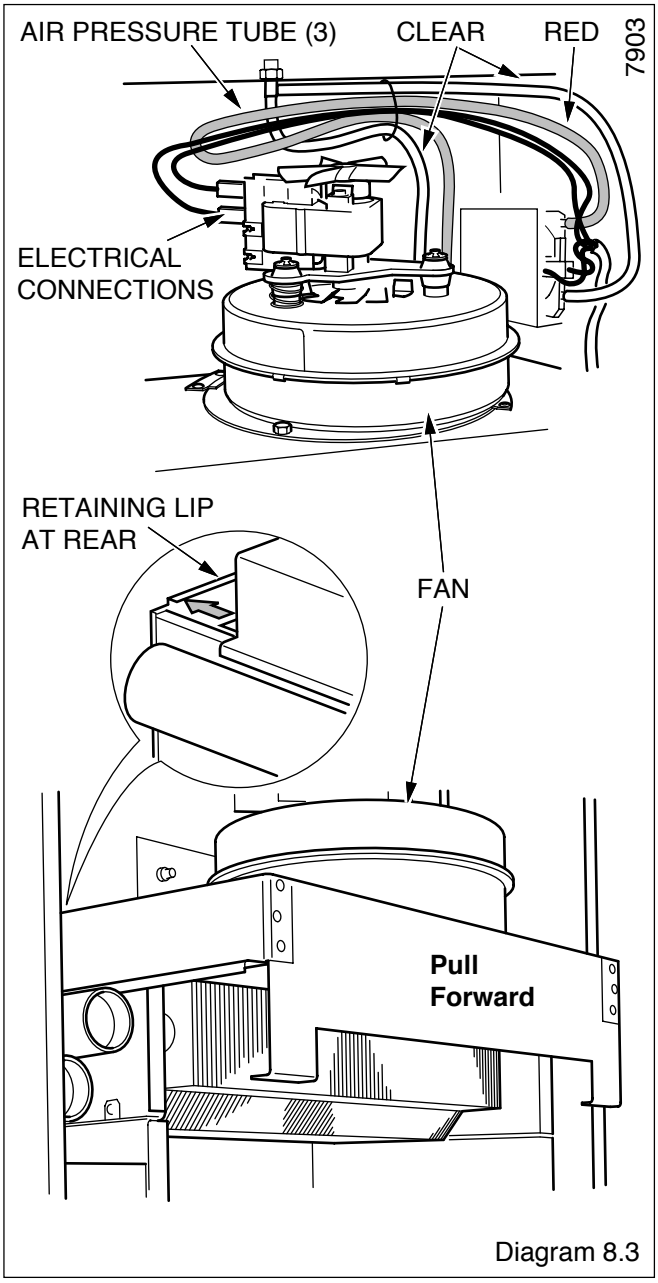


Diagram 8.3

8.2 Water and Gas Connections

Locate the boiler water pipes and gas supply pipe making sure the washers are retained in the tubing nuts onto the isolation valves, fully push the boiler back, see diagram 8.8.

Ensure the bottom boiler bracket is sitting on top of the service cock bracket, see diagram 8.6.

Secure all the tubing nuts finger tight, plus $^{3}/_{4}$ turn maximum.

Connect the gas pipe to the isolation valve ensuring that the sealing washer (supplied fitted) is in position.

8.3 Boiler Securing

Secure the boiler to the service cock bracket with the screws provided in the fittings pack, see diagram 8.6.

An anti theft kit is available, Kit No. 457110.

8.4 Discharge Pipe

Fit the short discharge pipe to the safety valve using the nut and sealing washer supplied in the fittings pack, see diagram 8.9.

Extend the discharge pipe, using only a compression type fitting to join the discharge extension, refer also to Section 6.4 “Safety Valve Discharge”.

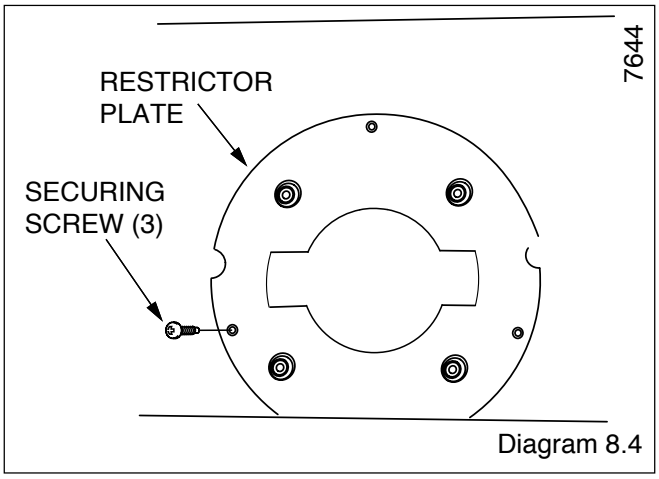


Diagram 8.4

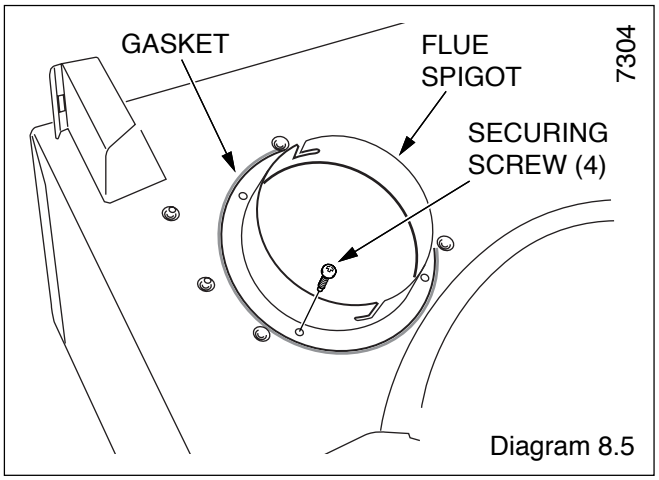


Diagram 8.5

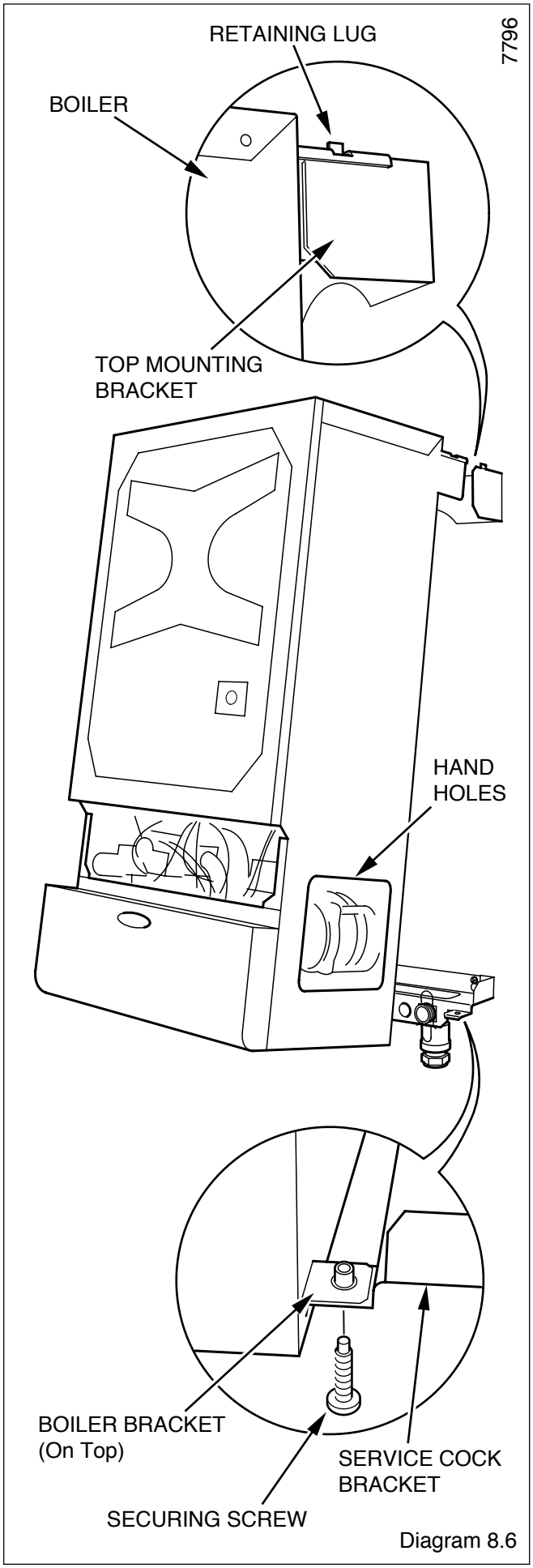


Diagram 8.6

8.5 Rear Outlet Flue Fixing

Make sure that the ductings do not slope down towards the boiler.

Fit the air duct into the flue spigot by pulling the air duct into the flue spigot, locating cutouts. Turn the air duct anticlockwise to lock into the cutouts, see diagram 8.10.

Note: It is important the correct restrictor plate is fitted or refitted, see restrictor table.

Fit the flue connecting sleeve onto the fan, see diagram 8.11.

Fit the fan to the flue ducting, see diagram 8.11.

Fit the fan and flue collector the electrical connections and air pressure tubes to the fan.

Refit the combustion chamber panel.

Make the outer wall weatherproof. A Flue Collar Kit Part No. 443286 is available.

8.6 Top Outlet Side or Rear Flue Fixing

Position the restrictor plate. Fit the gasket on top of the restrictor plate. Fit the flue elbow on top of the gasket and secure to the boiler using the four screws supplied, see diagram 8.7.

Tighten the four screws of the flue elbow evenly to ensure a good seal at the gasket.

Note: It is important the correct restrictor plate is fitted or omitted where instructed. For top flue outlet be sure to use the correct restrictor plate, all restrictors are supplied with the appliance, see restrictor table.

RESTRICTOR TABLE		
FLUE OUTLET	MAX. FLUE LENGTH	USE RESTRICTOR PLATE MARKED
REAR	up to 3.5M	'F' or COMP 75/80E 0.5M MAX
TOP	up to 1.5M	'E' or COMP 75E/80E 2.5M MAX
TOP	from 1.5M to 3.5M	'C' or COMP 100E 2.5M MAX

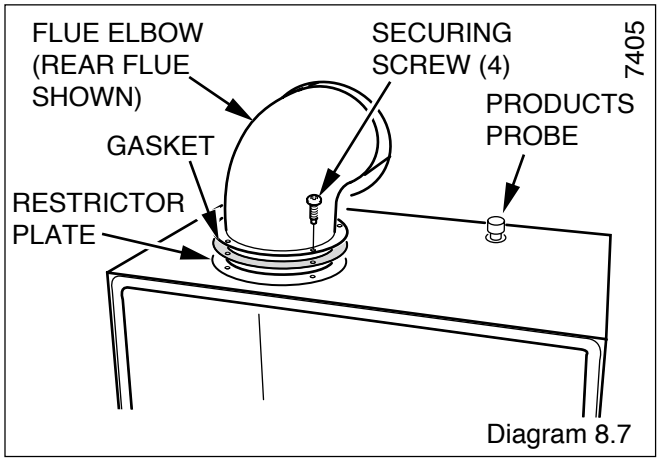


Diagram 8.7

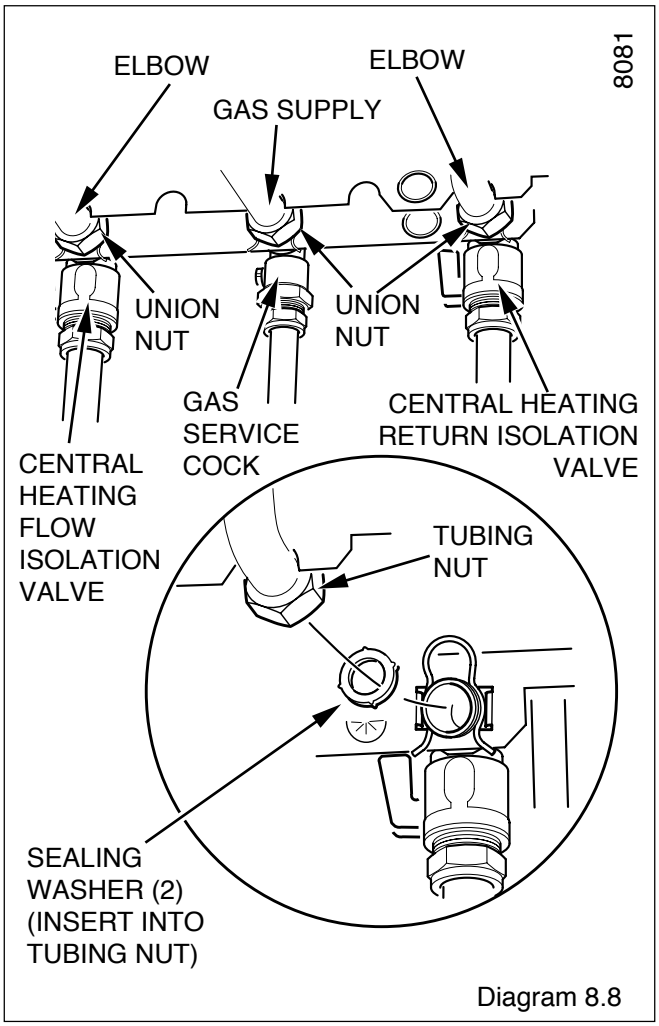


Diagram 8.8

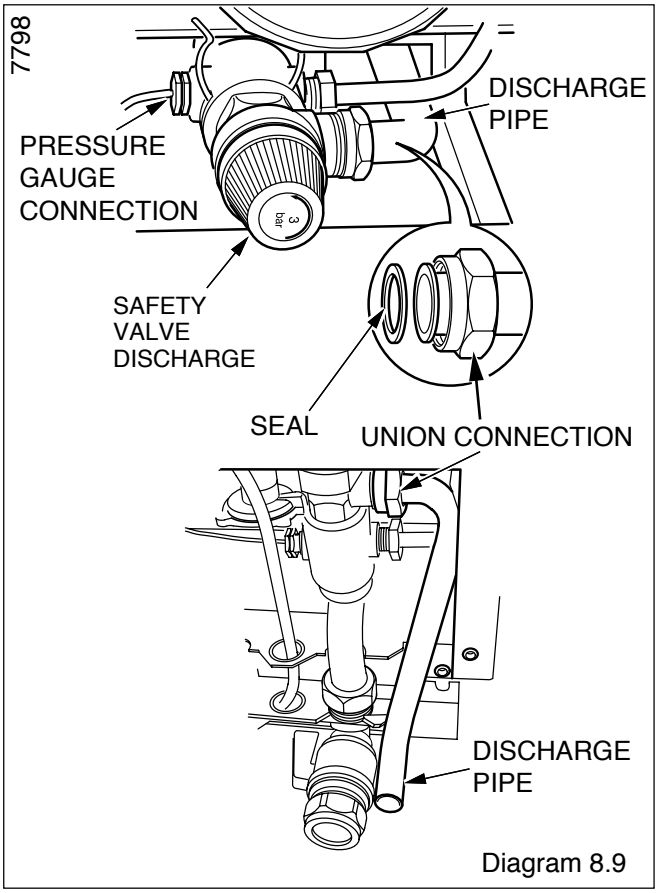


Diagram 8.9

8 Mounting the boiler

Make sure that the ductings do not slope down towards the boiler.

Remove the fan from the flue collector, secured with a screw and retaining lip.

Note: Make sure the fan outlet restrictor is fitted (60 ONLY), see diagram 8.12.

Fit the flue connecting elbow onto the fan, see diagram 8.12.

Fit the fan to the flue ducting, Holding it up in position fit the flue collector, see diagram 8.13.

Secure the fan to the flue collector with the securing screw and retaining lip, see diagram 8.14.

Fit the electrical connections and air pressure tubes to the fan.

Refit the combustion chamber panel.

Make the outer wall weatherproof. A Flue Collar Kit Part No. 443286 is available.

