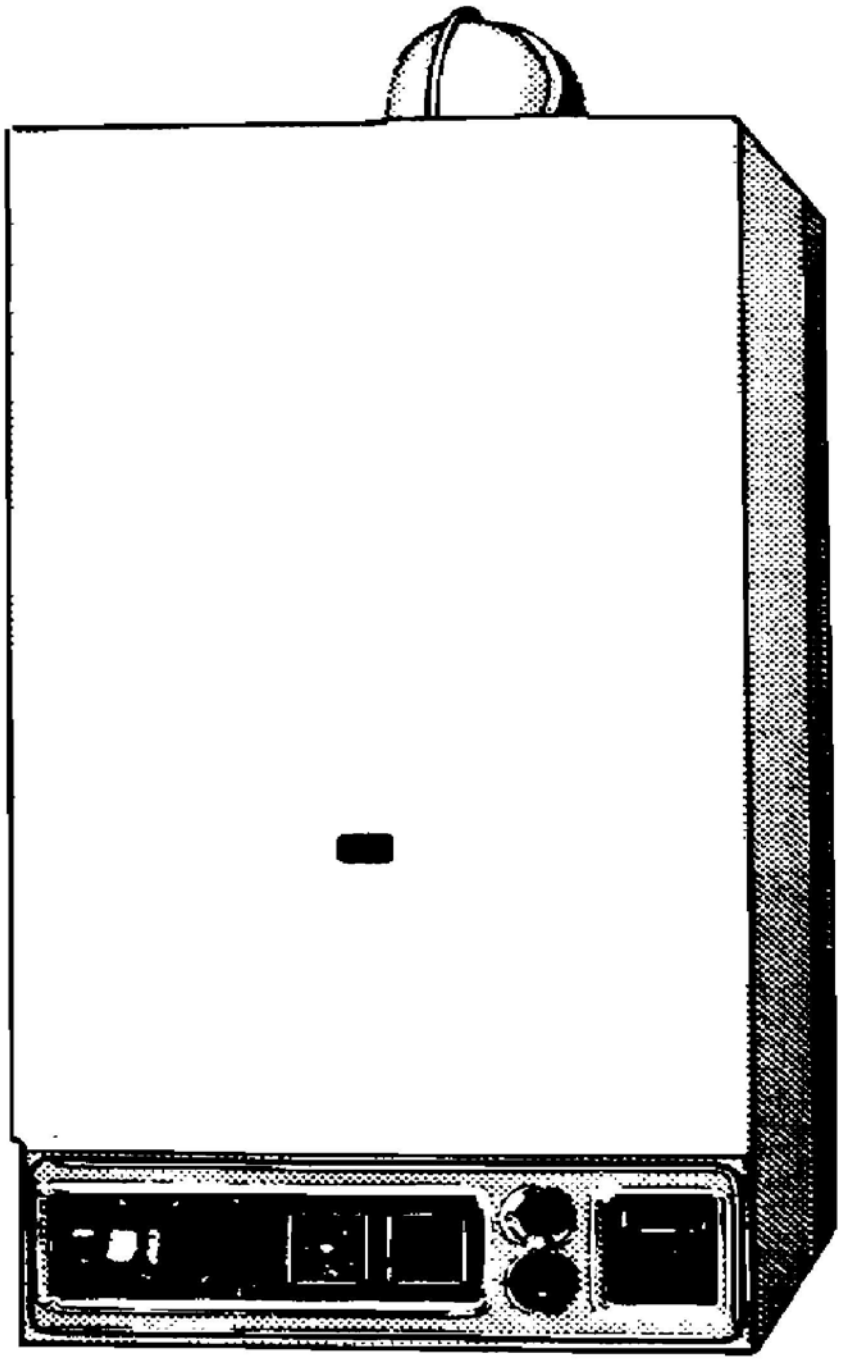
FAULT FINDING AND SERVICING INSTRUCTIONS

DUO

Wall Mounted Fanned Balanced Flue Combination Boiler



FOR USE WITH NATURAL GAS ONLY

TO BE LEFT WITH THE USER - ADJACENT TO THE GAS METER

3. COMMISSIONING

3.1 GAS INSTALLATION

The gas supply must be inspected and tested for soundness back to the gas meter. Purge the gas line by turning on the service tap on the boiler and loosen the top union connection on the back panel. Purging air from the gas line must be carried out in accordance with the recommendation of BS 6891. Retighten the gas union connection and check for gas soundness.

IMPORTANT NOTE: Open all doors and windows, do not smoke and extinguish all naked lights when testing for gas soundness and purging.

3.4 RANGE RATING (CENTRAL HEATING)

This boiler is a range rated appliance and may be adjusted to suit different systems. The maximum, minimum and midrange outputs are given in the following table.

NOTE: The appliance is factory set to the midrange rate shown below. When the appliance has been set up to the desired range rate the position on the data badge wich is positioned on the inner front panel should be marked with a pen (Biro).

Table 2

RANGE RATING	MIN	MED	MAX
Nominal Kw Heat Input Btu/Hr	13.68 46700	21.0 71650	29.0 98950
Nominal Kw Heat Output Btu/Hr	10.0 34100	16.59 56600	23.63 80650
Burner m bar Setting Pressure in wg	2.0 0.8	5.25 2.1	10.25 4.1
Vol cu ft/Hr Gas Rate L/H	44.4 1256	68.2 1930	94.2 2665

3.5 QUICK WARM UP SELECTOR

This boiler is fitted with a system that ensures quick warm up of the heating system if the control panel switch is set to the "rabbit" symbol. Diagram 16.

The function of the quick warm up switch is to operate the boiler heat input at its highest setting as soon as the boiler switches on. The heat input will return to its preset range rate as soon as the systems return temperature reaches 40°C.

NOTE: If the boiler supplies a large number of radiators and is set to the maximum range rate, the 'Quick Warm Up' facility will not be available. Please instruct the user.

3.6 LIGHTING THE BOILER

I) Check that the boiler on/off switch is set to off, and the summer/winter switch is set to winter, and main thermostat at minimum.

II) Light the pilot by turning the gas control knob anti-clockwise from the off position ★. Press in the control knob and hold in. Press the piezo ignition button and check that the pilot has lit through the burner viewing window on the front panel of the combustion chamber. Hold in the gas control knob for approximately 15 seconds to establish the flame failure valve in the gas control. If the pilot fails to light or estinguishes when the control knob is released, repeat the above operation.
If the pilot is subsequently extinguished for any reason wait at least 3 minutes before attempting to relight. Turn the gas control knob fully anti-clockwise to the flame symbol (◊).

III) Check all external controls e.g., timer, room thermostat are calling for heat.

IV) Check that the boiler isolating valves, radiator valves are open and that the heating system is full of water.

V) Switch on the electrical supply.

VI) Switch the boiler on/off switch to on.

3.7 ADJUSTING GAS PRESSURE

a) Slacken the pressure test screw (see Diagram 16) and fit a pressure gauge (U Tube Manometer). Switch on at the boiler on/off switch.

b) The boiler will now be running on its normal setting (mid range) for central heating and the required range rate can now be set. See Table 2. The burner pressure is adjusted between the maximum and minimum range rates by the variable resistor (pot) on the electronic board (Diag. 23). Turn adjuster anticlockwise to increase burner pressure.

NOTE: No other adjustment required. Range rating must only be carried out by following 7 (b) above. This appliance is fitted with a slow opening gas control valve and burner pressure variation is slow to respond to adjustment of Pot.

c) Fully open a domestic hot water tap. The boiler will now automatically switch over to produce domestic hot water. The burner pressure should now be checked while the appliance is at its full gas rate (4.1 in w.g.). If the rate is low, suspect low inlet pressure which should be 20 mbar (8.0 in w.g.) at appliance inlet. This can be checked at the left hand pressure test screw on the gas valve.

d) Turn off the gas service tap and switch off at the boiler on/off switch.

e) Remove U tube manometer(s) and retighten screw(s).

f) Remove the 6 screws securing the inner front panel. Relight boiler and immediately test for gas soundness at burner union connections (main and pilot).

g) Turn off. Replace inner front panel. Turn on and check remaining gas carrying components.

3.8 SETTING THE DOMESTIC HOT WATER FLOW RATE

a) Switch the summer/winter switch to summer (☼).

b) Open the domestic hot water tap furthest from the boiler and ensure that the water flows freely.

c) Leave the tap the furthest point from the boiler full on.

d) The domestic hot water flow rate may now be adjusted, using the throttle screw, positioned on the front of the divertor valve (See Diagram 21). It is recommended that the throttle be adjusted to give a 30°C rise in temperature. This is done by measuring the temperature of the cold mains supply water and then adjusting the throttle until the hot draw off water is 30°C (54°F) hotter than the cold water. Increasing water flow reduces temperature rise. Decreasing water flow increases temperature rise.

An alternative method of achieving an adjustment to give 30°C rise in temperature is by measuring the flow rate against time. This can be done by adjusting the flow rate so that a 2 litre jug is filled in 10.5 seconds.

NOTE: This adjustment procedure is recommended to prevent excessive flow rate and water being delivered too cool to the hot water draw off taps.

For higher draw off water temperatures up to a maximum of 65°C the user should then reduce the flow rate at the draw off tap which will increase the temperature of the water.

e) Turn off the domestic hot water tap and switch off at boiler.

f) Refit the control panel and secure with the two screws previously removed.

g) Refit the front cover panel by pushing the four stakes into the spring clips.

h) Fit the lighting instructions panel as shown in Diagram 10.

3.9 MEASUREMENT OF COMBUSTION PRODUCTS

The combustion products can be checked if required at the flue terminal.

