

IDEAL SPRINT RAPIDE RS 75 N Wall Mounted Balanced Flue Combination Boiler.

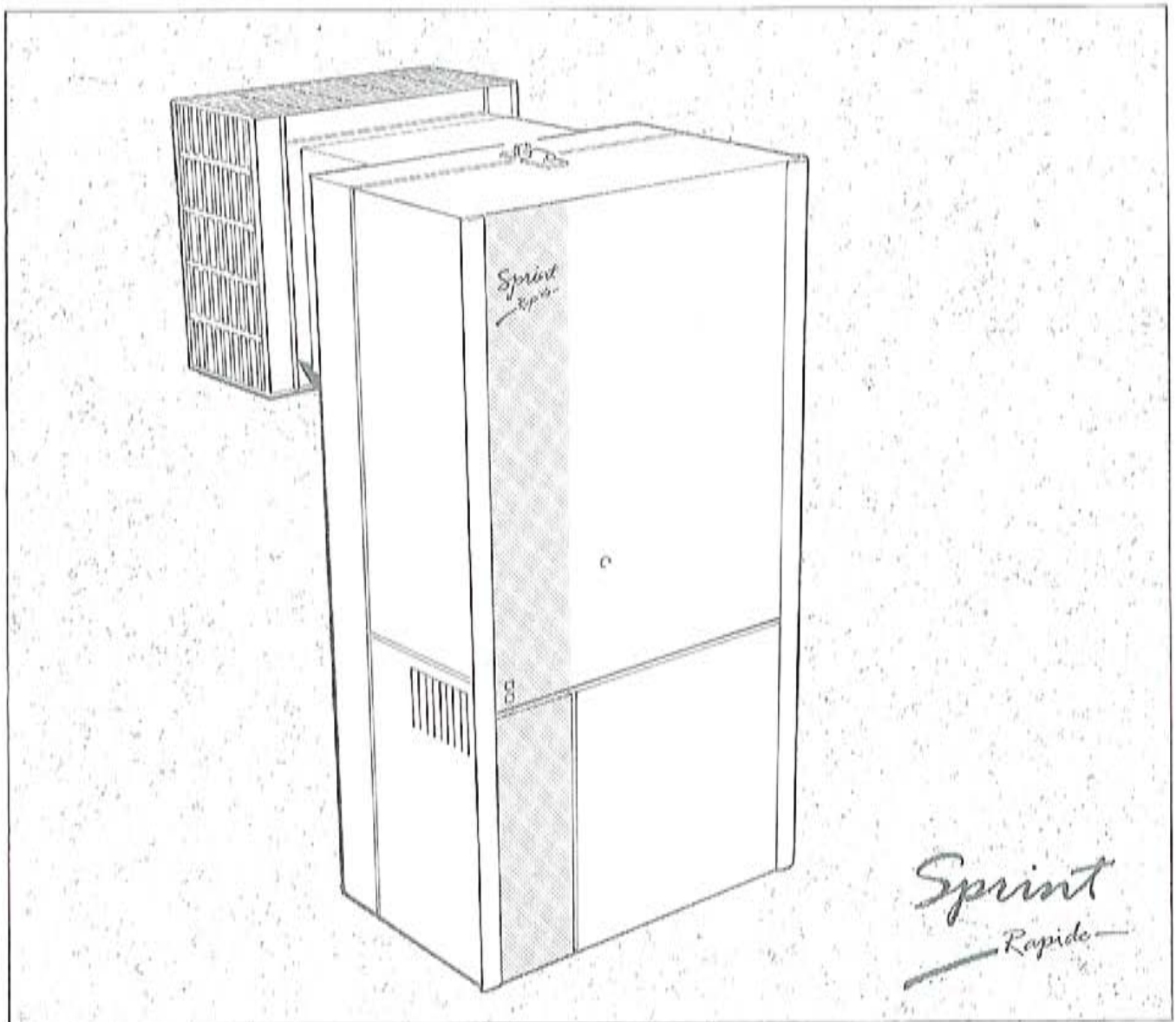
Installation & Servicing.

CAUTION: To avoid the possibility of injury during the installation, servicing or cleaning of this appliance, care should be taken when handling edges of sheet steel components.

Ideal Sprint Rapide
RS 75 N

G.C. Appliance No.
47 415 06

IMPORTANT: The appliances are for use with NATURAL GAS ONLY.



NOTE TO THE INSTALLER: LEAVE THESE INSTRUCTIONS ADJACENT TO THE GAS METER

Stelrad Ideal

Table 1- GENERAL DATA

| | | |
|--|---------------------------------|-------------------------|
| Boiler Size | RS 75 N | |
| Main Burner | AEROMATIC AC 19/ 123290 | |
| Gas Control Valve | HONEYWELL V 4700 N 4001 | |
| Burner Injector | BRAY Cat. 10 size 2200 | |
| Pilot Injector | HONEYWELL 45003-508-001, 38/36A | |
| Gas Supply Connection | Rc 1/2 (1/2 in. BSP/A) | |
| Inlet Connection | Domestic hot water | 15 mm compression union |
| Outlet Connection | Domestic hot water | 15 mm compression union |
| Flow Connection | Central heating | 22 mm compression union |
| Return Connection | Central heating | 22 mm compression union |
| MAXIMUM Working Pressure (sealed systems) | bar (psi) | 2.5 (36.3) |
| MAXIMUM Static Water Head | m (ft) | 25.5 (83.6) |
| MINIMUM Static Water Head (open water systems) | m (ft) | 1.8 (6.0) |
| MAXIMUM Domestic Hot Water Inlet Pressure | bar (psi) | 10.0 (145.0) |
| MINIMUM Domestic Hot Water Inlet Pressure | bar (psi) | 0.65 (9.4) |
| Electrical Supply | 240 V ~ 50 Hz | |
| External Fuse Rating | 3 A F2 A | |
| Water Content | Central Heating | litre (gal) |
| | Domestic Hot Water | litre (gal) |
| Dry Weight | kg (lb) | 49.6 (109.1) |
| MAXIMUM Installation Weight | kg (lb) | 40.4 (88.9) |
| Boiler Size | Height | mm (in.) |
| | Width | mm (in.) |
| | Depth | mm (in.) |

Table 2- PERFORMANCE DATA Central Heating

| Central Heating | | Maximum | Minimum |
|-------------------------------|--------------------------|---------------|---------------|
| Burner Setting Pressure (Hot) | mbar (in.w.g.) | 15.2 (6.1) | 2.7 (1.1) |
| Output | kW (Btu/h) | 22.6 (77 000) | 8.8 (30 000) |
| Input | kW (Btu/h) | 28.5 (97,400) | 12.2 (41,600) |
| Gas Consumption (Hot) | l/s (ft ³ /h) | 0.73 (92.8) | 0.31 (39.6) |

Table 3- PERFORMANCE DATA Domestic Hot Water

| Domestic Hot Water | | Maximum |
|--|----------------|---------------|
| Burner Setting Pressure (Hot) | mbar (in.w.g.) | 15.2 (6.1) |
| Domestic Hot Water Output | kW (Btu/h) | 22.6 (77 000) |
| Domestic Hot Water Flowrate at 35°C Temperature Rise | l/m (g.p.m.) | 9.3 (2.1) |

Note. Gas consumption is calculated using a calorific value of 38.7 MJ/m³ (1038 Btu/ft³)

INTRODUCTION

The Ideal Sprint Rapide RS 75 N is a wall mounted, low water content, natural draught, balanced flue combination boiler.

Central heating (C.H.) output is fully modulating between 8.8 kW (30 000 Btu/h) minimum and 22.6 kW (77 000 Btu/h) maximum. Instantaneous domestic hot water (D.H.W.) output is also fully modulating with a maximum of 22.6 kW (77 000 Btu/h).

The boiler is designed for use with fully pumped, sealed water systems. Consult Caradon Heating Ltd., if connection is to be made to open water systems.

It is supplied, fully assembled, with a domestic hot water calorifier, diverter valve, circulating pump, pressure gauge, safety valve and expansion vessels for both central heating (C.H.) and domestic hot water (D.H.W.). Variable C.H. and D.H.W. temperature controls are fitted and the boiler also features a D.H.W. preheat facility which can be switched on or off as required.

The boiler casing is of white enamelled mild steel with a removable white and grey glass fascia. The controls compartment, below the boiler, has a white and grey enamelled mild steel lift-off cover. The boiler controls (and Programmer if fitted) can be readily accessed through the hinged door at the left hand side of the lift-off cover.

An optional Programmer Kit is available if required.

OPERATION


When there is no call for C.H. and the D.H.W. preheat switch OFF, the boiler fires only when D.H.W. is drawn off.

With the D.H.W. preheat switch ON the boiler will periodically fire for a few seconds without any D.H.W. draw-off in order to maintain the D.H.W. calorifier in a heated condition.

When there is a call for C.H. the heating system is supplied at the selected temperature until D.H.W. is drawn off. The full output from the boiler is then directed via the diverter valve to the calorifier to supply a maximum D.H.W. draw-off of 9.3 l/min (2.1 g.p.m.) at 35° C temperature rise.

At the minimum D.H.W. draw off rate of approximately 3 l/min (0.7 g.p.m.) the maximum temperature is limited to 65° C by the modulating gas control.

Gas Safety (Installation and Use) Regulations, 1990

It is the law that all gas appliances are installed by competent persons (e.g. CORGI, identified by ) in accordance with the above Regulations. Failure to install appliances correctly could lead to prosecution.

It is in your own interest, and that of safety, to ensure that the law is complied with. The installation of the boiler MUST also be in accordance with the current I.E.E. Wiring Regulations, The Building Regulations (1985), Building Standards (Scotland), the Bye Laws of the Local Water Undertaking and any relevant requirements of the Local Authority. Detailed recommendations are contained in the following British Standards Codes of Practice.

Codes of Practice:

| | |
|----------------|---|
| BS. 6891: 1988 | Low pressure installation pipes. |
| BS. 6798 | Installation of gas fired hot water boilers of rated input not exceeding 60kW. |
| BS. 5449:1 | Forced circulation hot water systems (small bore and microbore domestic central heating systems). |
| BS.5546 | Installation of gas hot water supplies for domestic purposes (2nd Family Gases). |
| BS.5440:1 | Flues (for gas appliances of rated input not exceeding 60 kW.) |

BS. 5440:2 Air supply (for gas appliances of rated input not exceeding 60 kW).

Health safety document No. 635 - The Electricity at Work Regulations 1989.

IMPORTANT. This appliance is approved by British Gas for safety and performance. It is, therefore, important that no external control devices, (e.g. flue dampers, economisers, etc.) are directly connected to this appliance unless covered by these 'Installation & Servicing Instructions' or otherwise recommended by Caradon Heating Ltd., in writing. If in doubt please enquire.

Any direct connection of a control device not recommended by Caradon Heating Ltd., could invalidate the British Gas Certification and the normal appliance warranty. It could also infringe the Gas Safety (Installation and Use) Regulations and the above regulations or other statutory requirements.

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

LOCATION OF BOILER

The boiler MUST be installed on a flat and vertical non-combustible wall capable of adequately supporting the weight of the boiler and any ancillary equipment.

THE BOILER IS NOT SUITABLE FOR EXTERNAL INSTALLATION.

IMPORTANT NOTICE. If the boiler is to be fitted in a timber framed building it should be fitted in accordance with the British Gas publication 'Guide for Gas Installation in Timber Frame Housing', reference DM2.

If in doubt, advice must be sought from the Local Gas Region of British Gas, or Stelrad Group Ltd.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations and, in Scotland, the electrical provisions of the Building Regulations applicable in Scotland with respect to the installation of the boiler in a room or internal space containing a bath or shower.

Where a room sealed appliance is installed in a room containing a bath or shower then the appliance and any electrical control utilising mains electricity should be situated so that it cannot be touched by a person using the bath or shower.

Where installation will be in an unusual location special procedures may be necessary and BS. 6798 gives detailed guidance on this aspect. A compartment used to enclose the boiler MUST be designed and constructed specially for the purpose. Details of essential features of cupboard/compartment design, including airing cupboard installations, are given in BS. 6798.

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

1. The position selected for the installation MUST allow adequate space for servicing in front of the boiler and for air circulation around the boiler. The amount of side clearance will depend on the type of connections used.
2. This position MUST also permit the provision of a satisfactory flue termination.

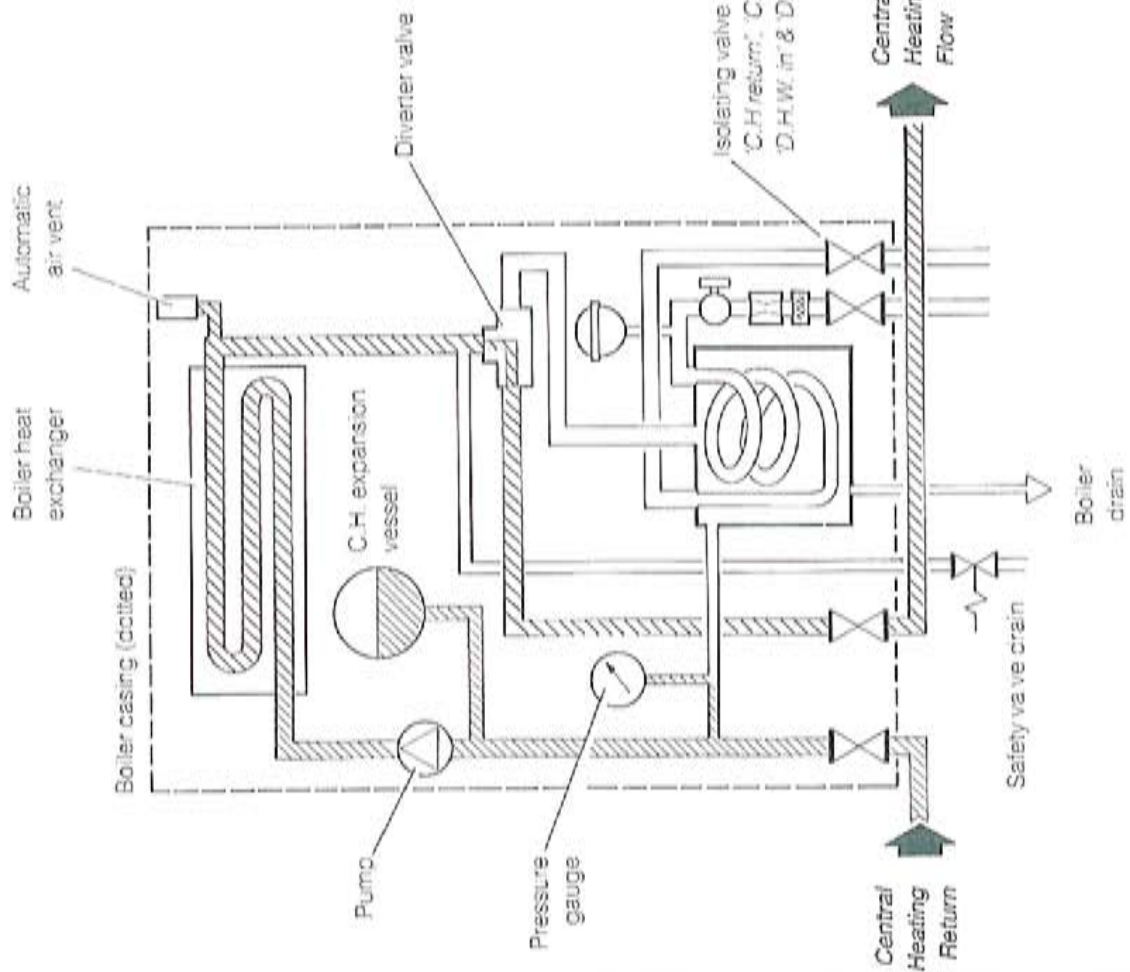
GAS SUPPLY

The Local Gas Region should be consulted at the installation planning stage, in order to establish the availability of an adequate supply of gas.

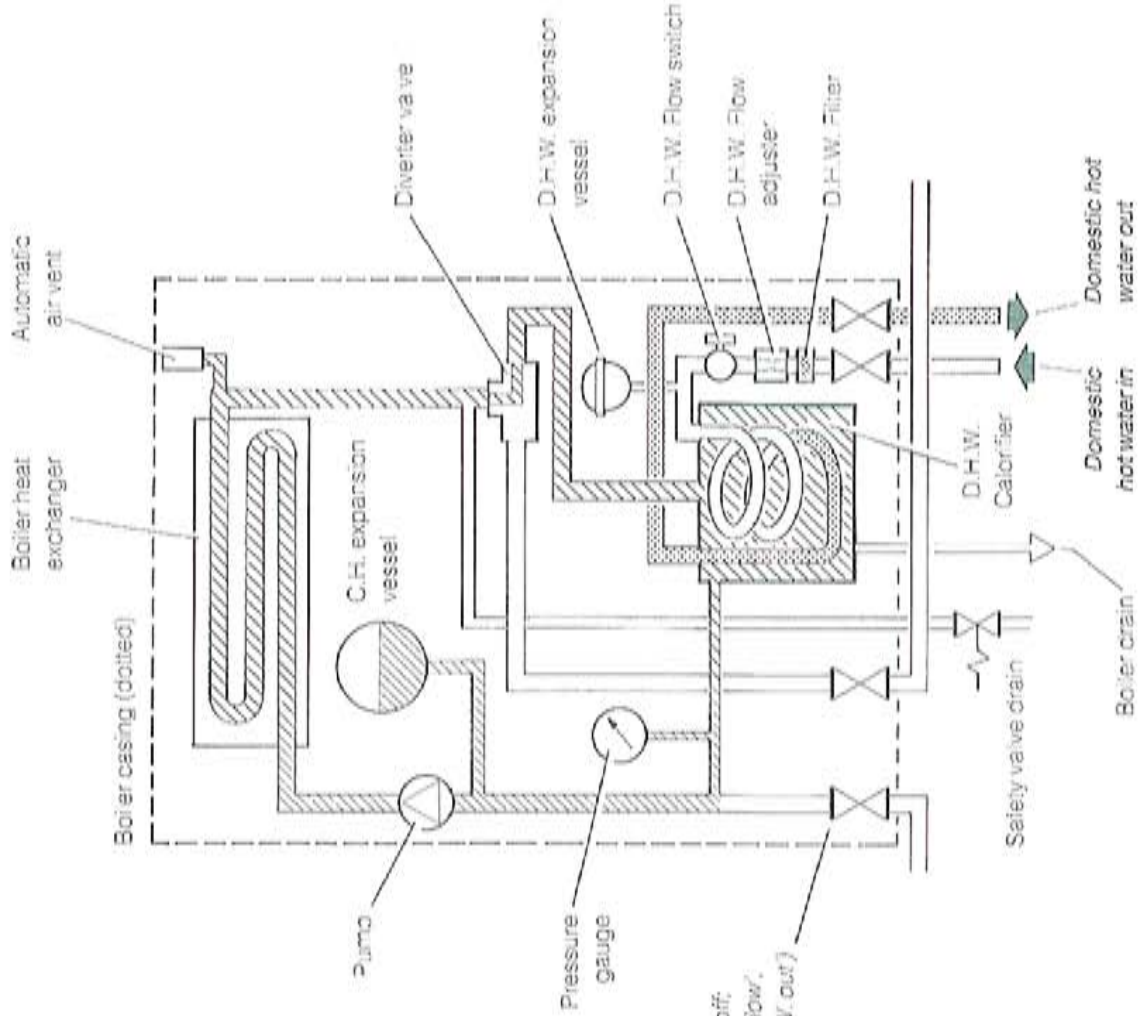
A gas meter can only be connected by the Local Gas Region or by a local Gas Region Contractor.

BOILER WATER CIRCUIT DIAGRAMS

Central Heating (C.H.) Water Circuit



Domestic Hot Water (D.H.W.) Circuit



Installation pipes should be fitted in accordance with BS. 6891: 1988. Do not use pipes of a smaller size than the boiler inlet gas connection.

The complete installation **MUST** be tested for gas soundness and purged as described in the above Code.

FLUE INSTALLATION

The flue must be installed in accordance with the recommendations of BS. 5440:1.

The following notes are intended for general guidance.

1. The boiler **MUST** be installed so that the terminal is exposed to external air.
2. It is important that the position of the terminal allows the free passage of air across it at all times.
3. The minimum acceptable spacings from the terminal to obstructions and ventilation openings are specified in Table 4.
4. Where the lowest part of the terminal is fitted less than 2 m (6.6 ft.) above a balcony, above ground or above a flat roof to which people have access then the terminal **MUST** be protected by a purpose designed guard.

Terminal guards are available from:

Quinnel, Barret & Quinnel Ltd.,
884 Old Kent Road, London, SE 15 (Model P6)
and from,

Tower Flue Components Ltd.,
Vale Rise, Tonbridge, Kent, TN9 1TB (Model C).

Ensure that the guard is fitted centrally over the terminal.

5. Where the terminal is fitted within 850 mm (34 in.) of a plastic or painted gutter or 450 mm (18 in.) of painted eaves then an aluminium shield at least 750 mm (30 in.) long should be fitted to the underside of the gutter or painted surface.
6. The air inlet/ products outlet duct and the terminal of the boiler **MUST NOT** be closer than 25 mm (1 in.) to combustible material. Detailed recommendations on the protection of combustible material are given in BS. 5440:1 1978, sub-clause 20:1.

IMPORTANT. It is absolutely **ESSENTIAL** to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation/ air conditioning.

TERMINAL

The terminal assembly can be adapted to accommodate various wall thicknesses, refer to Frames 3 & 9 (Installation).

Refer to Table 4 for details of allowable terminal positions.

AIR SUPPLY

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

1. It is **NOT** necessary to have a purpose provided air vent in the room or internal space in which the boiler is installed.
2. If the boiler is to be installed in a cupboard or compartment, permanent air vents are required (for cooling purposes) in the cupboard/ compartment, at both high and low levels. The air vents must either communicate with room/internal space, or be direct to

outside air. The minimum effective areas of the permanent air vents, required in the cupboard/ compartment, are specified as follows and are related to maximum rated heat input.

3. Both air vents **MUST** communicate with the same room or internal space, or **MUST** be on the same wall to outside air.
4. In siting the air vents care must be taken to avoid the freezing of pipework.

Refer to Table 5 for details of air vent position and sizing.

Table 4- BALANCED FLUE TERMINAL POSITION

| Terminal Position | Minimum Spacing |
|--|------------------|
| 1. Directly below an openable window, air vent or other ventilation opening. | 300 mm (12 in.) |
| 2. Below guttering, drain pipes or soil pipes. | 300 mm (12 in.) |
| 3. Below eaves. | 300 mm (12 in.) |
| 4. Below balconies or a car port roof. | 600 mm (24 in.) |
| 5. From vertical drain pipes or soil pipes. | 75 mm (3 in.) |
| 6. From internal or external corners. | 600 mm (24 in.) |
| 7. Above adjacent ground, roof or balcony level. | 300 mm (12 in.) |
| 8. From a surface facing the terminal. | 600 mm (24 in.) |
| 9. From a terminal facing a terminal. | 600 mm (24 in.) |
| 10. From an opening in a car port (eg. door or window) into dwelling. | 1200 mm (48 in.) |
| 11. Vertically from a terminal on the same wall. | 1500 mm (60 in.) |
| 12. Horizontally from a terminal on the wall. | 300 mm (12 in.) |

Table 5- AIR SUPPLY

| Position of air vent | Air from room/ internal space | Air direct from outside |
|--|-------------------------------|-------------------------|
| HIGH LEVEL cm ² (in ²) | 257 (40) | 129 (20) |
| LOW LEVEL cm ² (in ²) | 257 (40) | 129 (20) |

WATER CIRCULATION SYSTEM

The boiler is designed for connection to sealed water central heating systems but connection may be made to open vented systems if required.

The domestic hot water (D.H.W.) calorifier is incorporated within the boiler casing and only requires connection to the mains water supply.

IMPORTANT. Ensure that the mains water supply pressure is adequate to provide the required D.H.W. flow rate. Refer to Table 2 on Page 2.

The central heating system should be in accordance with the relevant recommendations given in BS. 6798 and, in addition, for smallbore and microbore systems; BS. 5449:1.

The domestic hot water system should be in accordance with the relevant recommendations of BS. 5546.

Copper tubing to BS. 2871:1 is recommended for water carrying pipework and MUST be used for pipework carrying potable water.

Ancillary pipework, not forming part of the useful heating surface, should be lagged to prevent heat loss and any possible freezing- particularly where pipes run through roof spaces and ventilated 'under floor' spaces.

Draining taps should be at least 1/2 in. BSP nominal size and be in accordance with BS. 2879.

Maximum recommended system hydraulic losses are given in Table 6 below.