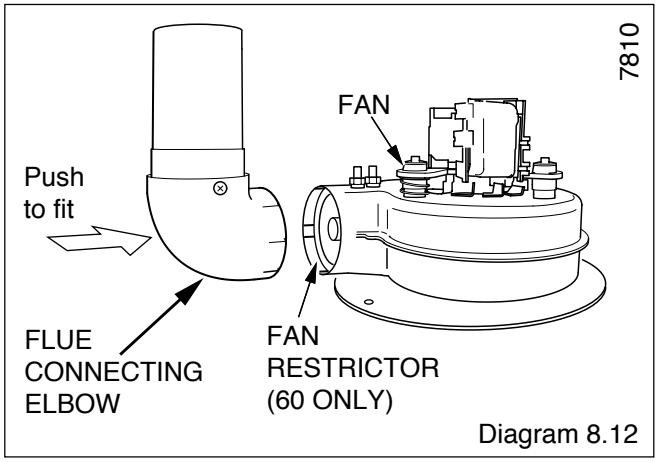


Diagram 8.12

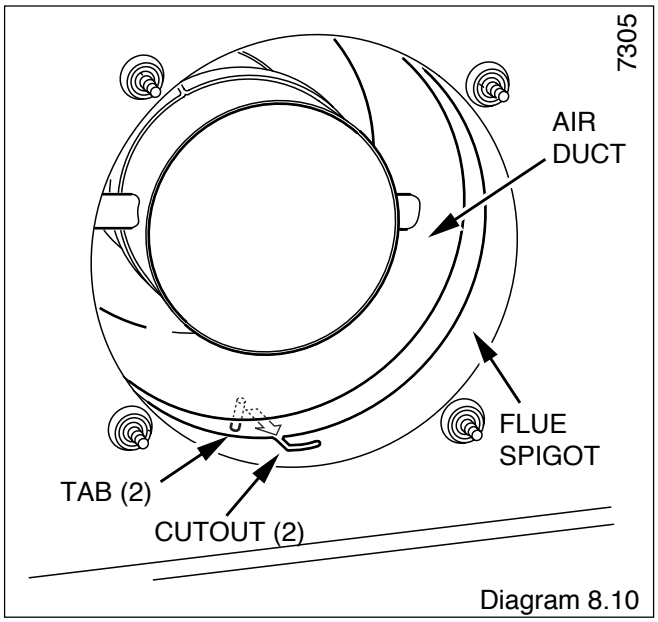


Diagram 8.10

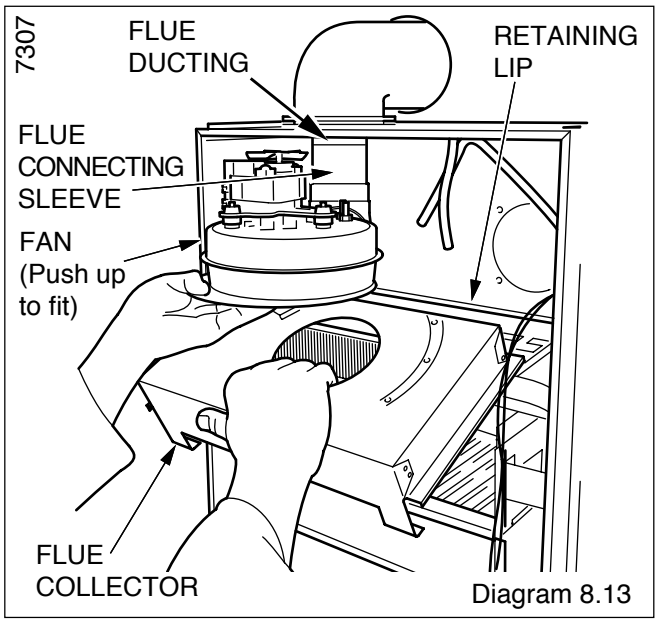


Diagram 8.13

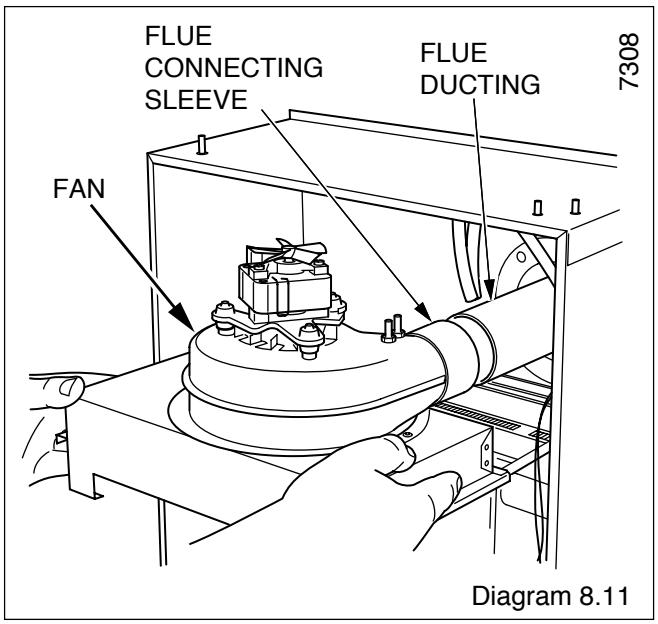


Diagram 8.11

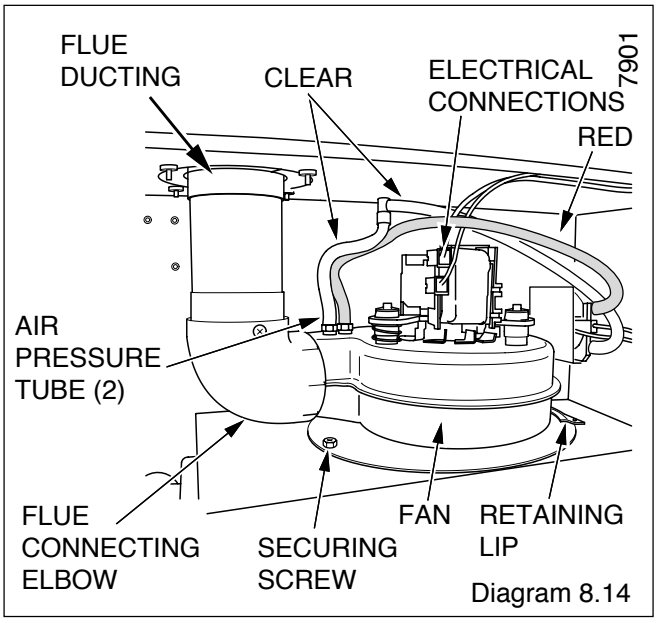


Diagram 8.14

9 Electrical Connections

9.1 Supply Cable Connection

CAUTION: To prevent an induced current from switching the appliance on, when not required, it is important that the system control cables are separated from the other mains supply cables.

Open the controls cover door. Remove the two screws securing the controls facia, see diagram 9.1.

Hinge the control fascia open.

The boiler requires a permanent mains supply through an external isolator which must also isolate any heating system controls, see diagram 9.2.

Any heating system controls must not interrupt the permanent mains supply to the boiler, as this would prevent frost protection from operating.

Using PVC cable of a suitable length and rating as stated in Section 1.8 “Electrical Supply”, route the mains supply cable and connect to the appropriate terminals of the connector block, restrain with the cable clamp supplied, see diagram 9.2.

Standard colours are, Brown - Live, Blue - Neutral, Green and Yellow - Earth.

Make the earth cable of a greater length so that if the cable is strained the earth would be the last to become disconnected.

CAUTION: It is ESSENTIAL to make sure that the polarity is correct.

9.2 Heating System Controls

All external controls and wiring are required to provide a minimum of reinforced insulation at 250Vrms between the parts of those devices operating at mains hazardous voltage and the user accessible parts at those devices.

Note: For further information, see The Building Regulations 1991 - Conservation of fuel and power, 1995 edition - Appendix G, table 4b.

If electrical controls are not to be used to regulate the heating system, fit a link cable between LP and LS on the mains supply connection block, see diagram 9.2 for positional reference.

When any form of external electrical control is being used to regulate the system, connect the external system controls to L.s. on the connection block on the mains terminal block bracket, see diagram 9.2.

The mains cable outer insulation must not be cut back external to the plug.

9.3 Programmer Kit (if applicable)

Open the controls cover door. Remove the two screws securing the controls facia, see diagram 9.1.

Hinge the control fascia open.

Remove the programmer cover and blanking plate, see diagrams 9.1 and 10.2.

Fit the programmer with the three screws supplied, see diagram 13.2.

Fit the programmer bracket with the two screws supplied, see diagram 9.2.

Fit the connection block, see diagram 9.2.

Connect the wires to the connection block and programmer, see diagrams 9.2 and 14.24.

Connect the programmer plug, see diagram 13.4.

9.4 Frost Thermostat

If the installation requires protection by a “frost thermostat”, connect a single pole type, to the appropriate terminals of the connector.

Keep all cables away from hot surfaces.

9.5 Electrical Test

Carry out preliminary electrical system checks as below:

1. Test insulation resistance to earth of mains cables.
2. Test earth continuity and short circuit of all cables
3. Test the polarity of the mains.

Refit the control fascia.

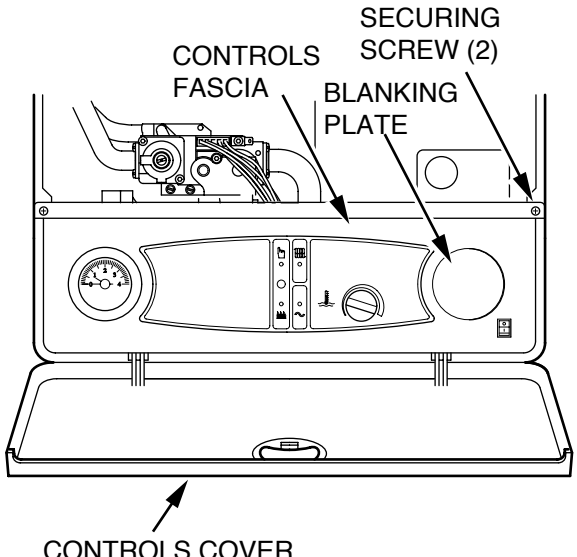


Diagram 9.1

9 Electrical Connections

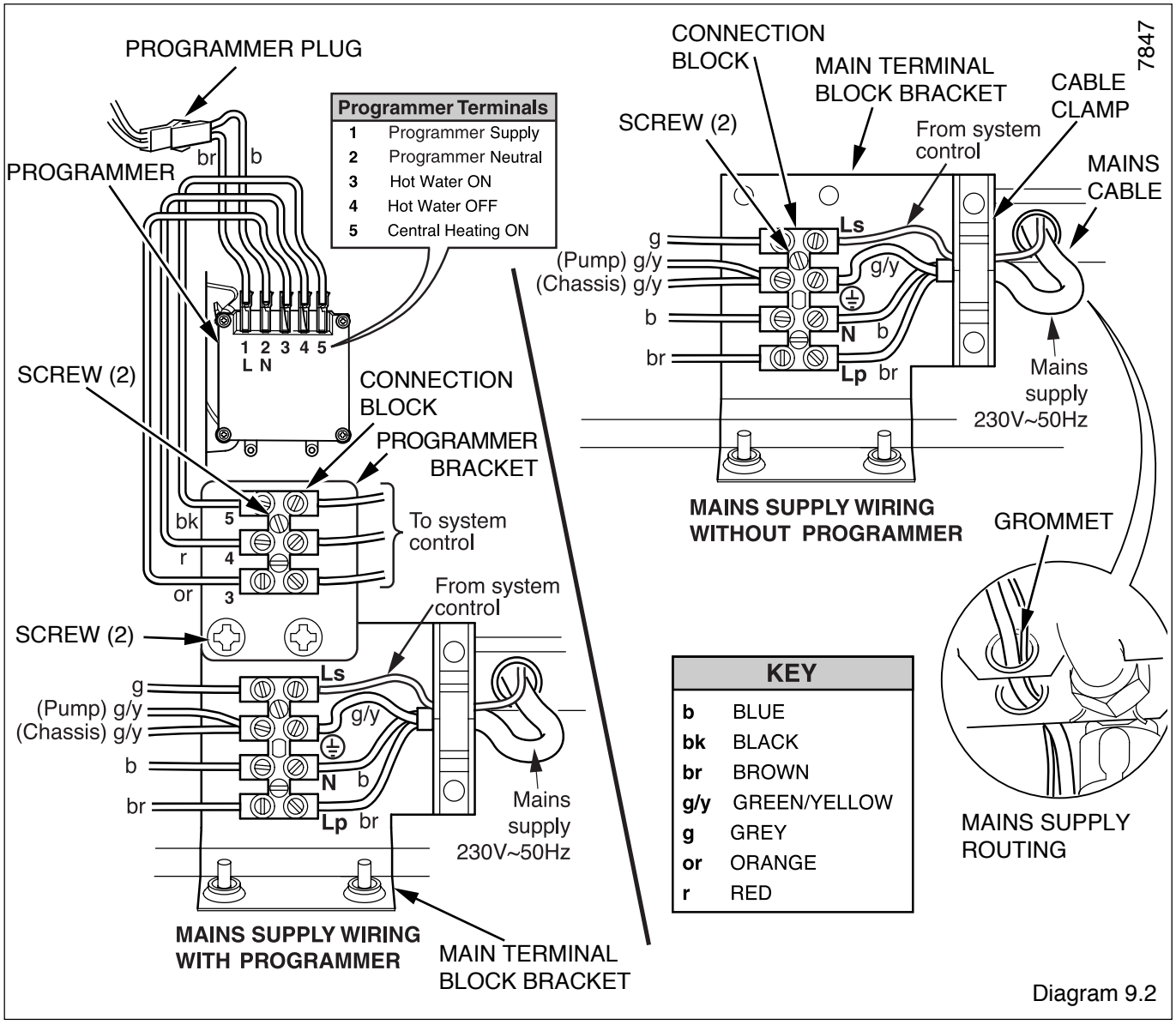


Diagram 9.2

10 Commissioning

Commissioning must only be carried out by a competent person in accordance with the current issue of BS6798.

Please ensure the “Benchmark” logbook is completed and left with the user.

10.1 System Commissioning

Check that the boiler is isolated from the electrical supply, at the external isolator.

Take care not to splash any of the electrical components.

Fully open the two water isolating valves, levers in line with the length of the valves, see diagram 6.1.

Make sure that the automatic air vent is operating correctly by loosening the cap, ensuring hole is directed away from controls.

Flush out the whole system.

Refill the system, refer to Section 4.9 and diagram 4.3, check the operation of the safety valve, by allowing the water pressure to rise until the valve operates. The valve should open within +/- 0.3bar of the 3□bar preset pressure. Where this is not possible carry out a manual check by turning the safety valve knob in the direction of the arrow.

Clear any air locks and check the system for water soundness.

Release the water pressure to the initial system design pressure.

10.2 Initial Lighting, testing and Adjustment

Check the boiler is Isolated from the electrical supply, at the external isolator.

Turn on the gas service cock, slot in line with the length of the cock, see diagram 6.1.

Purge the gas supply and test for soundness .

Lower the controls fascia by removing the two securing screws, see diagram 9.1.

Loosen the burner pressure test point screw , see diagram 10.1, and connect a suitable pressure gauge.

Switch on the electrical supply at the external isolator and check all remote controls, thermostats and programmers are switched on and are calling for demand.

Set the mains electrical switch “B” to 1, located on the controls fascia, see diagram 2. (Instructions for Use).

If the red light “F” comes “ON”, the boiler will not work. Depress the boiler safety cutoff reset button “G”, see diagram 2. (Instructions for Use).

The pump will circulate water through the appliance and the burner will light.

10.3 Burner Pressure

The burner pressure is factory preset and no adjustment should be required.

The burner pressure should be checked with the system cold to prevent any modulation of the gas pressure and the inner case front fitted.

Remove the three plastic plugs on the rear of the controls fascia, using the adjustment tool supplied turn the maximum burner pressure and minimum rate potentiometers on the control board (P.C.B.) to minimum (fully anticlockwise). Check the minimum burner pressure is 3.5 mbar +/-0.2 mbar. Adjust the pressure if required by adjusting the minimum rate adjustment screw on the gas control valve, see diagram 10.1.

Turn the maximum burner pressure potentiometer to maximum, (fully clockwise).

Check that the maximum burner pressure is 14.9 mbar +/-0.2 mbar. Adjust the pressure if required by removing the screw cap and turning the maximum rate adjustment screw on the gas control valve, see diagram 10.1.

10.4 Ignition Rate

Set the mains electrical switch “B” to 0, located on the controls fascia, see diagram 2. (Instructions for Use).

Disconnect the sensing lead at the connection, see diagram 10.2.

Set the mains electrical switch “B” to 1. The electrode will continue to spark for (10 seconds approx.) to enable the ignition to be set and checked before going to lockout. Check the ignition rate is set to 6.0 mbar +/-1.0 mbar, adjust if required by turning the ignition rate setting potentiometer using the adjustment tool supplied, If this is not achieved before the boiler goes to lockout the process can be repeated as required by pressing the rest button “G”, see diagram 2. (Instructions for Use). When set, switch the mains electrical switch “B” to 0. Reconnect the sensing lead.

Set mains electrical switch “B” to 1, depress the rest button “G” if required. Check the appliance operates correctly.

Isolate the boiler from the electrical supply.

Replace plastic plugs, screw cap and adjusting tool.

Disconnect the pressure gauge, tighten the burner pressure test point screw . Test for gas soundness. Take care not to splash any of electrical components.

10.5 System - Commissioning

Fully open all radiator valves.

Set the heating system in operation and balance the radiators.

Refer to Section 4.6 and diagram 4.1.

Allow the system to reach maximum temperature then switch off, isolate the boiler from the electrical supply and drain the system rapidly whilst still hot.

Remove the inner case front.

Fill and vent the system as described in Section 10.1. Add inhibitor, if applicable, refer to Section 4.10.

Fit the inner case front.

10.6 Completion

Fit the side panels, hook into the threaded lugs at the top, see diagram 10.4.

Refit controls fascia fastening through holes in the side panels, secure with four screws in the base

Fit the case base, slide back to engage the rear lugs, secure with two screws, see diagram 10.3.

Fit the outer case front by locating it on one side then wrap it around locating it on the opposite side, slide down locating on to the threaded lugs at the top and behind the controls cover at the bottom, secure all the panels with nuts ,see diagram 10.5.

Set the boiler and any remote control to the desired settings, then close the control cover door.

10.7 Instruct the User

Instruct and demonstrate the lighting procedure, then advise the user of the efficient and safe operation of the boiler.

Instruct and demonstrate the operation of any heating system controls.

Advise the user on the use and maintenance of any scale reducer and pass on any relevant instructional documents.

Advise the user that to ensure the continued efficient and safe operation of the appliance it is recommended that it is checked and serviced at regular intervals. The frequency of servicing will depend upon the particular installation and usage, but in general once a year should be enough.

Draw attention, if applicable, to the current issue of the Gas Safety (Installation and Use) Regulations, Section 35, which imposes a duty of care on all persons who let out any property containing a gas appliance.

It is the Law that any servicing is carried out by a competent person.