Approximate values are:
CO .005% CO^2 6.5%
(At maximum heat input D.H.W.).

8. FAULT FINDING

IMPORTANT NOTICE:
If any electrical fault occurs on the appliance the preliminary electrical system checks contained in the British Gas Multimeter Instruction Booklet must be carried out first.

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

1. Earth Continuity
2. Polarity
3. Resistance to Earth.

8.1 EARTH CONTINUITY CHECK

Appliances must be electrically disconnected meter set on Ω (ohms) x 1 scale and adjust zero if necessary.
Test leads from any appliance earth point (e.g. inside control box) see wiring diagram (Page 18) to earth pin on plug. Resistance should be less then 1 Ω (ohm) if the resistance is greater than 1 Ω (ohm) check all earth wires for continuity and all contacts are clean and tight.
If the resistance is still greater than 1 Ω (ohm) then this should be reported to your supervisor.

8.2 SHORT CIRCUIT CHECK

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

NOTE: Should it be found that the fuse has failed but no fault is indicated a detailed continuity check (i.e. by disconnecting and checking each component). It is required to trace the faulty component. It is possible that a fault could occur as a result of local burning/arcing but no fault could be found under test. However, a detailed visual inspection should reveal evidence of burning around the fault.

8.3 POLARITY CHECK

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

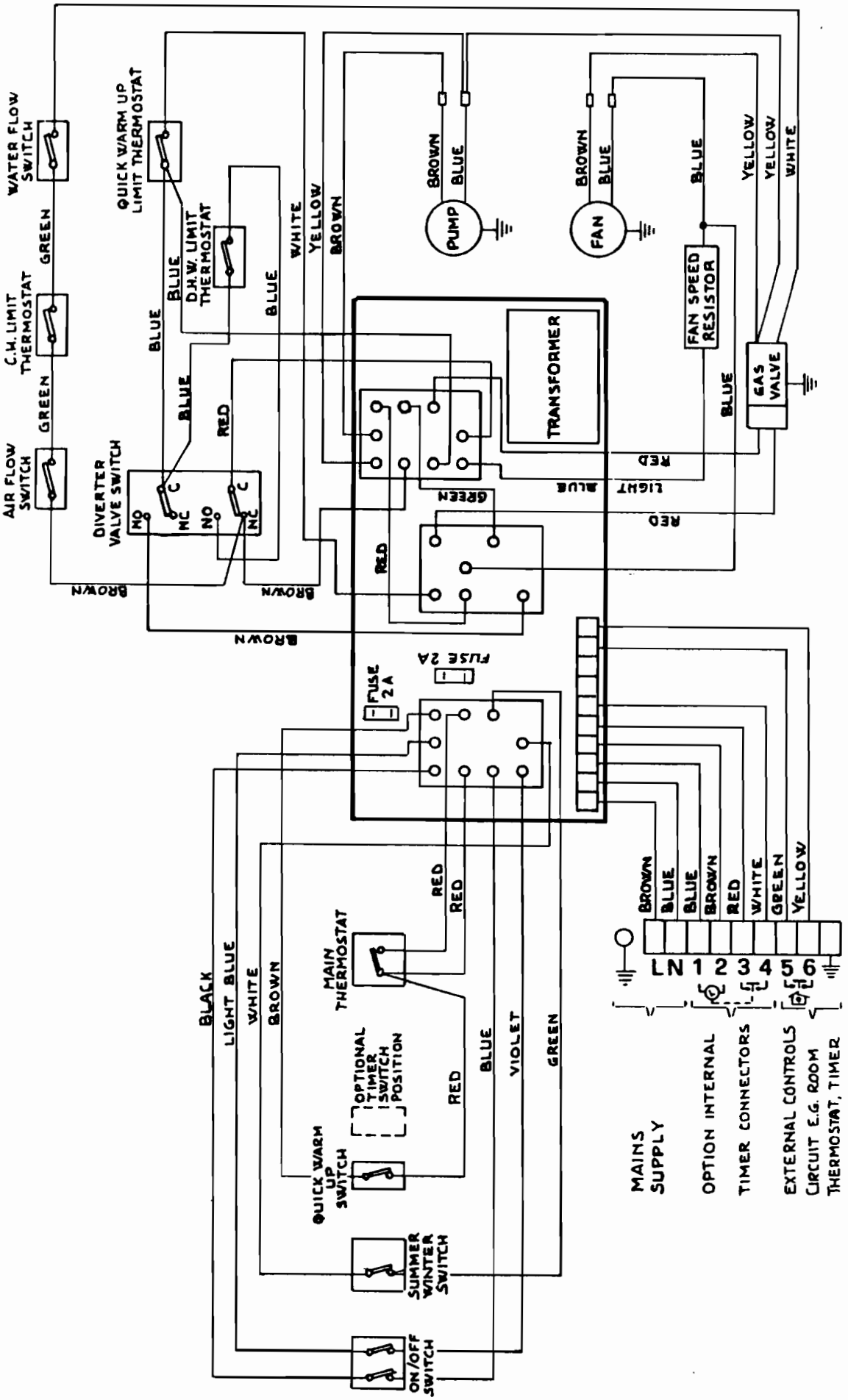
(a) Test leads from L to N meter reads approx. 240 V a.c.
(b) Test leads from L to E (⏚) meter reads approx. 240 V a.c.
(c) Test leads from N to E (⏚) meter reads 0 to 15 V a.c.

8.4 RESISTANCE TO EARTH CHECK

Appliance must be disconnected from main supply and meter on Ω (ohms) x 100 scale. All switches including thermostat on-test leads from L to E - if meter reads other than infinity (∞) there is a fault which should be isolated. A detailed continuity is required to trace the faulty component.

IMPORTANT:
These series of checks are the first electrical checks to be carried out during a fault finding procedure. On completion of the service/fault finding task which has required the breaking and remarking of electrical connections, then the checks 8.1 Earth Countinuity, 8.3 Polarity and 8.4 Resistance to Earth must be repeated.

BOILER WIRING DIAGRAM

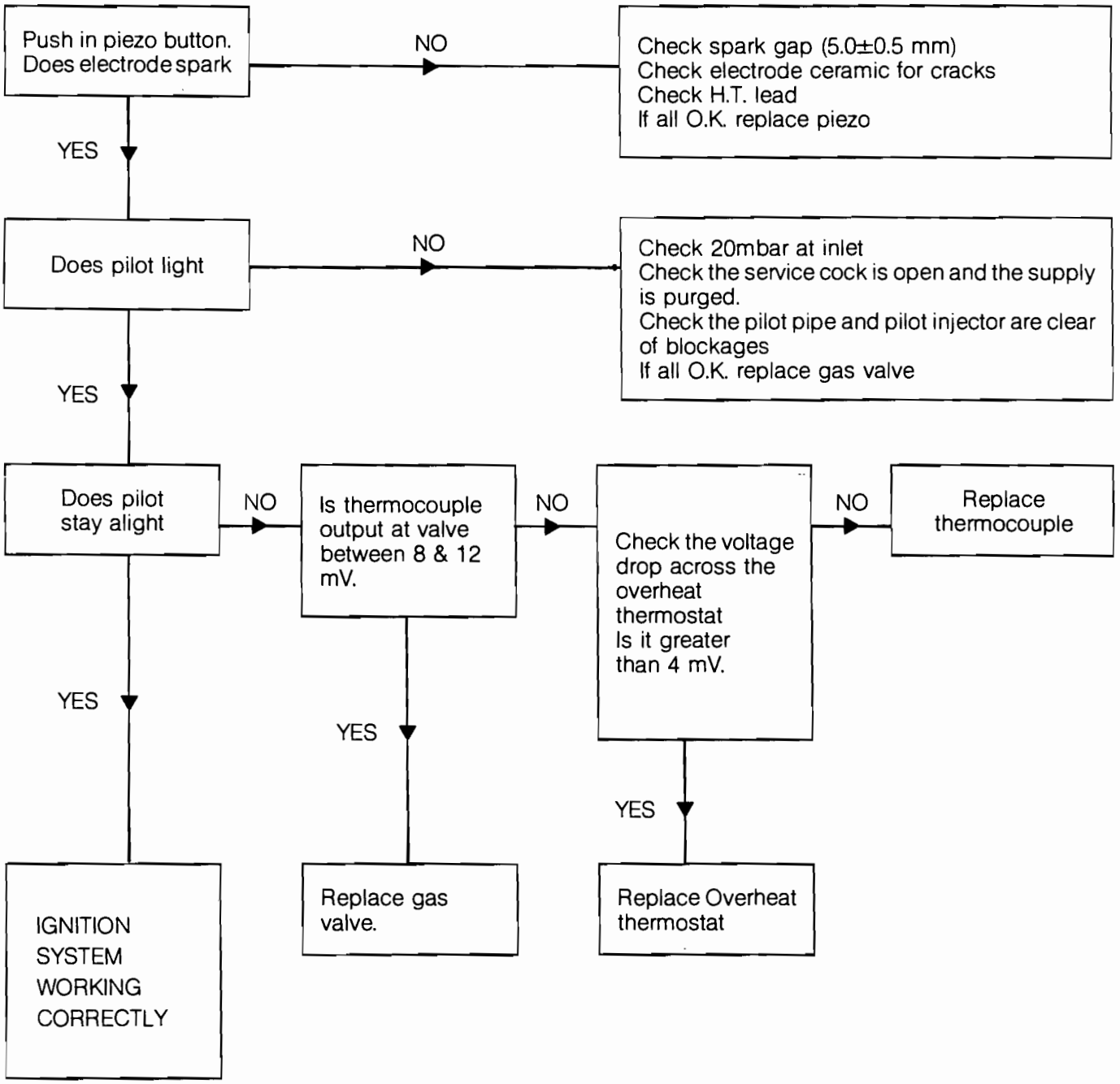


8.5 FAULT TRACING

To check any component, turn all external to boiler controls ON, e.g., room thermostat and timer. Ensure the gas supply is turned ON at all cocks, check for blockages and purge out any air in the line.