Table 6- WATER FLOW RATE & PRESSURE LOSS

| | | |
|--------------------------|-----------------|---------------|
| Boiler Output | kW (Btu/h) | 22.6 (77 000) |
| Water Flow Rate | l/min. (gal./h) | 25.4 (335) |
| Temperature Differential | | 13° C (23° F) |
| Pressure available | mbar (in.w.g.) | 209 (84) |

ELECTRICAL SUPPLY

Wiring external to the appliance MUST be in accordance with the current I.E.E. Wiring Regulations and any Local Regulations which apply.

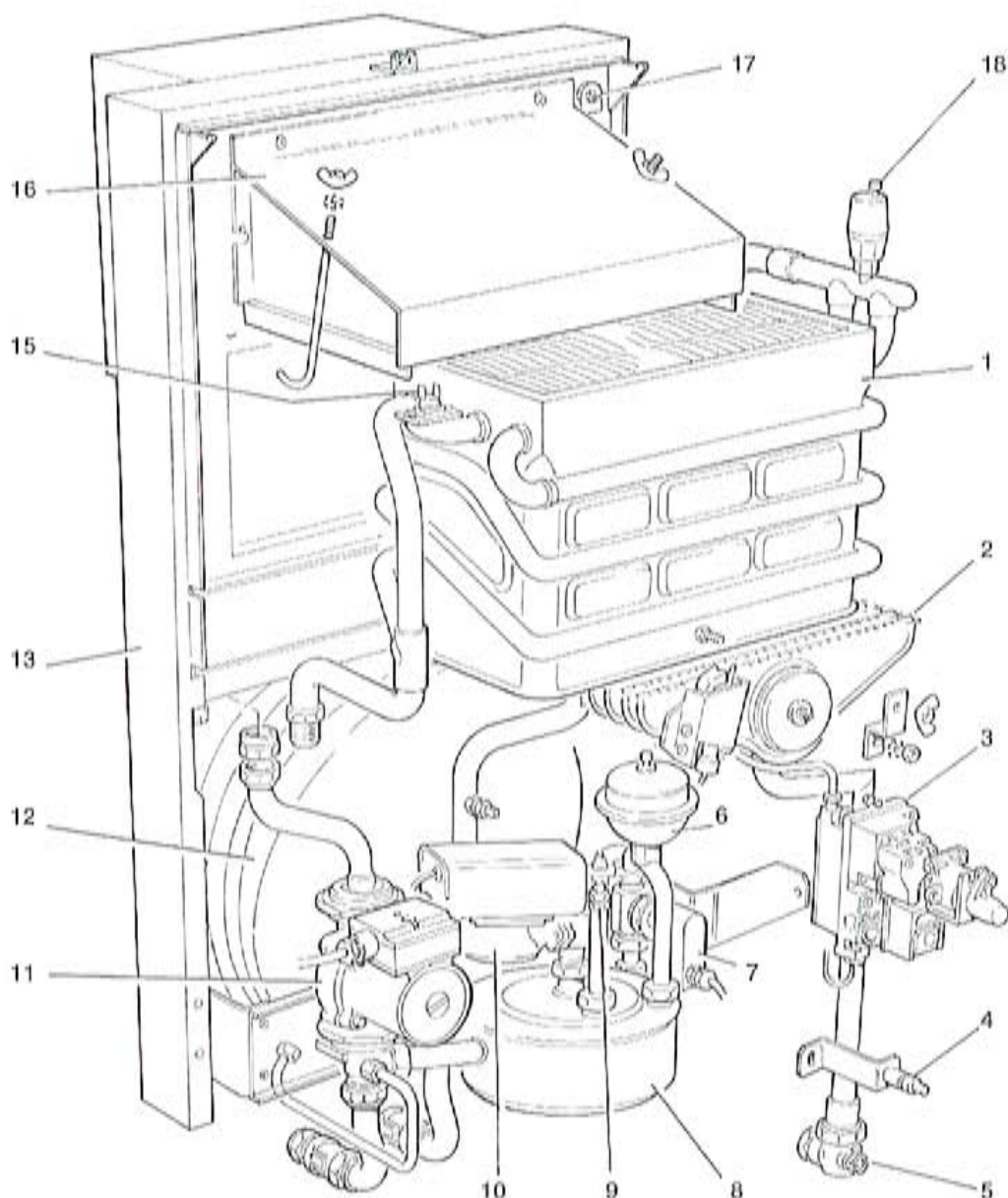
The boiler is supplied for 240 V ~ 50 Hz Single Phase.

Fuse rating is 3 A.

The method of connection to the mains electricity supply MUST facilitate the complete electrical isolation of the boiler, preferably by the use of a fused 'three pin' plug and shuttered socket outlet; both complying with the requirements of BS. 1363. Alternatively, a fused double pole switch, having 3 mm (1/2 in.) contact separation in both poles and serving only the boiler, may be used. The point of connection to the mains should be readily accessible & adjacent to the boiler, except that for bathroom installations the point of connection to the mains MUST be situated outside of the bathroom.

Note: Where a room sealed appliance is installed in a room containing a bath or shower, the appliance, any electrical switch or appliance control utilising mains electricity should be so situated such that it cannot be touched by a person using the bath or shower.

1 BOILER ASSEMBLY- Exploded View

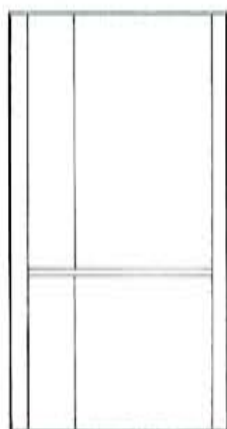


LEGEND

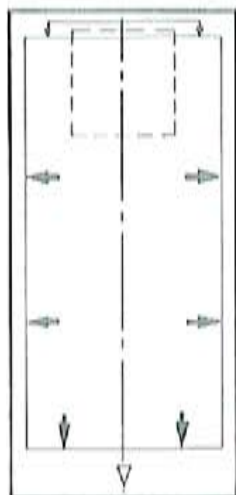
- 1. Heat exchanger
- 2. Main burner assembly
- 3. Gas control valve
- 4. Piezo igniter
- 5. Gas service cock
- 6. D.H.W. expansion vessel
- 7. D.H.W. flow switch
- 8. D.H.W. calorifier
- 9. D.H.W. thermistor sensor
- 10. Divorter valve
- 11. Pump
- 12. C.H. expansion vessel
- 13. Back panel assembly
- 15. 'Dry fire' thermostat
- 16. Flue collector hood
- 17. Overheat thermostat
- 18. Automatic air vent

2 UNPACKING The boiler is supplied fully assembled in one pack 'A' together with one of 3 packs (B, B1 and C) containing the flue terminal appropriate to wall thickness. Unpack and check the contents.

PACK 'A' CONTENTS

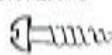


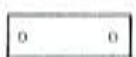





Complete boiler assembly.





Wall mounting template.

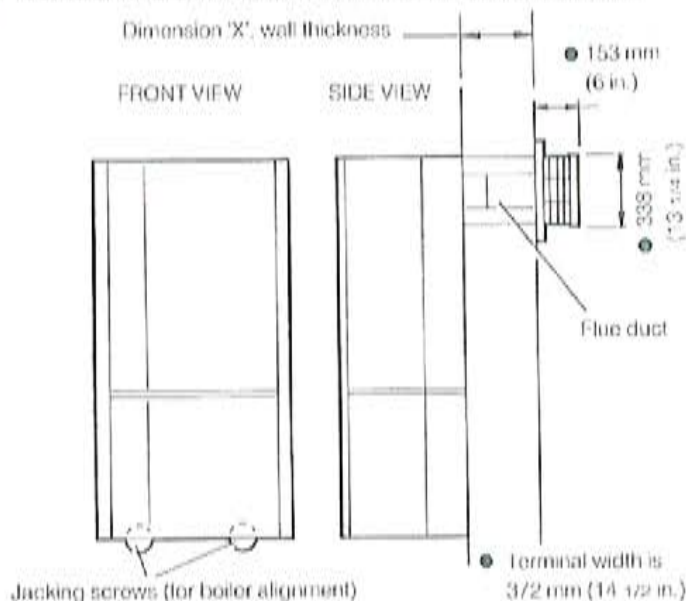
PACK 'A' HARDWARE PACK CONTENTS

-  No. 10 x 2 in. long screws, 6 off.
-  Wall mounting plate.
-  Wall plugs, 6 off.
-  Cover plate.
-  22 mm compression nuts and olives (C.H.), 2 off.
-  15 mm compression nuts and olives (D.H.W.), 2 off.
-  15 mm compression nut and olive (safety valve), 1 off.

PACK 'B', 'B1' & 'C' CONTENTS

-  Balanced flue terminal assembly.
-  Sachet of sealing compound, 4 off.

3 WALL MOUNTING AND WALL THICKNESS



1. **IMPORTANT.** The boiler must be installed in a vertical position.
2. The flue duct should be horizontal, but a slight downward slope away from the boiler is acceptable.
3. The wall must be of suitable load bearing capacity.
4. Use the jacking screws to align the boiler.

The following table shows the flue pack(s) required for the given wall thicknesses.

| WALL THICKNESS Dimension X | Flue Pack Required |
|--------------------------------------|-----------------------|
| 114 to 191 mm (4 1/2 to 7 1/2 in.) | C |
| 229 to 305 mm (9 to 12 in.) | B |
| 318 to 394 mm (12 1/2 to 15 1/2 in.) | B1 |

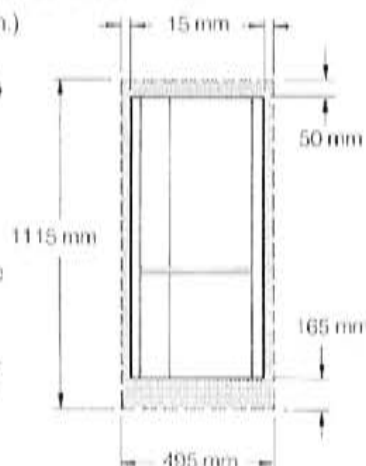
4 BOILER CLEARANCES

The minimum overall dimensions of the space in which the boiler is to operate and in order to facilitate servicing, are as follows:

- Width** - 495 mm (19 1/2 in.)
- Depth** - 300 mm (12 in.)
- Height** - 1115 mm (44 in.)

Additional space will be required for installation depending upon site conditions and also a minimum clearance of 450 mm (18 in.) MUST be available at the front of the boiler for servicing.

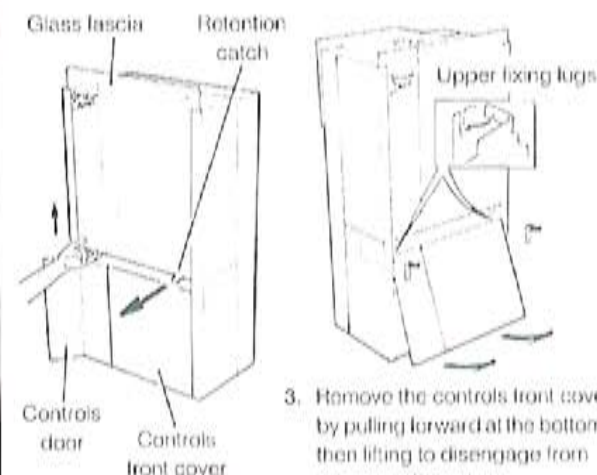
Note: If the boiler is to be installed at low level, over a solid floor, it is recommended that additional clearance is allowed beneath the boiler for ease of connection. The gas and water pipes should be pre-formed before fitting to the boiler.



5 BOILER CASING REMOVAL

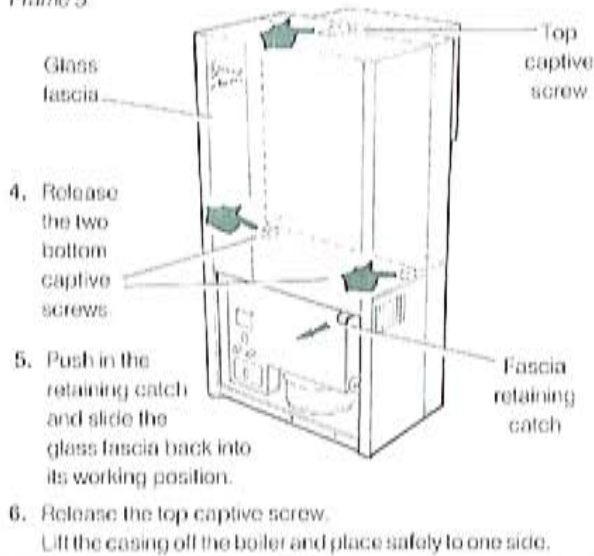
Take care not to damage the glass fascia panel.

1. Open the controls door.
2. Slide the glass fascia upwards & locate it in the retaining catch.

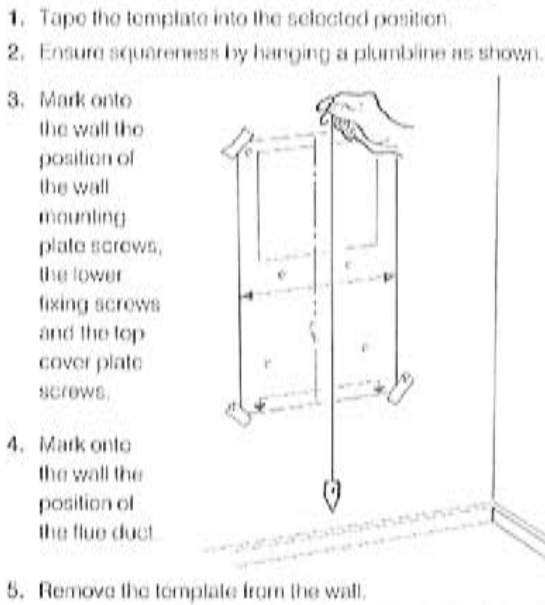


6 BOILER CASING REMOVAL

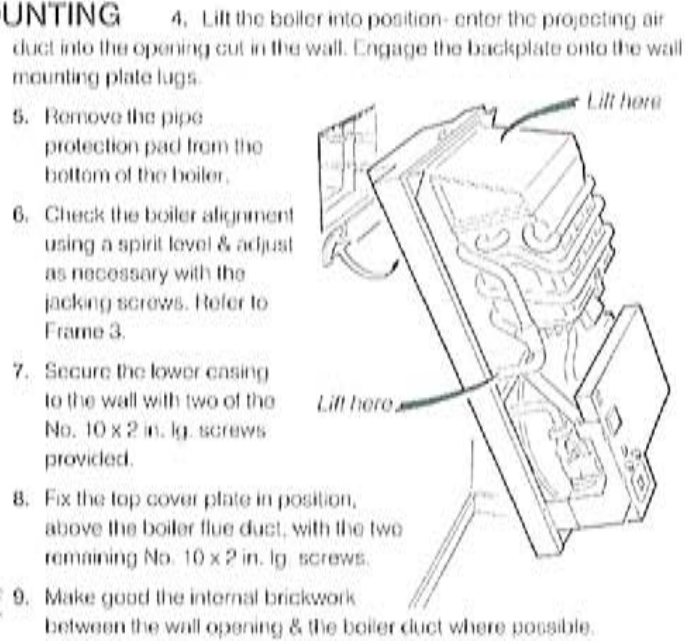
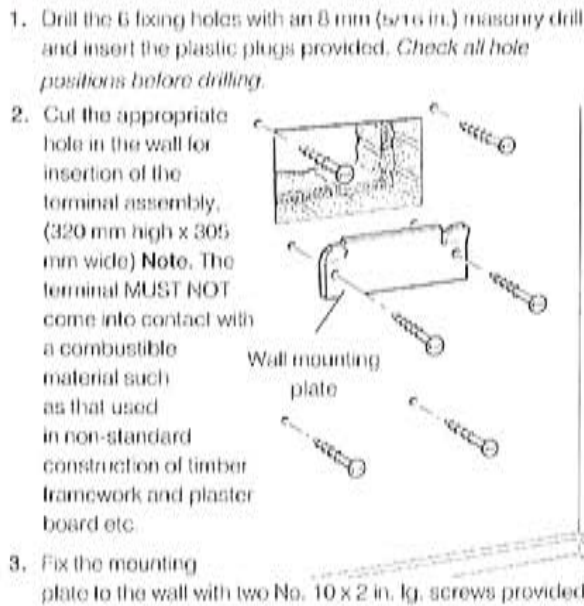
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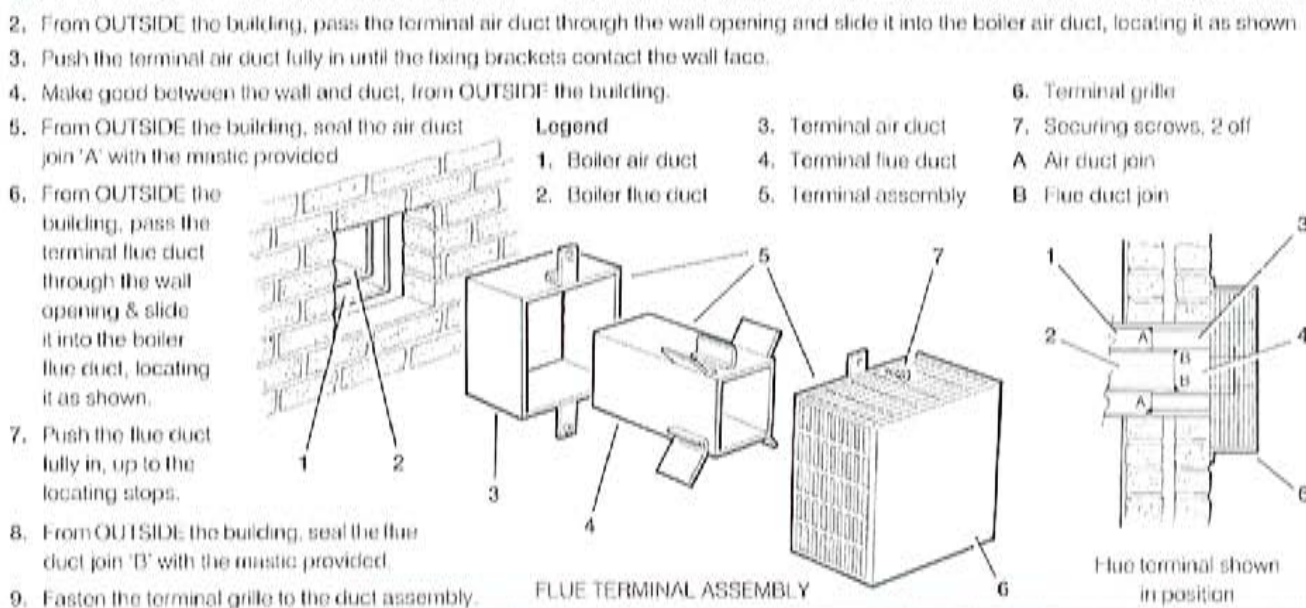
7 WALL MOUNTING TEMPLATE



8 PREPARING THE WALL & BOILER MOUNTING



9 FITTING THE FLUE ASSEMBLY



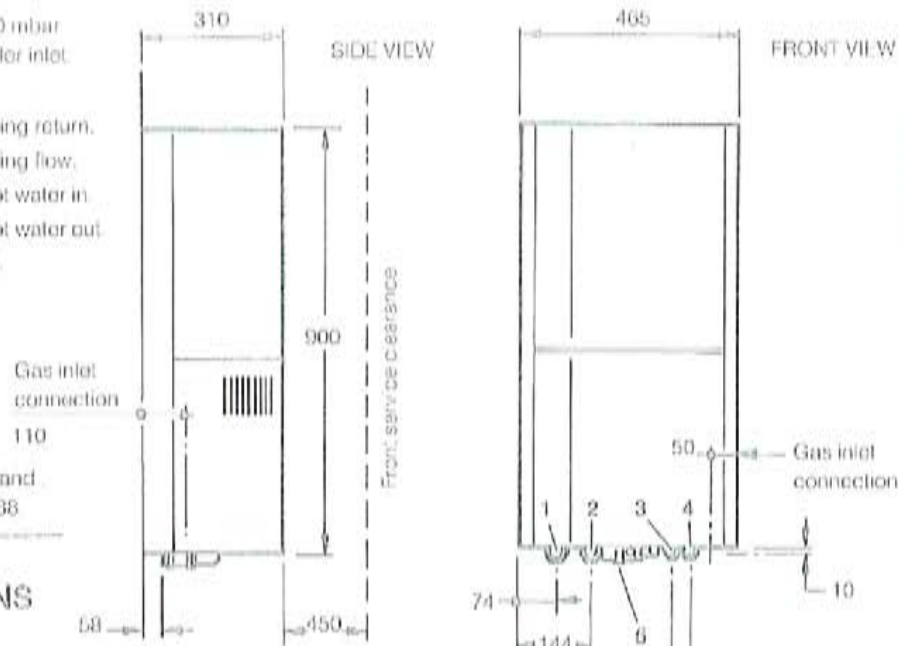
10 GAS CONNECTION.

1. A **MINIMUM** working gas pressure of 20 mbar (8 in. w.g.) **MUST** be available at the boiler inlet.
2. Extend a gas supply pipe **NOT LESS THAN 15 mm O.D.** to the boiler and connect to the gas service cock, situated as shown. Connection must be made from below the boiler. If the pipe run from the meter to the boiler is greater than 3 m (10 ft.) it is recommended that 22 mm O.D. pipe is used.
3. Test the gas installation for soundness and purge in accordance with BS. 6891:1988

Legend

1. Central heating return.
2. Central heating flow.
3. Domestic hot water in.
4. Domestic hot water out.
5. Safety drain.

BOILER DIMENSIONS AND SERVICE CONNECTION REQUIREMENTS



Notes

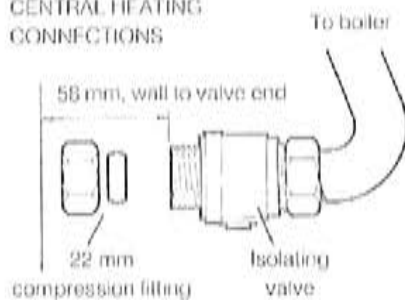
- (a) When the central heating load exceeds 14.4 kW (49 000 Btu/h) then 28mm (1 in.) pipes should be used, both to and from the boiler, as soon as is practicable after the initial 22 mm connection shown.
- (b) For methods of filling refer to Frame 14.

IMPORTANT. Ensure that the C.H. isolating valves are open.

1. Connect the central heating flow and return pipes to the boiler as shown. **Note.** 22 mm compression nuts and olives are supplied in the Hardware Pack.
2. Fill and vent the system. Check for water soundness.
3. **Safety Valve Drain.** Connect a 15 mm O.D. copper pipe to the safety valve drain using the compression nut and olive provided and route it to a position outside of the building such that any discharge of water or steam from the valve cannot create a hazard to the occupants or damage to electrical components and wiring.

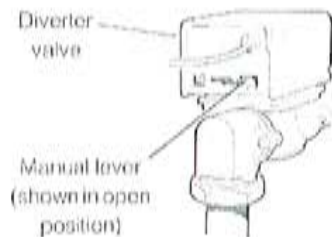
11 WATER CONNECTIONS Central Heating.

CENTRAL HEATING CONNECTIONS

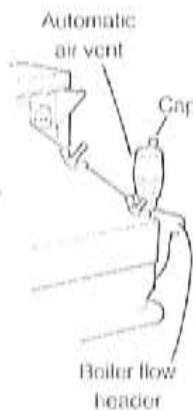


using the compression nut and olive provided and route it to a position outside of the building such that any discharge of water or steam from the valve cannot create a hazard to the occupants or damage to electrical components and wiring.

4. **IMPORTANT.** Remove the control panel securing screw and swing the panel open. Set the diverter valve manual lever to the OPEN position when filling.

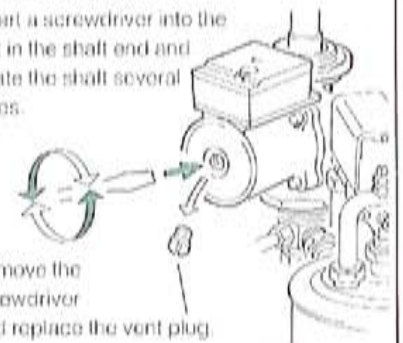


5. The cap on the automatic air vent **MUST** be loose at all times. When filling there may be a slight water leak from the vent therefore electrical connections on the gas control valve should be protected.



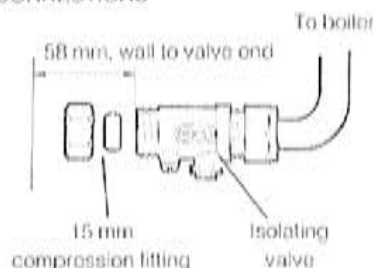
6. Ensure that the pump is free to rotate.