Advise the user of the precautions necessary to prevent damage to the system and building in the event of the heating system being out of use during frost and freezing conditions.

Reminder - Leave these instructions and the “Benchmark” logbook with the user.

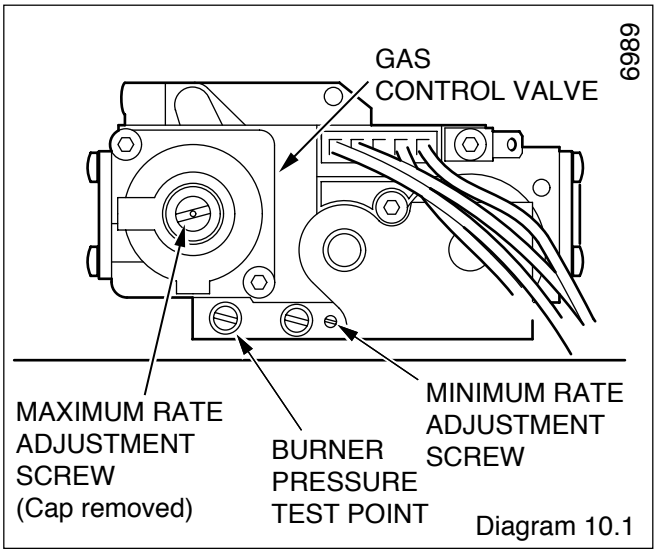


Diagram 10.1

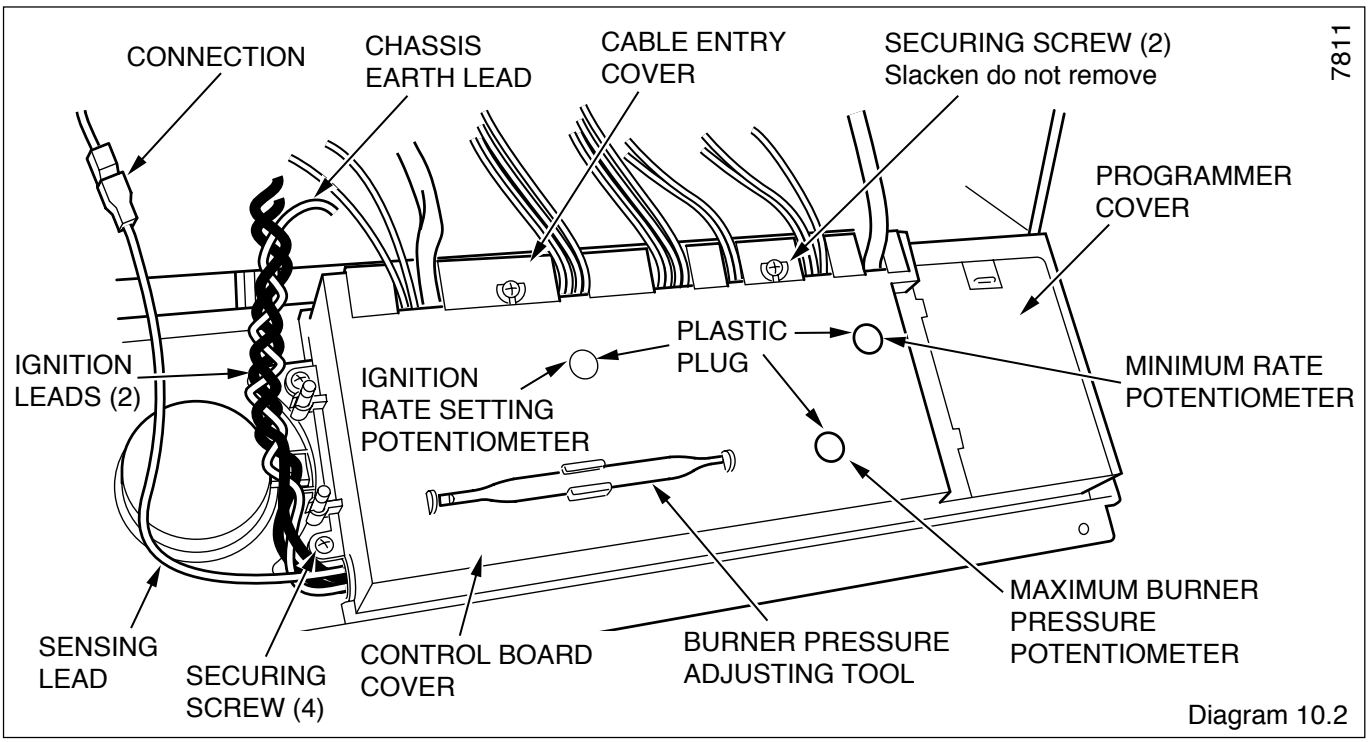


Diagram 10.2

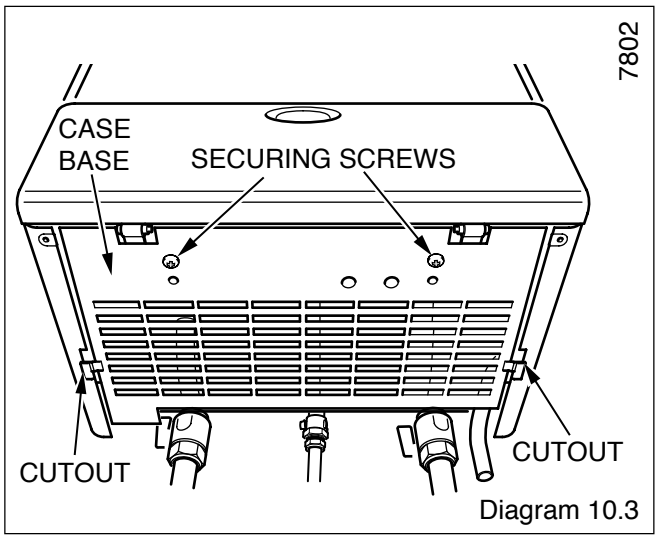


Diagram 10.3

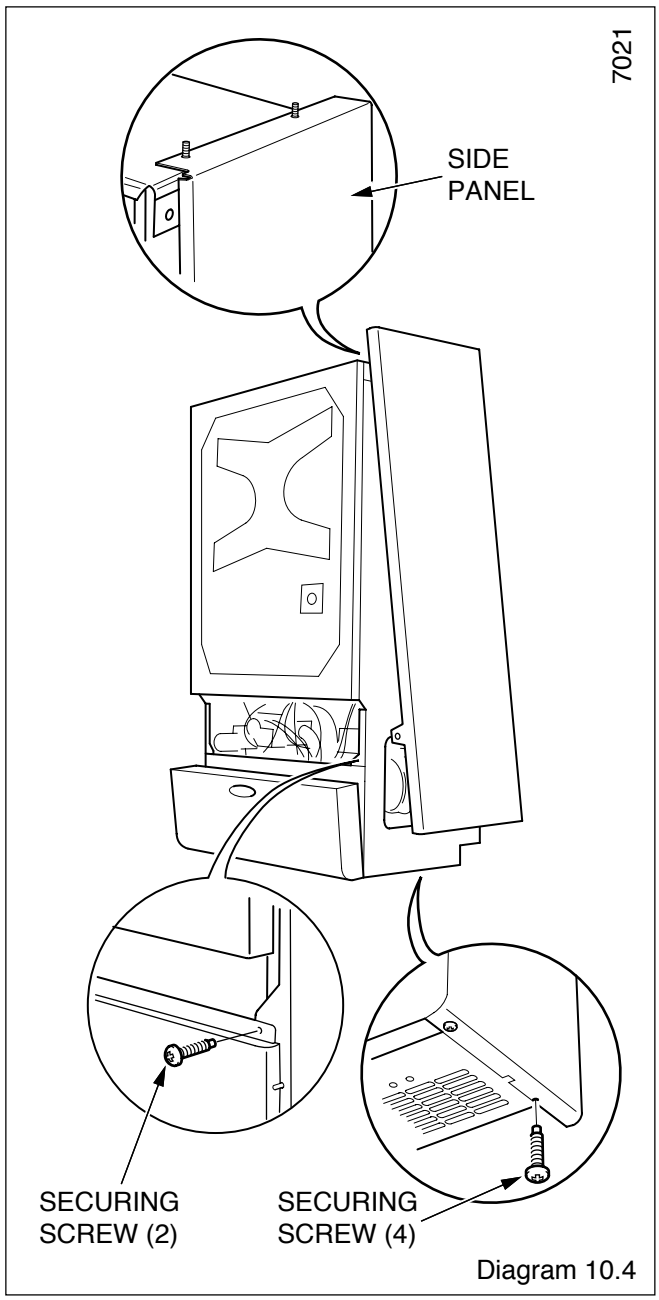


Diagram 10.4

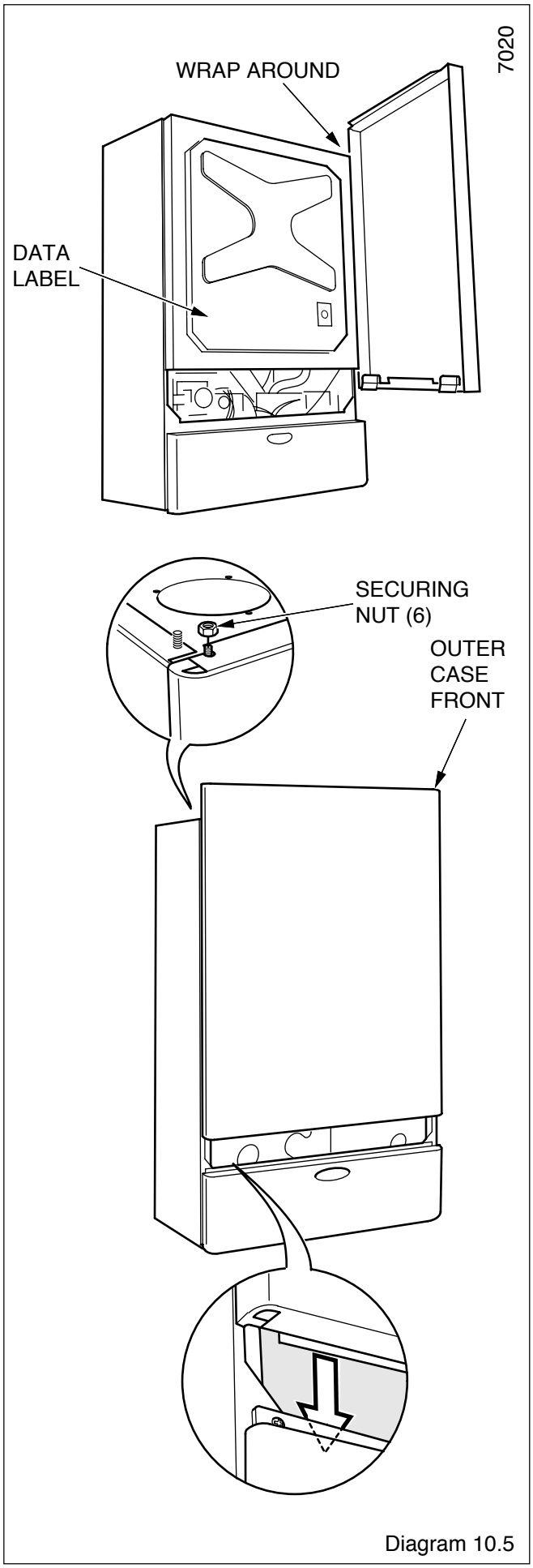


Diagram 10.5

11 General Data

Spare Parts

REMEMBER, When replacing a part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Hepworth Heating Ltd.

11.1 Servicing or Replacing Parts

To ensure the continued efficient and safe 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 a year should be enough.

The servicing of this boiler must be carried out by a competent person in accordance with the rules in force in the countries of destination.

NOTE: To obtain a products of combustion reading, remove the rubber cap from probe positioned on the top of the boiler, see diagram 12.7. Connect the analyser tube after use replace the screw.

Typical values for this boiler at maximum demand is:- CO_2 = 5.5 - 6.5% and CO < 0.005%. These are based on a 300mm length rear flue.

Make sure the appliance does not modulate whilst checking combustion and allow the appliance to warm up for 15 minutes before taking a reading.

Unless stated otherwise, parts removed or renewed during servicing should be fitted in the reverse order to removal.

After completing any servicing, or renewing of gas carrying components, ALWAYS test for gas soundness and carry out functional checks of controls.

Dispose of all used sealing washers, gaskets and “O” rings when renewing components.

Use the new ones supplied with the replacement.

11.2 Data Label

The data label is positioned on the inner case front, refer to diagrams 10.5 and 1.2.

11.3 Isolation of Boiler

Before starting any servicing or the replacement of parts, isolate the boiler from the electrical supply at the external isolator.

When servicing or replacing any components containing water close all water cocks and drain appliance.

Close the gas service cock, see diagram 6.1.

BEFORE DRAINING THE BOILER, REFER TO SECTION 11.6.

11.4 Outer Case Front Removal

Remove the two nuts securing the outer case front then lift up unhook the case at the top from the threaded lugs, pull it off on one side to release then remove, see diagram 10.5.

11.5 Inner Case Front

Remove the inner case front, secured by two clamps at the bottom lift up and unhook at the top, see diagram 8.1.

11.6 System Pressures and Draining

After replacing any water containing part of the circuit, make up the water loss, vent all air and pressurise the system. Refer to “Commissioning” in the Installation Instructions.

Check for water soundness and that the safety valve seats without leaking.

12 Servicing

12.1 Isolation and Access REAR FLUE ONLY

Before commencing, refer to Section 11.

Remove the combustion chamber panel unhook and lift off, see diagram 8.2.

Remove the fan electrical connections by pulling the boots not the wires and air pressure switch tubes, see diagram 8.3.

Remove the fan and flue collector assembly by pulling it forward see, diagram 8.3.

Disconnect the three electrode leads, see diagram 12.1. (White lead sensing electrode).

Remove the burner retaining bracket by sliding it out, see diagram 12.4.

Carefully pull the burner forward to remove, see diagram 12.5.

Take care not to damage the combustion chamber insulation.

12.2 Isolation and Access HORIZONTAL TOP FLUE OUTLET ONLY

Before commencing, refer to Section 11.

Remove the combustion chamber panel unhook and lift off, see diagram 8.2.

Remove the fan electrical connections by pulling the boots not the wires and air pressure switch tubes, see diagram 12.2.

Remove the fan.

Remove flue collector assembly by pulling it forward see, diagram 12.3.

Disconnect the three electrode leads, see diagram 12.1. (White lead sensing electrode).

Remove the burner retaining bracket by sliding it out, see diagram 12.4.

Carefully pull the burner forward to remove, see diagram 12.5.

Take care not to damage the combustion chamber insulation.

12.2 Cleaning Heat Exchanger

Place a sheet of paper or similar in the combustion chamber, to act as a collector for deposits removed.

Brush the heat exchanger with a suitable brush, remove paper together with any debris.

Take care not to damage the insulation.

Do not use a brush with metallic bristles.

Ensure the baffle is refitted correctly to top of heat exchanger.

12.3 Cleaning Main Burner

Use a vacuum cleaner or suitable brush to clean the burner thoroughly, making sure that all burner ports are clear and unobstructed.

Do not use a brush with metallic bristles.

12.4 Service Checks

Inspect the spark and sensing electrodes, Clean or renew if necessary, refer to Sections 14.4 and 14.5.

Check the injector, cleaning or renewing as necessary, refer to Section 14.3.