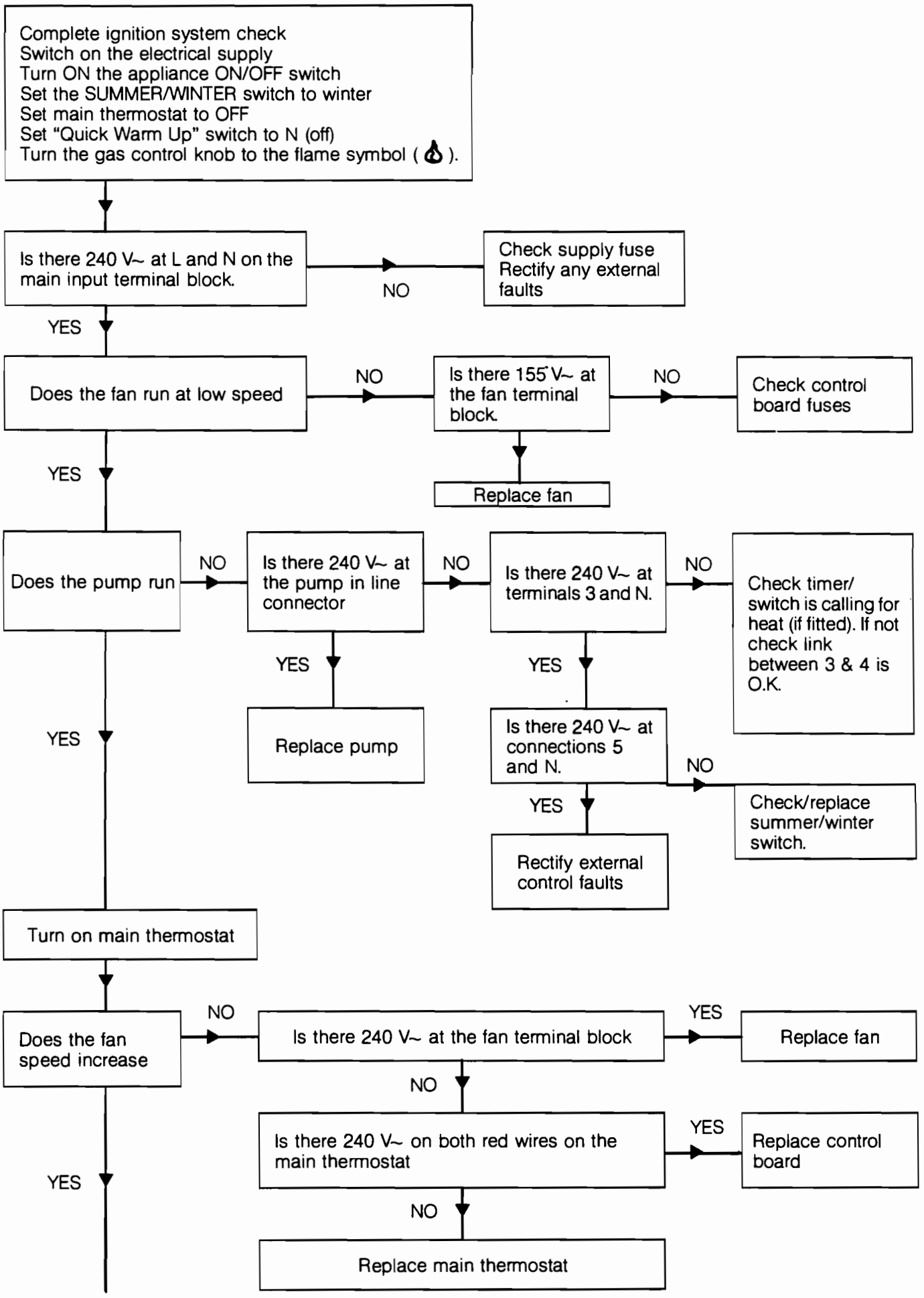
8.5.1. The checks must be carried out in full and in the following sequence.

IGNITION SYSTEM

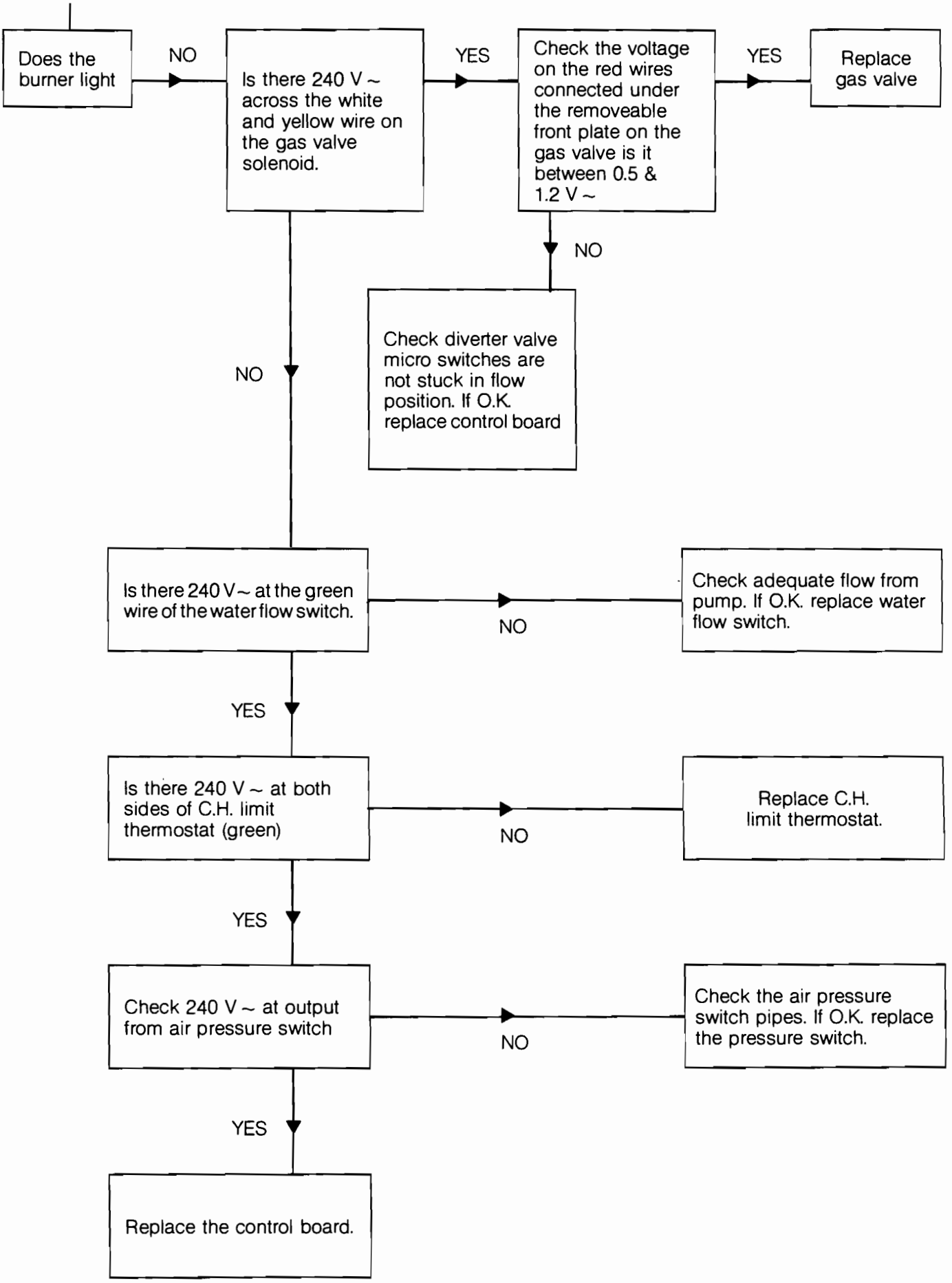


8.5.2.