- (a) Remove the vent plug.
- (b) Insert a screwdriver into the slot in the shaft end and rotate the shaft several times.
- (c) Remove the screwdriver and replace the vent plug.



12 WATER CONNECTIONS. Domestic Hot Water Supply.

DOMESTIC HOT WATER CONNECTIONS



Notes.

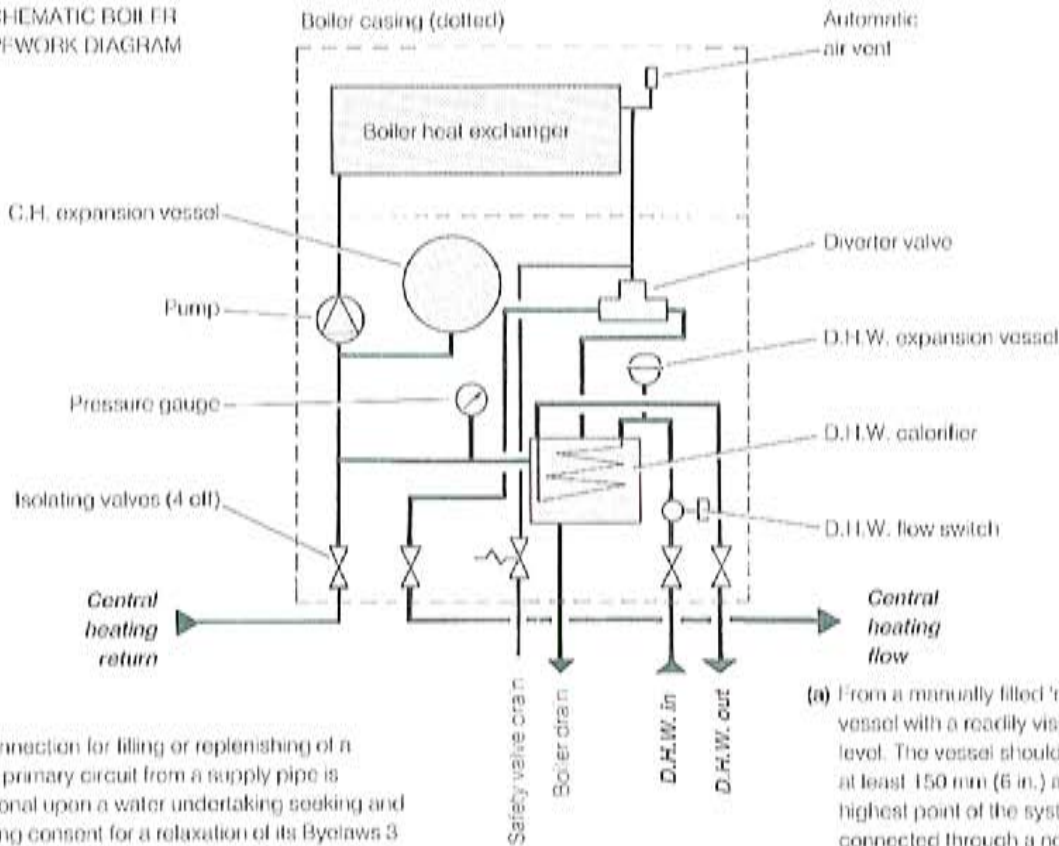
- (a) The DHW supply pipe **MUST** be thoroughly flushed **BEFORE** connecting to the boiler.
- (b) The boiler incorporates a DHW filter therefore no external device is necessary
- (c) It is recommended that a water softening device is fitted on the cold water inlet supply, particularly in hard water areas
- (d) Ensure that the mains supply pressure is sufficient to provide the maximum delivery of DHW (approx. 0.65 mbar). In areas where the mains water pressure is known to be high (greater than 10 bar) it is recommended that a water governor is fitted on the cold inlet supply to the boiler.

1. Connect the hot and cold water supply pipes as shown. **Note.** 15 mm compression nuts and olives are supplied in the Hardware Pack.
2. Open the DHW drawoff taps, clear air locks and check for water soundness.

13 SYSTEM REQUIREMENTS. Central Heating.

Continued in Frame 14

SCHMATIC BOILER PIPEWORK DIAGRAM



Notes.

- (a) Any connection for filling or replenishing of a sealed primary circuit from a supply pipe is conditional upon a water undertaking seeking and obtaining consent for a relaxation of its Byelaws 3 & 8 (1) from the Secretary of State.
- (b) The method of filling, re-filling, topping up or flushing sealed primary hot water circuits from the mains via a temporary hose connection is only allowed if acceptable to the Local Water Authority.
- (c) Antifreeze fluid, corrosion and scale inhibitor fluids suitable for use with boilers having copper heat exchangers may be used in the central heating system.

For further information contact;

Fernox Manufacturing Co. Ltd.,
 Britannie Works,
 Clavering, Essex, or
 Grace Service Chemicals,
 Grace Dearborn Ltd.,
 Widnes, Cheshire.

- 1. The installation must comply with the requirements of BS. 6891: 1988 and BS. 5449:1.
- 2. The installation should be designed to work with flow temperatures of up to 82° C.
- 3. All components of the system must be suitable for a working pressure of 3 bar (45 psi) and temperature of 110° C. Extra care should be taken in making all connections so that the risk of leakage is minimised. The following components are incorporated within the appliance.
 - (a) Circulating pump.
 - (b) Safety valve; with a non-adjustable pre-set lift pressure of 3 bar (45 psi).
 - (c) Pressure gauge, covering a range of 0 to 6 bar.
 - (d) 8 litre expansion vessel; with an initial charge pressure of 0.75 bar.
 - (e) Domestic hot water (D.H.W.) mini expansion vessel.

For further details refer to BS. 5449:1 and British Gas Corporation publication 'Specifications for Domestic Central Heating and Hot Water'.

- 4. 'Make-up' water. Provision must be made for replacing water loss from the system either:

(a) From a manually filled 'make-up' vessel with a readily visible water level. The vessel should be mounted at least 150 mm (6 in.) above the highest point of the system and be connected through a non-return

valve to the system, fitted at least 150 mm (6 in.) below the 'make-up' vessel on the return side of the radiators.

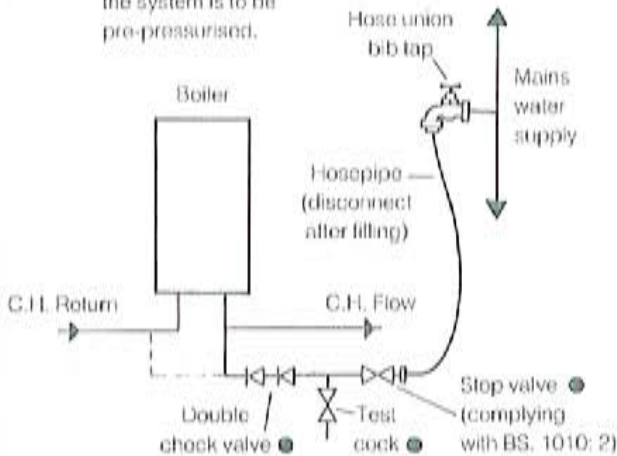
(b) Where access to a 'make-up' vessel would be difficult, by pre-pressurisation of the system. Refer to Frame 14 'Filling'. The maximum cold water capacity of the system should not exceed 127 litres if not pressurized. However, if the system is to be pressurized the efficiency of the expansion vessel will be reduced and a larger vessel (or smaller system volume) may be necessary. If the capacity of the vessel is not considered sufficient for this, or for any other reason, an additional vessel MUST be installed on the return to the boiler. Guidance on vessel sizing is given below and also in BS. 7074:1 and BS. 5449:1.

| | | | |
|---|--------|--------------------------------|-------|
| Safety valve setting | bar | 3.0 | |
| Vessel charge pressure | bar | 0.5 to 0.75 | |
| System pre-charge pressure | bar | None | 1.0 |
| System volume | litres | Expansion vessel volume litres | |
| 25 | | 1.6 | 1.8 |
| 50 | | 3.1 | 3.7 |
| 75 | | 4.7 | 5.5 |
| 100 | | 6.3 | 7.4 |
| 125 | | 7.8 | 9.2 |
| 150 | | 9.4 | 11.0 |
| 175 | | 10.9 | 12.9 |
| 190 | | 11.9 | 14.0 |
| 200 | | 12.5 | 14.7 |
| 250 | | 15.6 | 18.4 |
| 300 | | 18.8 | 22.1 |
| For other system volumes - multiply by the factor across; | | 0.063 | 0.074 |

14 SYSTEM REQUIREMENTS. Central Heating & Domestic Hot Water.

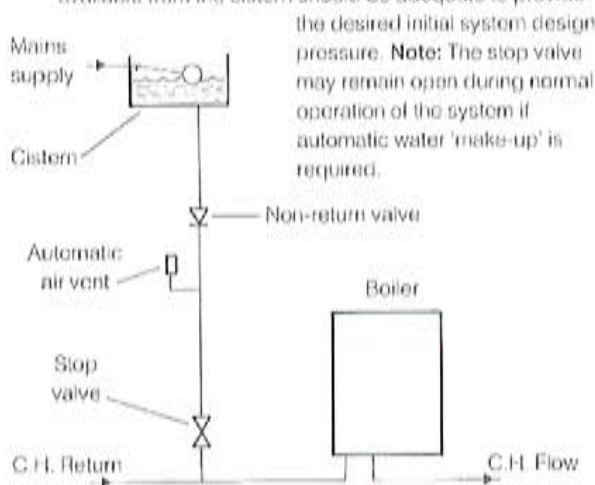
Continued from Frame 13.

5. **Mains Connection.** There must be no direct connection to the mains water supply or to any water storage tank supplying domestic water, even through a non-return valve, without the approval of the Local Water Authority.
6. **Filling.** The system may be filled by one of the following methods:
 - (a) Through a temporary hose connection from a 'draw off' tap, supplied from a service pipe under mains pressure. Where the mains pressure is excessive, a pressure reducing valve shall be used to facilitate filling.
 - (i) Thoroughly flush out the whole system with cold water.
 - (ii) Fill and vent the system until the pressure gauge registers 1.5 bar (21.5 psi.), and examine for leaks.
 - (iii) Check the operation of the safety valve by raising the water pressure until the valve lifts. This should occur within 0.3 bar (4.3 psi.) of the pre-set lift pressure.
 - (iv) Release water from the system until the minimum system design pressure is reached; 1.0 bar (14.5 psi.) if the system is to be pre-pressurised.



● These fittings to form a permanent part of the system

- (b) Through a cistern, used for no other purposes, via a ball valve permanently connected directly to a service pipe and/or a cold water distributing pipe. The static head available from the cistern should be adequate to provide



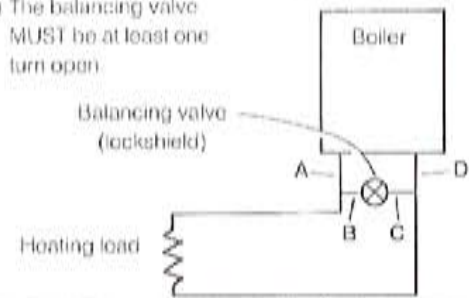
the desired initial system design pressure. **Note:** The stop valve may remain open during normal operation of the system if automatic water 'make-up' is required.

7. **Bypass.** The flow through the boiler MUST NOT fall below the values shown. A bypass MUST be fitted consisting of 22 mm (3/4 in.) pipe, positioned as far from boiler as possible and incorporating a balancing valve which CANNOT be adjusted by the Householder. For adjustment refer to Frame 25.

IMPORTANT. If ALL radiators are fitted with Thermostatic radiator valves then:

- (a) The total length of pipework (22 mm) A, B, C & D MUST NOT be less than 3 m. (10 ft.)

- (b) The balancing valve MUST be at least one turn open.

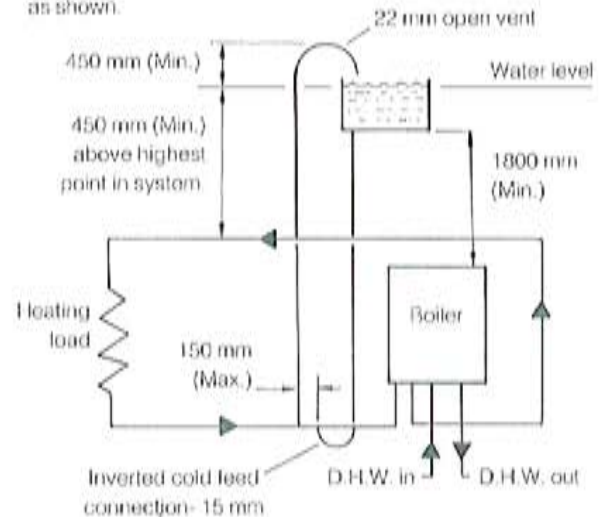


| | | |
|--------------------------|-----------------|---------------|
| Boiler output | kW (Btu/h) | 22.6 (77 000) |
| Water flow rate | l/min. (gal/h) | 25.4 (335) |
| Temperature differential | °C (°F) | 13 (23) |
| System head | m bar (in w.g.) | 209 (84) |

8. **Thermostatic Radiator Valves.** Stelrad Group Ltd., support the recommendations made by heating manufacturers of domestic heating controls that heating systems utilising full thermostatic radiator valve control of temperature in individual rooms should also be fitted with a room thermostat controlling the temperature in a space served by radiators not fitted with such a valve. Such an arrangement will provide for a more efficient control of the environment and will also avoid the continuous running of the circulation pump during programmed heating 'ON' periods, saving electrical energy. It is therefore strongly recommended that, when thermostatic radiator valves are used, the space heating temperature control over a living/ dining area or a hallway having a heating requirement of at least 10 % of the boiler output is achieved using a room thermostat, whilst other rooms are individually controlled by thermostatic radiator valves. However, if thermostatic radiator valves are fitted to all radiators then the bypass circuit MUST comply with the above requirements.

9. **Open Vented Systems.** The Ideal Sprint Rapide is designed for use with sealed systems, but can also be connected to open if systems if required.

Note. To comply with the relevant requirements of BS. 5449:1 and BS. 6798 the positions of the cold feed and vent must be as shown.



10. **Domestic Hot Water Requirements.** The Ideal Sprint Rapide is suitable for connection to most types of washing machine and dish washing appliances.

When connecting to suitable showers, i.e. those designed for modulating domestic hot water, ensure that:

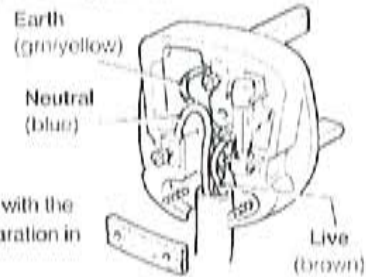
- The cold inlet to the boiler is fitted with an approved anti-vacuum or syphon non-return valve.
- Hot & cold water supplies to the shower are of equal pressure.

15 ELECTRICAL CONNECTIONS

WARNING. This appliance **MUST** be efficiently earthed.

A mains supply of 240 V – 50 Hz is required. All external controls & wiring **MUST** be suitable for mains voltage. Wiring should be in 3-core PVC insulating cable, **NOT LESS** than 0.75 mm² (24 x 0.2mm) and 70° C 'T' rating, to BS. 6500 Table 16.

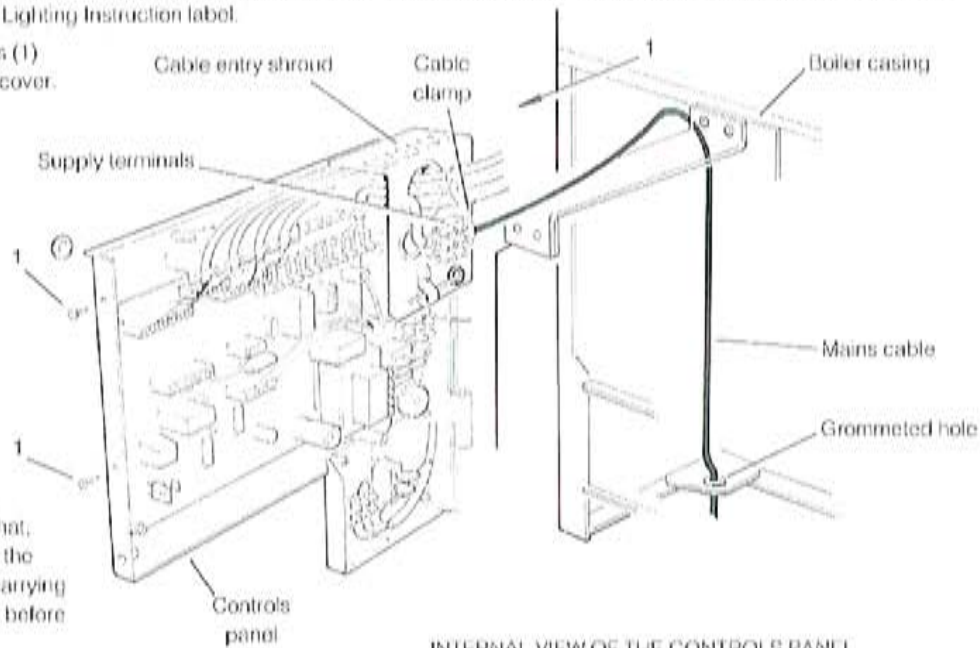
Wiring external to the boiler **MUST** be in accordance with the current I.E.E. Wiring Regulations and any Local Regulations. The supply connection may be made via a removable plug to a shuttered socket/ outlet, preferably adjacent to the boiler, and should such a plug be used for connection to the mains, it **MUST** be of the 3-pin type -wired as shown, fused at 3 A and comply with the requirements of BS. 1363. Alternatively, a fused double-pole switch having a 3 mm contact separation in both poles, serving only the boiler & system controls may be used.



16 INTERNAL WIRING

Flow, Pictorial and Schematic wiring diagrams are shown in Frames 17, 18 and 19. A wiring diagram is also included on the Lighting Instruction label.

1. Remove the securing screws (1) and lift off the controls inner cover.
2. Route the mains lead as shown, passing it through the grommet at the bottom L.H. side.
3. Wire into the supply terminals marked 'L' and 'N' and 'E'. Secure with the cable clamp.



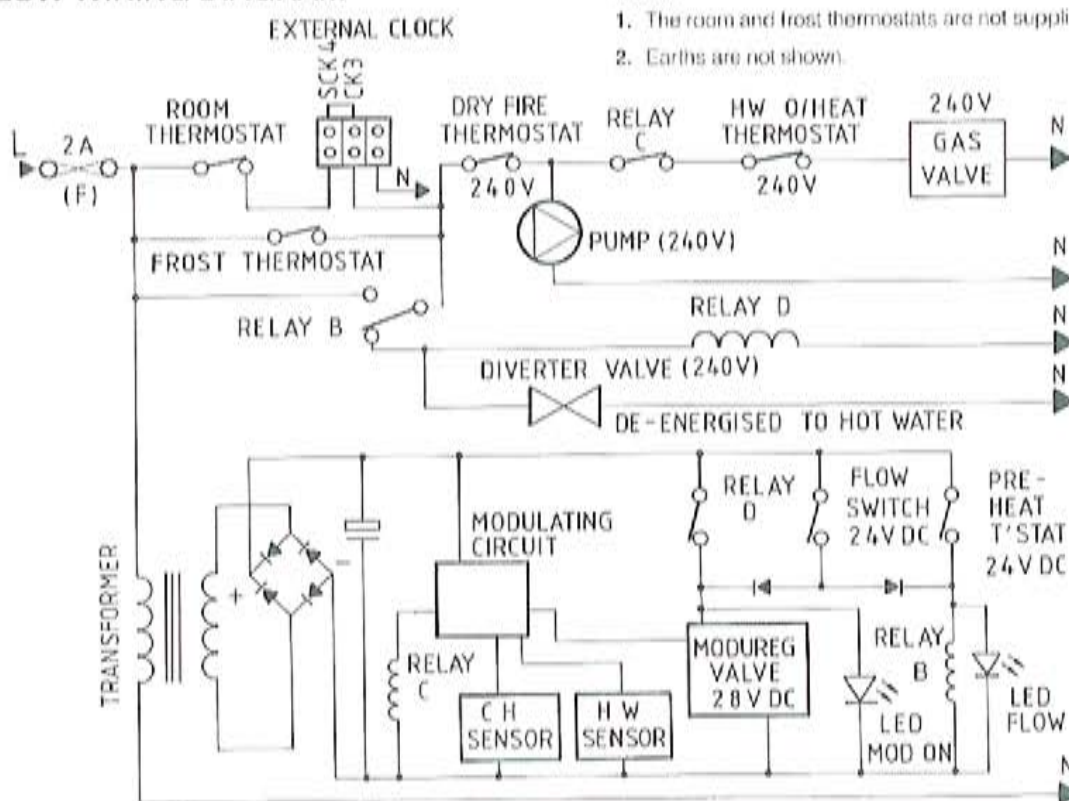
INTERNAL VIEW OF THE CONTROLS PANEL (with the inner cover shown removed)

Notes.

(a) The mains lead connection **MUST** be made in such a way that, should the lead slip from the anchorage, the current carrying conductors become taut before the earthing conductor.

(b) The 'T' rating of the mains lead should be 70° C.

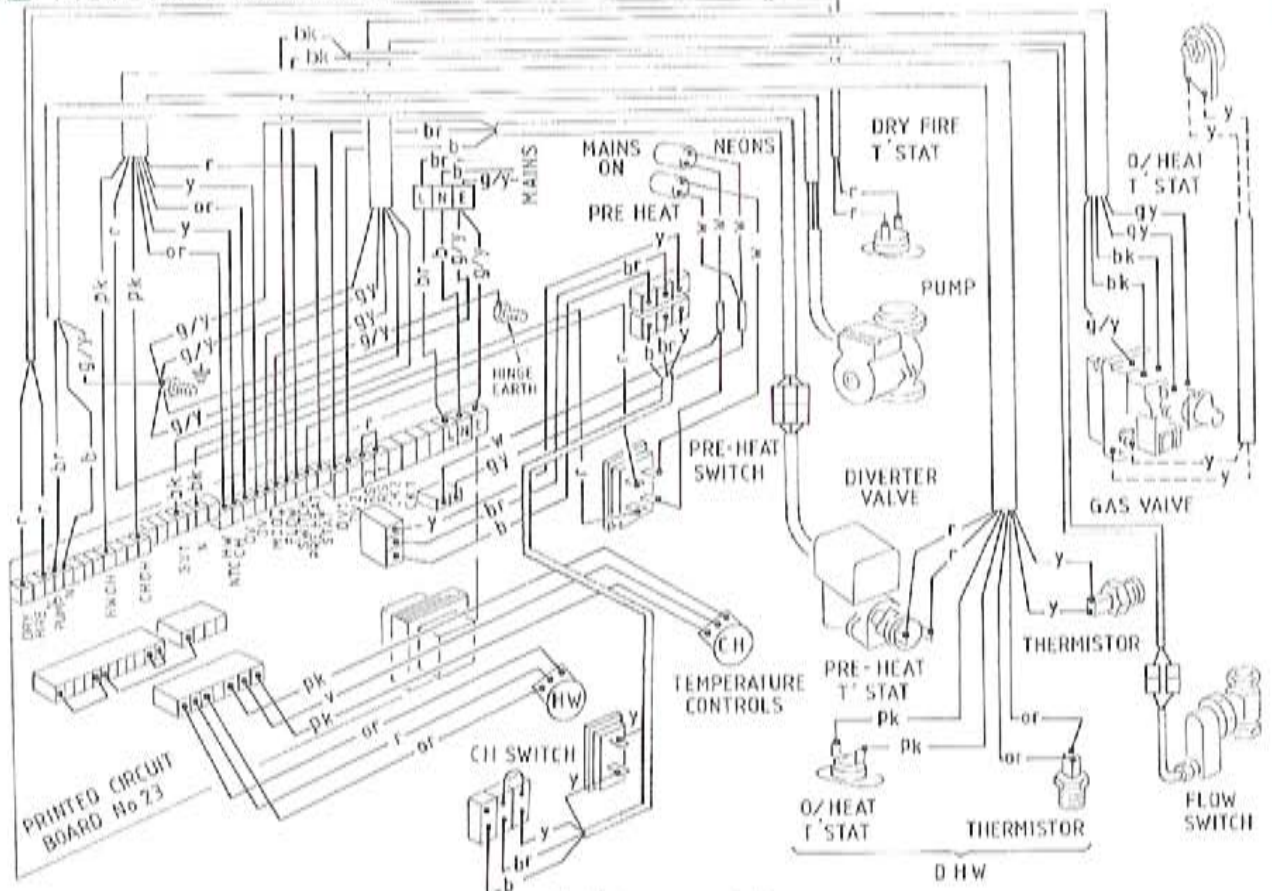
17 FLOW WIRING DIAGRAM



Notes.