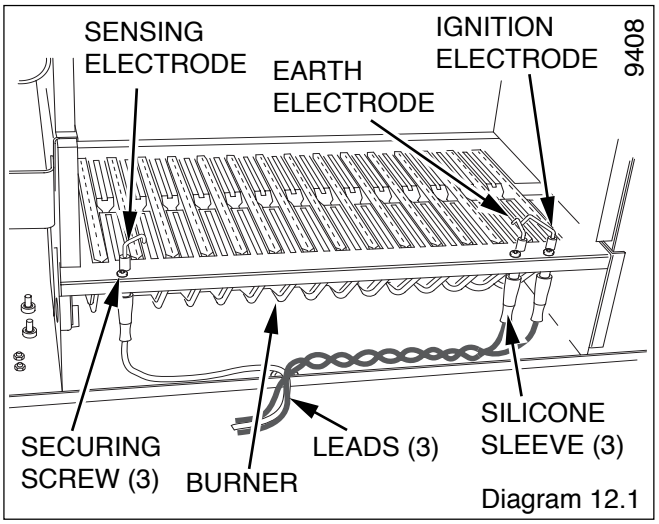


Diagram 12.1

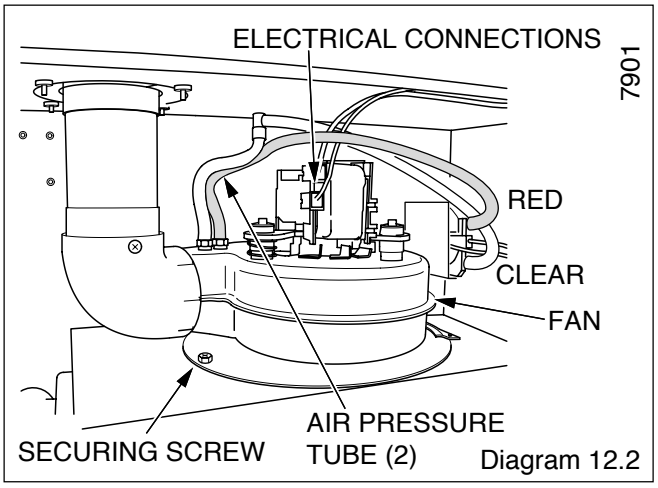


Diagram 12.2

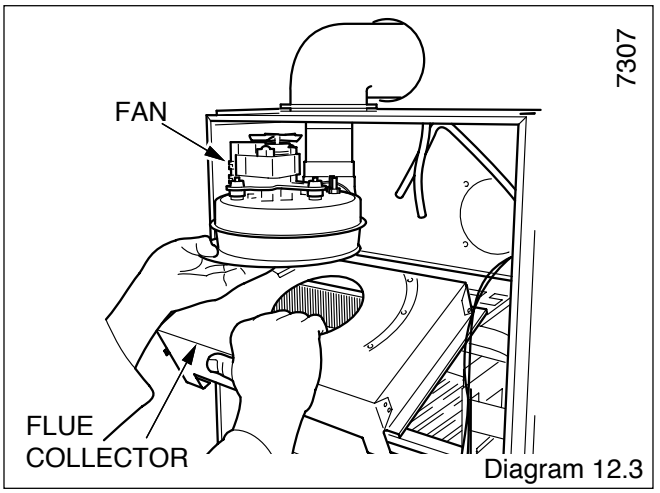
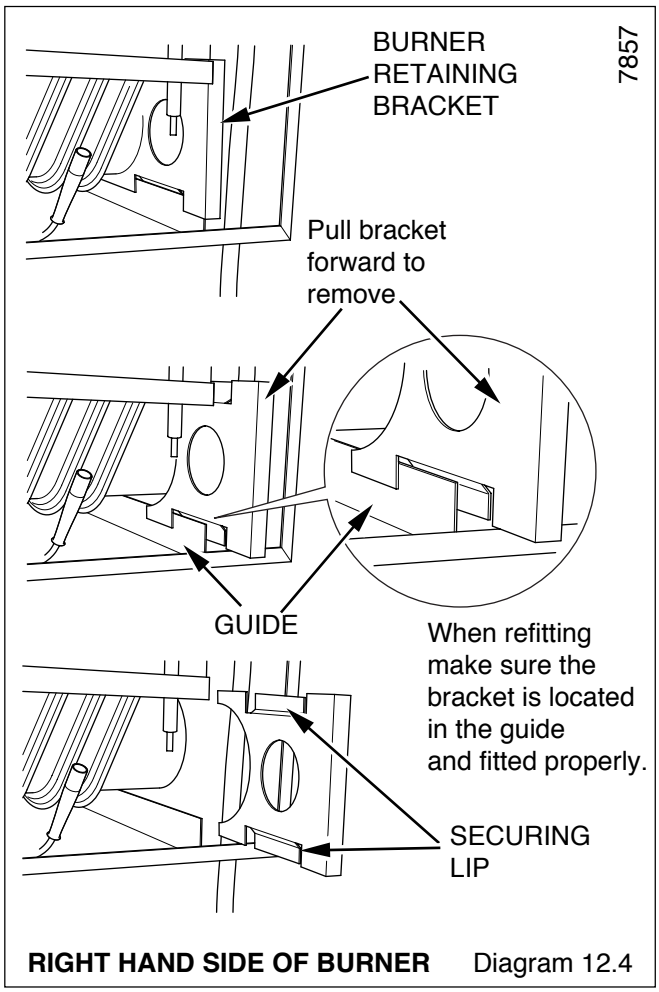


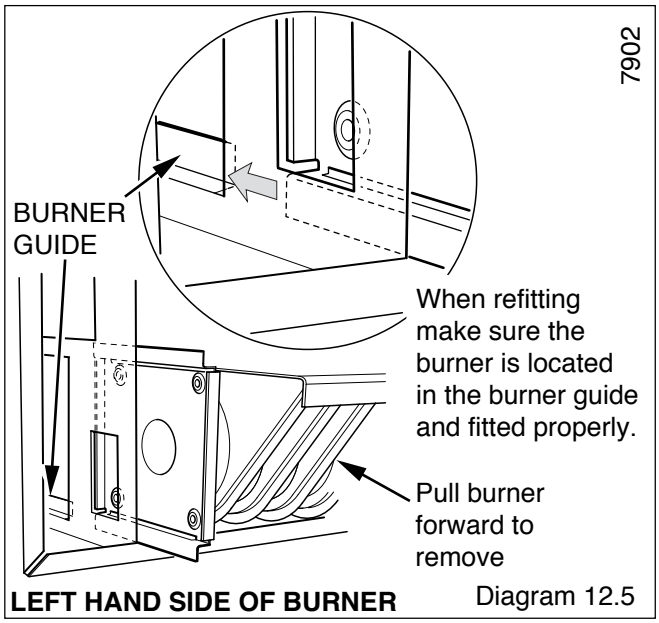
Diagram 12.3

Before replacing any of the parts removed during servicing, inspect the condition of all seals and joints, renewing them as necessary.

Check the condition of the combustion chamber insulation. If renewing, refer to Section 14.22.

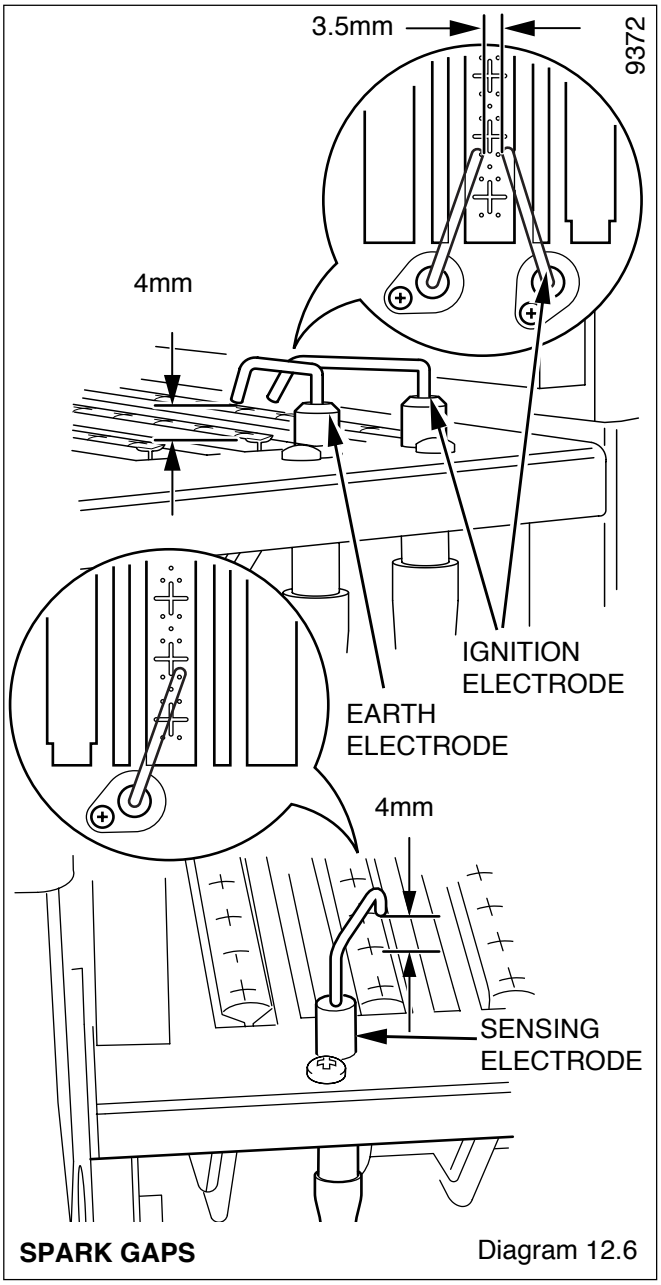


RIGHT HAND SIDE OF BURNER Diagram 12.4



LEFT HAND SIDE OF BURNER Diagram 12.5

12 Servicing



SPARK GAPS Diagram 12.6

12.6 Spark Gap

Check that the spark and sensing gaps are as shown in diagram 12.6.

12.7 Operational Checks

Light the boiler, carry out operational checks and any necessary adjustments as described in "Commissioning" in the Installation Instructions.

12.8 Completion

Slide the outer case front on secure with the nuts previously removed.

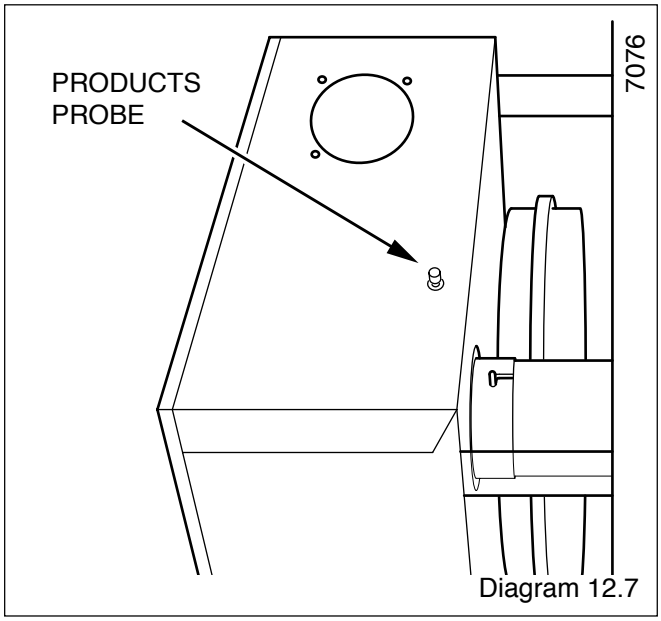


Diagram 12.7

13 Fault Finding

13.1 Initial Checks

If the boiler fails to operate, first check the following:-

1) That the electrical supply is available at the boiler and the fuses are in order.

NOTE: THE BOILER CONTROL BOARDS CAN BE DAMAGED BY INCORRECT TESTING OF COMPONENTS AND WIRING WITH THE POWER ON.

2) Make sure that the system pressure gauge registers 0.7bar, minimum, and that the automatic air vent works. Refer to Installation Instructions, Section 10.1.

3) That the gas supply is available at the boiler and purged of air.

4) Check that all heating system controls, if fitted, are working correctly and calling for heat. If not isolate the boiler from the electrical supply.

Test for continuity, at mains.

If this is satisfactory proceed with the detailed fault finding as Section 13.3.

13.2 Electrical

Preliminary electrical system checks, as outlined in a Multimeter Instruction book, are the first checks to be carried out during a fault finding procedure.

Isolate the boiler from the electrical supply, refer to Section 11.3.

Gain access to the boiler controls by removing the outer case front, refer to diagram 10.5.

Remove the two screws securing the controls facia, see diagram 9.1.

Hinge the control facia forward.

Remove the controls board cover by slackening the cable entry cover screws, see diagram 10.2.

Remove the covers.

Ease the cover up and clear.

Check that all cables, multipin connectors and connectors are secure on the board.

Test the fuse on the main control board and renew as necessary. Fuse 1 type (2AT). If a fuse fails repeatedly or the initial fault-finding checks described in Section 13.1 indicate a boiler fault, check the boiler electrical circuits and follow the fault finding procedures, see diagrams 13.1, 13.2, 13.3 and for programmer fault finding, diagram 13.5.

NOTE: Only replace fuse with correct type.

On completion of a fault finding task that has required the disconnection and making of electrical connections then checks, for earth continuity, polarity and resistance to earth must be carried out.

Before replacing any part please read points below:-

Replacement of parts must only be carried out by a competent person.

1. Refer to Section 11.1.

2. Always isolate the boiler from the electrical supply and as required, the gas supply, as Section 11.3.

3. On completion, make good any water loss and pressurise the system to initial design pressure, refer to “Commissioning” in the Installation Instructions.

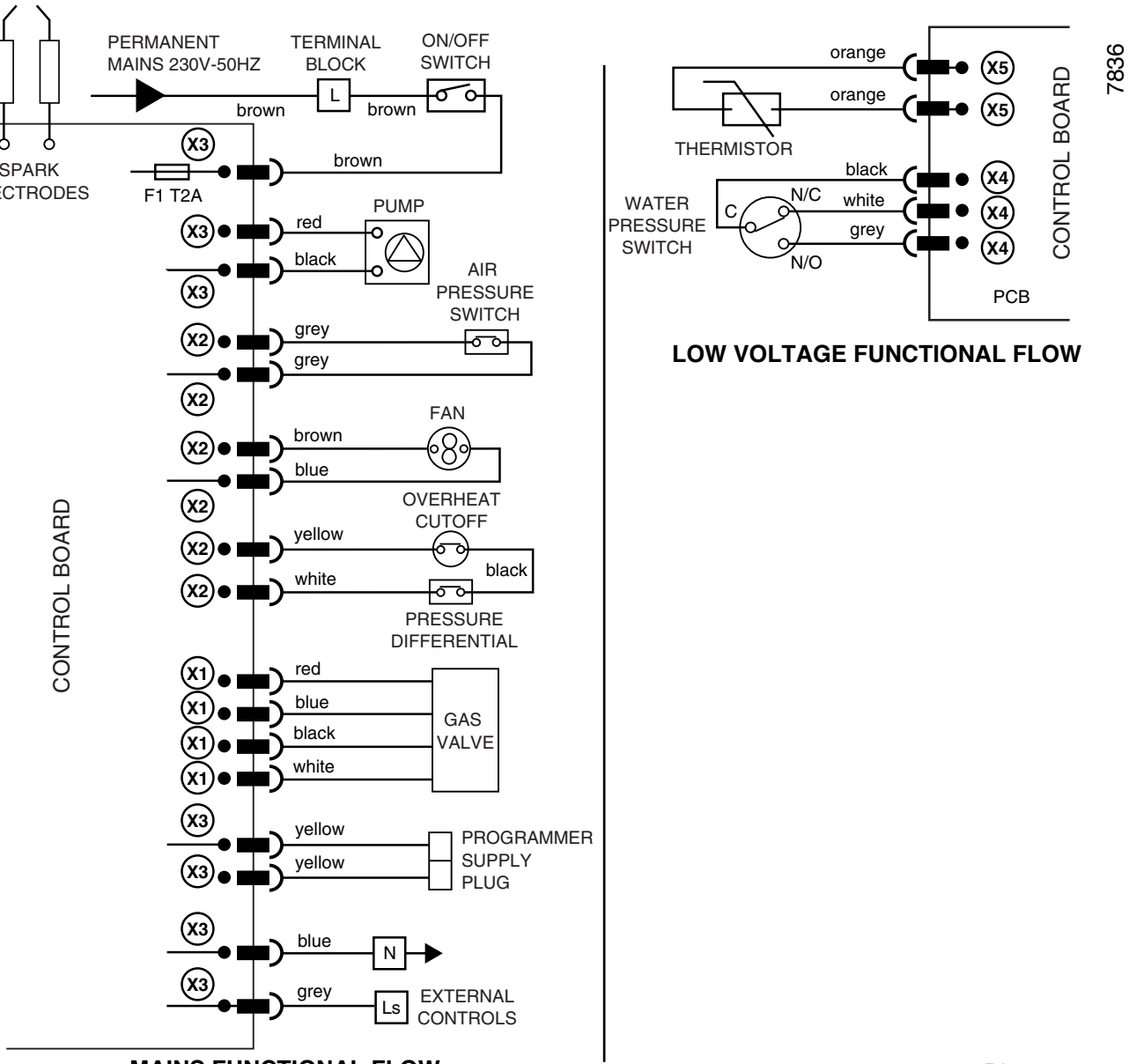


Diagram 13.1

13 Fault Finding

TO TEST FOR COMPONENT OPERATION / FAILURE

Power to the appliance :- Test for 230V~ across live (brown) and earth (yellow and green), 230V~ across live and neutral (blue), and zero potential across neutral and earth.

Thermistor :- With the power off unplug the connector and test resistance is 10kΩ at 25°C

Differential pressure switch :- With the power off separate the in-line connector and test for continuity across male end. Restore the power and with demand off, open circuit, demand on closed circuit.

Overheat thermostat :- With the power off unplug the connectors and test for continuity (zero resistance).

Power to the gas control valve :- With a demand on test for voltages of 24 to 50V~ across the black and white cable connectors and 130V~ across the red and blue cable connectors.

Power to the fan :- With a demand on and the front cover removed test for 230v~ at the fan connectors.

Fan failure :- with the power off and the supply leads to the fan disconnected (pull the boots only) the resistance across the fan coil should not be greater than 50Ω.

Pump :- With the power off. Restore the power and check that there is 230V~ between live (red) and neutral (back) or live and the appliance earth.

Air pressure switch :- With the power off and the front cover removed pull one of the supply cables from the fan and ensure it is electrically safe. Restore the power establish a demand, check that there is 230v~ at one of the APS cables but not at the other. Turn the power off, refit the fan cable, restore the power and check that there is now 230V~ at both the APS connectors (**Caution**, the appliance will light unless the spark leads are temporarily unplugged from the electrodes and laid where they cannot spark and ignite the gas and are electrically safe). This indicates that the APS changes state when the fan is run.