CENTRAL HEATING

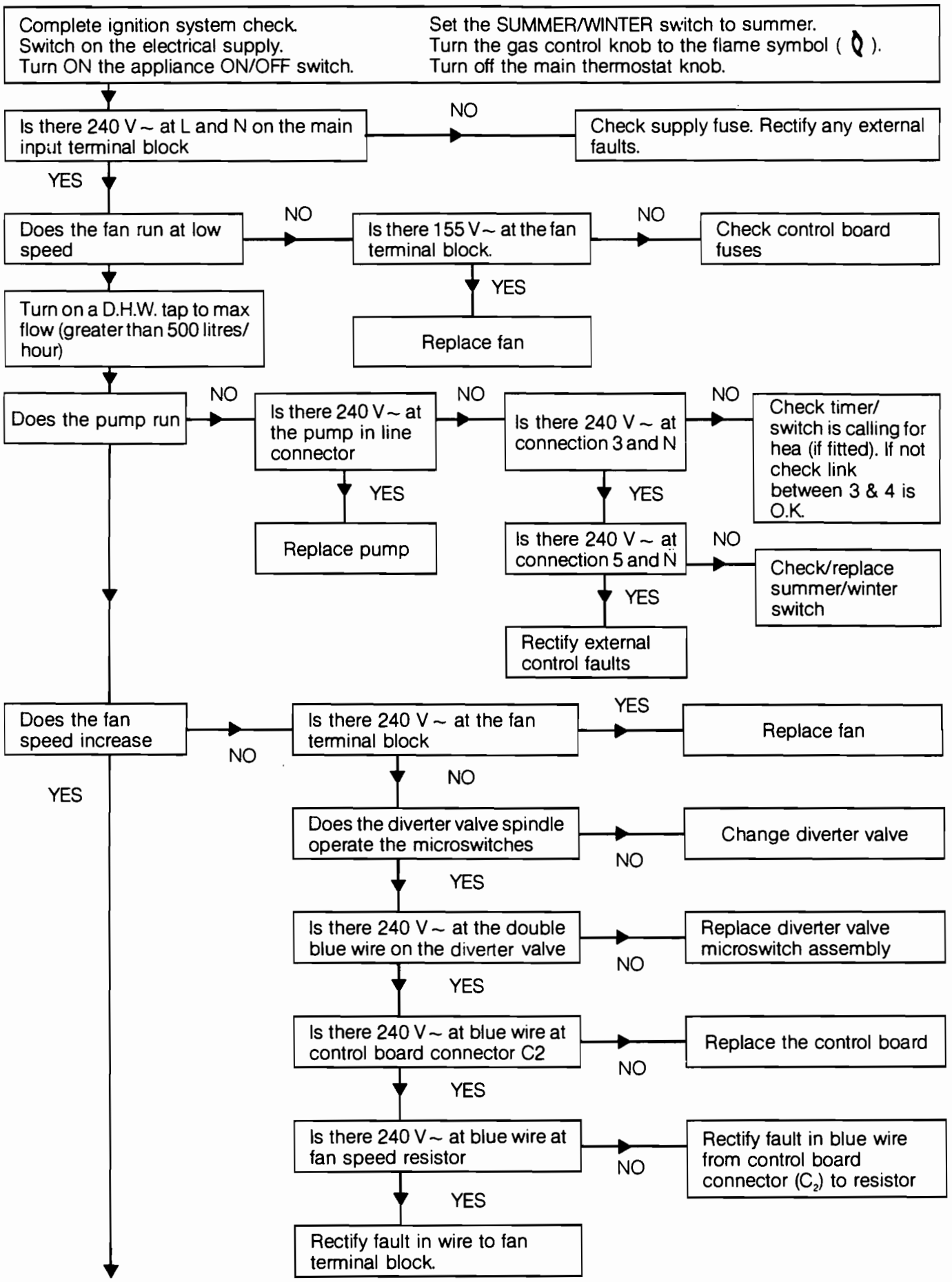


8.5.2. contd.

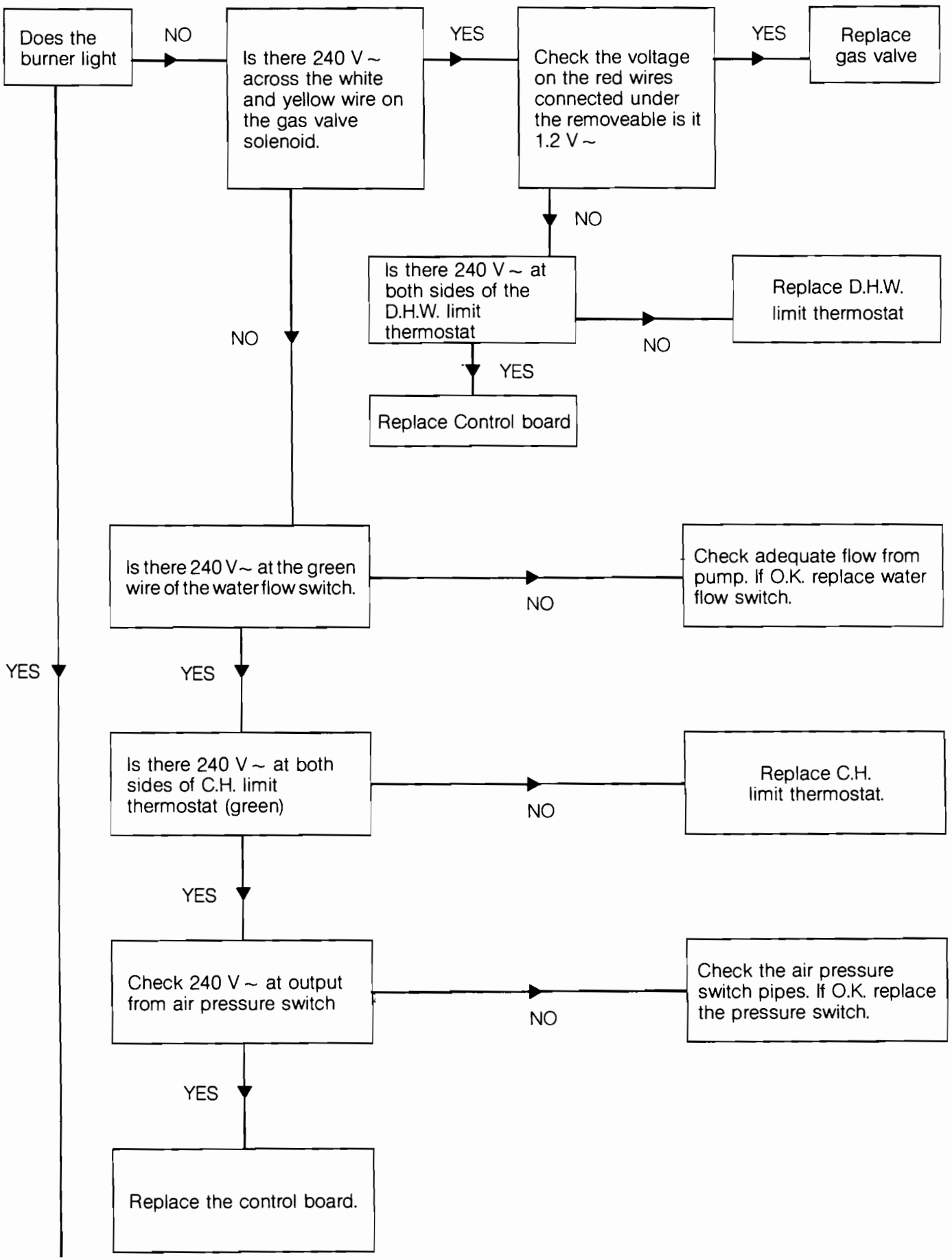

Does the burner light
NO
Is there 240 V ~ across the white and yellow wire on the gas valve solenoid.
YES
Check the voltage on the red wires connected under the removeable front plate on the gas valve is it between 0.5 & 1.2 V ~
YES
Replace gas valve
NO
Check diverter valve micro switches are not stuck in flow position. If O.K. replace control board
NO
Is there 240 V ~ at the green wire of the water flow switch.
NO
Check adequate flow from pump. If O.K. replace water flow switch.
YES
Is there 240 V ~ at both sides of C.H. limit thermostat (green)
NO
Replace C.H. limit thermostat.
YES
Check 240 V ~ at output from air pressure switch
NO
Check the air pressure switch pipes. If O.K. replace the pressure switch.
YES
Replace the control board.

8.5.3.

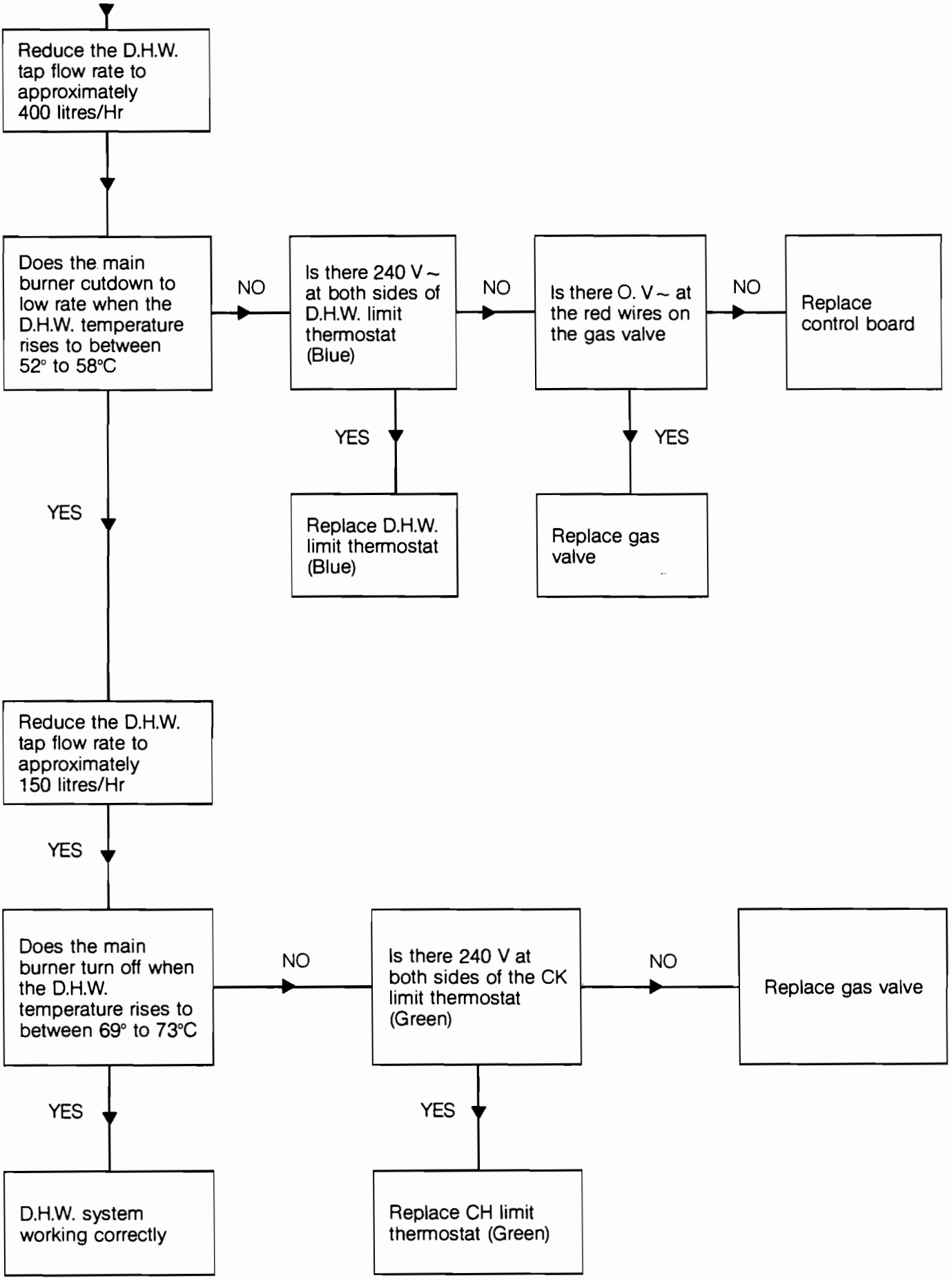
DOMESTIC HOT WATER



8.5.3. contd.