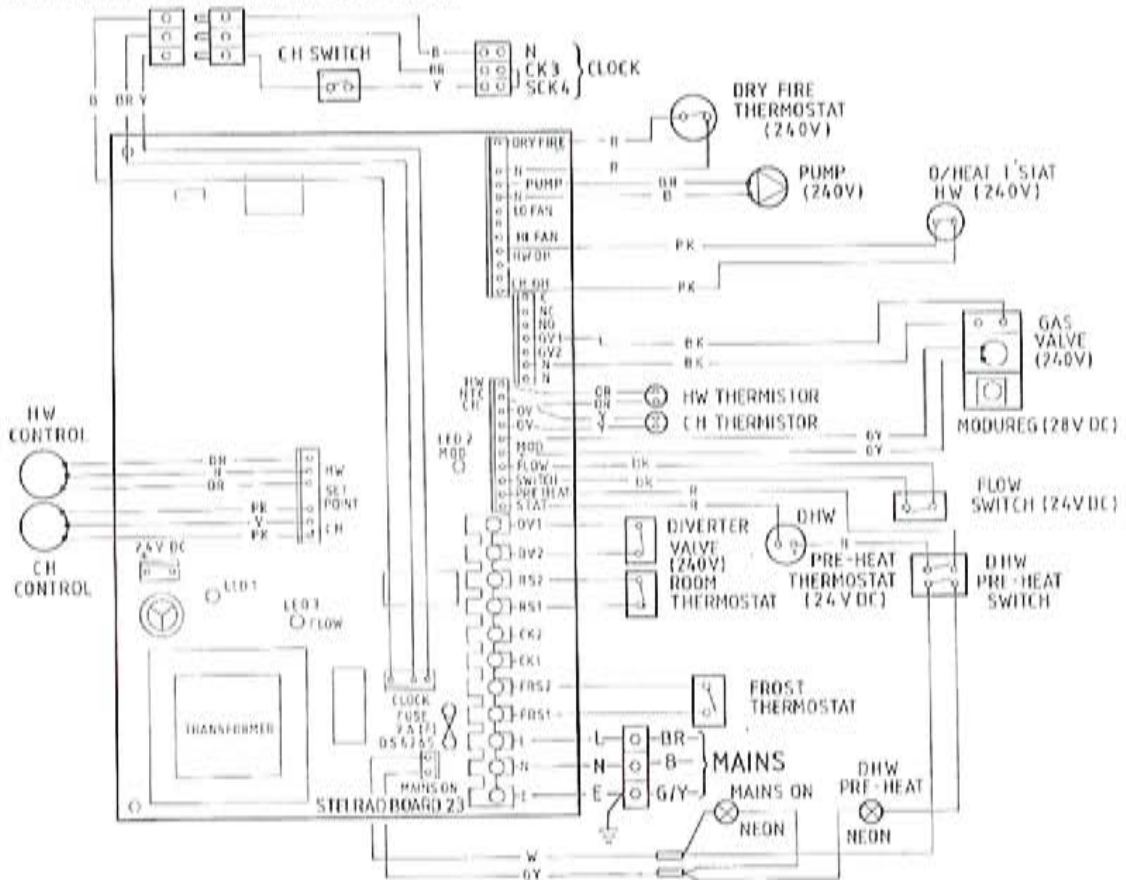
1. The room and frost thermostats are not supplied.
2. Earths are not shown.

18 PICTORIAL WIRING DIAGRAM



LEGEND br brown r red or orange bk black v violet
 b blue w white pk pink y yellow gy grey g/y green/yellow

19 SCHEMATIC WIRING DIAGRAM



LEGEND br brown r red or orange bk black v violet
 b blue w white pk pink y yellow gy grey g/y green/yellow

20 EXTERNAL CONTROLS

External wiring **MUST** be in accordance with the current I.E.E. Wiring Regulations.

Difficulty in wiring should not arise, providing the following directions are observed:

1. **Room Thermostat.** Remove the link between terminals RS1 and RS2, wire in the room thermostat. Refer to the thermostat manufacturers instructions.
2. Controls that over ride an ON/OFF control, e.g. a frost thermostat **MUST** be wired into the mains in parallel with the controls to be over-riden. Wire the frost thermostat into terminals FRS1 and FRS2.
3. **Time Switch.** *External.* Remove the link between terminals CK3 and SCK4, wire in the time switch. Ensure that the switched live from the timer is wired into SCK4.

Optional Programmer Kit. Refer to the 'Ideal Sprint Rapide Programmer Kit Installation Instructions'.

COMMISSIONING AND TESTING

21 COMMISSIONING AND TESTING

(a) Electrical Installation

1. Checks to ensure the electrical safety should be carried out by a competent person.
2. **ALWAYS** carry out the preliminary electrical system checks, i.e. earth continuity, polarity, resistance to earth and short circuit using a suitable test meter.

(b) Gas Installation

1. The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations of BS. 6891:1988.

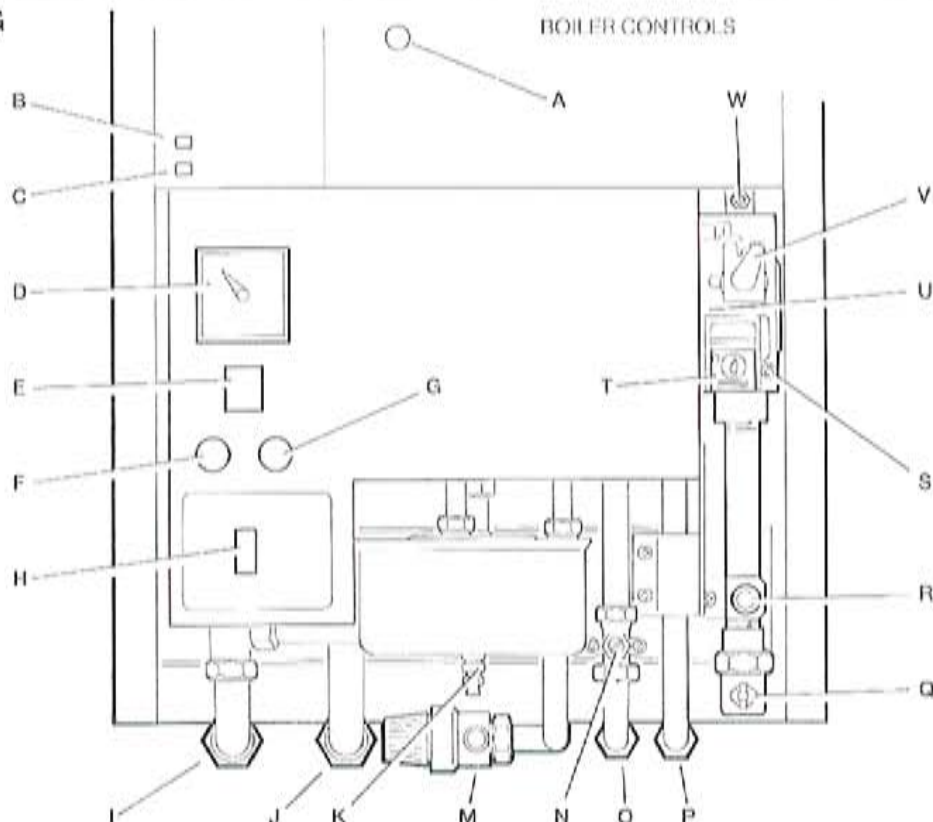
WARNING. Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and **DO NOT SMOKE.**

2. Purging air from the gas installation may be expedited by loosening the union on the gas service cock and purging until gas is smelled.
3. Retighten the union and check for gas soundness.

22 INITIAL LIGHTING

LEGEND

- A Sightglass
- B 'Mains On' neon
- D 'D.H.W. Preheat' neon
- E 'D.H.W. Preheat' switch
- F Heating temperature control
- G D.H.W. temperature control
- H 'Central heating' switch
- I C.H. return isolating valve
- J C.H. flow isolating valve
- K Boiler drain point
- L D.H.W. calorifier
- M Safety valve drain pipe connection
- N D.H.W. flow adjuster
- O D.H.W. inlet isolating valve
- P D.H.W. outlet isolating valve
- Q Gas service cock
- R Piezo ignition button
- S Inlet pressure test nipple
- T Gas valve control button
- U Pilot pressure adjuster
- V Modureg solenoid
- W Burner pressure test nipple



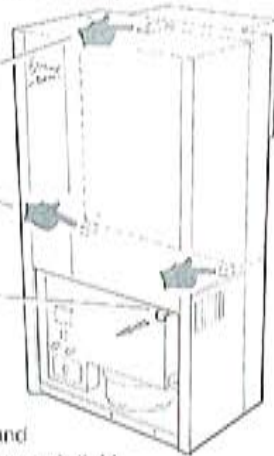
LIGHTING THE BOILER

1. Check that the gas service cock (Q) is OPEN and that the electricity supply is OFF.
2. Slacken the screw in the burner pressure test nipple (W) and connect a gas pressure gauge via a flexible tube.
3. Push the gas control button (T) UPWARDS until resistance is felt and then release it.
4. Push in and retain fully depressed the gas control button (T), press and release the piezo ignition button (R) repeatedly until the pilot lights.
5. Hold the gas control button depressed for 15 seconds after the pilot burner has ignited.
6. If the pilot fails to remain alight at this stage, repeat the procedure detailed above but wait longer than 15 seconds before releasing the gas control button.
7. Check the appearance of the pilot flame to ensure that it envelopes the tip of the thermocouple, and is approximately 25 mm (1 in.) long. The pilot flame is factory set and no adjustment should be necessary. **Note.** The recommended range of thermocouple outputs is 8 to 15 mV closed circuit.
8. Test the pilot pipe connections for gas soundness using leak detection fluid.
9. Fit the boiler casing. Refer to Frame 23.

23 INITIAL LIGHTING. *Continued from Frame 22.*

FITTING THE CASING. **WARNING.** The casing **MUST** be properly fitted for the boiler to operate correctly.

1. Lift the boiler casing up to the boiler assembly and secure the top captive screw.
2. Slide the glass fascia upwards and locate it in the retaining catch.
3. Secure the bottom captive screws.

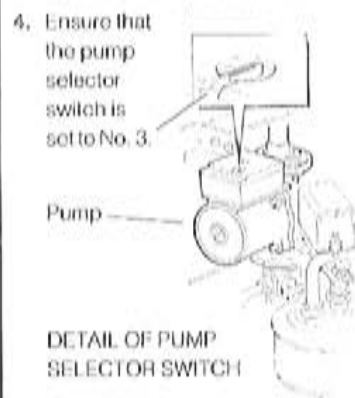


The casing **MUST** seat correctly and compress the sealing strip to make an air-tight joint. If side clearance is limited this may be checked by ensuring that the top and bottom edges of the casing are correctly located.

CENTRAL HEATING

1. Check that the 'Heating' switch (H) and the 'Domestic Hot Water Pre-heat' selector switch (E) are OFF.
2. Check that all external controls are calling for heat & switch ON the electricity supply. The 'Mains On' indicator neon will glow.
3. Set the 'Heating' switch to ON. Check that the pump starts and that the main burner cross-ignites smoothly from the pilot flame.

Note. The burner pressure should increase slowly to maximum setting.

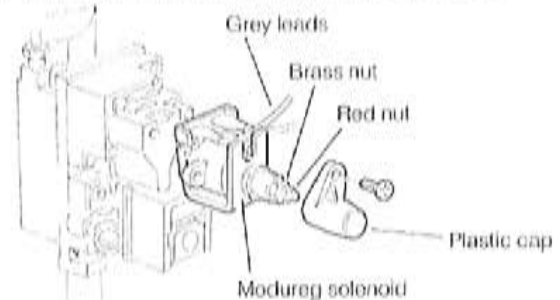


The control is factory set and should require no adjustment. However if adjustment is found to be necessary proceed as follows.

7. Refit the controls inner cover and cable entry shroud, swing the control panel back to its working position and secure.

4. Ensure that the pump selector switch is set to No. 3.
5. Test for gas soundness around the boiler gas components using leak detection fluid.
6. The boiler central heating control is fully modulating, operating between burner pressures of 15.2 mbar (6.1 in. wg.) ± 0.5 mbar (0.2 in. wg.) MAX, and 2.7 mbar (1.1 in. wg.) ± 0.5 mbar (0.2 in. wg.) MIN. The control is

8. Operate the boiler for 10 minutes to stabilise the burner temp.
9. Remove the plastic cap from the Modureg solenoid.



DETAIL OF GAS CONTROL VALVE

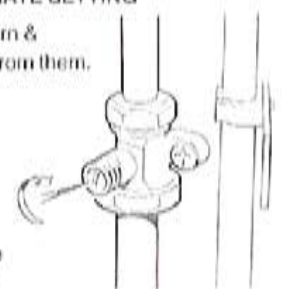
10. Disconnect one grey lead from the Modureg solenoid. The burner pressure should reduce to the minimum setting of 2.7 mbar (1.1 in. wg.) ± 0.5 mbar (0.2 in. wg.). To adjust, turn the brass nut **CLOCKWISE** to **INCREASE** the pressure.
11. Reconnect the lead to the Modureg solenoid. The burner pressure should increase to the maximum setting of 15.2 mbar (6.1 in. wg.) ± 0.5 mbar (0.2 in. wg.). To adjust, turn the red plastic nut **CLOCKWISE** to **INCREASE** the pressure - using a 7 mm spanner. **Note.** **ALWAYS** adjust the minimum pressure **BEFORE** the maximum.
12. Replace the plastic cap.

DOMESTIC HOT WATER (D.H.W.)

1. With the burner firing as above, fully open a D.H.W. tap. The pump and burner should continue to run and the diverter valve should de-energise to circulate water from the boiler to the D.H.W. calorifier. The D.H.W. control is also fully modulating operating between the same maximum and minimum pressure as the C.H. control, therefore no further adjustment should be necessary.

DOMESTIC HOT WATER FLOWRATE SETTING

1. Fully open all D.H.W. taps in turn & ensure that water flows freely from them.
2. Close all taps except the furthest one from the boiler and check that the boiler is firing at maximum rate.
3. Turn the D.H.W. flow adjuster (N) **CLOCKWISE** to reduce the D.H.W. flowrate until a D.H.W. temperature of approximately 35°C rise is obtained at the tap. This corresponds to a flow rate of about 9.3 l/min (2.0 gpm).
4. Turn off the D.H.W. tap, and switch OFF the electricity supply.



24 GENERAL CHECKS

Make the following checks for correct operation.

DOMESTIC HOT WATER (D.H.W.) MODE.

1. Set the 'Heating' switch (H) to OFF.
2. Switch ON the electricity supply.
3. Set the 'Domestic Hot Water Preheat' switch (E) to ON. The pump should start, circulating water through the D.H.W. calorifier, and the burner should fire at minimum rate for about one minute - preheating the D.H.W. calorifier. **Note.** If no D.H.W. is drawn off, the boiler will fire periodically for a short time to maintain the calorifier temperature.
4. If the preheat facility is not required, set the 'Domestic Hot Water Preheat' switch (E) to OFF.
5. Fully open a D.H.W. tap; check that the pump starts and the main burner lights at maximum rate.
6. Reduce the D.H.W. draw-off rate to the minimum required to

keep the boiler firing and check that the burner pressure decreases in response to D.H.W. temperature rise.

7. Close the D.H.W. tap and check that the main burner extinguishes and the pump stops.

CENTRAL HEATING (C.H.) AND DOMESTIC HOT WATER (D.H.W.) MODE.

1. Set the 'Heating' switch (H) to ON. Check that the main burner fires at the maximum rate.
2. Fully open a D.H.W. tap and check that hot water is delivered.
3. Close the D.H.W. tap and turn off the 'Heating' switch. Check that the main burner extinguishes and the pump stops.
4. Check the correct operation of the programmer, if fitted, and all other system controls. Operate each control separately and check that the main burner responds.
5. Remove the pressure gauge and tube. Relighten the sealing screw in the pressure test nipple, ensuring that a gas tight seal is made.

25 GENERAL CHECKS. *Continued from Frame 24.*

FLAME FAILURE DEVICE

1. Turn the electricity supply OFF.
2. Extinguish the pilot flame by closing the gas service cock (Q) and note the time taken for the flame failure device to shut down- identified by a click within the gas control valve. This **MUST NOT** be longer than 60 seconds.
3. Open the gas service cock and re-light the pilot.
4. Turn the electricity supply ON and the burner should light.
5. Slide the gas control button (T) UPWARDS until resistance is felt and then release it. The main burner and pilot flames should shut down immediately.

Notes.

- (a) A latch in the gas control valve provides a safety delay period of approximately 30 seconds before the boiler can be re-lit.
- (b) If the pilot is extinguished for any reason **WAIT FOR 3 MINUTES** before attempting to re-light the boiler.

WATER CIRCULATION SYSTEM.

1. With the system cold check that the initial pressure is correct to the system design requirements. For pre-pressurised systems this should be 1.0 bar (14.5 psi).
2. Set the RED fill-pressure indicator on the pressure gauge (D) to the initial system pressure. Refer to Frame 14- 'Filling'.
3. With the system hot examine all water connections for soundness. The system pressure will increase with temperature rise but should not exceed 2.5 bar (36.6 psi).
4. With the system still hot turn off the gas, water and electricity supplies to the boiler and drain down in order to complete the flushing process.
5. Re-fill and vent the system as described in 'Guide to System Requirements', clear all air locks and again check for water soundness.
6. Re-set the system initial pressure to the design requirement.
7. Balance the system and set the by pass

BY PASS ADJUSTMENT. Refer also to Frame 14.

Note. The flow through the boiler **MUST NOT** fall below the values shown in the Table in Frame 14.

With the boiler firing at full output and with one small radiator open, open the bypass until a temperature differential of 13°C is achieved across the boiler flow and return pipes.

FINALLY.

1. Refit the controls front cover in reverse order of removal.
2. Set the controls to the User's requirements.

Notes.

- (a) The design water output temperatures are as follows:
 Central Heating- 82°C Maximum.
 Domestic Hot Water- 65°C Maximum (at 3 l/min. draw-off).
 However, these can be set lower to 60°C (C.H.) and 45°C (D.H.W.) via the Central Heating and Domestic Hot Water temperature control knobs (F) and (G). Refer to Frame 22.
- (b) If an optional Programmer Kit is fitted, refer to the Programmer Kit Installation and User's Instructions.
3. Check that the casing is sealed correctly and compressing the sealing strip all around the casing.

WARNING: *The boiler MUST NOT be operated with the casing removed.*

IMPORTANT. It is absolutely **ESSENTIAL** to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation/ air conditioning.

If this should occur, the appliance MUST be turned OFF IMMEDIATELY and the Local Region of British Gas plc. called to investigate.

26 HANDING OVER

After completing the installation and commissioning of the system, the Installer should hand over to the Householder by the following actions.

1. Hand the User's Instruction to the Householder and explain his/her responsibilities under the Gas Safety (Installation and Use) Regulations 1984.
2. Draw attention to the Lighting Instruction label affixed to the inside of the control compartment front cover.
3. Explain and demonstrate the lighting and shutting down procedures.
4. The operation of the boiler and the use and adjustment of ALL system controls should be fully explained to the Householder, to ensure the greatest possible fuel economy, consistent with the household requirements of both heating and hot water consumption.
 Advise the User of the precautions necessary to prevent damage to the system, and to the building, in the event of the system remaining in-operative during frosty conditions.
5. Explain the function and the use of the boiler heating and domestic hot water controls.

6. Explain the function of the boiler over-heat thermostats. Emphasise that if cut-out occurs, the boiler should be turned off and the local Heating Installer consulted.
7. Explain and demonstrate the function of time and temperature controls, radiator valves, etc. for the economic use of the system.
8. If an optional Programmer Kit is fitted, then draw attention to the Programmer Kit User's Instructions and hand them to the Householder.
9. **LOSS OF SYSTEM WATER PRESSURE.** Explain that the dial on the control panel indicates the central heating system pressure and that if the normal COLD pressure of the system, indicated by the red arrow on the dial, is seen to decrease over a period of time then a water leak is indicated. In this event the local Heating Installer should be consulted.
DO NOT FIRE THE BOILER IF THE PRESSURE HAS REDUCED TO ZERO FROM THE ORIGINAL SETTING.
10. Stress the importance of regular servicing by the Local Gas Region or by a qualified Heating Engineer and that a comprehensive service should be carried out **AT LEAST ONCE A YEAR.**

SERVICING/SPARE AND REPLACEMENT PARTS.

Caradon Heating Ltd., do not accept any liability resulting from the use of unauthorised parts, or the repair and servicing of appliances not carried out in accordance with the Company's recommendations and specifications. A comprehensive service should be carried out at least once a year. The User is advised to make a contract with the local Gas Region or a qualified Heating Engineer.

1 SCHEDULE

The following should be carried out at periods not exceeding one year.

- (a) Light the boiler and carry out a pre-service check, noting any operational faults.
- (b) Clean the main burner.
- (c) Clean the heat exchanger.
- (d) Clean the main injector.
- (e) Check the condition of the thermocouple.
- (f) Check that the flue terminal is unobstructed and that the flue system, including the inner cover, is sealed correctly.
- (g) If the appliance has been installed in a compartment, check that the ventilation areas are clear.

The servicing procedures are covered more fully in Frames 2 to 8 and must be carried out in sequence.

WARNING. Always turn OFF the gas supply at the gas service cock and switch OFF and DISCONNECT the electricity supply to the appliance BEFORE SERVICING.

IMPORTANT. After completing the servicing or exchange of components, always test for gas soundness and carry out any functional checks as appropriate.

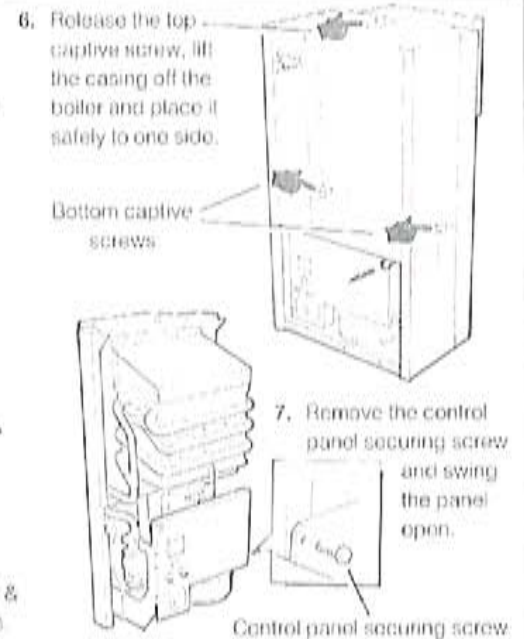
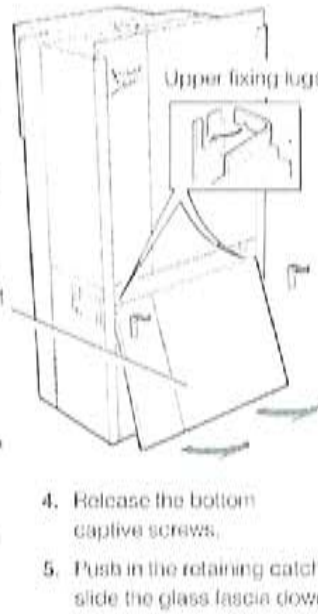
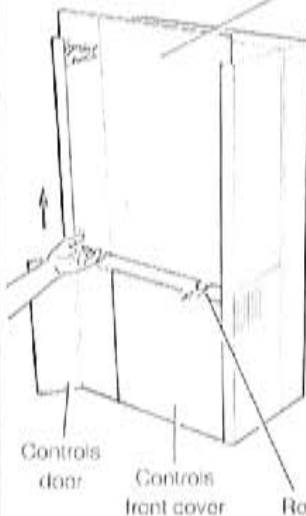
Note. In order to carry out either the servicing or replacement of components then the boiler casing must be removed. Refer to Frame 2.

IMPORTANT. When work is complete the casing MUST be correctly re-litted, ensuring that a good seal is made.