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Boiler Fault Finding

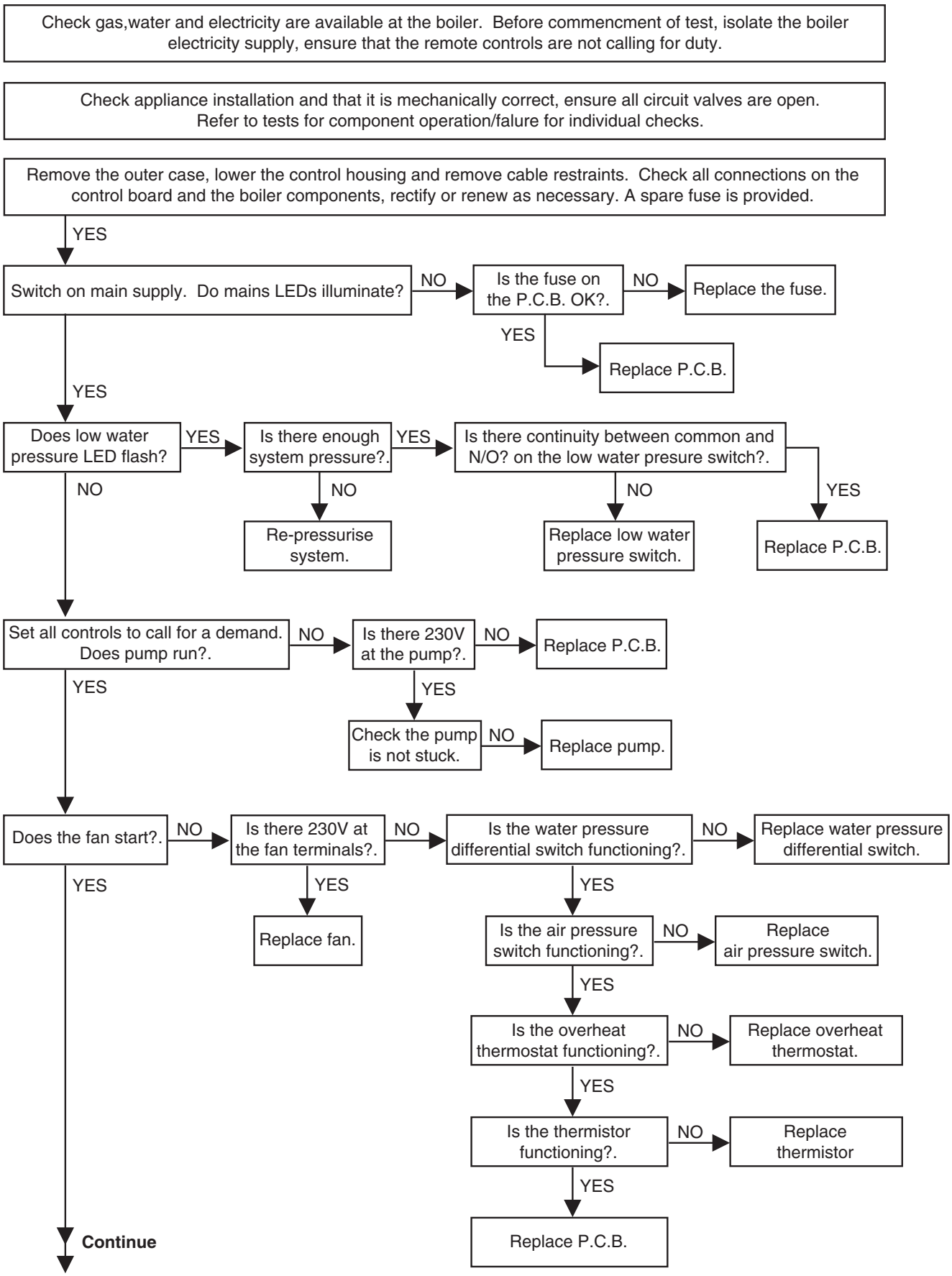


Diagram 13.2

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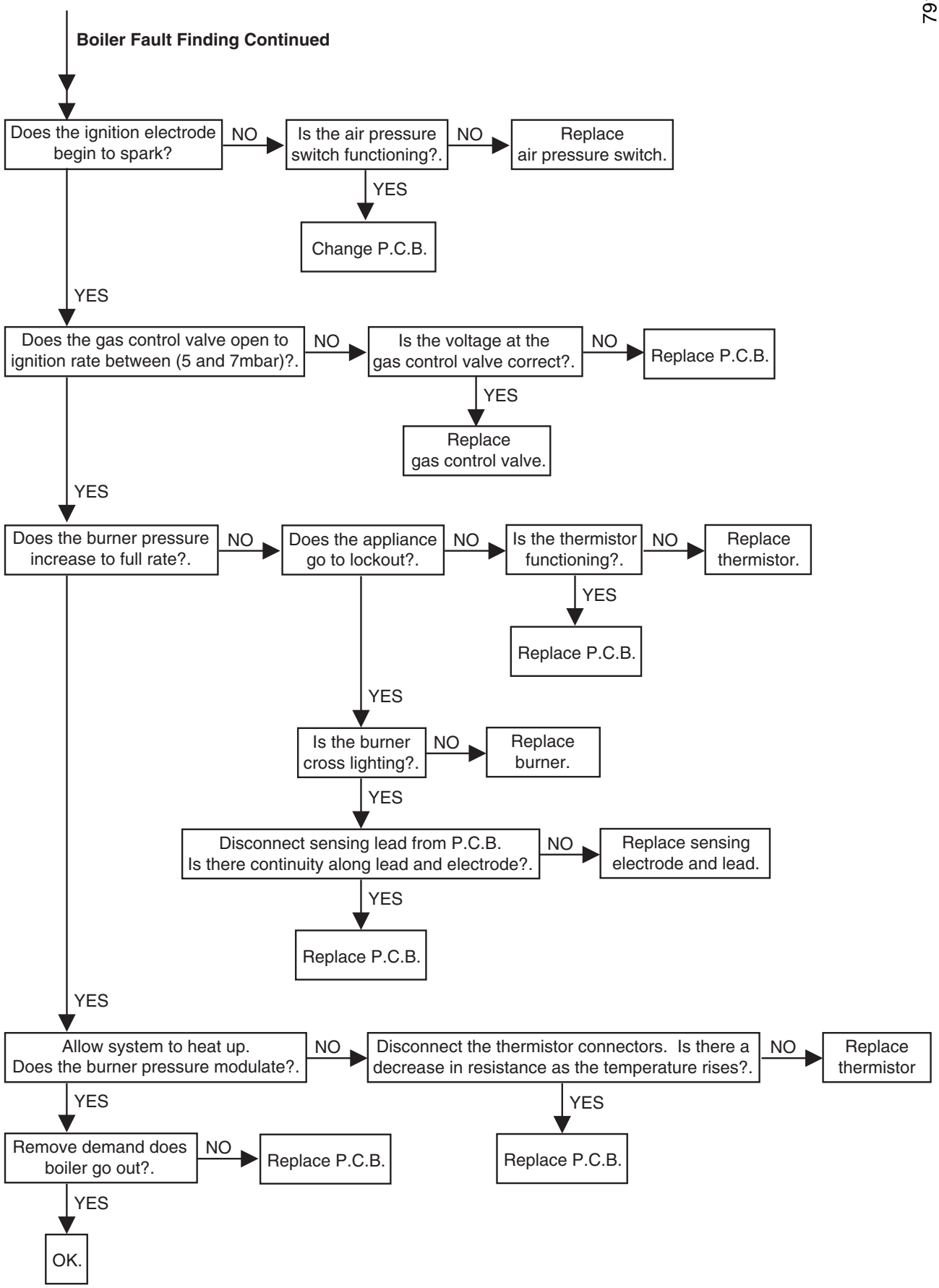


Diagram 13.3

13.2 Programmer

If the programmer has failed it can be bypassed by disconnecting the plug, see diagram 13.4.

Gain access by removing the two screws securing the controls facia, see diagram 9.1.

Hinge the control facia forward.

Remove the programmer cover, see diagram 10.2.

Disconnect the programmer wiring harness plug.

This is a temporary measure and the programmer should be repaired or replaced as soon as possible.

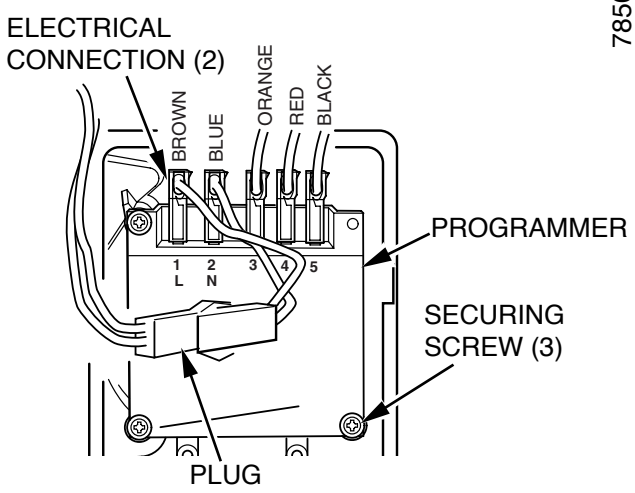


Diagram 13.4

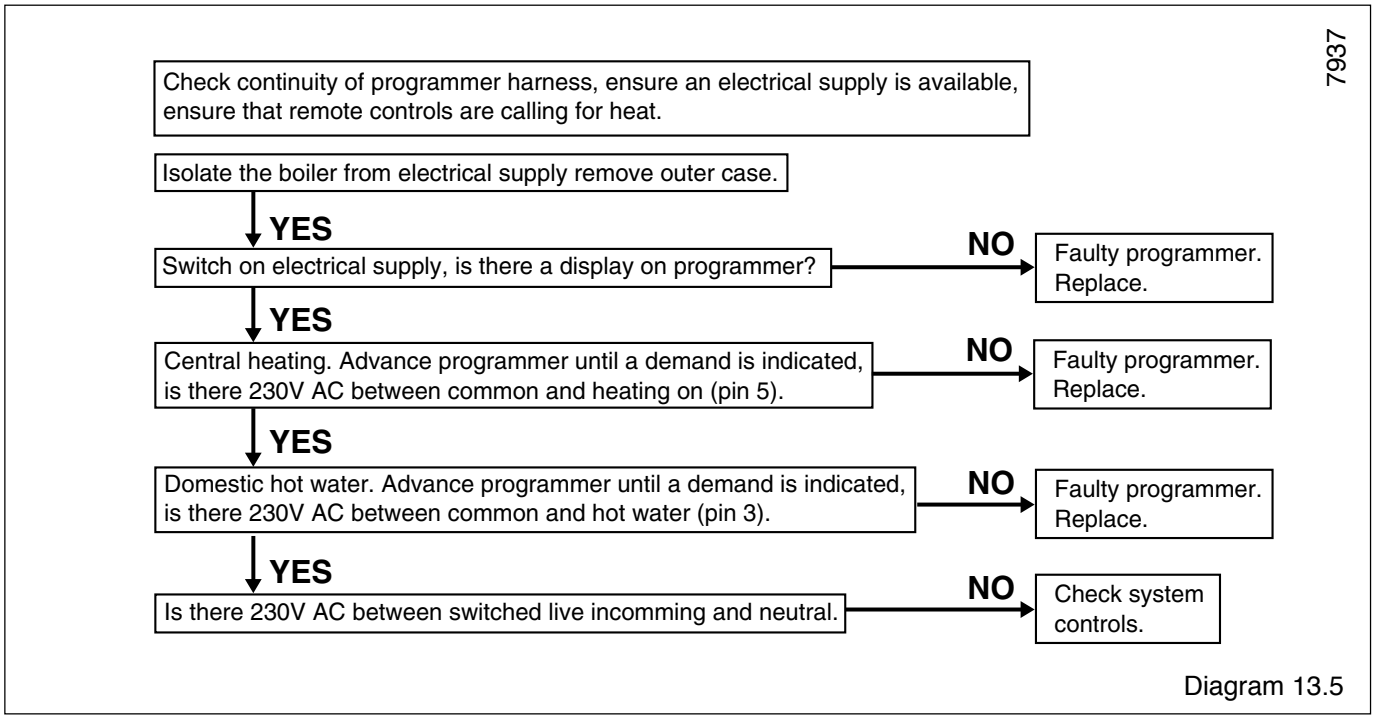


Diagram 13.5

14 Replacement of Parts

14.1 Fan

Before starting refer to Section 11.

Disconnect the two electrical connectors at the fan by pulling the boots not the wires, see diagram 14.1.

Remove the two flexible tubes from the fan, noting their colour and positions, see diagram 14.1.

Remove the fan, secured with a screw at the front, ease the fan outlet from the flue duct and retaining lip at the rear, see diagram 14.1.

Note: To fit the fan, locate it into the flue duct and rear retaining lip, push fully up to ensure a good seal, then secure the fan with the screw, see diagram 14.1.

The polarity of the two electrical connectors is not important.

14.2 Burner

Before starting refer to Section 11.

Remove as relevant parts of Servicing Section 12.1.

Remove the spark electrode assemblies from the burner secured by three screws see diagram 12.1.

Fit spark electrode assemblies to new burner. Check setting.

Taking care fit new burner.

14.3 Injector

Before starting refer to Section 11.

Remove the burner as relevant parts of Servicing Section 12.1.

Unscrew the injector.

When fitting the new injector, fit the new copper sealing washer, supplied, to ensure gas soundness, see diagram 14.2.

14.4 Ignition, Earth and Sensing Electrode

Before starting refer to Section 11 General Data.

For easier access remove the burner as relevant parts of Servicing Section 12.1.

Remove the electrode lead and silicone sleeve, remove the securing screw and electrode, see diagram 12.1.

Check setting of new one when fitted.

14.5 Ignition, Earth and Sensing Lead

Before starting refer to Section 11.

Disconnect the silicone sleeve and lead at the electrode, see diagram 12.1. (White to sensing electrode).

Important Note : If replacing one of the ignition leads it will be necessary to disconnect both from their electrodes and untwist them from one another and the earth lead. Make sure when replacing the two ignition leads that they are tightly twisted together again, and the earth lead is twisted round the pair, see diagrams 10.2 and 12.1.

Disconnect leads from the two retaining clips at the side of case.

Remove the two screws securing the controls facia, see diagram 9.1.

Hinge the control fascia open.

Remove the control board cover, see diagram 10.2.

Remove the lead on the control board and withdraw from grommet, see diagram 14.7.

14.6 Boiler Overheat Cutoff

Before starting refer to Section 11.

Disconnect the electrical connections, unclip to remove the overheat cutoff, see diagram 14.3.

14.7 Thermistor

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls facia, see diagram 9.1.

Hinge the assembly forward.

Remove the electrical connection, unclip to remove the thermistor, see diagram 14.3.

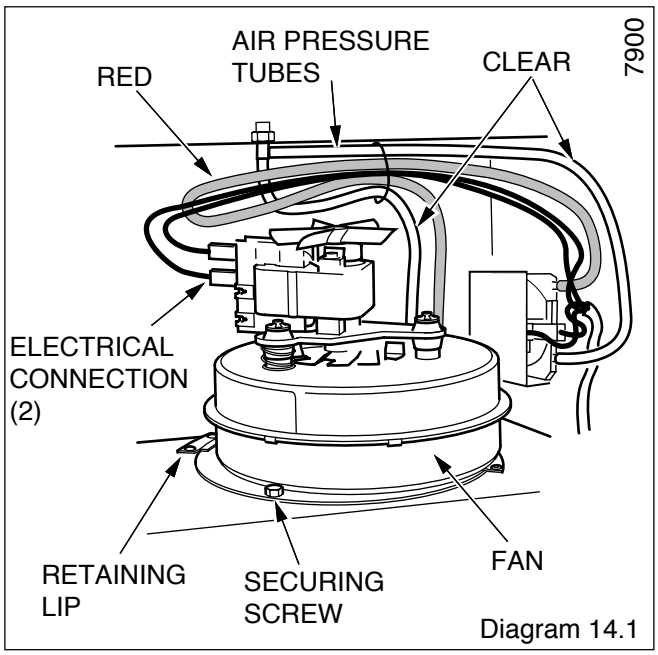


Diagram 14.1

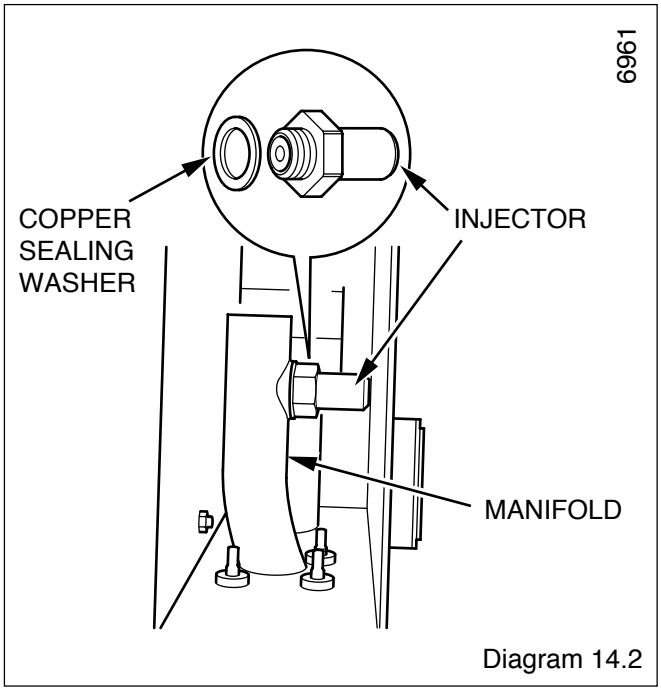


Diagram 14.2

14.8 Pressure Gauge

Before starting refer to Section 11.

Remove case base, see diagram 10.3.

Open the controls cover door. Remove the two screws securing the controls facia, see diagram 9.1.

Hinge the control fascia open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Disconnect the pressure gauge connection from the safety valve, discard the washer, see diagram 14.4.

Remove the pressure gauge, see diagram 14.5.

Locate the supplied washer under the pressure gauge connection when refitted to the safety valve.

14.9 Control Board

Before starting refer to Section 11.

Remove the two screws securing the controls facia, see diagram 9.1.

Hinge the control fascia open.

Remove the cable entry covers, see diagram 10.2.

Disconnect the multi-pin connectors retained by clips, see diagram 14.6.