Does the burner light
NO
Is there 240 V ~ across the white and yellow wire on the gas valve solenoid.
YES
Check the voltage on the red wires connected under the removeable is it 1.2 V ~
YES
Replace gas valve
NO
Is there 240 V ~ at both sides of the D.H.W. limit thermostat
NO
Replace D.H.W. limit thermostat
YES
Replace Control board
NO
Is there 240 V ~ at the green wire of the water flow switch.
NO
Check adequate flow from pump. If O.K. replace water flow switch.
YES
YES
Is there 240 V ~ at both sides of C.H. limit thermostat (green)
NO
Replace C.H. limit thermostat.
YES
Check 240 V ~ at output from air pressure switch
NO
Check the air pressure switch pipes. If O.K. replace the pressure switch.
YES
Replace the control board.

8.5.3. contd.

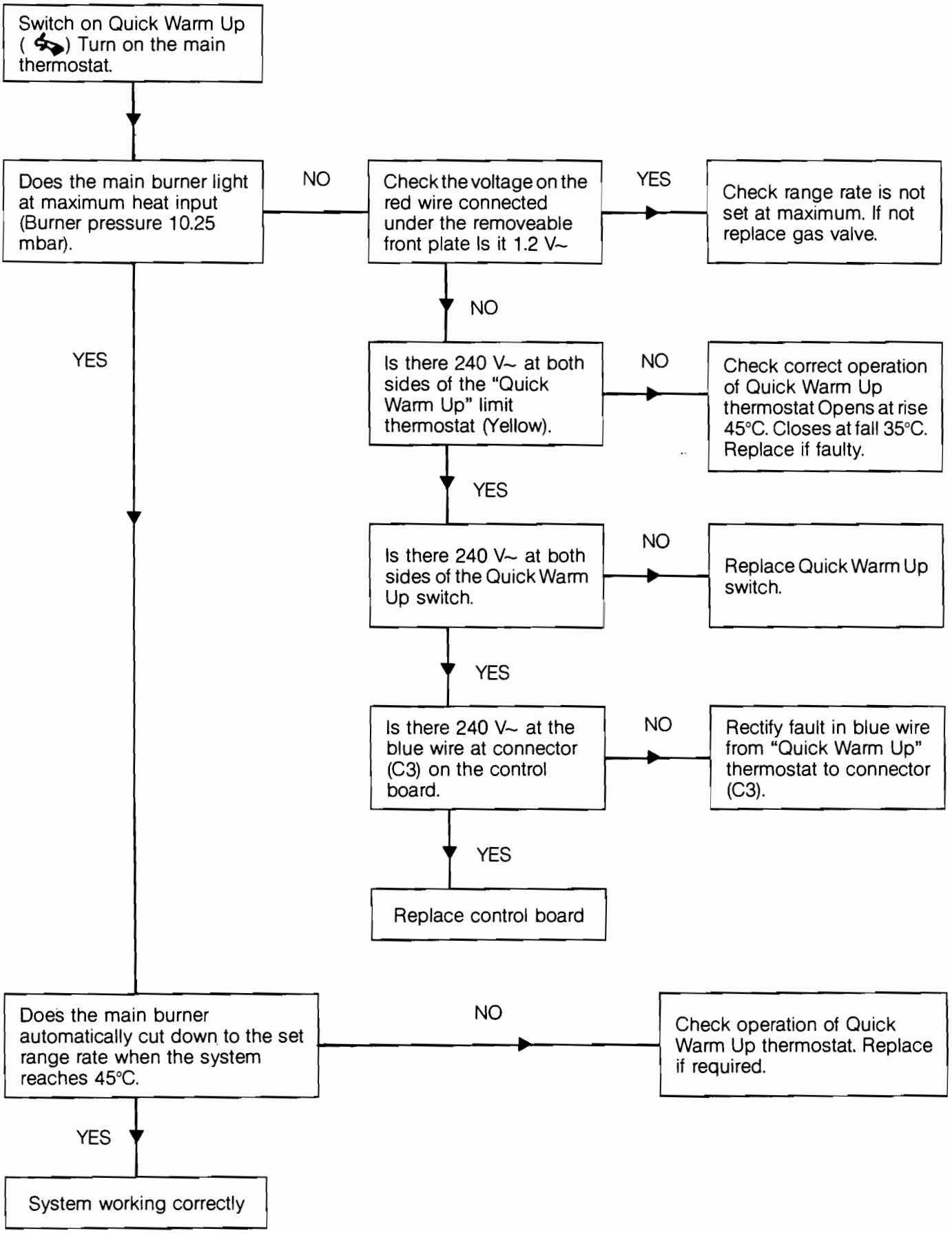

Reduce the D.H.W. tap flow rate to approximately 400 litres/Hr
Does the main burner cutdown to low rate when the D.H.W. temperature rises to between 52° to 58°C
NO
Is there 240 V ~ at both sides of D.H.W. limit thermostat (Blue)
NO
Is there O. V ~ at the red wires on the gas valve
NO
Replace control board
YES
Replace D.H.W. limit thermostat (Blue)
YES
Replace gas valve
YES
Reduce the D.H.W. tap flow rate to approximately 150 litres/Hr
YES
Does the main burner turn off when the D.H.W. temperature rises to between 69° to 73°C
NO
Is there 240 V at both sides of the CK limit thermostat (Green)
NO
Replace gas valve
YES
D.H.W. system working correctly
YES
Replace CH limit thermostat (Green)

8.5.4.

QUICK WARM UP

If the boiler supplies a large number of radiators and is set to the maximum range rate, the "Quick Warm Up" facility will not be available.

Carry out test sequence for Central Heating and Domestic Hot Water and then turn off at the main thermostat. Allow heating system to cool for approximately 10 minutes.



OPTIONAL TIMER AND SWITCH

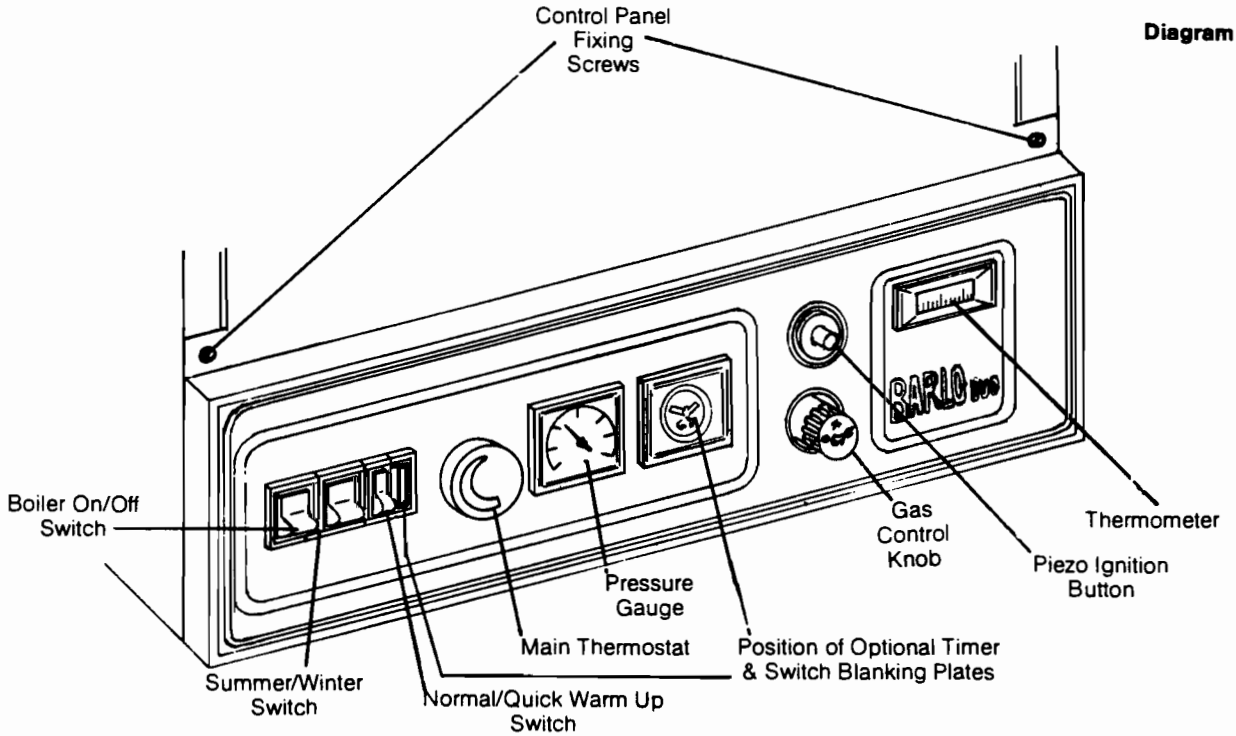
FITTING INSTRUCTIONS

NOTE: If the optional timer is to be fitted into an existing installation, DISCONNECT THE APPLIANCE FROM THE ELECTRICAL SUPPLY BY SWITCHING OFF AT THE ISOLATING SWITCH OR REMOVING THE PLUG FROM THE SOCKET.