2 BOILER CASING REMOVAL

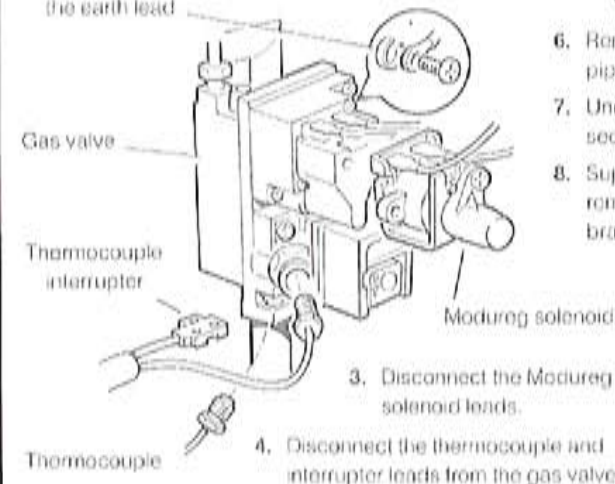
Take care not to damage the glass fascia panel

1. Open the controls door.
2. Slide the glass fascia upwards & locate it in the retaining catch.
3. Remove the controls front cover by pulling forward at the bottom, then lifting to disengage from the upper fixing lugs.

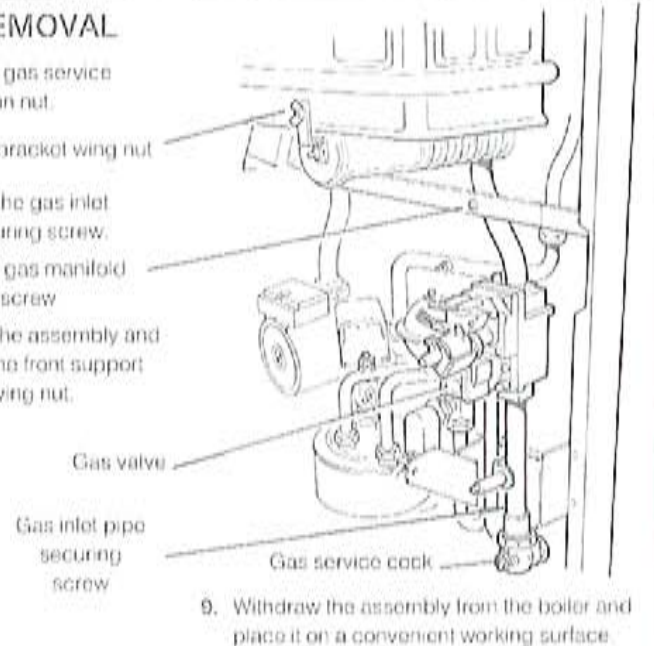


3 BURNER AND CONTROLS ASSEMBLY REMOVAL

1. Release the gas valve cover securing screw and slide the cover off.
2. Disconnect the operator leads and the earth lead.
3. Disconnect the Modureg solenoid leads.
4. Disconnect the thermocouple and interrupter leads from the gas valve.

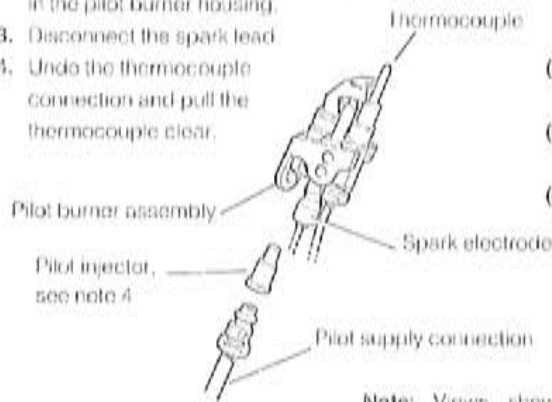


5. Undo the gas service cock union nut.
6. Remove the gas inlet pipe securing screw.
7. Undo the gas manifold securing screw
8. Support the assembly and remove the front support bracket wing nut.



14 PILOT BURNER REPLACEMENT

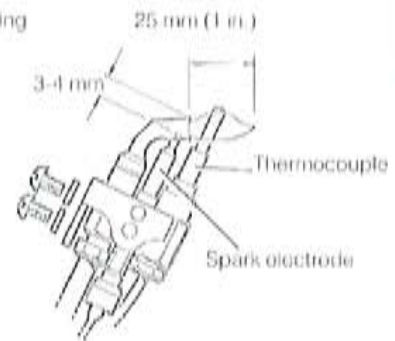
1. Remove the burner and controls assembly. Refer to Frame 3.
2. Undo the pilot supply connection & ease clear of the pilot burner. Do NOT lose the pilot injector which is a push fit in the pilot burner housing.
3. Disconnect the spark lead.
4. Undo the thermocouple connection and pull the thermocouple clear.



Note: Views show the pilot burner assembly without the pilot shield.

5. Remove the 2 securing screws and withdraw the pilot assembly.
6. Transfer the spark electrode (refer to Frame 15) to the new pilot burner.
7. Fit the new pilot burner assembly and re-assemble in reverse order, ensuring that:

- (a) The injector is in position when relighting the pilot supply.
- (b) A gas-tight joint is made. Refer to Frame 22 'Installation'.
- (c) The spark gap is correct, 3 to 4 mm



DETAIL OF PILOT BURNER FLAME LENGTH

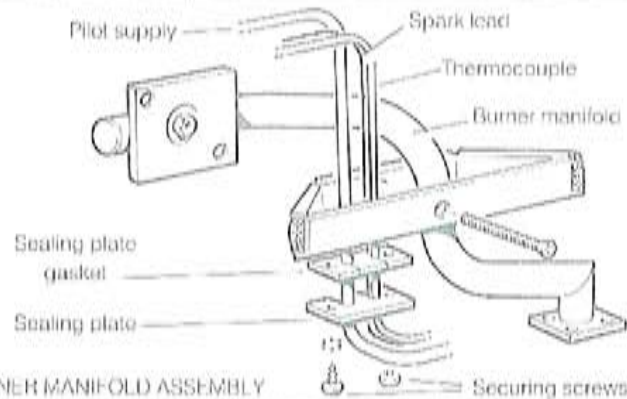
15 SPARK ELECTRODE REPLACEMENT

Refer to Frame 14 for the illustration of the following procedure.

1. Disconnect the spark lead.
2. Prise the retaining clip out of the groove in the electrode, using a small screwdriver, and withdraw the electrode.
3. Push in the new electrode until the retaining clip locates in the groove, & re-assemble in reverse order.

16 SPARK LEAD REPLACEMENT

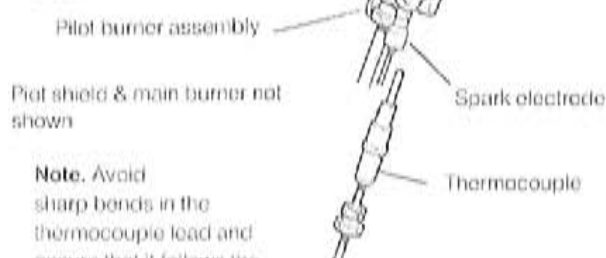
1. Remove the burner and control assembly. Refer to Frame 3.
2. Remove the buckle clip.
3. Undo the two securing screws and washers and remove the sealing plate.
4. Disconnect the spark lead from the base of the electrode and withdraw the lead.
5. Fit the new lead and re-assemble in reverse order.



VIEW OF MAIN BURNER MANIFOLD ASSEMBLY

17 THERMOCOUPLE REPLACEMENT

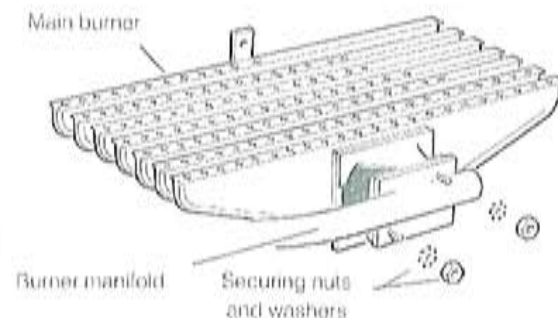
1. Remove the burner and controls assembly. Refer to Frame 3.
2. Remove the buckle clip.
3. Undo the thermocouple connection and pull the thermocouple clear.
4. Remove the burner manifold sealing plate (refer to Frame 16) and withdraw the thermocouple.
5. Fit the new thermocouple and re-assemble in reverse order.



Note: Avoid sharp bends in the thermocouple lead and ensure that it follows the same route as previously.

18 MAIN BURNER REPLACEMENT

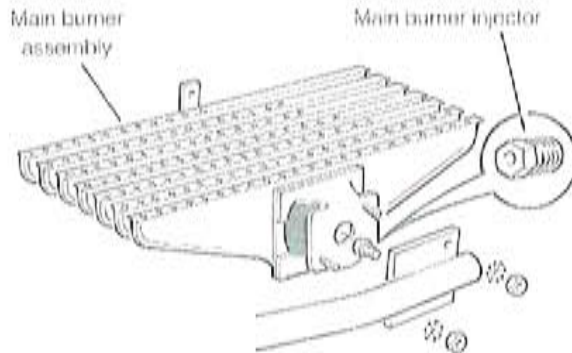
1. Remove the burner and controls assembly. Refer to Frame 3.
2. Remove the pilot burner assembly. Refer to Frame 14.
3. Remove the two nuts and washers securing the burner to the manifold and withdraw the burner.
4. Transfer the burner end bracket to the new burner.



5. Fit the new burner and re-assemble in reverse order taking care not to damage the burner injector which is screwed into the gas manifold.

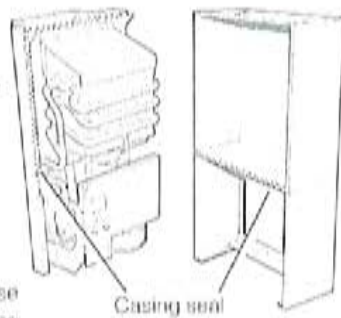
19 MAIN BURNER INJECTOR REPLACEMENT

1. Remove the burner and controls assembly. Refer to Frame 3.
2. Unscrew the main burner injector from the manifold.
3. Fit the new injector using a suitable jointing compound and re-assemble in reverse order.



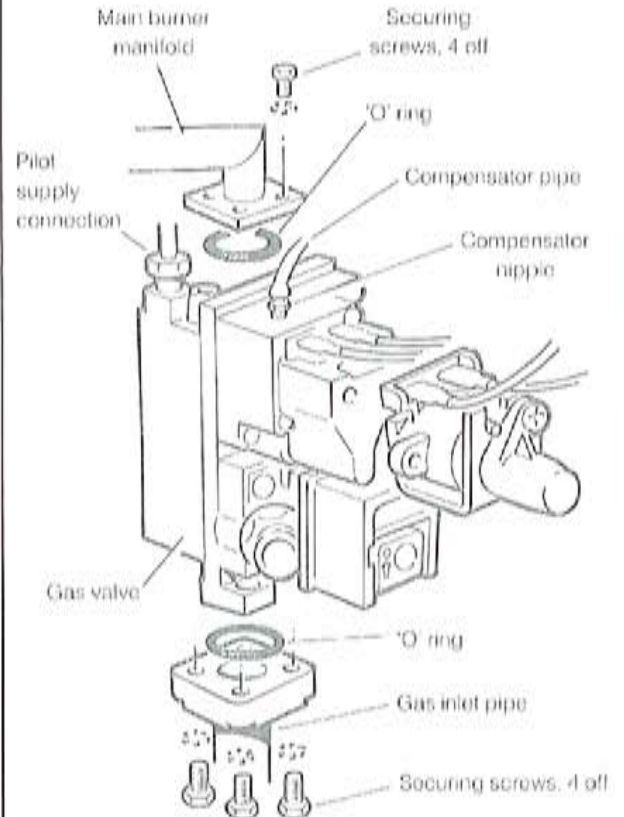
21 CASING SEAL REPLACEMENT

1. There are 3 seals; on the lower edge of the casing, around 3 edges of the casing and on the burner manifold. For the latter, refer to Frame 3 and remove the burner and controls assembly. The outer casing seals must be replaced together.
2. Remove the old seals & any traces of old adhesive.
3. Peel the backing tape off the new sealing strip & apply as shown. Avoid stretching the strip & ensure a good bond by pressing firmly.
4. Re-assemble in reverse order. **Note.** The casing must be correctly seated, compressing the seal to make an airtight joint. If side clearances are limited, then this can be checked by ensuring that the top and bottom edges of the casing are correctly located.



20 GAS VALVE REPLACEMENT

1. Remove the burner and controls assembly. Refer to Frame 3.
2. Undo the pilot supply connection.
3. Disconnect the pressure compensator pipe and transfer the nipple to the new valve.
4. Remove the four securing screws and withdraw the valve from the burner manifold.
4. Transfer the gas inlet pipe to the new valve.
5. Fit the new gas valve, ensuring that:
 - (a) The valve is fitted the right way round- an arrow engraved on the valve indicates the direction of flow.
 - (b) The sealing 'O' rings supplied with the valve are correctly fitted at the inlet and outlet flanges.

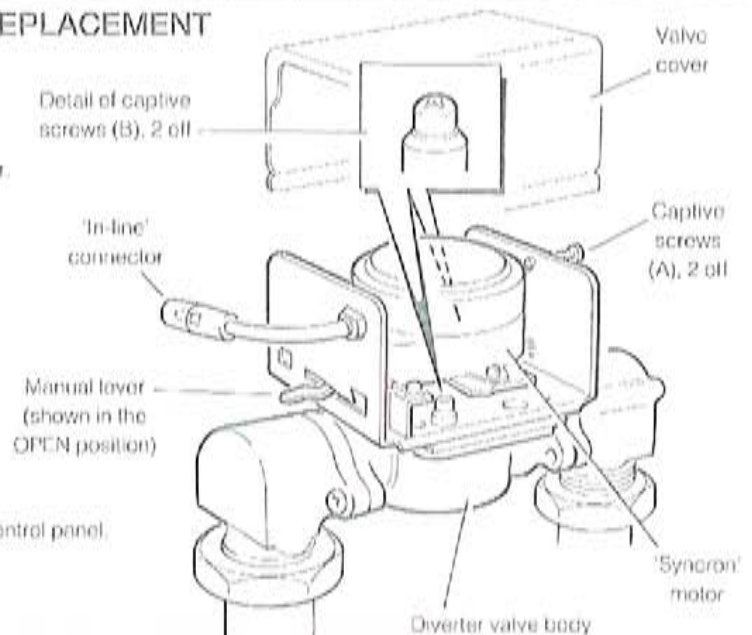


Note. After replacement, the maximum & minimum burner setting pressures should be checked. Refer to Frame 23 'Installation'.

22 DIVERTER VALVE ACTUATOR REPLACEMENT

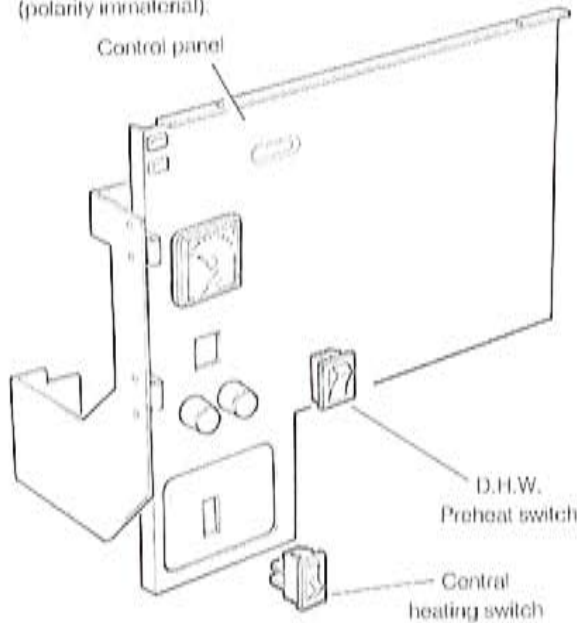
1. Remove the three securing screws and lift off the controls inner cover. Refer to Frame 16 'Installation'.
2. Unplug the diverter valve lead at the 'in-line' connector.
3. Release the captive screw (A) and lift off the valve cover.
4. Set the manually operated valve lever to OPEN.
5. Release the two captive screws (B) and lift the actuator off the valve body.

Note. At this stage, if required, the 'Synchron' motor may be replaced. Refer to the instructions supplied with the replacement motor.
6. Fit the new actuator, PRESET TO THE OPEN POSITION.
7. Disconnect the valve lead from the P.C.B. (refer to Frames 17, 18 & 19) and discard the lead.
8. Connect the lead of the new actuator directly into the control panel.
9. Secure the lead to the wiring harness using the cable straps provided.
10. Re-assemble in reverse order.



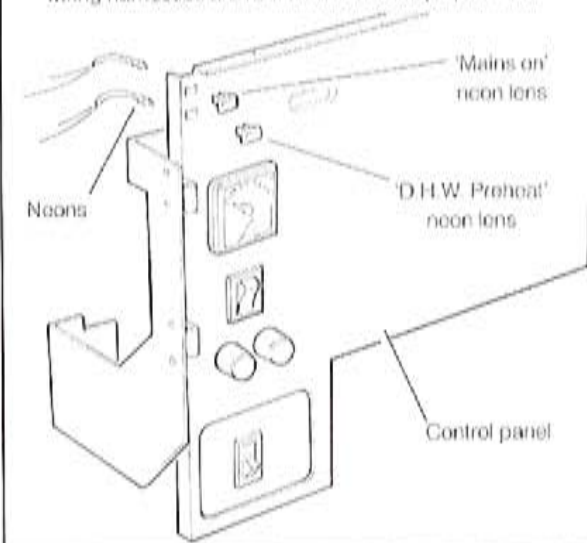
23 PRE-HEAT SELECTOR SWITCH & HEATING SWITCH REPLACEMENT

1. Remove the three securing screws and lift off the controls inner cover. Refer to Frame 16 'Installation'.
2. Pull the electrical leads off the terminals of the defective switch.
3. Compress the retaining clips and prise the switch out through the front of the control panel.
4. Fit the new switch and re-assemble in reverse order, (polarity immaterial).



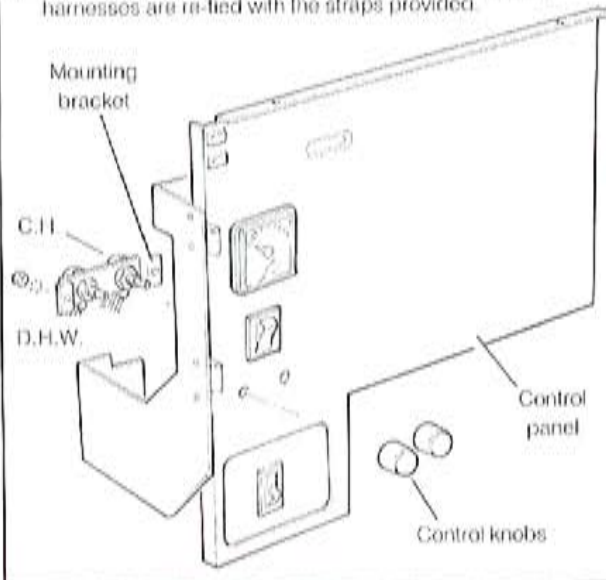
24 INDICATOR NEON REPLACEMENT

1. Remove the securing screws. Lift off the controls inner cover & cable entry shroud. Refer to Frame 16 'Installation'.
2. Disconnect the electrical lead from the L.H. side of the mains supply terminal block.
3. Release the pressure gauge capillary clamp.
4. Remove the 2 screws and slide the cable entry shroud back.
5. Release the wires from the harness and disconnect the neon leads from the P.C.B.
6. Disengage the two neons from the lenses and withdraw the complete harness from the control panel.
7. Fit the new neon harness and re-assemble in reverse order, ensuring that, each neon is fitted in its correct lens and the wiring harnesses are re-tied with the straps provided.



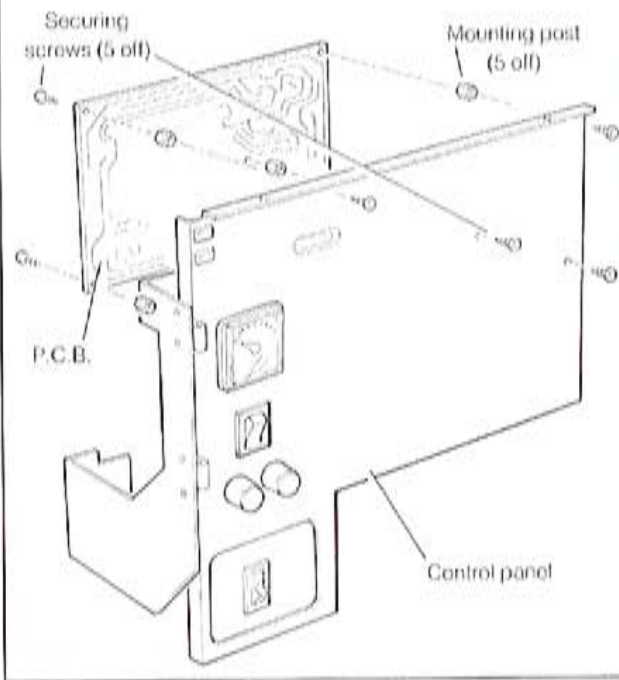
25 C.H. AND D.H.W. POTENTIOMETER REPLACEMENT

1. Remove the three securing screws and lift off the controls inner cover. Refer to Frame 16 'Installation'.
2. Unplug the potentiometer lead from the P.C.B. (refer to Frames 17, 18 and 19 'Installation') and release the wires from the harness.
3. Remove the control knobs.
4. Remove the securing nuts and withdraw the potentiometers and mounting bracket assembly.
5. Fit the new potentiometer and mounting bracket assembly complete.
6. Re-assemble in reverse order, ensuring that the wiring harnesses are re-tied with the straps provided.



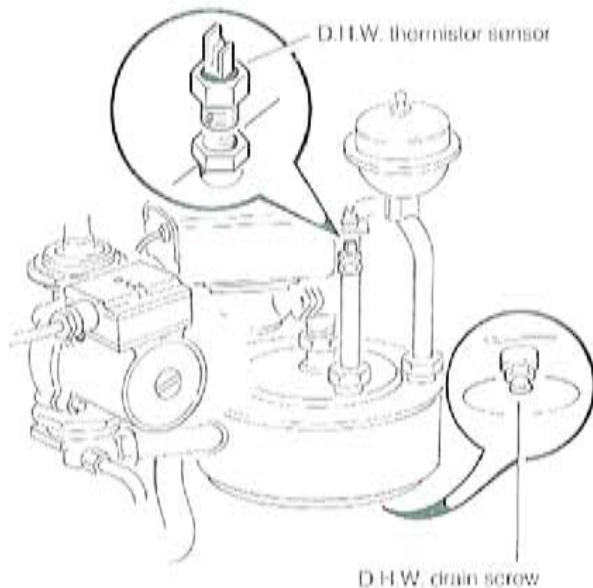
26 P.C.B REPLACEMENT (INCLUDING TRANSFORMER)

1. Remove the securing screws and lift off the controls inner cover. Refer to Frame 16 'Installation'.
2. Disconnect all electrical wiring from the PCB. Refer to Frames 17, 18, 19 'Installation' and Frame 45 'Exploded Views'.
3. Remove the securing nuts from the four mounting posts, and lift off the PCB.
4. Transfer the RS link to the new board.
5. Fit the new PCB and re-assemble in reverse order.



27 D.H.W. THERMISTOR SENSOR REPLACEMENT

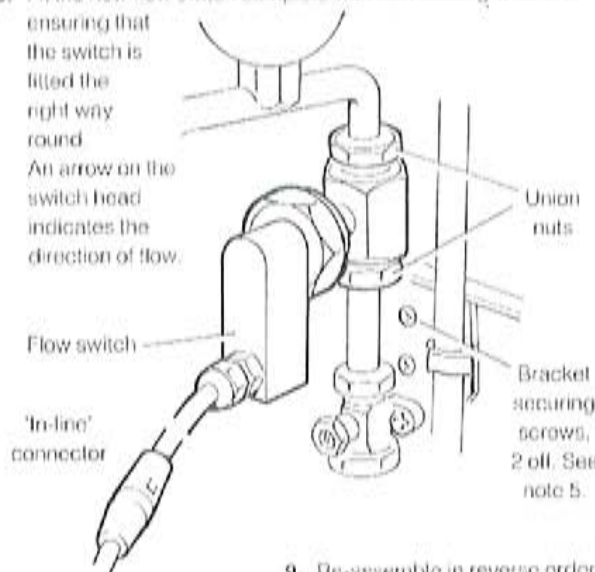
1. Close the D.H.W. inlet isolating valve.
2. Open the lowest D.H.W. draw-off tap.
3. Drain any residual water into a receptacle via the D.H.W. drain screw.
4. Pull the electrical lead off the thermistor sensor.
5. Unscrew the sensor from the pipe.



6. Fit the new sensor, using a suitable jointing compound complying with BS. 5292 (e.g. Pernabond A 129) and re-assemble in reverse order.