Remove the controls board cover, see diagram 10.2.

Disconnect the remaining multi-pin connector retained by a clip.

Remove the control board securing screw and the control board from the support posts, see diagram 14.7.

THE MAIN CONTROL BOARD MUST BE KEPT IN THE ANTI STATIC HOLDER UNTIL IMMEDIATE REQUIREMENT.

When replacing the main control board check and if necessary adjust the main burner gas pressure. Refer to “Commissioning” in the Installation Instructions.

14.10 Gas Control Valve

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Disconnect multi-pin connector

Support the gas control valve, remove the eight screws at the sides of the gas control valve, see diagram 14.8.

Separate the valve from the pipes, noting the fitted position.

Discard the “O” rings and fit the new ones supplied.

Check and adjust the main burner gas pressures, refer to “Commissioning” in the Installation Instructions.

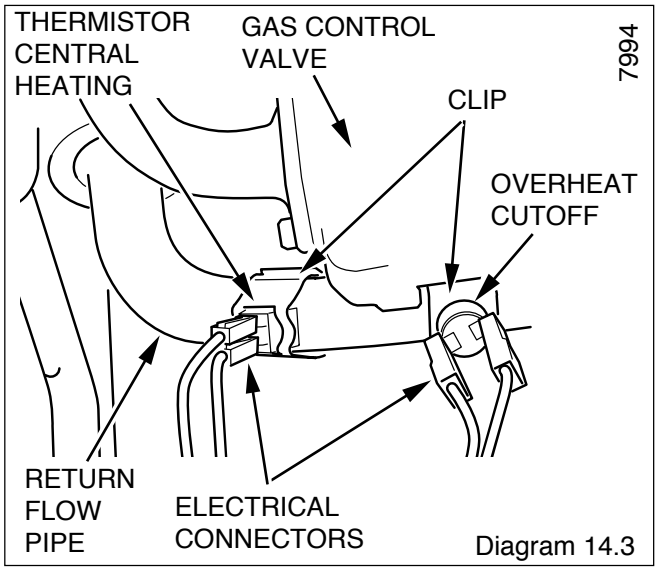


Diagram 14.3

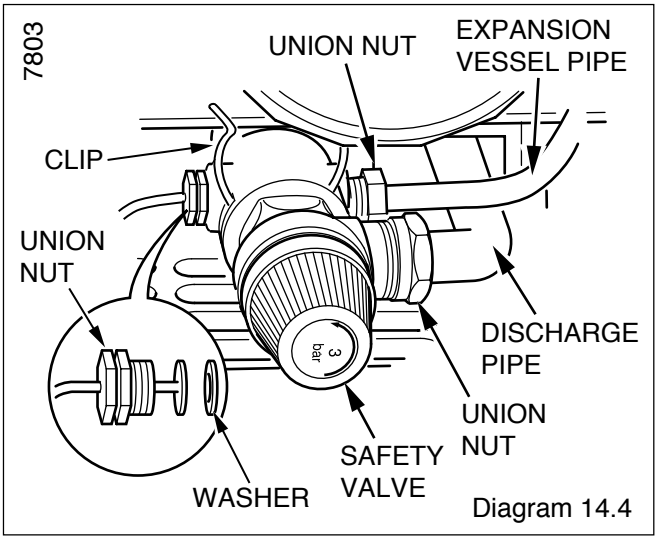


Diagram 14.4

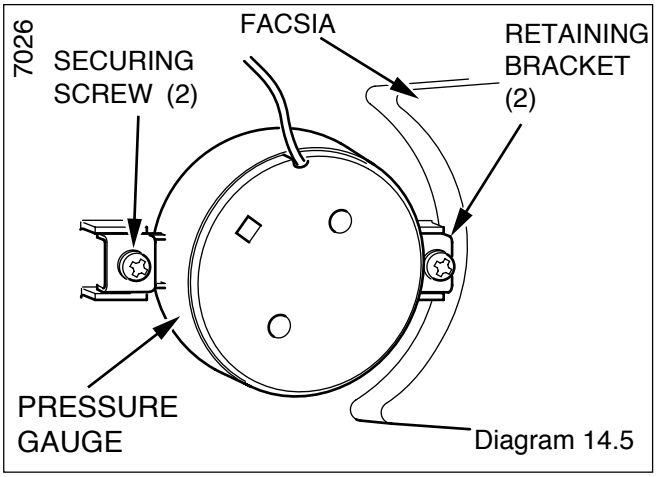


Diagram 14.5

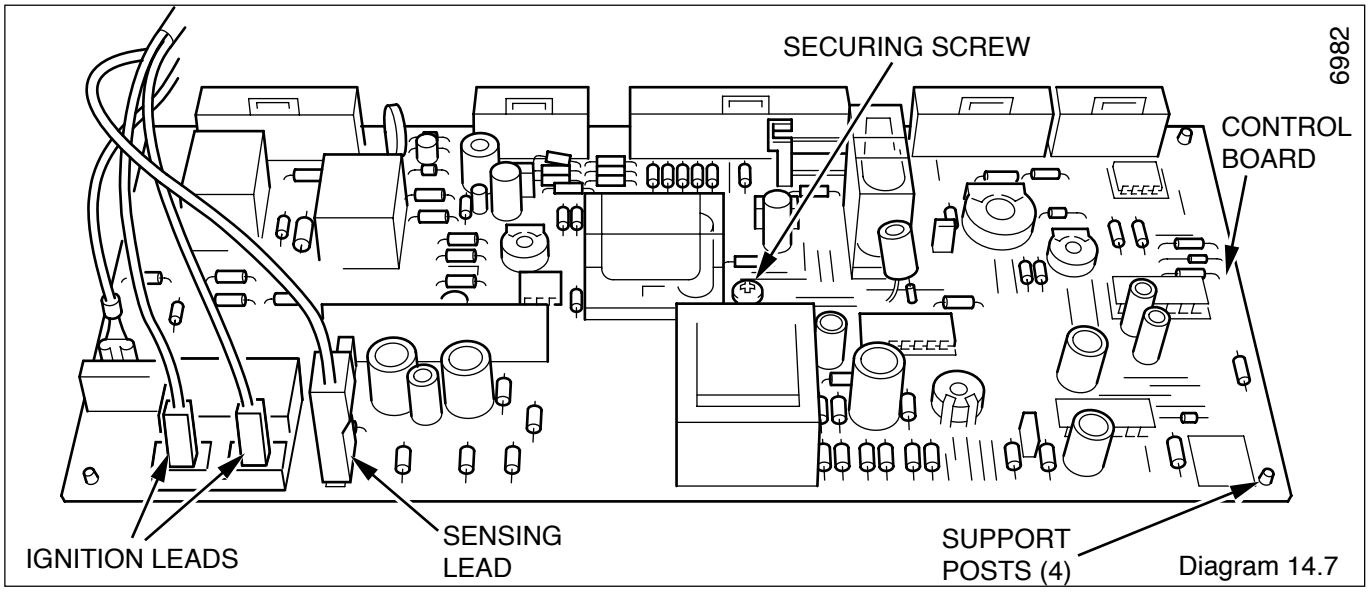


Diagram 14.7

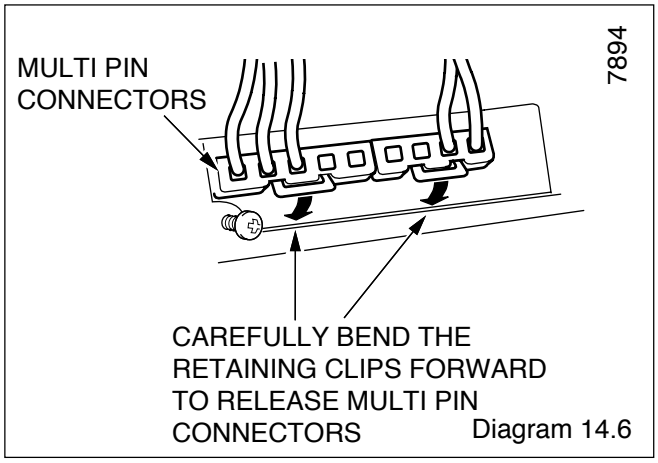


Diagram 14.6

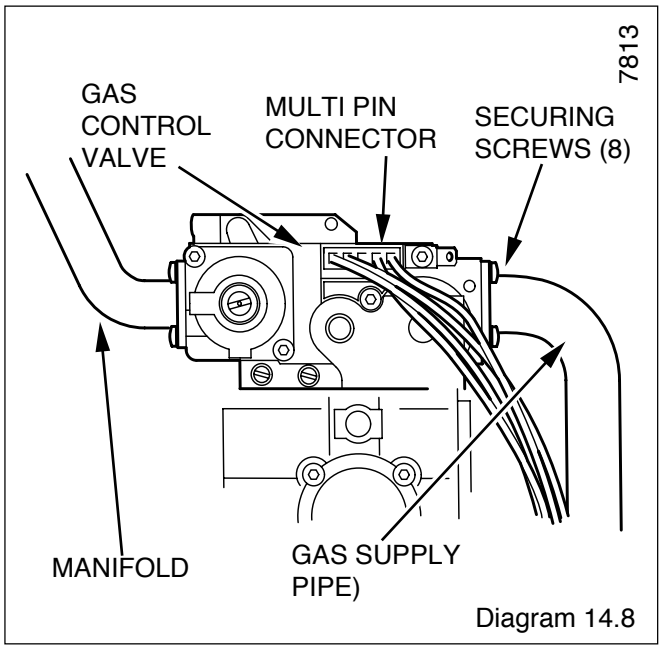


Diagram 14.8

14.11 Pump

Before starting refer to Section 11.

Remove the two screws securing the controls facia, see diagram 9.1.

Hinge the assembly open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Remove the electrical plug at the pump, see diagram 14.9.

Remove the four cap head screws, see diagram 14.9.

Make sure that the new pump is fitted in the correct orientation.

The pump adjuster on the new pump should be set to that of the original, refer also to Section 4.4.

The flow rate should be controlled by means of a valve in the heating flow, refer to Section 4.6.

14.12 Low Water Pressure Switch

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

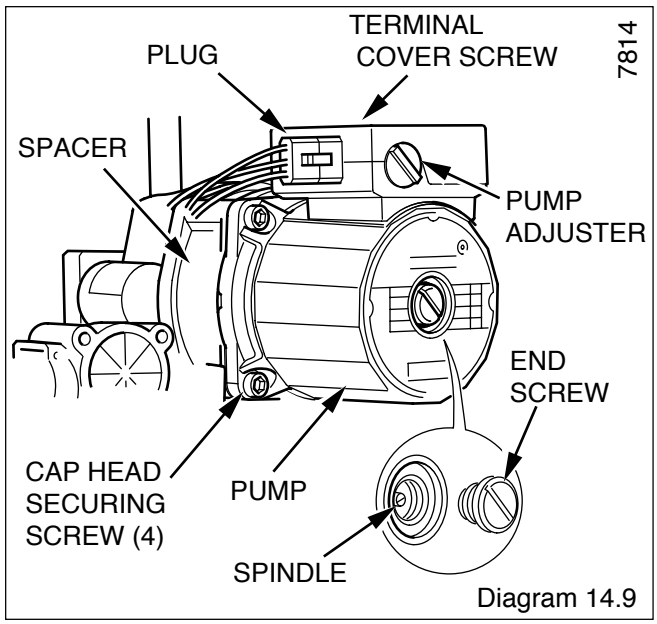


Diagram 14.9

Remove the clip to remove the water pressure switch, see diagram 14.10

Remove the plastic cover.

Remove the electrical connectors.

Refer to wiring diagram 14.24 when fitting.

14.13 Safety Valve

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Remove the case base, see diagram 10.3.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Disconnect the union nut and clip to release the safety valve, see diagram 14.4.

14.14 Pressure Differential Micro Switch

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls facia, see diagram 9.1.

Hinge the assembly open.

Disconnect the inline connector to the pressure differential micro switch.

Remove the micro switch securing clip, ease the micro switch from its housing, see diagram 14.11.

14.15 Hydro Block Assembly Left hand side (see diagram 14.12)

Before starting refer to Section 11.

Remove the case base refer to Section 10.6 and diagram 10.3.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Remove the low water pressure switch, refer to Section 14.11.

Disconnect the pressure differential micro switch inline electrical connector, refer to Section 14.14.

Unplug gas control valve multi pin connector.

Remove the left hand side bypass tube retaining pin, see diagram 14.13.

Disconnect the union nut to the central heating flow service cock, refer to diagram 14.3.

Remove securing pins 1, 2, 3, elbow and the support plug, see diagram 14.12.

Ease the hydro block back to release the central heating flow pipe and bypass tube, see diagram 14.14.

Remove the left hand side of the hydro block.

Ensure all ”O“ rings and seals are fitted when reassembling.

14.16 Hydro Block Assembly Right hand side (see diagram 14.12)

Before starting refer to Section 11.

Remove the case base refer to Section 10.6 and diagram 10.3.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Disconnect the discharge pipe and expansion vessel pipe, see diagram 14.4.

Disconnect the union nut to the central heating return service cock, refer to diagram 8.8 and 14.12.

Remove the left hand side bypass tube retaining pin, see diagram 14.13.

Remove the main terminal block bracket with programmer bracket if fitted to ease hydro block removal, for position refer to diagram 9.2.

Unplug pump multi pin connector.

Remove the pump and spacer, refer to Section 14.11 and diagram 14.9.

Remove securing pins 4, 5, 6, elbow and the support plug, see diagram 14.12.

Take care the heating return filter may fall out.

Twist the hydro block and ease forward to release the central heating return pipe and bypass tube, see diagram 14.15.

Remove the right hand side of the hydro block.

See inset on diagram 14.12 to remove heating return filter.

Ensure all ”O“ rings, seals and heating return filter are fitted when reassembling.

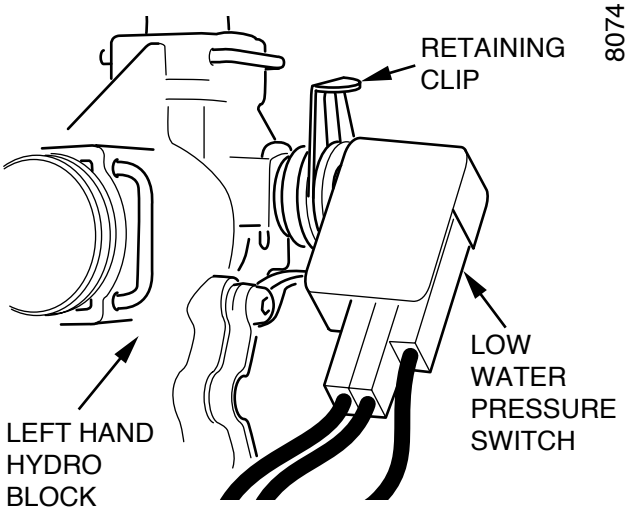


Diagram 14.10

14.17 Bypass Tube

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Remove the left hand side bypass tube retaining pin, see diagram 14.13.

Remove the right hand hydro block as relevant parts of Section 14.16.

Remove the bypass tube, refer to diagram 14.15 .

Refer to diagram 14.16 for rear view and position.

14.18 Bypass Valve

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Remove the left hand side bypass tube securing pin, see diagram 14.13.

Remove the bypass valve retaining pin, see diagrams 14.13. and 14.17.

Remove bypass valve.