1) The front panel is fixed with four stakes at each corner and engaged in corresponding springs in the side panels. Remove the front panel by pulling the panel forward starting at the top.

2) Remove the two screws fixing the control panel (Diagram 15). The control panel is held in position by two stakes which engage in corresponding springs in the side panel. Pull open the control panel by holding the panel at its extreme ends as shown by arrows (A) (Diagram 15) and allow the panel to drop forward as shown in Diagram 16.

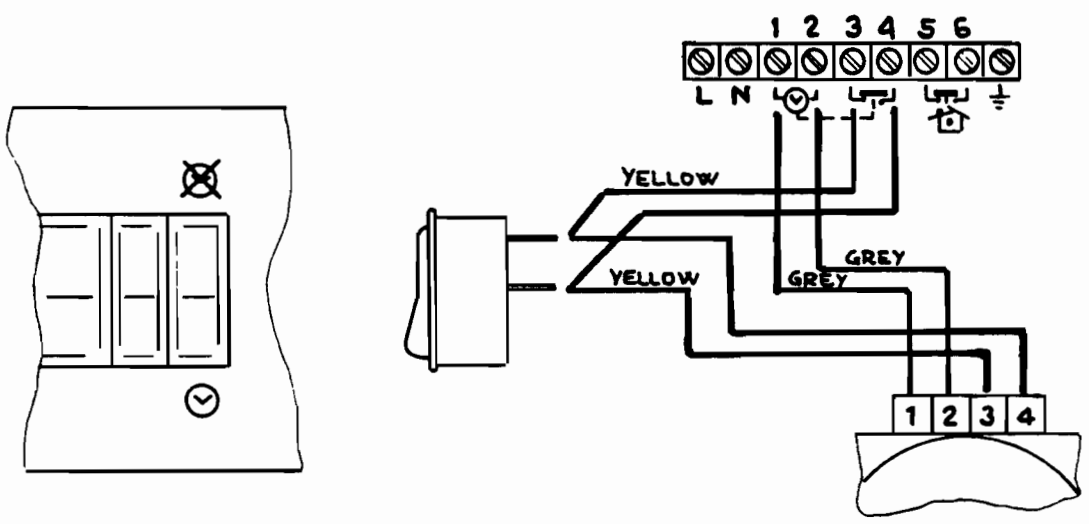
Diagram (A)



3) Remove the optional timer and switch blanking plates. See Diagram (A).

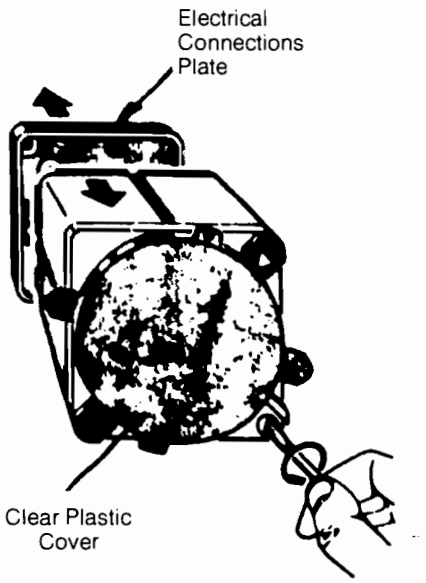
4) Fit the switch supplied so that the terminals are at the top the control panel as shown in Diagram (B).

Diagram (B)



5) The timer can now be fitted into its position on the control panel as follows:
   (a) Remove the clear plastic cover (Diagram C) from the front of the timer by rotating the cover clockwise and pulling clear from the timer.
   (b) Undo the screw as shown in diagram (C) and remove the electrical connection plate.
   (c) Remove the clamping plate from the timer body by easing open the two plastic lugs and slide the plate clear of the body.
   (d) Push the timer into the hole in the control panel so that the electrical connection fixing screw is in the bottom right hand corner.
   (e) Fit the clamping plate onto the back of timer body and push home to fix the timer into the control panel.

Diagram (C)



6) The switch and electrical connection plate should now be wired to the appliance terminal block as shown in Diagram (B) with the wire supplied.

7) Push the electrical connection plate onto the rear of the timer and fix with the screw previously removed.

8) Replace all components in reverse order of removal.

INSTRUCTIONS FOR USE

1) Remove the clear plastic cover.

2) Set the time of day by rotating the clock dial until the correct time is shown against the white arrow.

3) The timer can now be set to switch the boiler on and off by using the three sets of controlling pegs provided.
   Green pegs switch on
   Red pegs switch off
   Minimum on or off time is 45 minutes.

4) The optional timer switch can now be set to achieve the following conditions:

   Timer Controlled Operation.

   Non Timer Controlled Operation (Manual Over-ride)

2.9 ELECTRICAL CONNECTIONS

WARNING THIS APPLIANCE MUST BE EARTHED

1) Remove the two screws fixing the control panel. Diagram 15. The control panel is held in position by two stakes which engage in corresponding springs in the side panel. Pull open the control panel by holding the panel at its extreme ends as shown by arrows (a), Diagram 15, and allow the panel to drop forward as shown in Diagram 16.

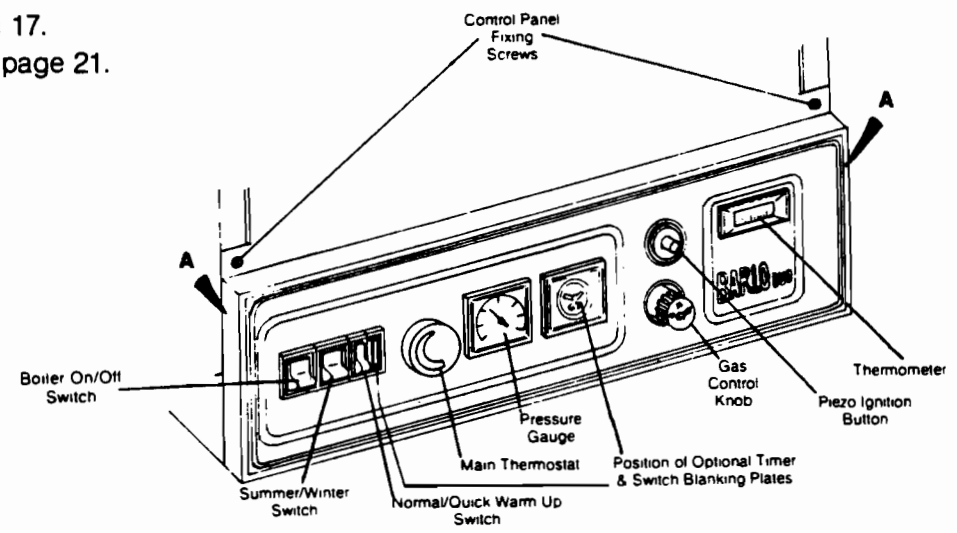
2) Thread the mains input cable through one of the grommets in the rear panel and then through one of the cable clamps.
   Enough slack must be left in the cable to enable the front panel to be dropped down for maintenance purposes. Connect the cable to the terminal block as shown in Diagram 16.

NOTE: When making connections onto the terminal block make sure the earth conductor is longer than the live and neutral conductors so that the earth wire is the last to become disconnected should the cable be pulled from the clamp.

For internal wiring see Diagram 17.

For external control wiring, see page 21.