28 D.H.W. FLOW SWITCH REPLACEMENT

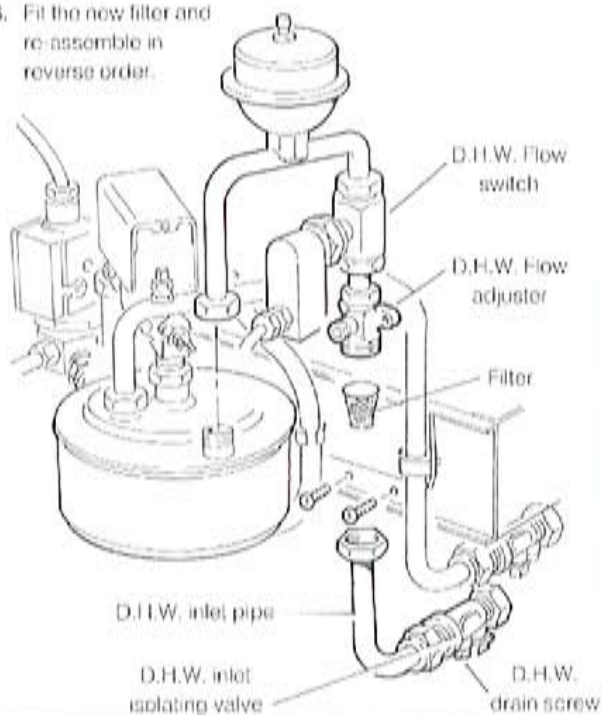
1. Disconnect the flow switch lead at the 'in-line' connectors.
2. Close the D.H.W. isolating valve.
3. Open the lowest D.H.W. draw-off tap.
4. Drain any residual water into a receptacle via the D.H.W. drain screw on the D.H.W. inlet isolating valve.
5. Remove the 2 securing screws and withdraw the control panel support bracket.
6. Undo the union nuts shown. Withdraw the switch & inlet pipe.
7. Transfer the inlet pipe to the new flow switch.
8. Fit the new flow switch complete with new sealing washers, ensuring that the switch is fitted the right way round. An arrow on the switch head indicates the direction of flow.



9. Re-assemble in reverse order.

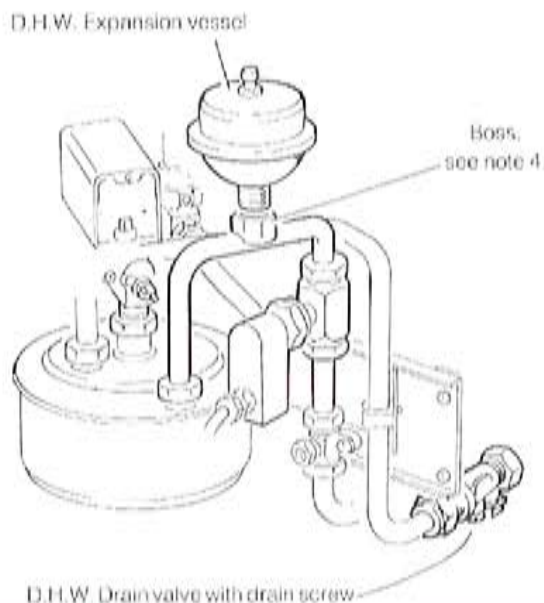
29 D.H.W. FILTER REPLACEMENT

1. Close the D.H.W. inlet isolating valve.
2. Open the lowest D.H.W. draw-off tap.
3. Drain any residual water into a receptacle via the D.H.W. drain screw.
4. Undo the unions shown and remove the D.H.W. inlet pipe.
5. Withdraw the filter from its housing beneath the D.H.W. flow adjuster.
6. Fit the new filter and re-assemble in reverse order.



30 D.H.W. EXPANSION VESSEL REPLACEMENT

1. Close the D.H.W. inlet isolating valve.
2. Open the lowest D.H.W. draw-off tap.
3. Drain any residual water into a receptacle via the D.H.W. drain screw.
4. Unscrew the expansion vessel from the pipe, applying an appropriate counterforce on the boss to prevent damage.
5. Fit the new vessel complete with new sealing washer and re-assemble in reverse order.

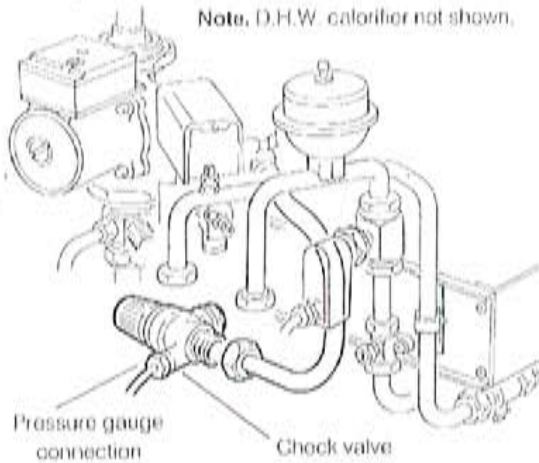


31 PRESSURE GAUGE REPLACEMENT

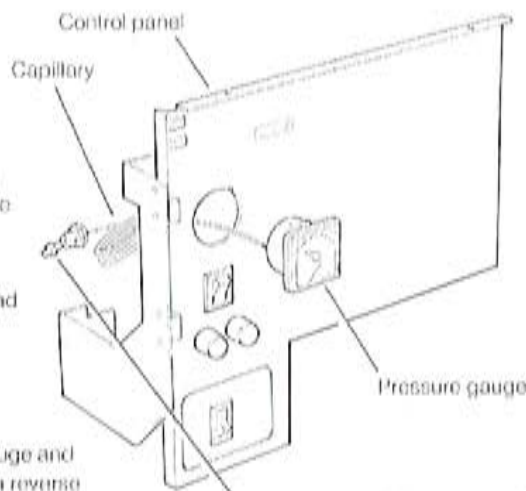
DETAIL OF THE BOILER CONTROL PANEL

1. Remove the securing screws and lift off the controls inner cover. Refer to Frame 16 'Installation'
2. Release the pressure gauge capillary clamp and withdraw the capillary from the entry, through the split grommet.

Note. D.H.W. calorifier not shown.



3. Disconnect the pressure gauge capillary from the safety valve.
4. Compress the retaining lugs and withdraw the gauge through the front of the control panel.
5. Fit the new gauge and re-assemble in reverse order, ensuring that:
 - (a) The capillary is carefully & neatly routed, as previously.
 - (b) The sealing 'O' is correctly fitted.
 - (c) The gauge is correctly orientated within the control panel.

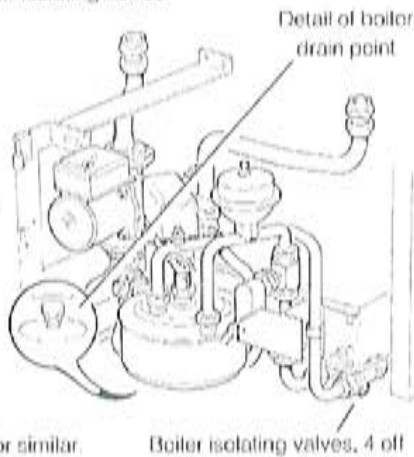


32 DRAINING THE BOILER

IMPORTANT: IN ORDER TO REPLACE THE COMPONENTS IN FRAMES 33 TO 41 IT IS NECESSARY TO DRAIN THE BOILER.

1. Close the boiler isolating valves.

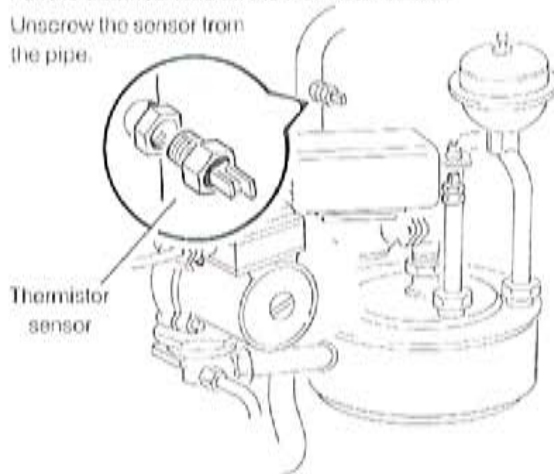
2. Open the boiler drain point. There may be a slight water leakage therefore any gas or electrical components and the floor should be protected with water proof sheets or similar.



3. To refill the boiler refer to Frame 14 'Installation'.

33 C.H. THERMISTOR REPLACEMENT

1. Drain the boiler. Refer to Frame 32.
2. Pull the electrical lead off the thermistor sensor.
3. Unscrew the sensor from the pipe.

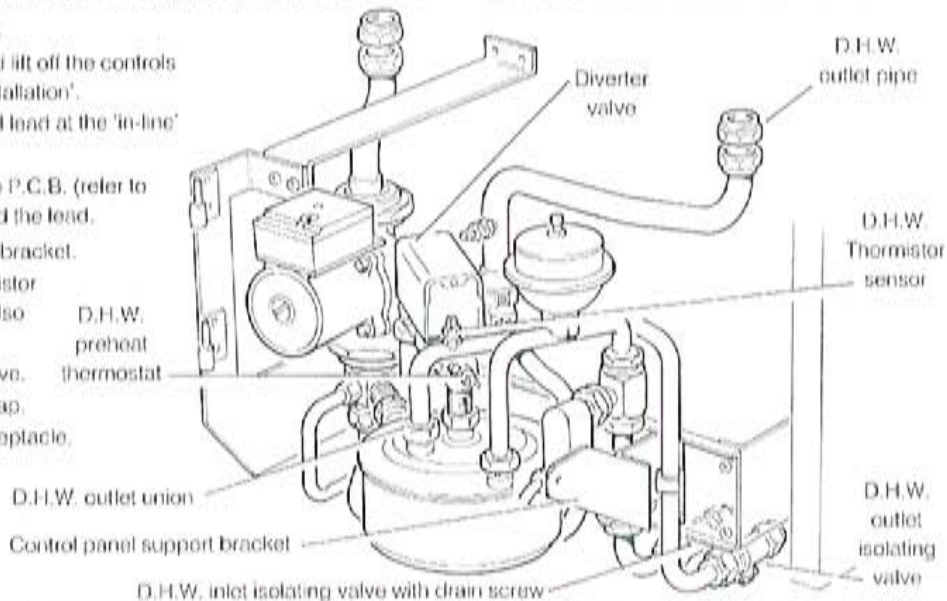


4. Fit the new sensor using an appropriate jointing compound and re-assemble in reverse order.

34 DIVERTER VALVE (COMPLETE) REPLACEMENT

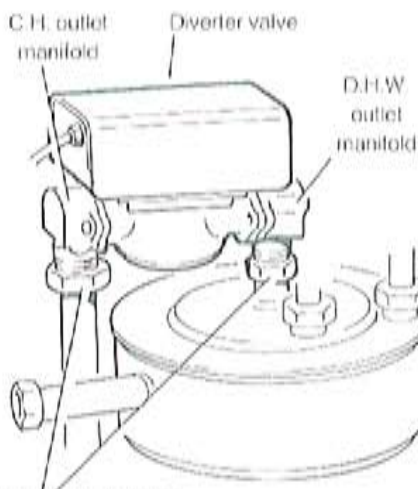
DETAIL OF BOILER INTERNAL PIPEWORK

1. Drain the boiler. Refer to Frame 32.
 2. Remove the 3 securing screws and lift off the controls inner cover. Refer to Frame 16 'Installation'.
 3. Unplug the diverter valve electrical lead at the 'in-line' connector, if fitted.
 4. Disconnect the valve lead from the P.C.B. (refer to Frames 17, 18 and 19) and discard the lead.
 5. Remove the control panel support bracket.
 6. Pull the leads off the D.H.W. thermistor sensor, overheat thermostat and also the D.H.W. preheat thermostat.
 7. Close the D.H.W. inlet isolating valve.
 8. Open the lowest D.H.W. draw off tap.
 9. Drain any residual water into a receptacle, via the D.H.W. drain screw.
 10. Undo the 2 unions on the D.H.W. outlet pipe, unclip the pipe and lift it aside.
- Continued in Frame 35.*



35 DIVERTER VALVE (COMPLETE) REPLACEMENT

11. Disconnect the safety valve pipe from the inlet manifold.



Unions, see note 13.

12. Slacken the socket screw, using a 2.5 mm Allen key.

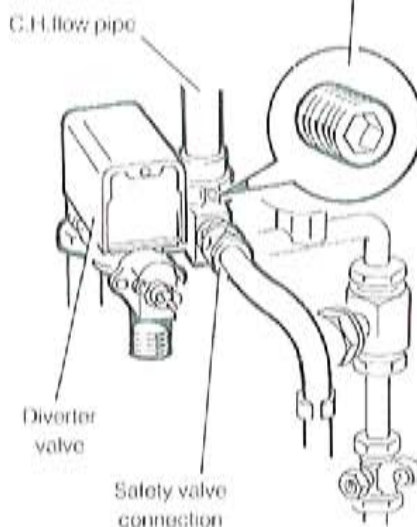
13. Undo the C.H. and the D.H.W. outlet manifold unions and withdraw the valve from the boiler.

14. Transfer the inlet and outlet manifolds to the new valve, fitting the new 'O' rings provided. Also renew the 'O' ring on the central heating flow pipe.

15. Fit the new valve, complete with the new sealing washers, and connect the electrical lead directly into the control panel.

16. Secure the lead to the wiring harness using the cable straps provided

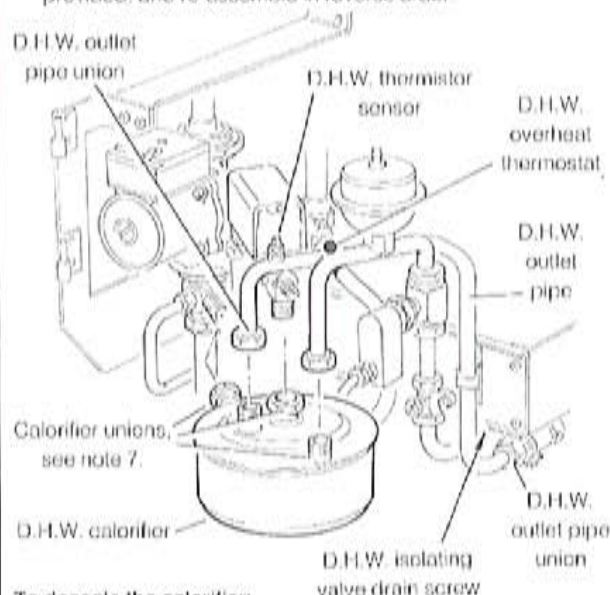
Continued from Frame 34. Socket screw



17. Re-assemble in reverse order.

36 D.H.W. CALORIFIER REPLACEMENT

1. Drain the boiler. Refer to Frame 32.
2. Close the D.H.W. inlet isolating valve.
3. Open the lowest D.H.W. draw-off tap.
4. Drain any residual water into a receptacle via the D.H.W. drain screw.
5. Pull the leads off the D.H.W. thermistor sensor and overheat thermostat.
6. Undo the unions on the D.H.W. outlet pipe. Unclip the pipe and lift it aside.
7. Undo the three remaining calorifier unions and withdraw the calorifier from the boiler.
8. Fit the new calorifier, complete with the new sealing washers provided, and re-assemble in reverse order.



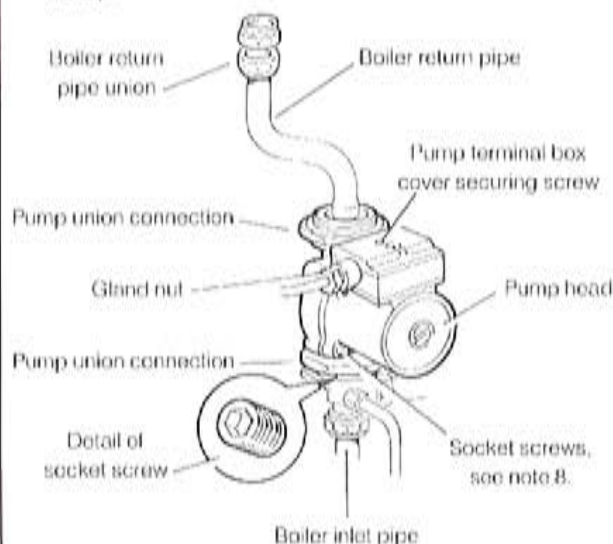
To descale the calorifier:

- (a) Remove the calorifier from the boiler as described above.
- (b) Descale the domestic hot water coil, using a proprietary descaling agent.
- (c) Rinse thoroughly with clean water.
- (d) Re-assemble in reverse order.

WARNING: The compounds are highly corrosive and ingestion or contact with skin, eyes and clothing MUST be avoided. Protective clothing should be worn and the descaling operation conducted out of doors or in a well ventilated area.

37 PUMP REPLACEMENT

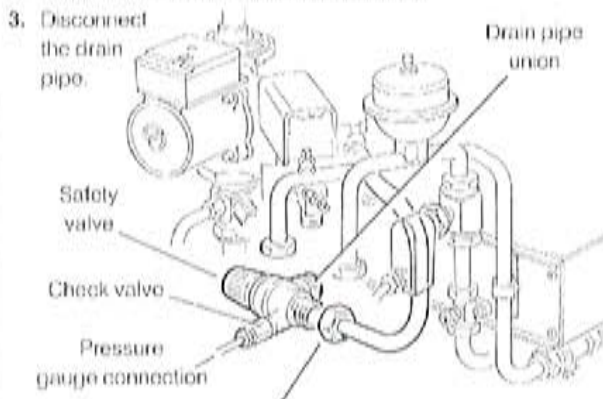
1. Drain the boiler. Refer to Frame 32.
2. Remove the pump terminal box cover and disconnect the electrical loads. **Note.** A hole in the control panel support bracket permits access to the cover securing screw.
3. Unscrew the gland nut and withdraw the cable from the terminal box.
4. Undo the boiler return pipe union.
5. Slacken the socket screw, using a 2.5 mm Allen key.
6. Withdraw the pump, complete with inlet pipe and boiler return pipe, by rotating it to the left and lifting.
7. Undo the pump union connections and, using the new sealing gaskets provided, transfer the inlet pipe and the boiler return pipe to the new pump.
8. Remove the four socket screws and rotate the head of the new pump through 90° in order to position the wiring box at the top.



9. Fit the new pump and reassemble in reverse order, ensuring that:
 - (a) The new sealing washer provided is fitted to the boiler return pipe connection.
 - (b) The electrical connections are correctly re-made. Refer to the diagram inside the terminal box cover.
 - (c) The pump selector switch cover is correctly fitted and that the switch is set at position '3'.

38 SAFETY VALVE REPLACEMENT

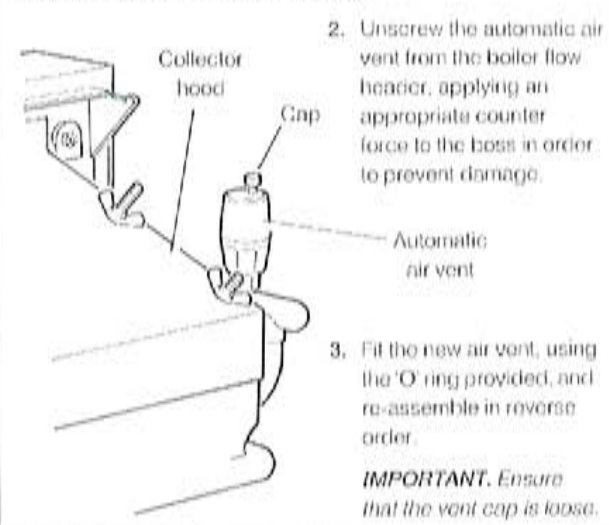
1. Drain the boiler. Refer to Frame 32.
2. Disconnect the pressure gauge capillary



3. Disconnect the drain pipe.
4. Undo the safety valve union & withdraw the valve from the boiler.
5. Transfer the check valve to the new safety valve, using a suitable jointing compound.
6. Fit the new valve and re-assemble in reverse order.

39 AUTOMATIC AIR VENT REPLACEMENT

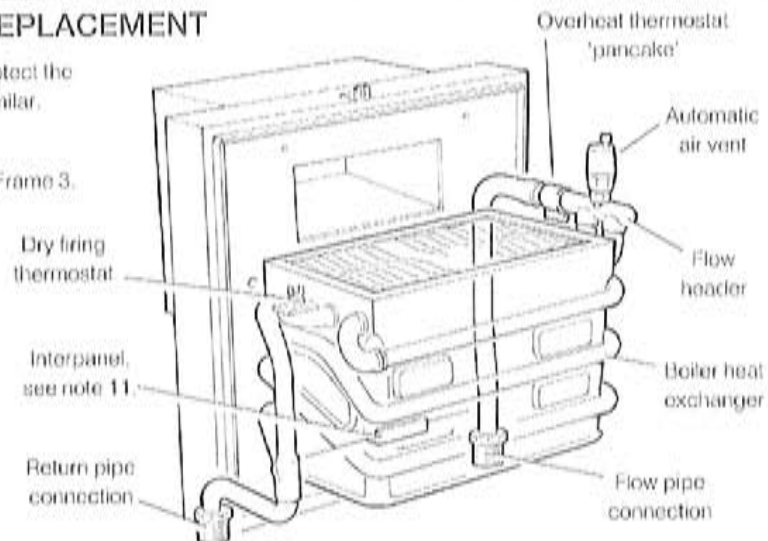
1. Drain the boiler. Refer to Frame 32.



40 BOILER HEAT EXCHANGER REPLACEMENT

IMPORTANT. Before starting the removal procedure protect the gas and electrical controls with a waterproof sheet or similar.

1. Drain down the boiler. Refer to Frame 32.
2. Remove the burner and controls assembly. Refer to Frame 3.
3. Remove the flue collector hood. Refer to Frame 5.
4. Remove the overheat thermostat 'pancake' and clamp from the flow header. refer to Frame 11.
5. Remove the dry firing thermostat, refer to Frame 12, and transfer it to the new heat exchanger.
6. Remove the automatic air vent, refer to Frame 39, and transfer it to the new heat exchanger.
7. Slacken the boiler flow pipe socket screw at the diverter valve inlet manifold. Refer to Frame 35.
8. Slacken the pump socket screw. Refer to Frame 37.
9. Undo the boiler flow and return pipe connections. Swing the pipes aside.
10. Support the heat exchanger and remove the locknuts.



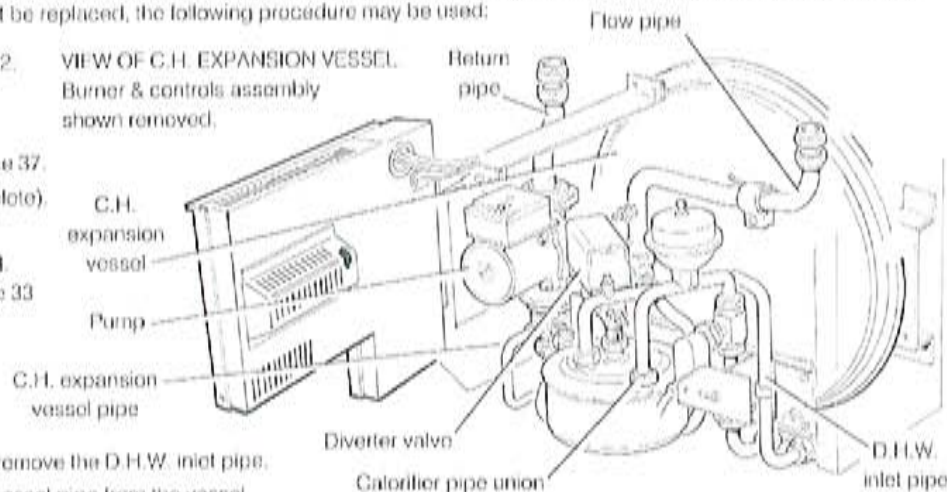
11. Lift the heat exchanger to disengage it from the interpanel and bottom panel. Withdraw it from the boiler.
12. Fit the new heat exchanger and re-assemble in reverse order.

41 C.H. EXPANSION VESSEL REPLACEMENT

In the unlikely event of the failure of the C.H. expansion vessel it is recommended that a new vessel is fitted exterior to the boiler. It should be positioned on the return pipe & as close to the boiler as possible. However, if the vessel must be replaced, the following procedure may be used:

1. Drain the boiler. Refer to Frame 32.
2. Remove the burner and controls assembly. Refer to Frame 3.
3. Remove the pump. Refer to Frame 37.
4. Remove the diverter valve (complete). Refer to Frames 34 & 35.
5. Disconnect the load from the C.H. thermostat sensor. Refer to Frame 33
6. Undo the union and remove the C.H. flow pipe.
7. Remove the D.H.W. flow switch. Refer to Frame 28.
8. Undo the calorifier pipe union & remove the D.H.W. inlet pipe.
9. Disconnect the C.H. expansion vessel pipe from the vessel and slacken the union at the other end. Swing the pipe aside.
11. Remove the vessel retaining bracket.