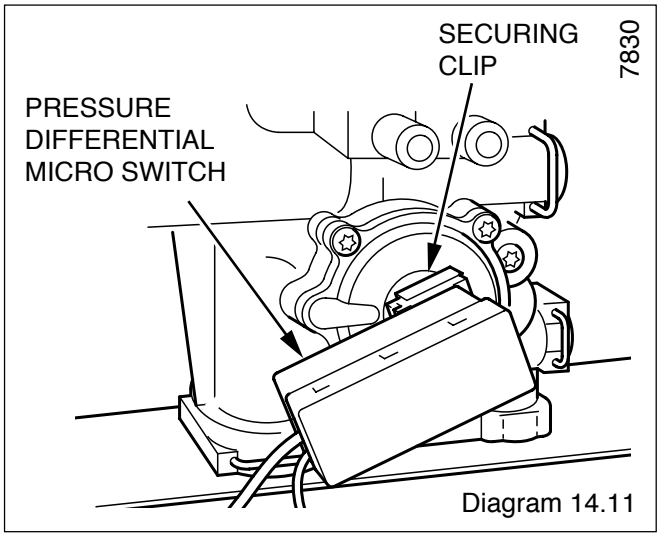


Diagram 14.11

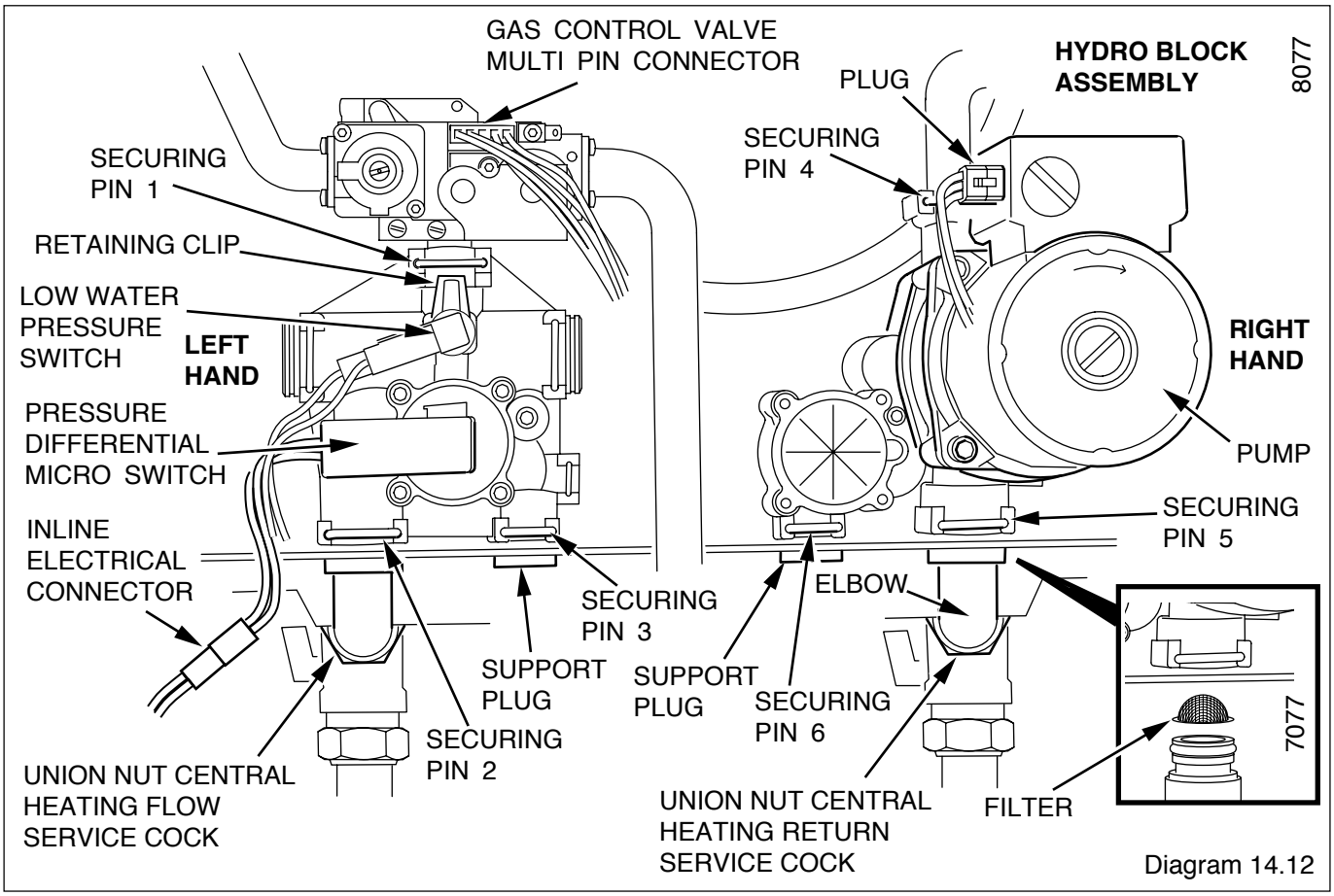


Diagram 14.12

14.19 Expansion Vessel

Before starting refer to Section 11.

Remove all panels refer to the relevant parts of Section 10.

Renewal of the expansion vessel requires the boiler to be removed from the wall. As an alternative, a separate expansion vessel of the same specification may be connected as close as possible to the boiler on the return side of the system, leaving the original in position, refer to the Installation Instructions.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

Remove the case base refer to Section 10.6 and diagram 10.3.

Disconnect the boiler water connection and gas supply union nuts at the front of the isolating valves, see diagram 8.8 .

Disconnect the safety valve discharge pipe from the boiler, see diagram 8.9.

Disconnect the mains supply cable at the connector block and slacken the cable clamp to release the cable. Refer to diagram 9.2 for position.

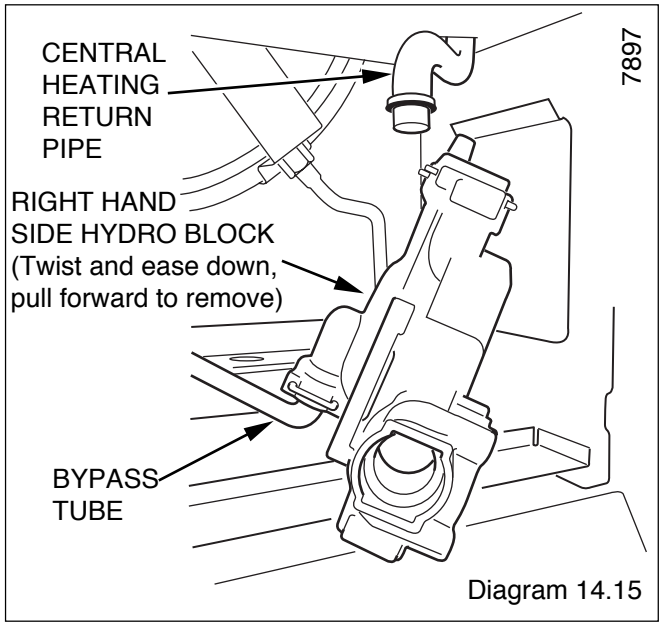


Diagram 14.15

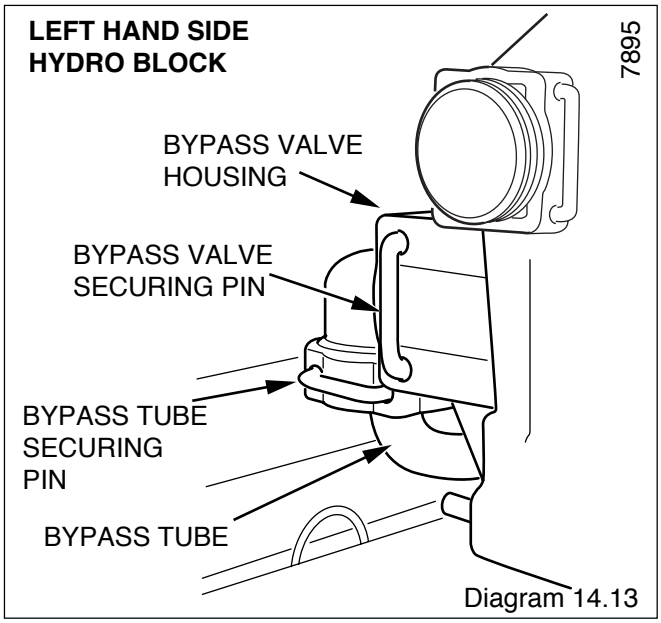


Diagram 14.13

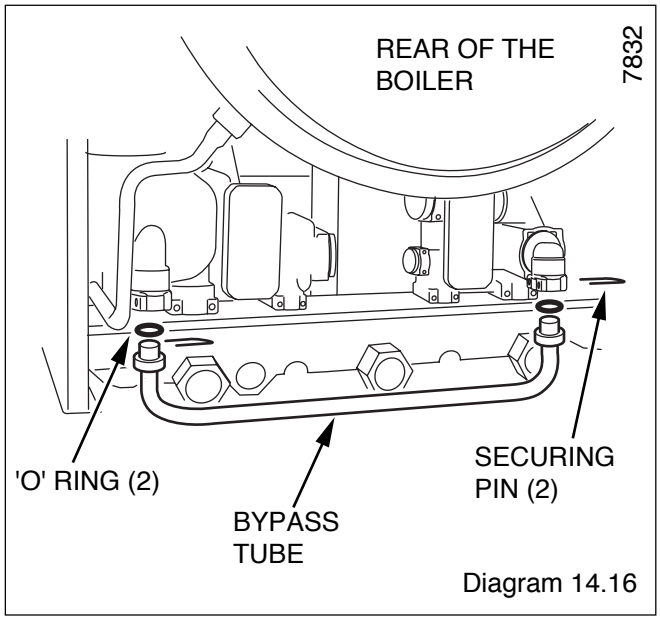


Diagram 14.16

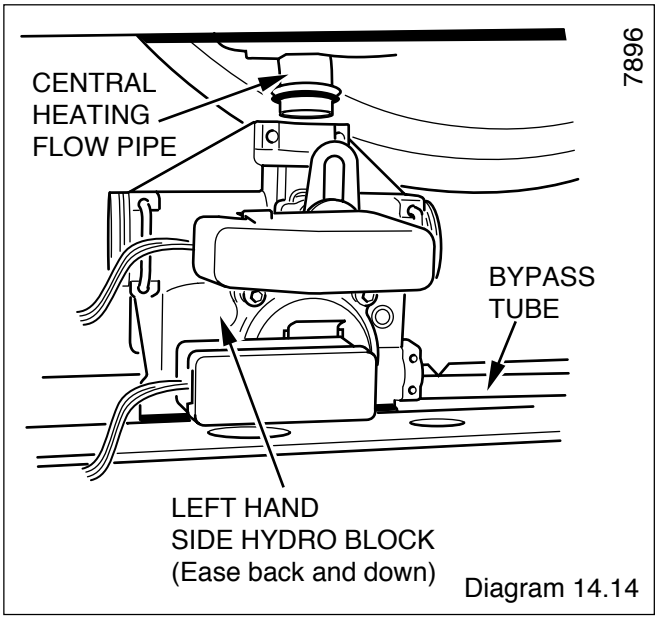


Diagram 14.14

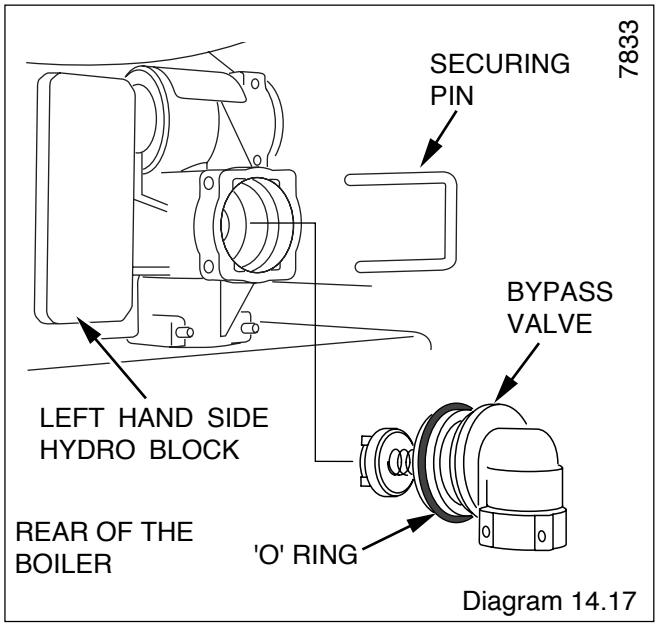


Diagram 14.17

Remove the two screws at the service cock bracket, see diagram 8.6. Ease the boiler from the isolating valves. Unhook the boiler at the top, easing the boiler from the flue outlet and lift off.

Carefully lay the boiler down on its side for access to the expansion vessel.

Disconnect the union nut connection, see diagram 14.18 and discard the sealing washer for the new one supplied.

Remove the expansion vessel, secured with two clamping screws.

Connect the union nut, when fitting the expansion vessel, before clamping it.

Refer to Sections 8, 9 and 10 when mounting the boiler.

14.20 Automatic Air Vent

Before starting refer to Section 11.

Remove the two screws securing the controls cover door and controls fascia, see diagram 9.1.

Hinge the assembly open.

Release the water pressure and drain the boiler, refer to Section 11.3 and 11.6.

If you have access to the right remove the automatic air vent securing pin, see diagram 14.19.

Remove the automatic air vent cap and body.

SLACKEN THE SMALL CAP ON THE AIR VENT. THIS MUST NOT BE RE-TIGHTENED.

If you have minimum clearances remove the right hand hydro block as Section 14.16 to gain access to the automatic air vent.

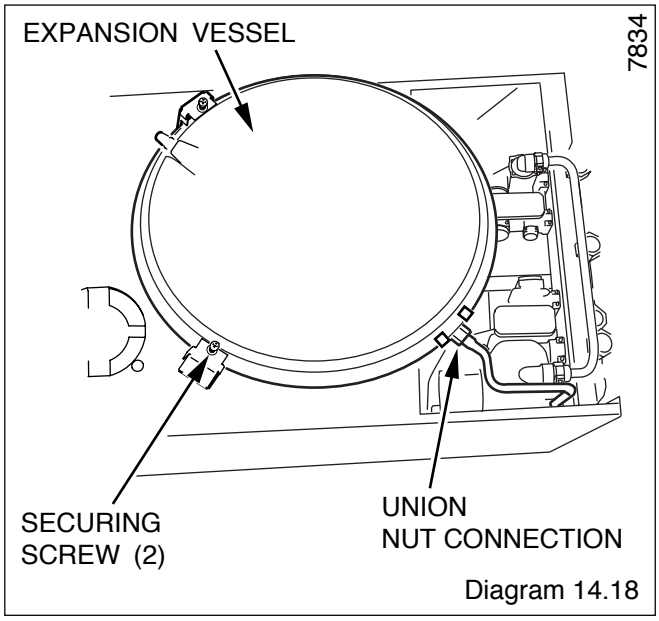


Diagram 14.18

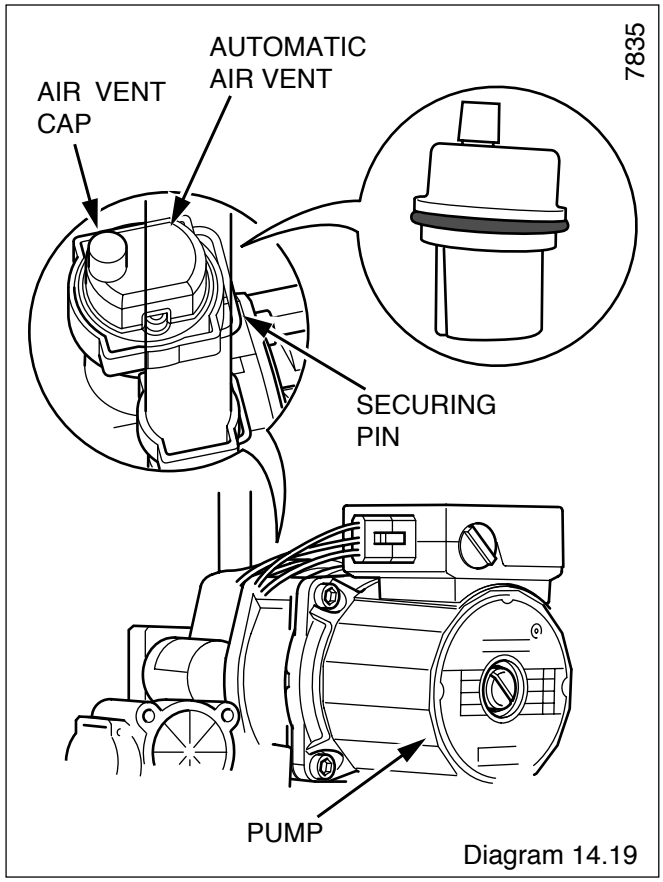


Diagram 14.19

14.21 Heat Exchanger

Before starting refer to Section 11.

Unhook the combustion chamber front, see diagram 8.2.

Remove the fan and flue collector, refer to Section 14.1.

Remove the burner see Section 14.2.

Refer to diagram 14.20 and remove the two side insulation pieces.

Remove the securing clips on the inlet and outlet pipes.

Remove the combustion chamber main panel securing screws.

Remove the heat exchanger/combustion chamber assembly.

Remove heat exchanger front retaining clips.

Remove the heat exchanger from its retaining tabs positioned at the rear by easing it forward and up.

Replace heat exchanger making sure that it is correctly engaged on the retaining lugs at the back of the combustion chamber, carefully refit the pipe securing clips and front retaining clips.

14.22 Combustion Chamber Insulation

Remove outer case front as section 11.4.

Remove the inner case front as Section 11.5.

Unhook the combustion chamber front, see diagram 8.2.

Remove the burner see section 14.2.

Remove the front insulation piece and slide out both side insulation pieces, see diagram 14.21.

Pull the lower rear insulation forwards, then slide the upper rear insulation down from behind the heat exchanger, see diagram 14.21.