Diagram 15



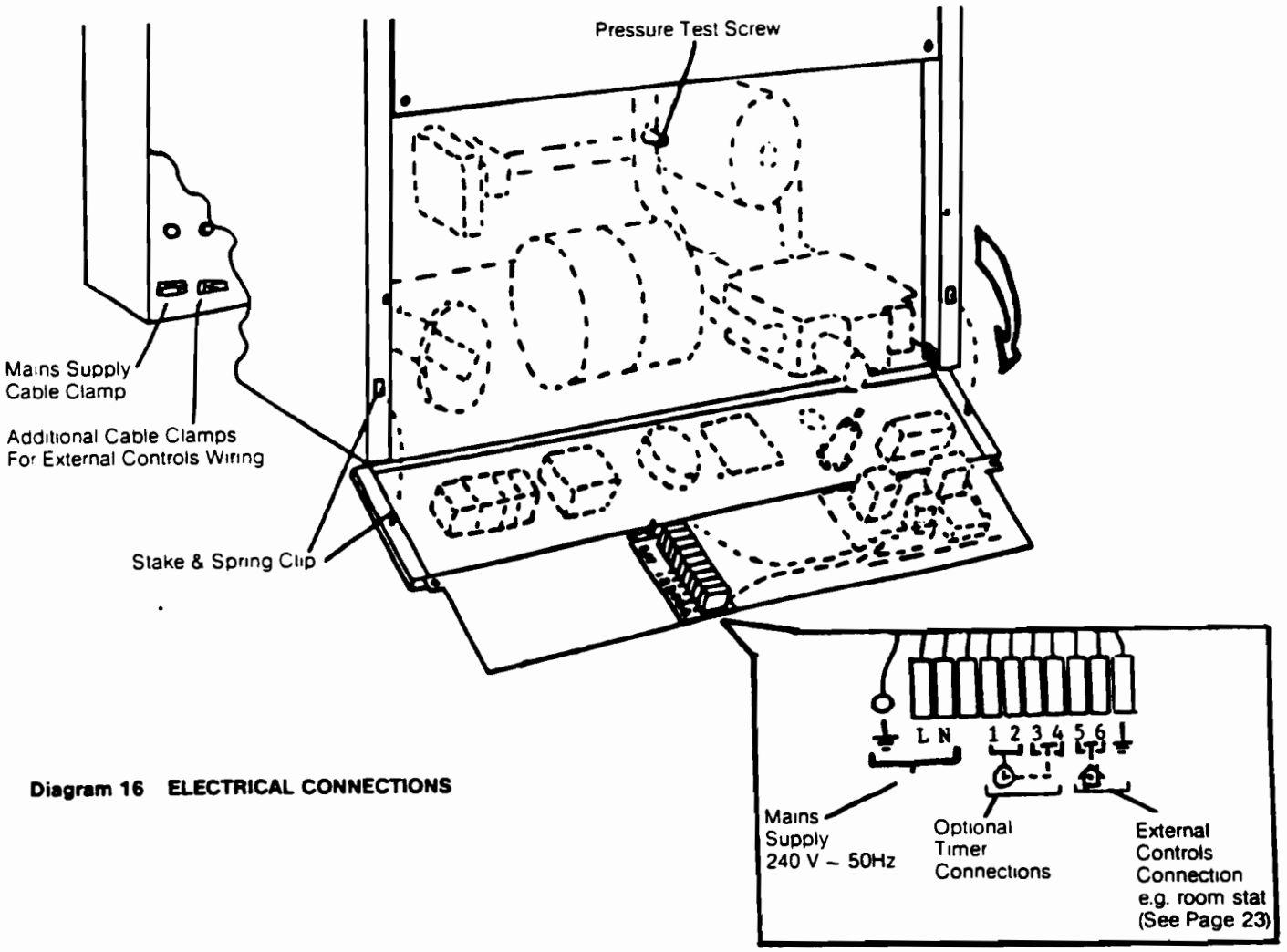


Diagram 16 ELECTRICAL CONNECTIONS

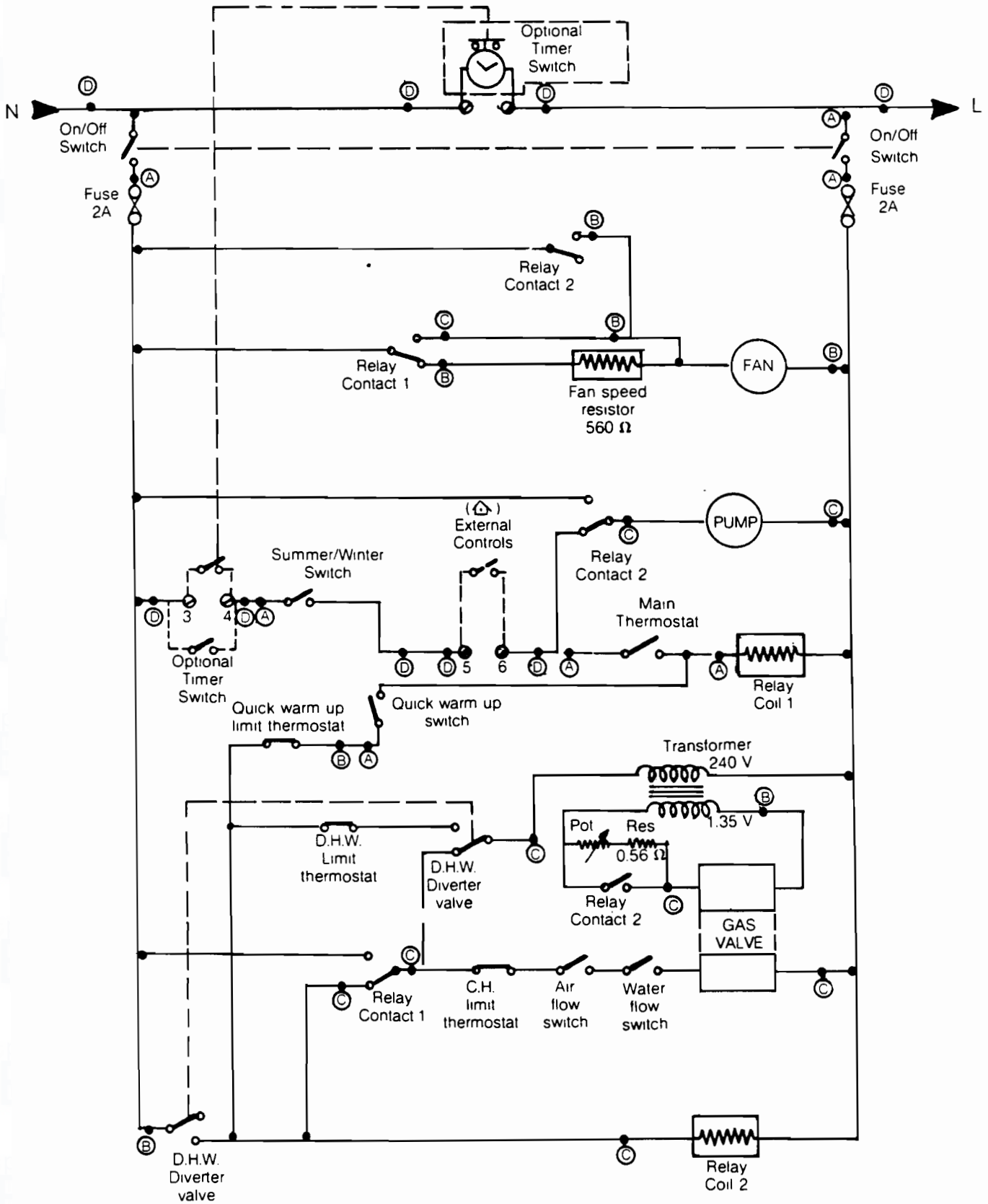
3) If external controls are not being used e.g., external timer, room thermostat, the link between terminals 5 & 6 should be left in position.

4) If the optional internal timer is not fitted to the boiler, the link between terminals 3 & 4 should be left in position.

NOTE: Where external controls are being used, the switching should be carried out between terminals 5 & 6. The wires for external controls must be clamped through the additional cable clamp provided on the back panel.

ALL WIRING TO THE CONTROL PANEL MUST USE CABLE OF SIZE 0.75 mm² (24x0.2 mm) TO BS 6500 : TABLE 16.
NO EXTERNAL CONTROLS SHOULD BE CONNECTED IN THE SUPPLY TO TERMINAL L.

FUNCTIONAL FLOW ELECTRICAL WIRING DIAGRAM



ALL SWITCHES IN UNENERGIZED CONDITION
Connection Blocks on Control Board (A) (B) (C) (D) - Position shown on Boiler Wiring Diagram