VIEW OF C.H. EXPANSION VESSEL. Burner & controls assembly shown removed.



10. Lift and draw the vessel forward to remove it from the boiler.
11. Fit the new vessel and re-assemble in reverse order.

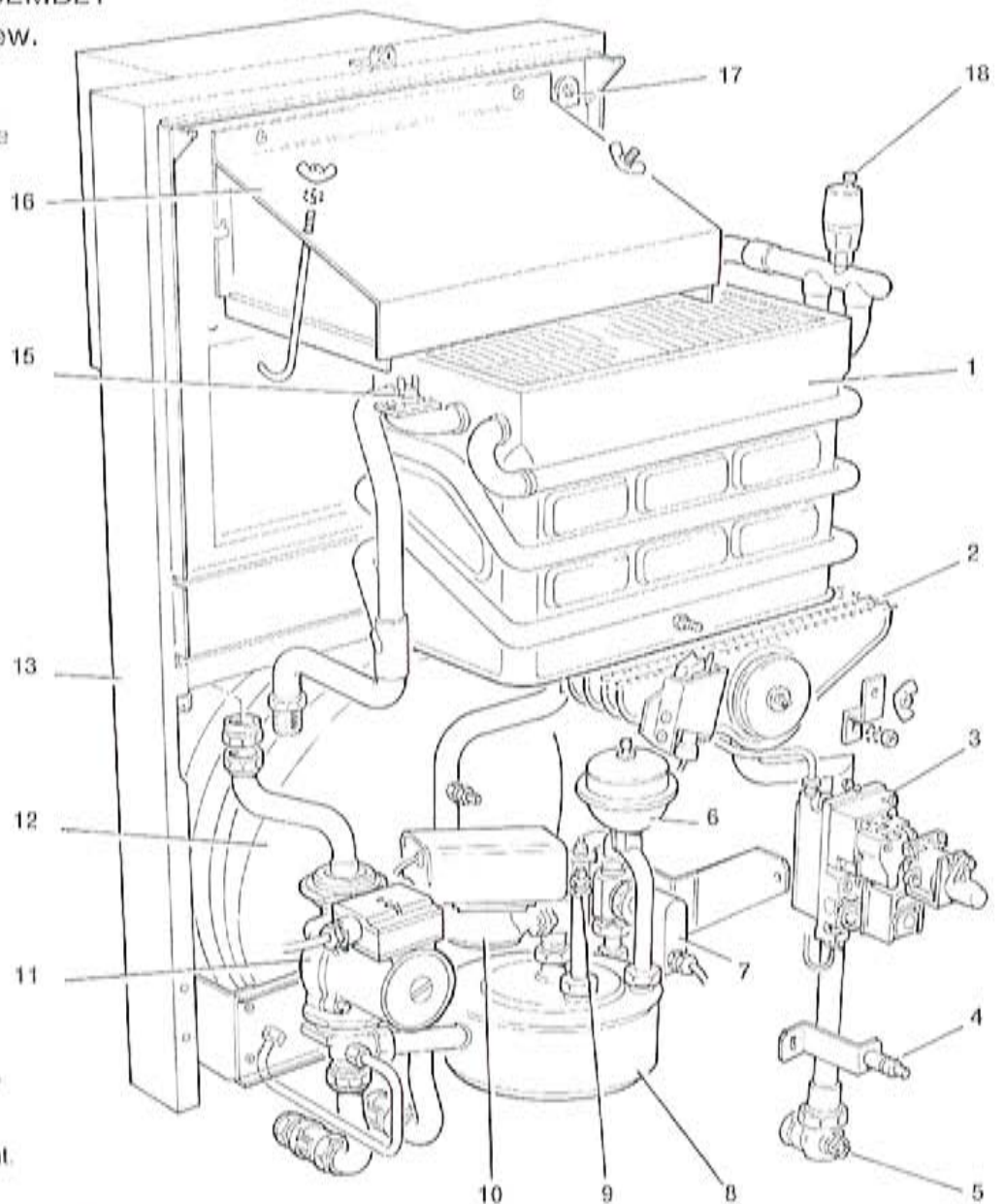
42 BOILER ASSEMBLY

Exploded View.

Note. The boiler controls panel and hinge arms are shown removed.

LEGEND

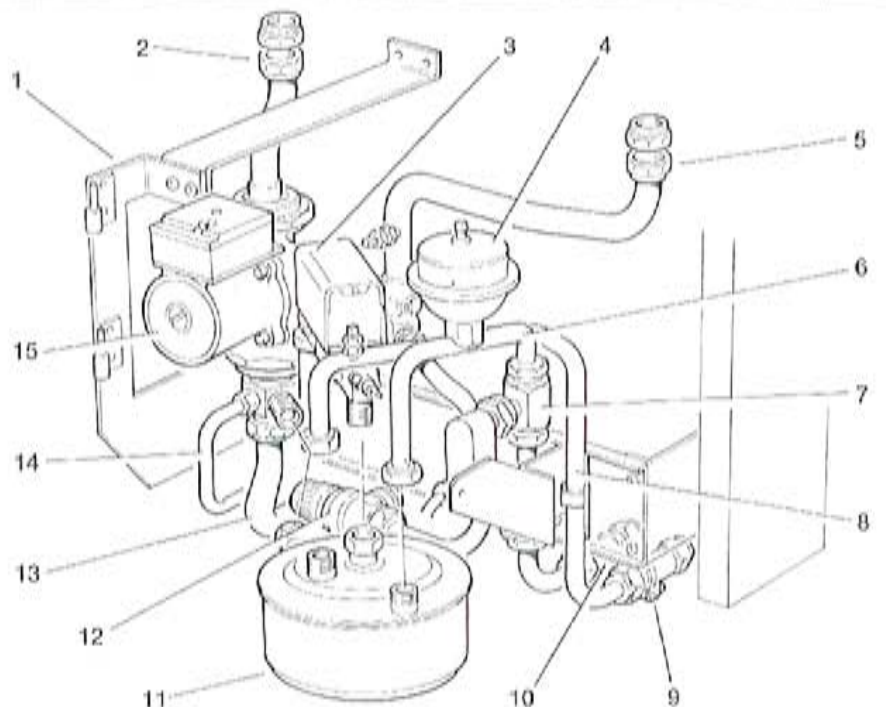
1. Heat exchanger.
2. Main burner assembly.
3. Gas control valve.
4. Piezo igniter.
5. Gas service cock.
6. D.H.W. expansion vessel.
7. D.H.W. flow switch.
8. D.H.W. calorifier.
9. D.H.W. thermistor sensor.
10. Diverter valve.
11. Pump.
12. C.H. expansion vessel.
13. Back panel assembly.
15. 'Dry fire' thermostat.
16. Flue collector hood.
17. Overheat thermostat.
18. Automatic air vent.



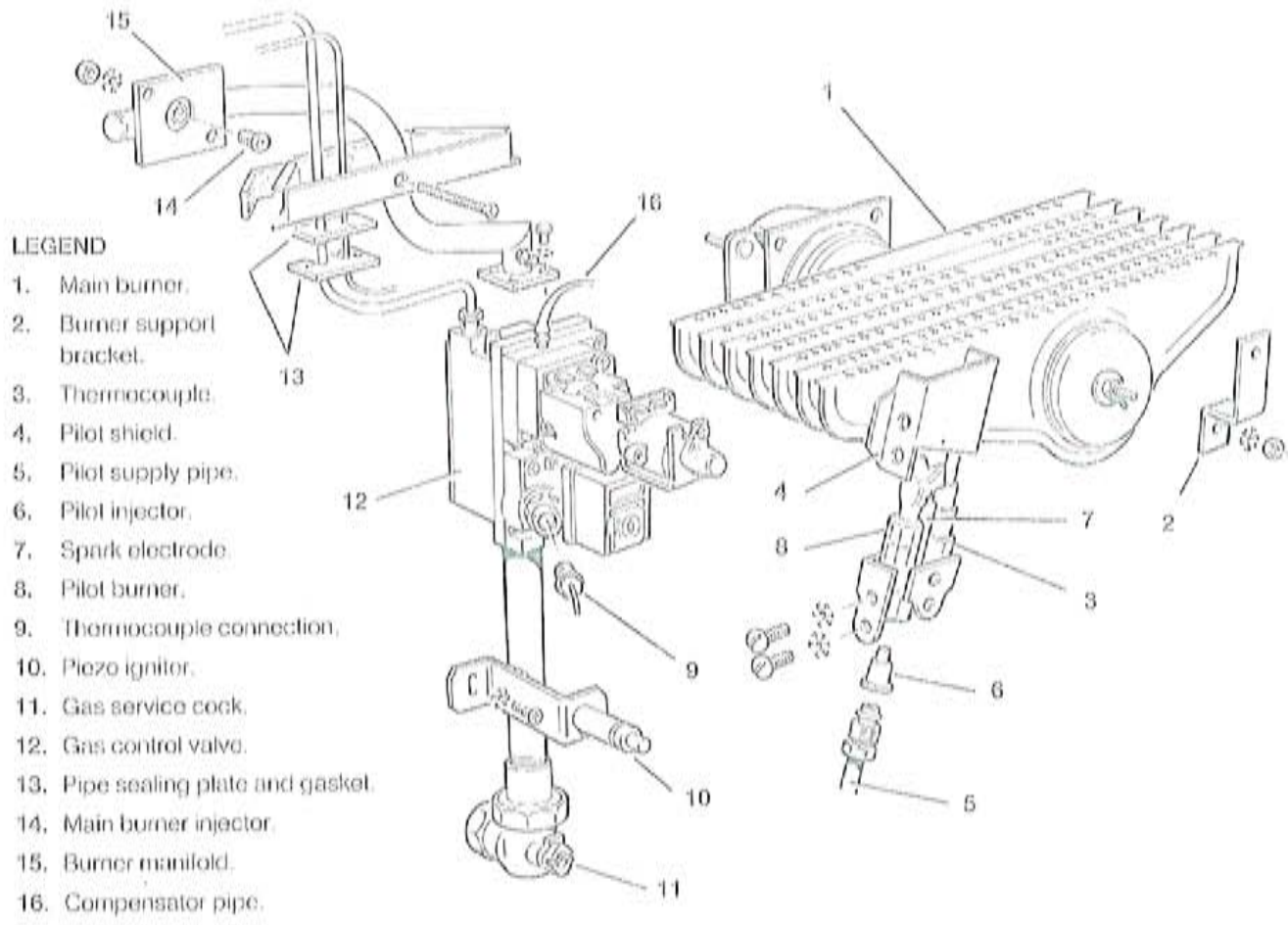
43 BOILER PIPEWORK

LEGEND

1. Control panel hinge arm.
2. Boiler return pipe.
3. Diverter valve.
4. D.H.W. expansion vessel.
5. Boiler flow pipe.
6. D.H.W. inlet pipe.
7. D.H.W. flow switch.
8. D.H.W. outlet pipe.
9. D.H.W. outlet isolating valve.
10. D.H.W. inlet isolating valve.
11. D.H.W. calorifier.
12. Safety valve.
13. Inlet pipe.
14. Expansion vessel pipe.
15. Pump.

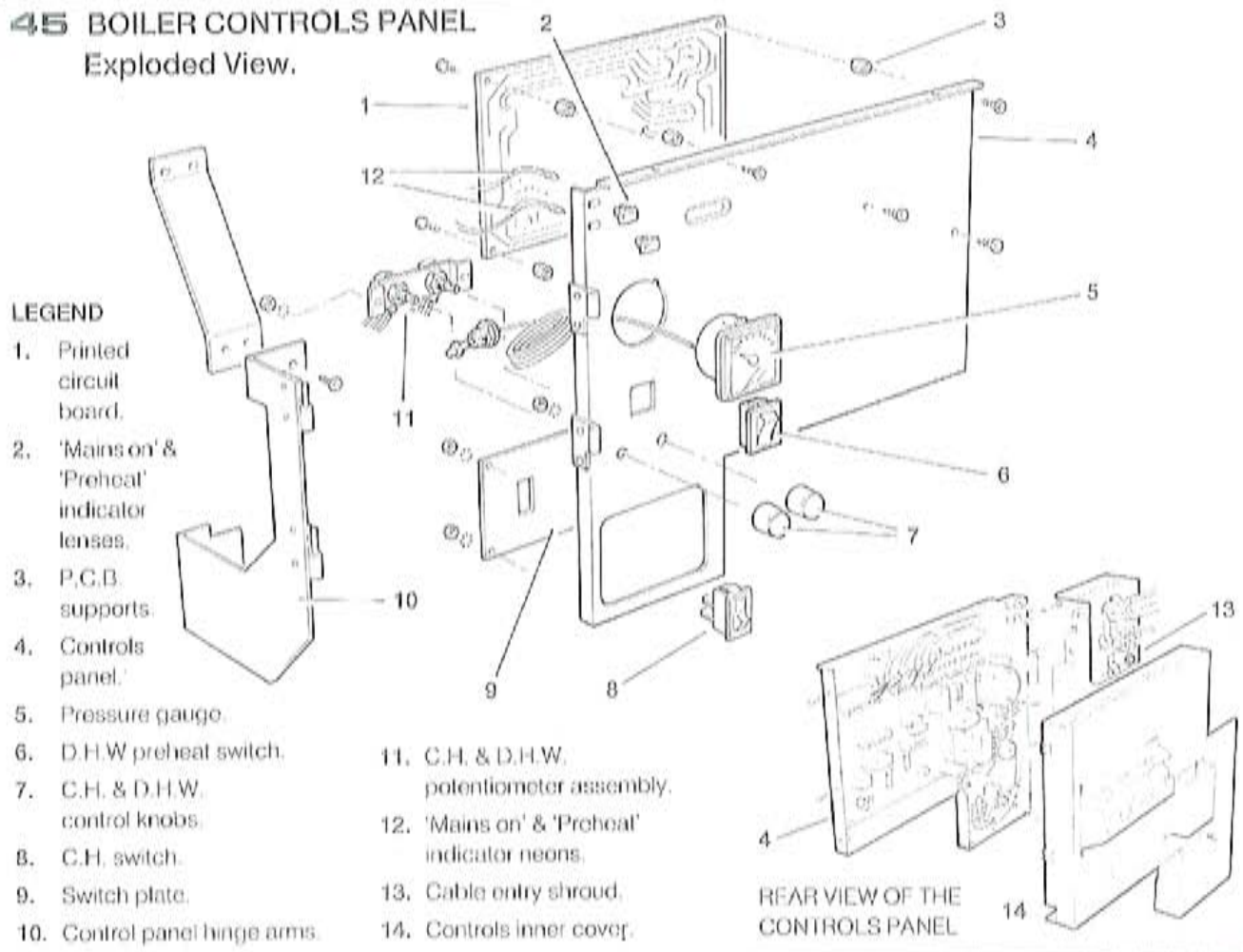


44 BURNER AND CONTROLS ASSEMBLY - Exploded View.



45 BOILER CONTROLS PANEL

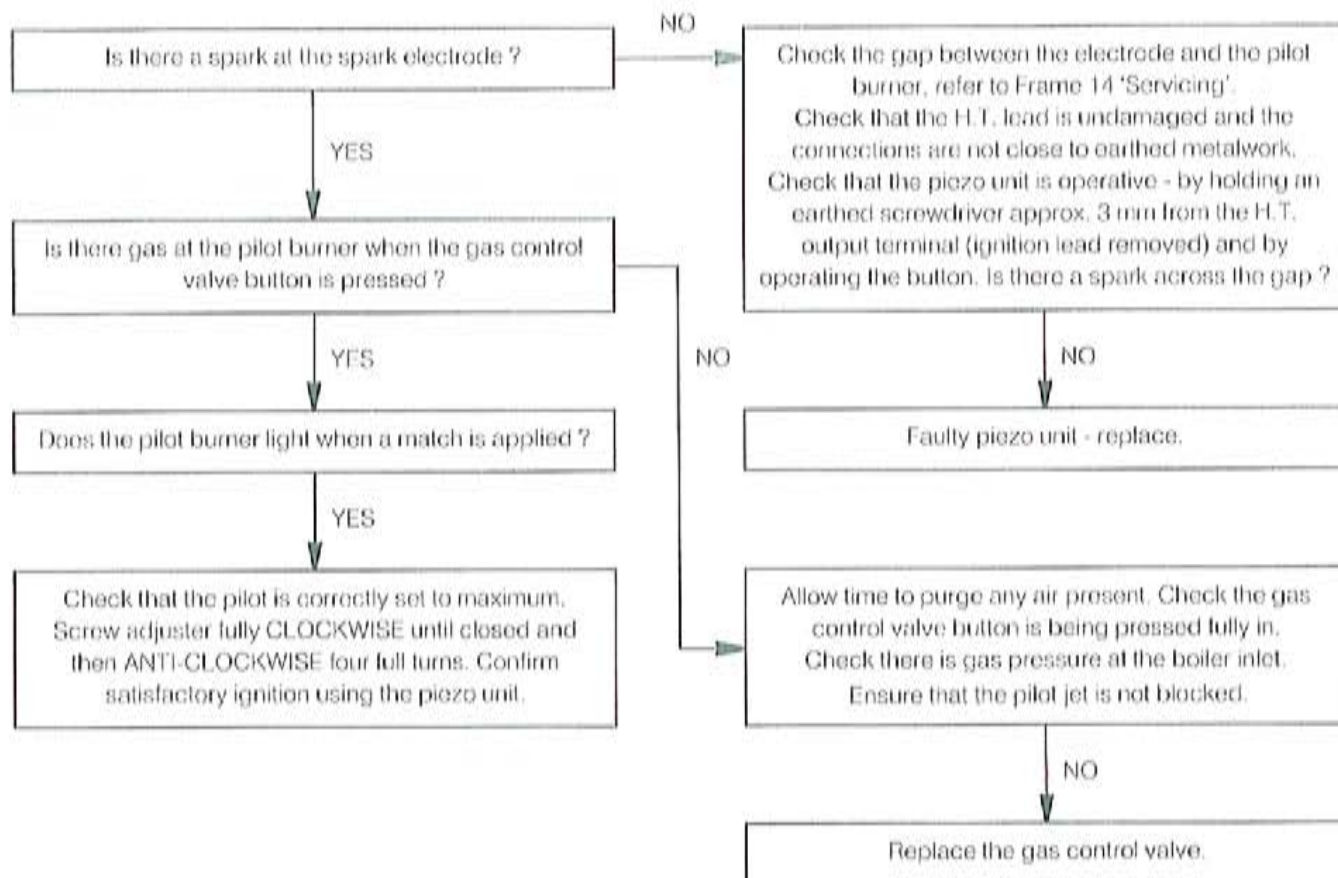
Exploded View.



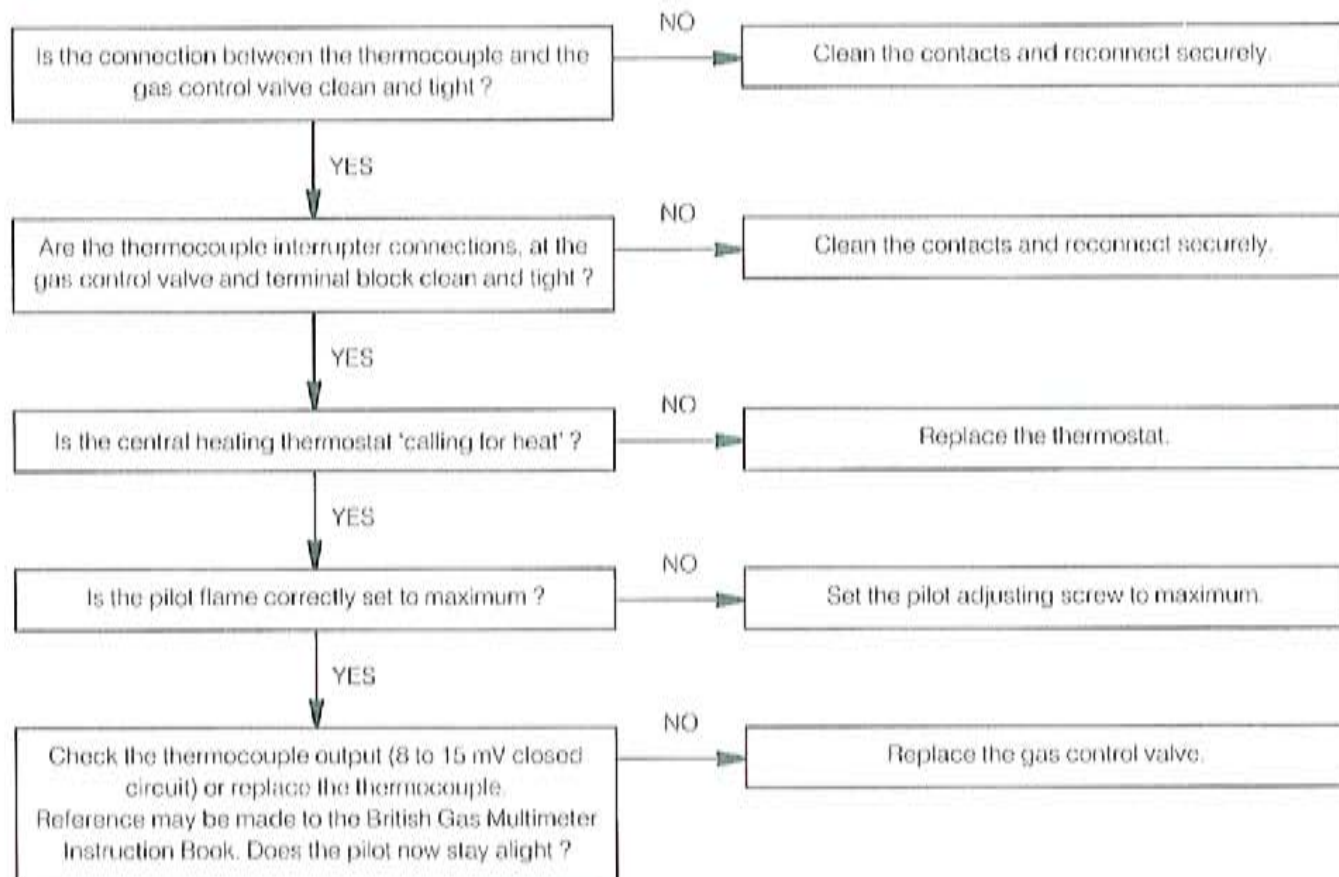
Before attempting any electrical fault finding, ALWAYS carry out the preliminary electrical system checks using a suitable meter.

Detailed instructions on the cleaning and adjustment or replacement of faulty components are contained in the 'Servicing' section of this publication.