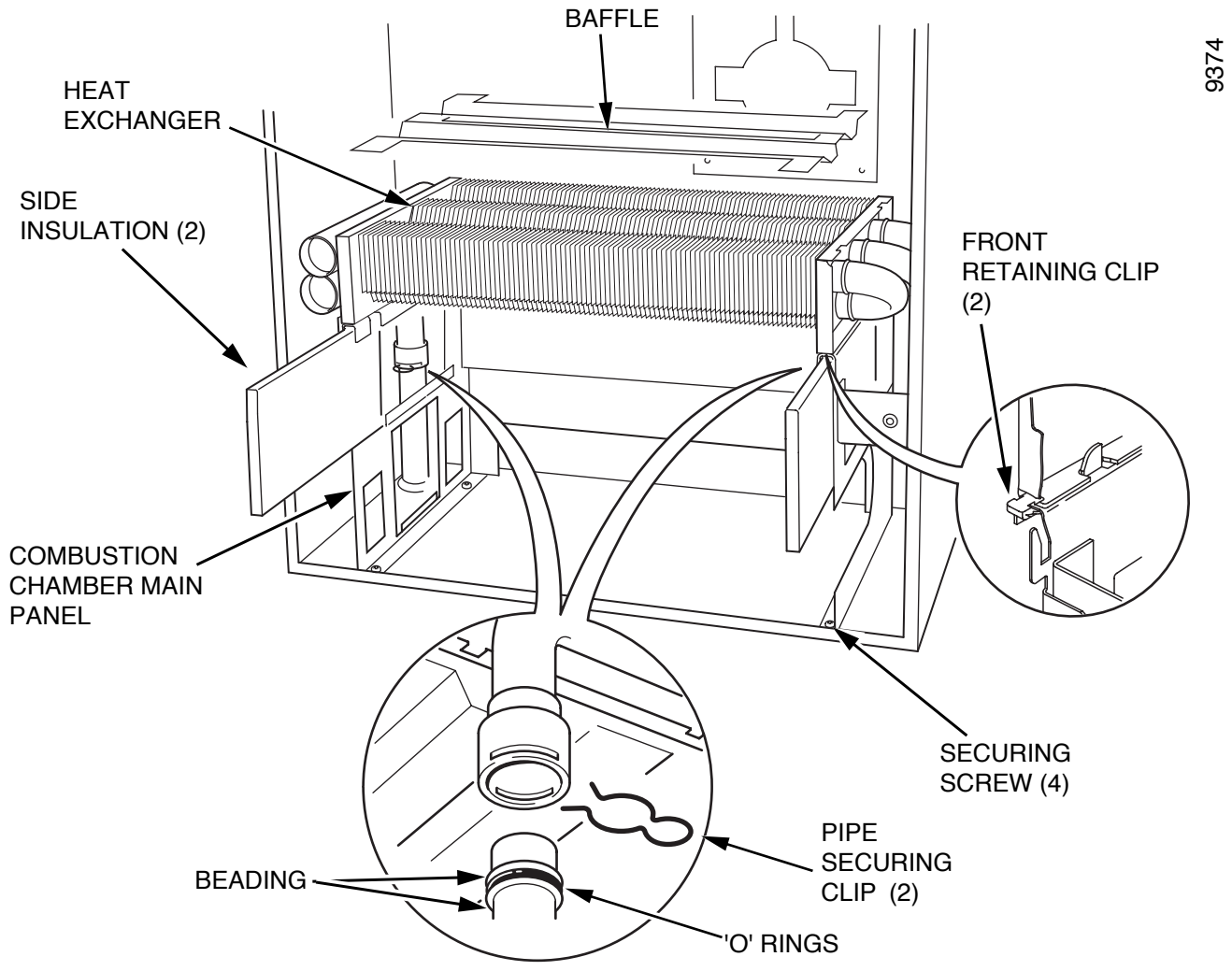


Diagram 14.20

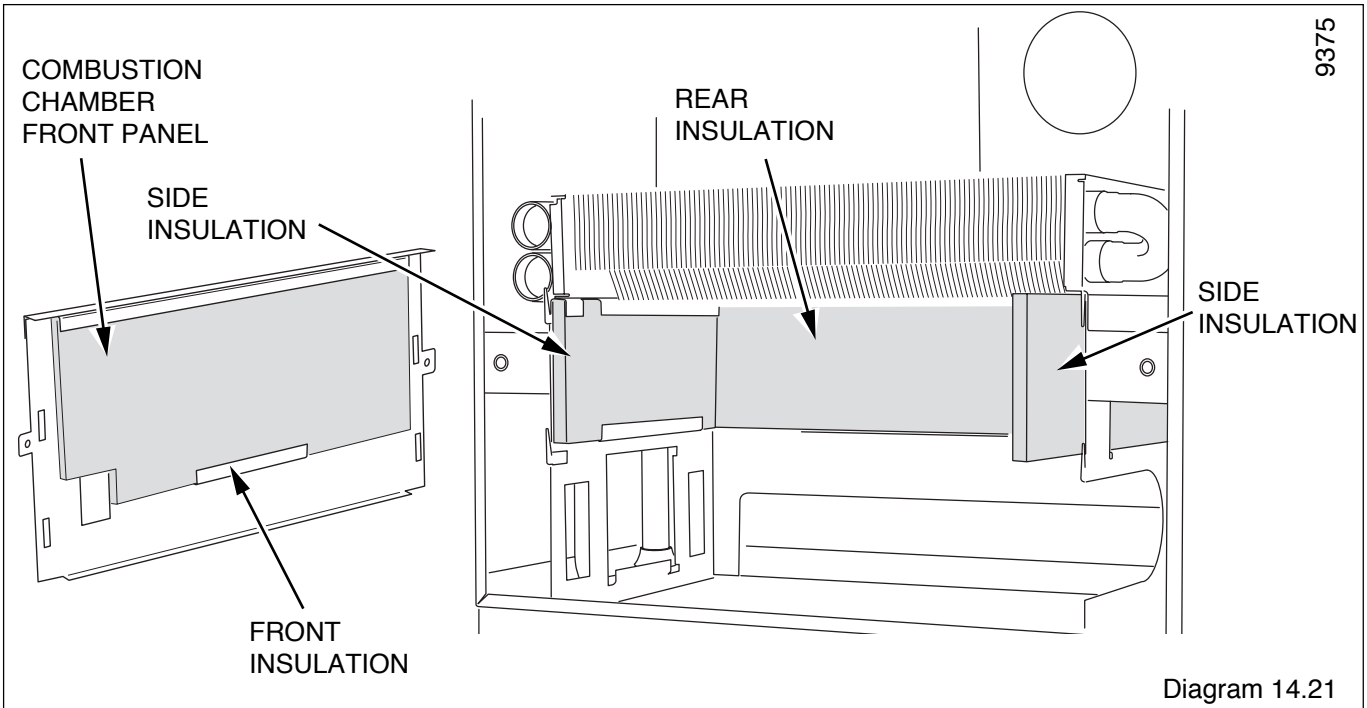


Diagram 14.21

14.23 Viewing Window

Before starting refer to Section 11.

Remove the old self adhesive aluminium foil gasket and the old mica window. Replace with the new mica window, see diagram 14.22. Peel off the backing paper and secure with the new self adhesive aluminium foil gasket. Ensure no air bubbles are trapped underneath the foil.

Important

Make sure that the mica window fully covers the opening and that the hole in the aluminium foil gasket is centred over opening.

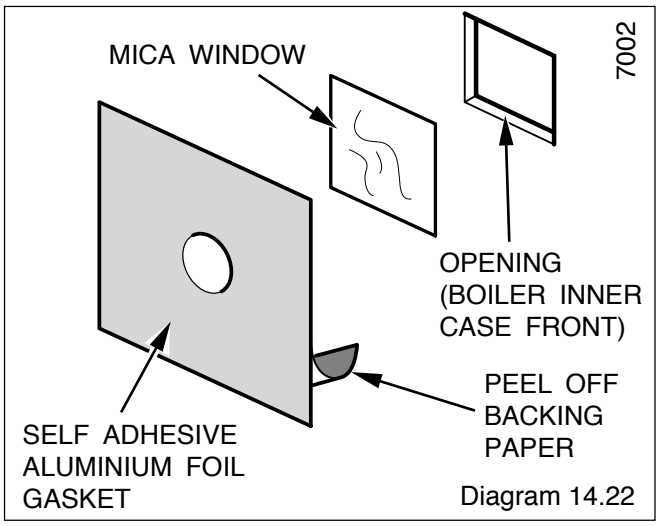


Diagram 14.22

14.24 Air Pressure Switch

Before starting refer to Section 11.

Disconnect the two electrical connectors at the air pressure switch, see diagram 14.23.

Remove the flexible tubes from the switch.

Remove the heat shield, secured with two screws.

Remove the air pressure switch from the heat shield,, secured with two screws.

When replacing the tubes to the air pressure switch make sure that the red tube from the fan connects to the upper connection of the switch.

The polarity of the electrical connections is important, refer to diagram 14.24.

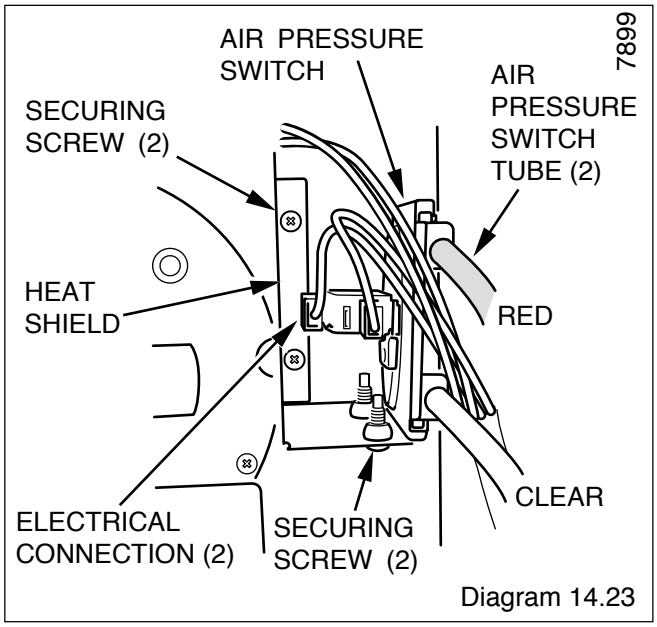


Diagram 14.23

14.25 Programmer if fitted

Before starting refer to Section 1 General Data.

Isolate the boiler from the electrical supply.

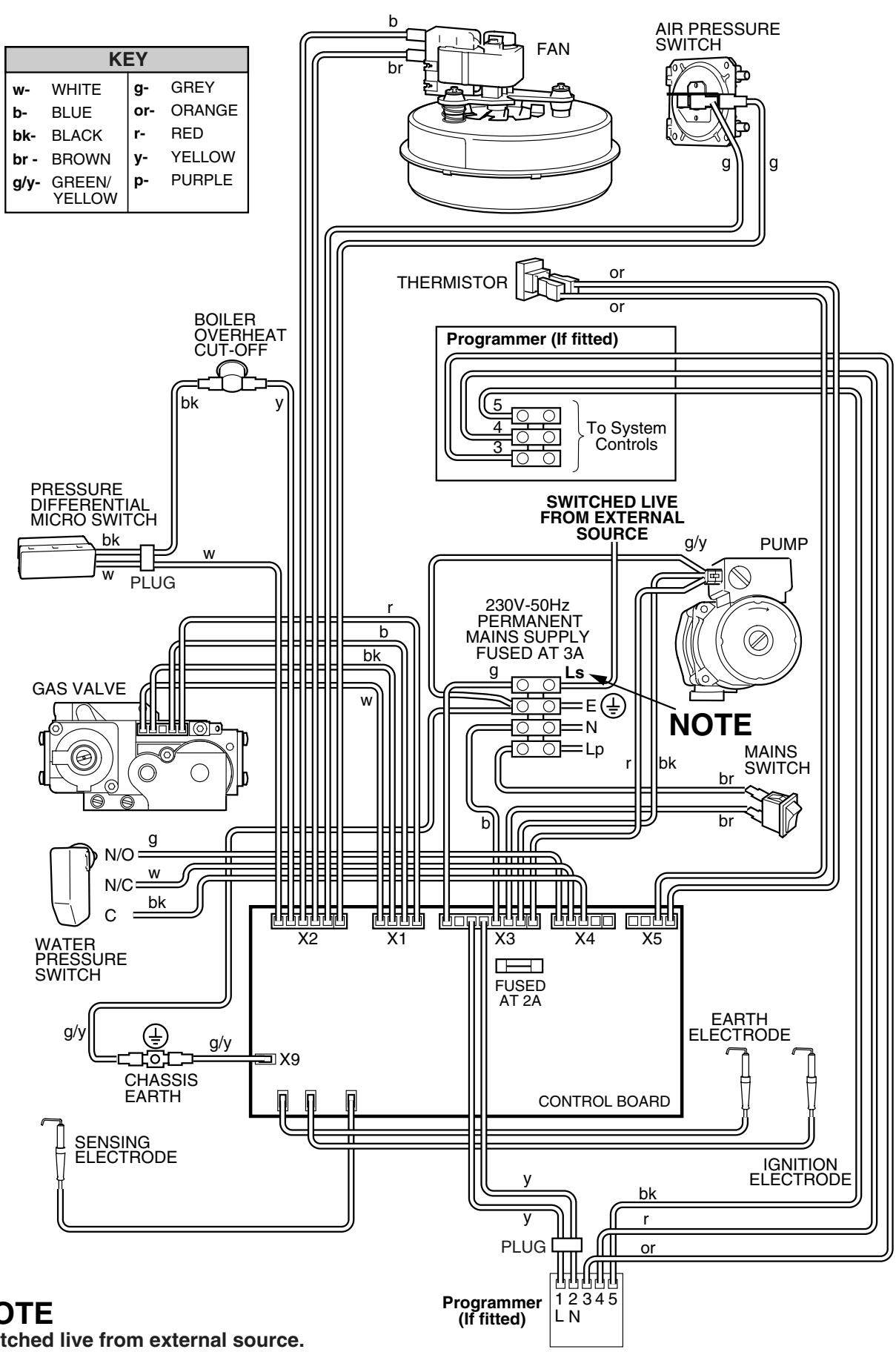
Remove outer case front as section 11.4.

Remove the two screws securing the controls cover door and controls facia, see diagram 9.1.

Hinge the assembly forward.

Remove the programmer cover, see diagram 10.2.

Disconnect the programmer wiring harness plug, remove the programmer and electrical connections, see diagram 13.4.



NOTE

Switched live from external source.

CAUTION :- This wiring will remain live when the mains switch on the controls facsia is isolated.

Diagram 14.24

15 Spare Parts

15.1 Part Identification

The key number in diagram 15.1 and the first column of the list will help identify the spare part.

15.2 Ordering

When ordering any spare part, please quote the part number and the description from the list together with the model name and serial number information from the data label.

The data label is positioned on the inner case front, see diagram 8.1 and 10.5 Installation Instructions.

Key No	Part No	Description	GC No
1	457660	Fan assembly	E60912
2	205771	Injector assembly	********
3	202641	Spark electrode (2)	********
4	202641	Sensing Electrode	********
5	202579	Boiler over heat cut off assy	********
6	204546	Pressure gauge assembly	********
7	227095	Control board	********
8	227004	Thermistor assembly-Heating	********
9	801192	Pump (Not illustrated)	E27211
10	202226	Fuse - not illustrated	278136
11	230510	Gas control valve	E27124
12	227104	Air pressure switch assy	********
13	801208	Safety valve assembly	E27115
14	********	Water inlet filter	********
15	227099	Low water pressure switch	********
16	227060	Mains switch	E26675
17	********	Automatic air vent assembly	********
18	********	Pressure differential micro switch	********

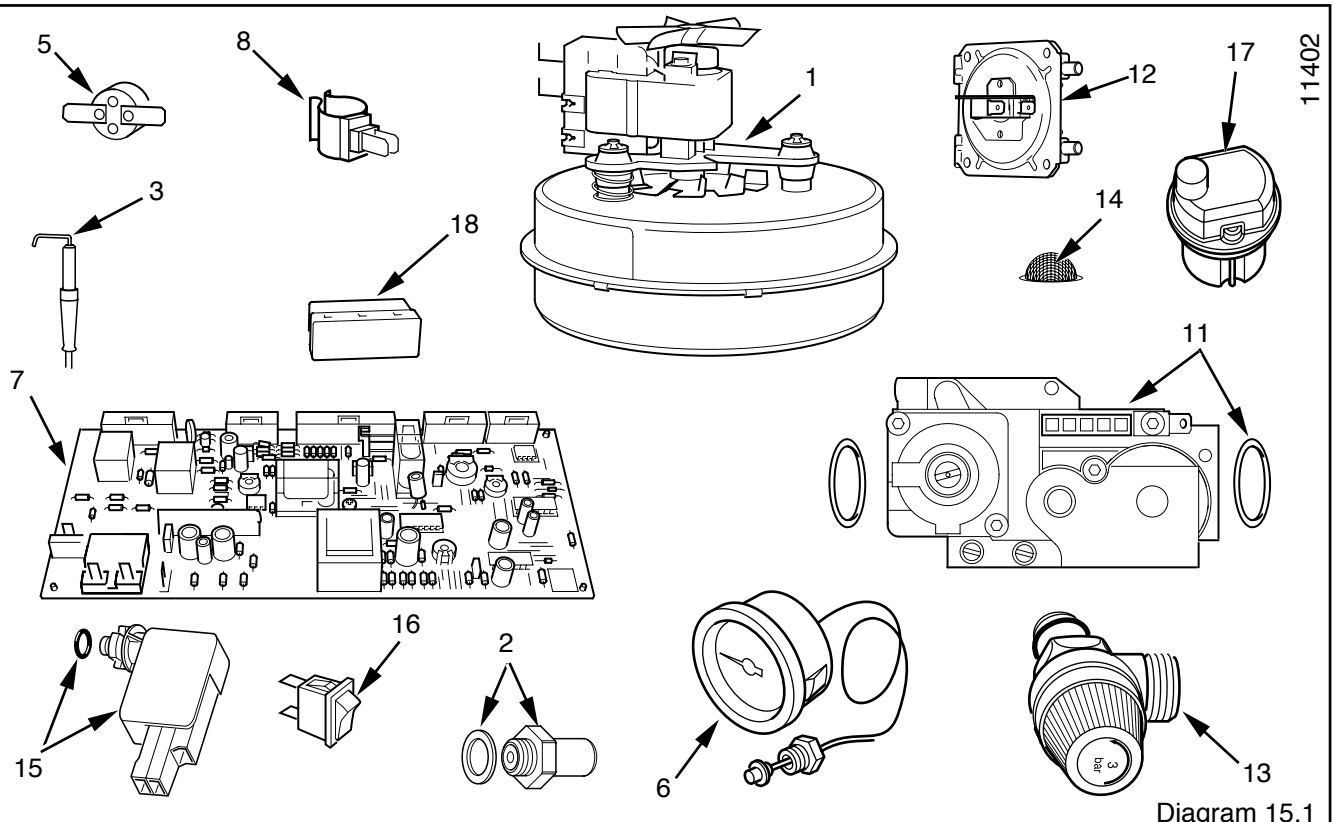


Diagram 15.1

Because of our constant endeavour for improvement, details may vary slightly from those shown in these instructions.