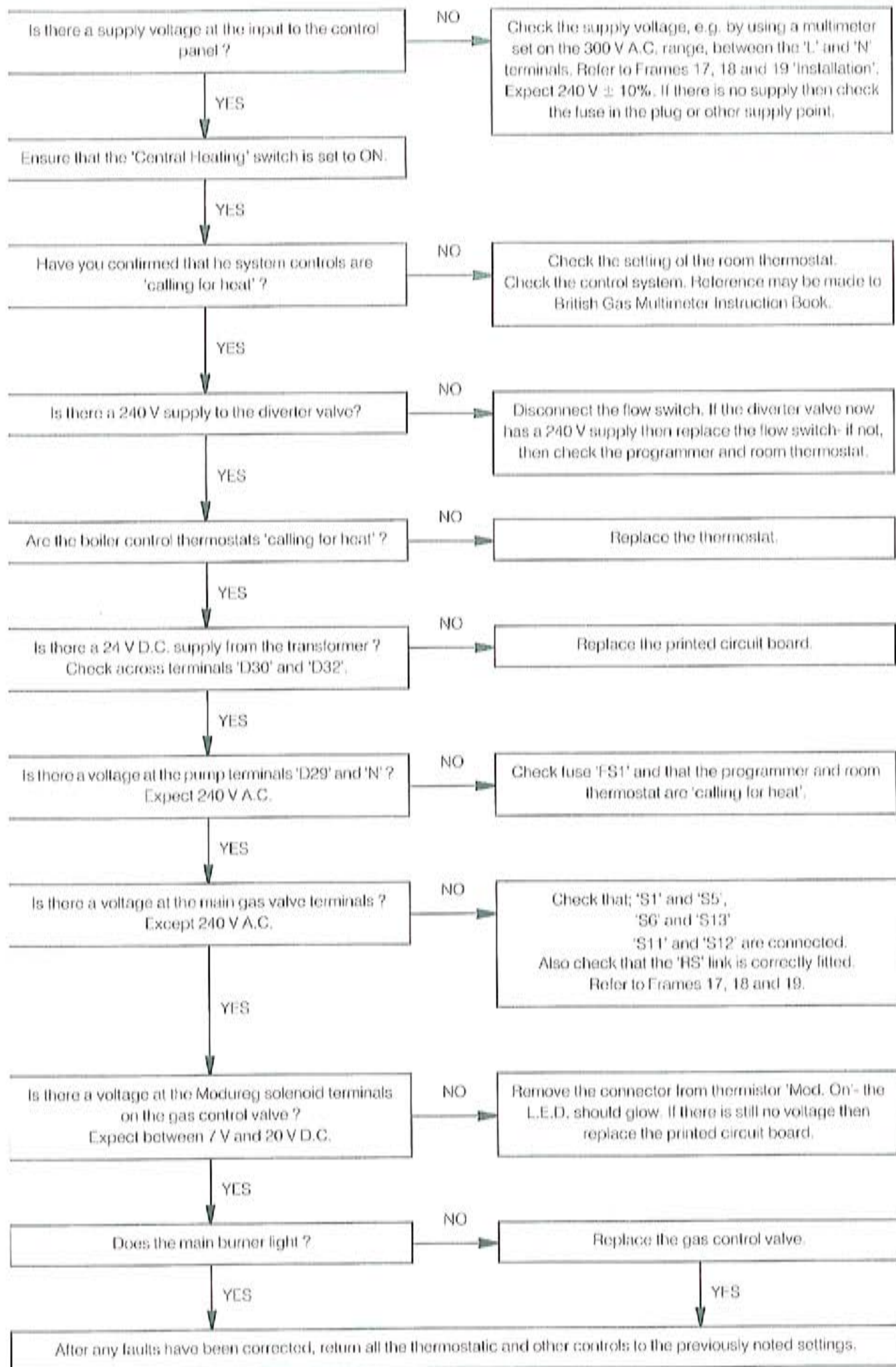
46 PILOT WILL NOT LIGHT



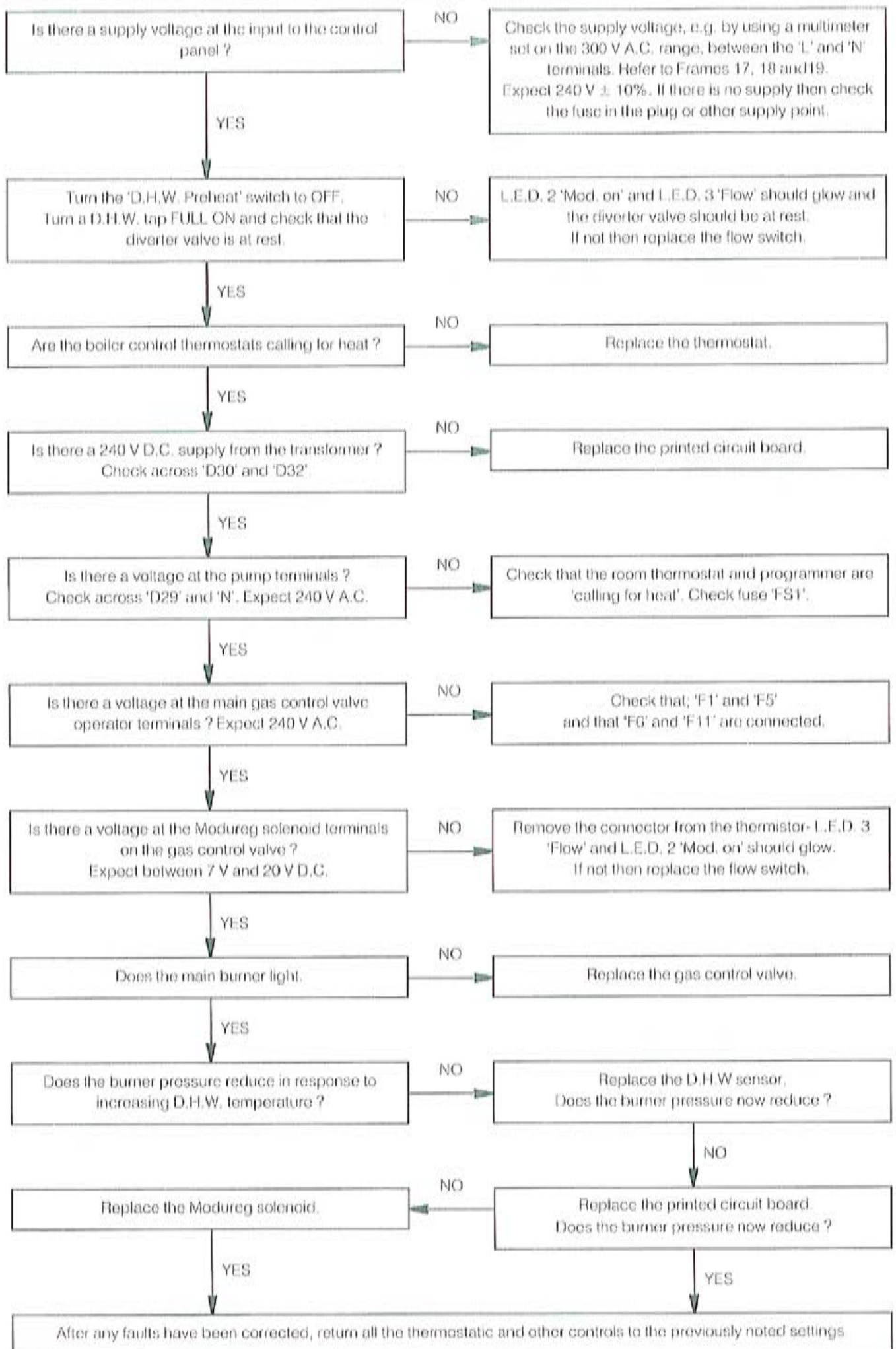
47 PILOT WILL NOT STAY LIT WHEN THE GAS VALVE BUTTON IS RELEASED



48 PILOT LIT BUT NO MAINS GAS Central Heating Mode.



49 PILOT LIT BUT NO MAINS GAS Domestic Hot Water Mode.

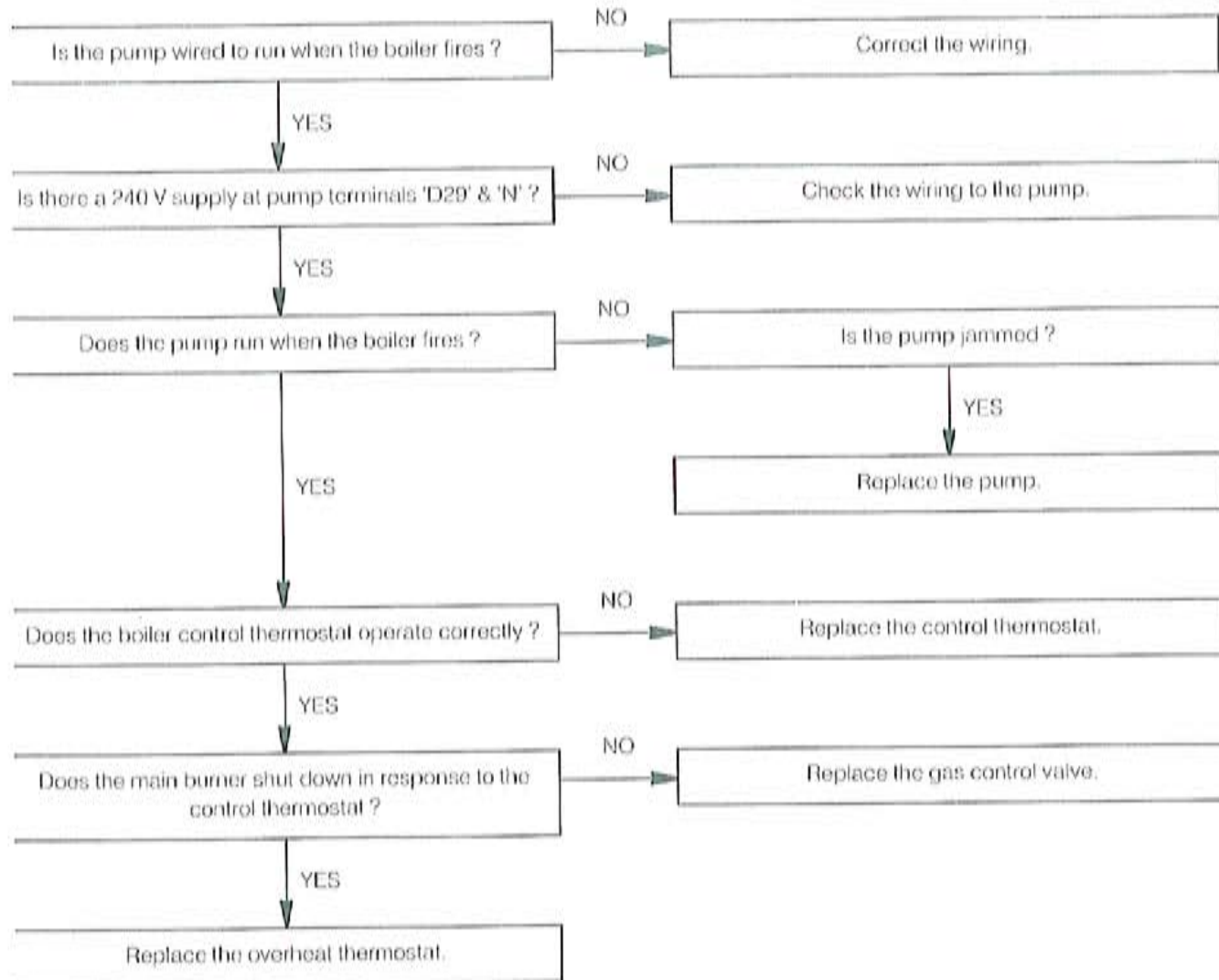


50 MAIN BURNER IS SHUT DOWN BY THE OVERHEAT THERMOSTATS

Central Heating Mode

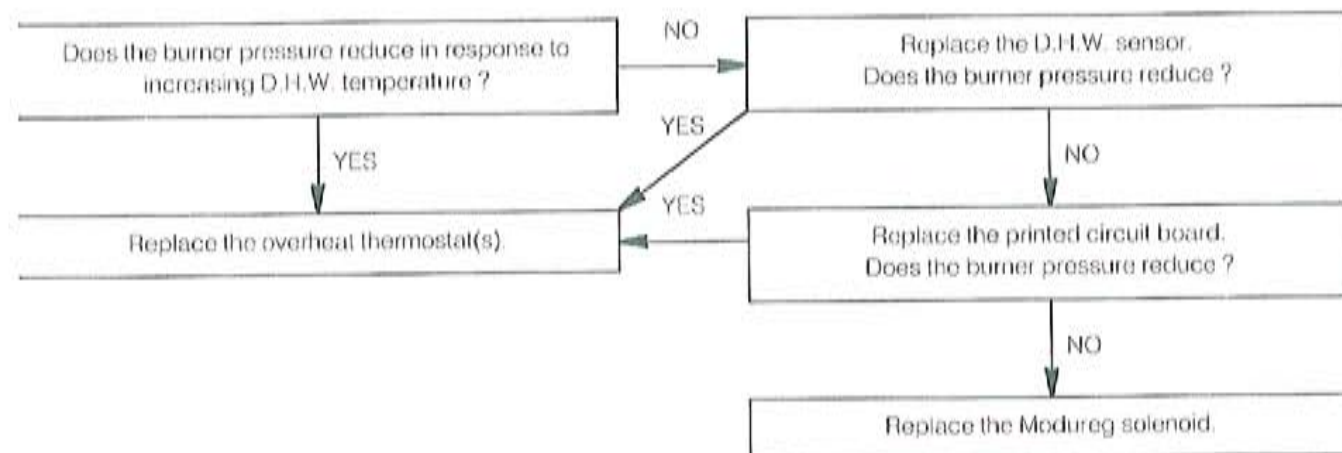
Notes.

- If the boiler has been shut down by the C.H. overheat thermostat, the pilot flame will be out.
- If the boiler has been shut down by the dry-fire thermostat only the pilot flame will be alight, but the main burner will not fire.
- Before re-setting the thermostat(s) and continuing with the fault finding procedure, ensure that the boiler and system are full of water and free from air locks.



Domestic Hot Water Mode.

Note. Carry out the tests detailed above before commencing.



The following list comprises parts commonly required as replacement components due to damage, expendability, or such that their failure or absence is likely to affect safety or performance.

The list is extracted from the British Gas List of Parts, which contains all available spare parts.

Details of the British Gas Lists are held by Gas regions, STELRAD Distributors and by Merchants.

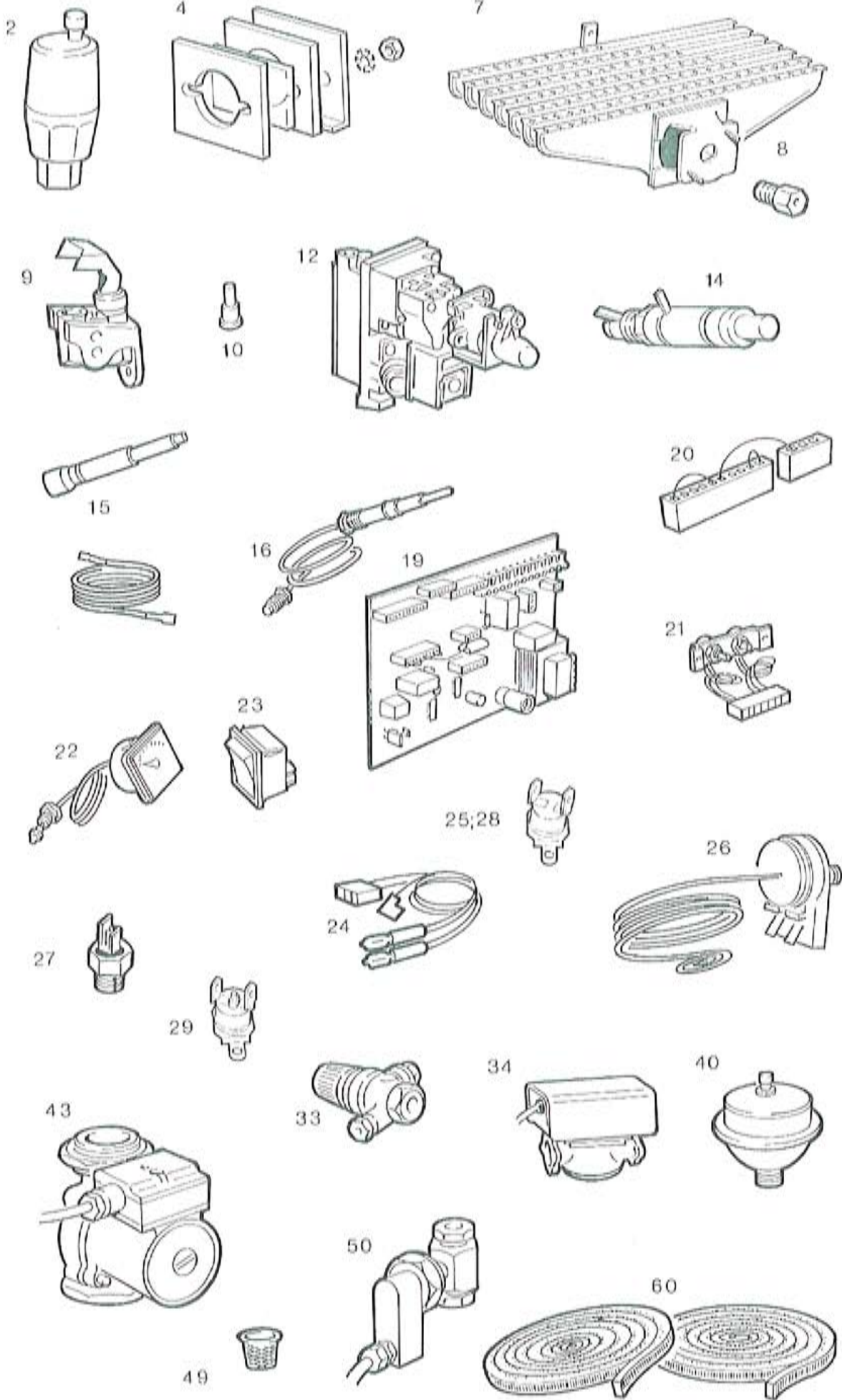
Ideal Sprint Rapide RS 75 N Combination Gas Boiler.

When ordering spares please quote:

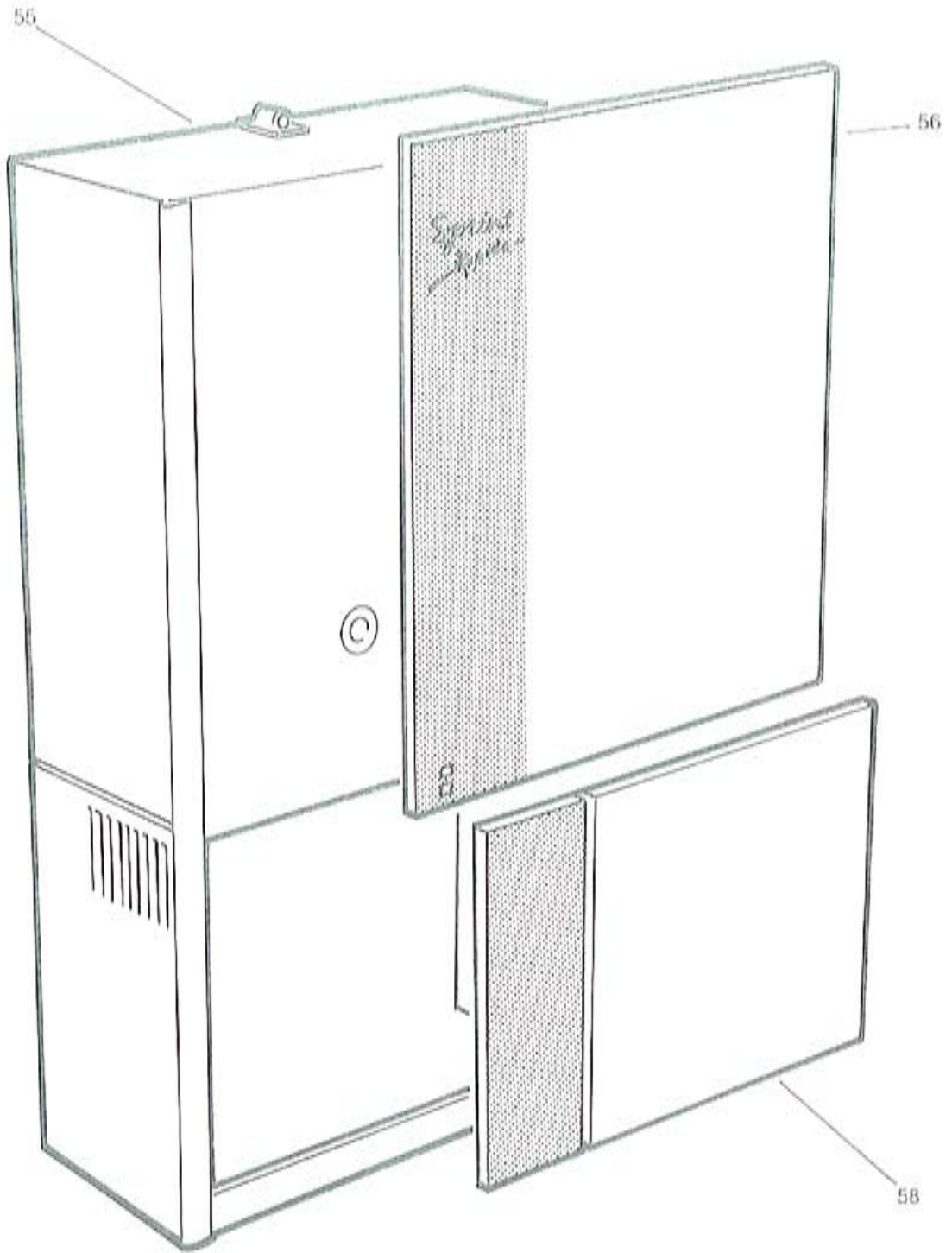
1. Boiler Model
2. Appliance G.C. Number
3. Description
4. Maker's Part Number
5. Quantity

| Key No. | G.C. Part No. | Description | No. Off | Makers Part No. |
|---------|---------------|---|---------|-----------------|
| 2 | 386 830 | Automatic air vent, CALTEFFI 5030 | 1 | 199 224 305 |
| 4 | 319 493 | Sight glass assembly kit | 1 | 160 079 333 |
| 7 | | Main burner, AEROMATIC AC 19 / 123290 | 1 | 199 226 064 |
| 8 | 398 064 | Main burner injector, BRAY Cat. 10 Size 2200 | 1 | 189 776 060 |
| 9 | | Pilot burner, HONEYWELL Q385A 1079 with HONEYWELL 45004 108 001 injector | 1 | 589 040 085 |
| 10 | 381 656 | Pilot injector, HONEYWELL 45004 108 001 | 1 | 589 040 083 |
| 12 | 386 800 | Gas control valve, HONEYWELL VR 4700 N 4001 | 1 | 586 221 910 |
| 14 | 341 933 | Spark generator, VERNITRON 60080 | 1 | 589 220 086 |
| 15 | | Spark electrode, BUCCLEUCH- with H.T. lead | 1 | 589 220 088 |
| 16 | 390 038 | Thermocouple, HONEYWELL Q 309 A 2788, 36 in. lg. | 1 | 581 861 906 |
| 19 | 374 041 | Printed circuit board, STELRAD BOARD No. 23 | 1 | 589 220 201 |
| 20 | 374 053 | Printed circuit board RS link assembly | 1 | 589 220 202 |
| 21 | 374 038 | Potentiometer assembly (C.H. and D.H.W.) | 1 | 589 220 205 |
| 22 | 374 044 | Pressure gauge, ALTECNIC | 1 | 589 220 207 |
| 23 | 386 802 | 'Central Heating' switch, ARROW HART Cygnel Series No. 100 0 11 E (A) | 1 | 589 220 209 |
| 23 A | 386 803 | 'Domestic Hot Water Preheat' switch ARROW HART Cygnel Series No. 200 0 11 E (A) | 1 | 589 220 210 |
| 24 | 374 009 | Neon indicator assembly, REDILEAD | 2 | 589 220 212 |
| 25 | 386 850 | D.H.W. overheat thermostat, ELMWOOD 2455 R 98 608 | 1 | 589 220 216 |
| 26 | 386 853 | Overheat thermostat, RANCO L07 P 4002 | 1 | 589 220 218 |
| 27 | 374 067 | Temperature Sensors (C.H. and D.H.W.), NTC Thermistor | 2 | 589 220 221 |
| 28 | 386 851 | D.H.W. preheat thermostat, ELMWOOD 2455 R 98 609 | 1 | 589 220 225 |
| 29 | 386 804 | Dry fire thermostat, ELMWOOD R 455 RMT 247 B2035 | 1 | 160 013 843 |
| 33 | 374 045 | Safety valve, 3 bar CALEFFI 3141 | 1 | 199 220 425 |
| 34 | 386 670 | Diverter valve, HONEYWELL V 4044 C 1536 | 1 | 199 220 427 |
| 34 A | 397 661 | Diverter valve actuator, HONEYWELL | 1 | 160 065 745 |
| 34 B | 386 670 | Diverter valve actuator motor, HONEYWELL | 1 | 160 065 746 |
| 40 | 341 950 | D.H.W. expansion vessel, WMP | 1 | 589 220 046 |
| 43 | 383 722 | Pump (with gaskets), GRUNDFOS UPS 15 60 | 1 | 589 220 031 |
| 49 | 374 046 | D.H.W. filter | 1 | 199 220 451 |
| 50 | 374 047 | D.H.W. flow switch, HONSBURG Fluvatest UM 15 MA | 1 | 199 220 453 |
| 55 | 374 058 | Boiler casing assembly, white stove enamel with dimple foil insulation, 3 securing screws and retaining washers, and including Key No.4 | 1 | 199 224 031 |
| 56 | 374 059 | Glass fascia | 1 | 199 220 098 |
| 58 | 374 061 | Controls compartment lift off cover, stove enamel with name badges and Lighting Instructions label | 1 | 199 220 099 |
| 60 | 374 062 | Casing seal pack | 1 | 199 224 034 |

51 SMALL PARTS



52 BOILER CASING ASSEMBLY



CARADON HEATING pursues a policy of continuing improvement in the design and performance of its products. The right is therefore reserved to vary specification without notice.

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