ILLUSTRATED WIRING DIAGRAM

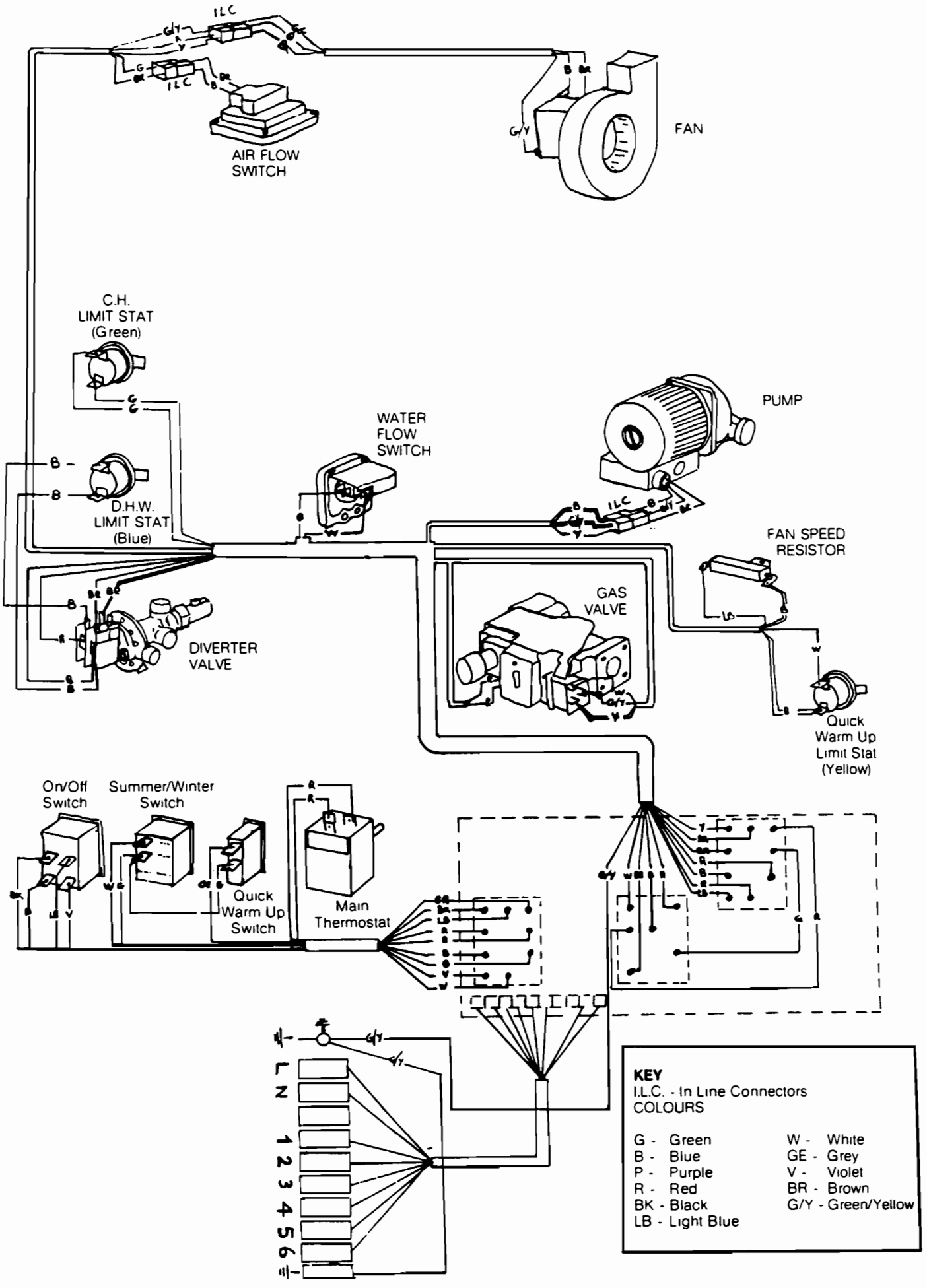
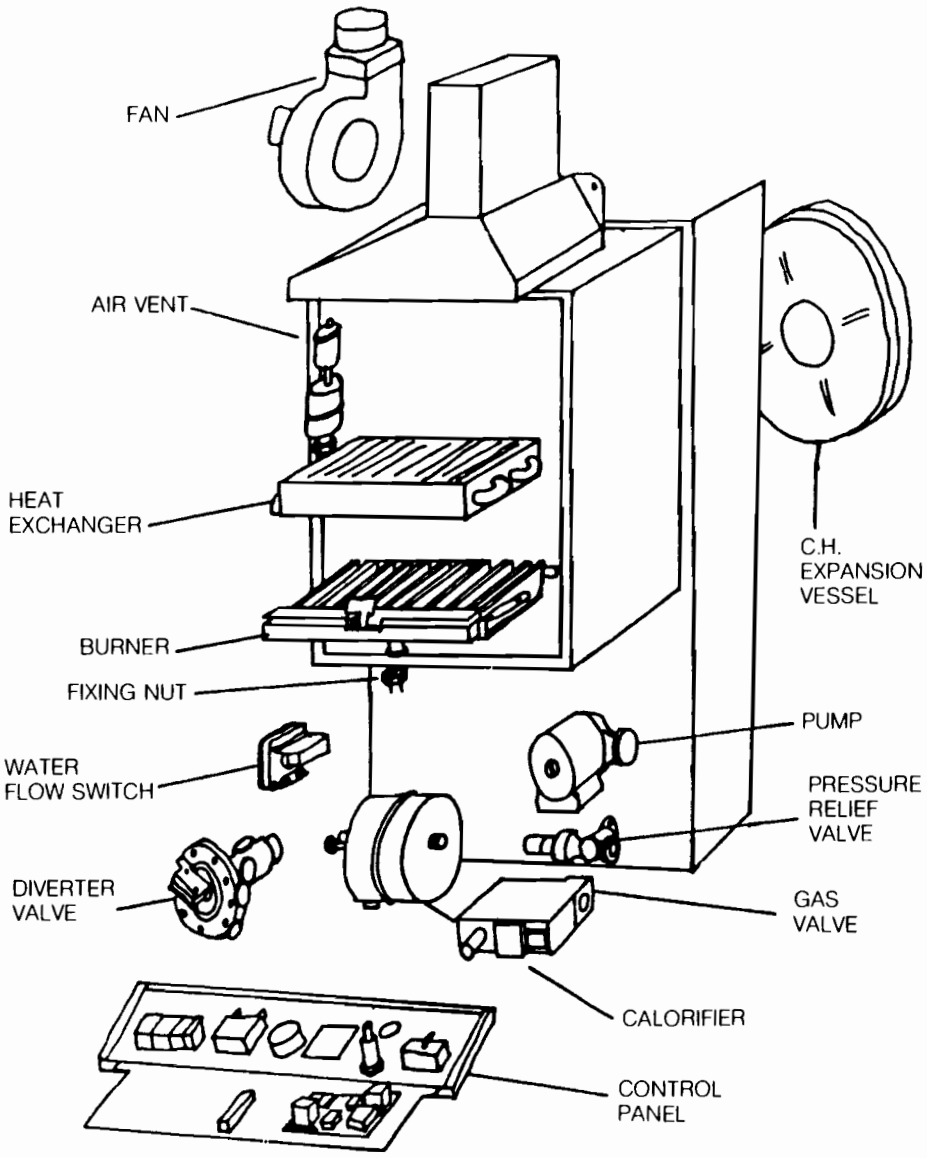


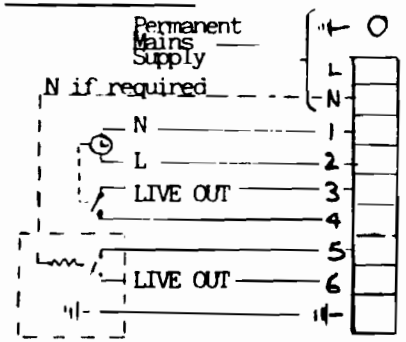
Diagram 18

GENERAL LAYOUT OF COMPONENTS

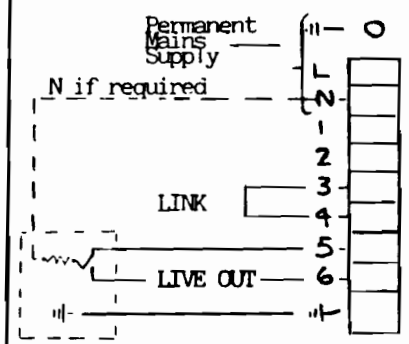


EXTERNAL WIRING DIAGRAMS

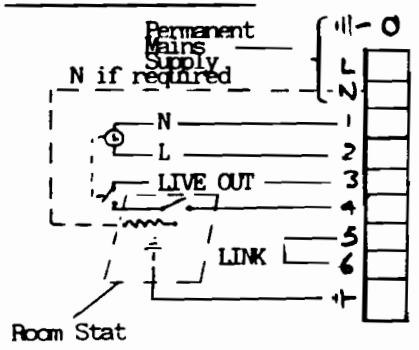
External Timer with Separate Room Thermostat



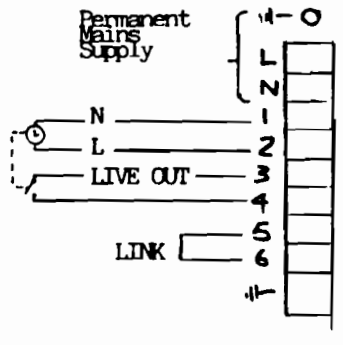
External Room Thermostat Only



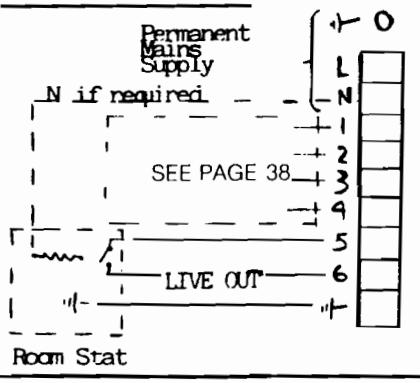
External Timer with Room Thermostat in Series



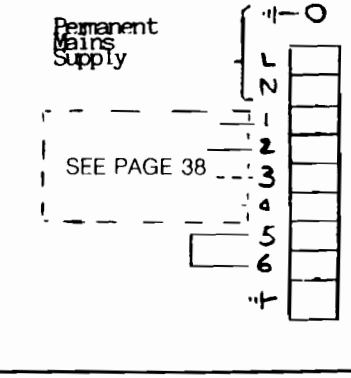
External Timer Only



Internal Optional Timer With Room Thermostat



Internal Optional Timer Only



SERVICING INSTRUCTIONS

IMPORTANT:

This appliance must be serviced and cleaned at regular intervals to ensure prolonged and efficient service. Generally servicing and cleaning should be carried out at yearly intervals. Checks should also be carried out to the heating and hot water systems including timers and thermostats.

4 SERVICING AND CLEANING THE APPLIANCE

4.1

DISCONNECT THE APPLIANCE FROM THE ELECTRICAL SUPPLY BY SWITCHING OFF AT THE EXTERNAL ISOLATING SWITCH OR REMOVING THE PLUG FROM THE SOCKET.
TURN OFF THE GAS SUPPLY AT THE APPLIANCE SERVICE TAP.

4.2

The front panel is fixed with four stakes at each corner and enganged in corresponding springs in the side panels. Remove the front panel by pulling the panel forward starting at the top.

4.3

Remove the six screws fixing the inner front panel and remove panel.

4.4 FAN ASSEMBLY REMOVAL (Diagram 19)

I) Remove the electrical connections from the fan motor.

II) Remove the two fan plate fixing screws and pull the fan vertically downwards to disengage the flue spigot from the elbow. Pull the fan forward from its rear location, remove the air pressure pipes marking if necessary to ensure correct re-positioning and remove fan assembly.

4.5 COMBUSTION CHAMBER FRONT PANEL REMOVAL

I) Remove the three screws securing the combustion chamber front panel, lower the panel to disengage from locating pegs on the burner and remove panel.

4.6 COLLECTOR HOOD REMOVAL

I) Remove the two rear fixing screws securing the collector hood. Remove the two screws securing the collector hood to the combustion chamber side panels. Remove the hood by sliding forward and out of the appliance. Care should be taken when with drawing the hood past the overheat thermostat.

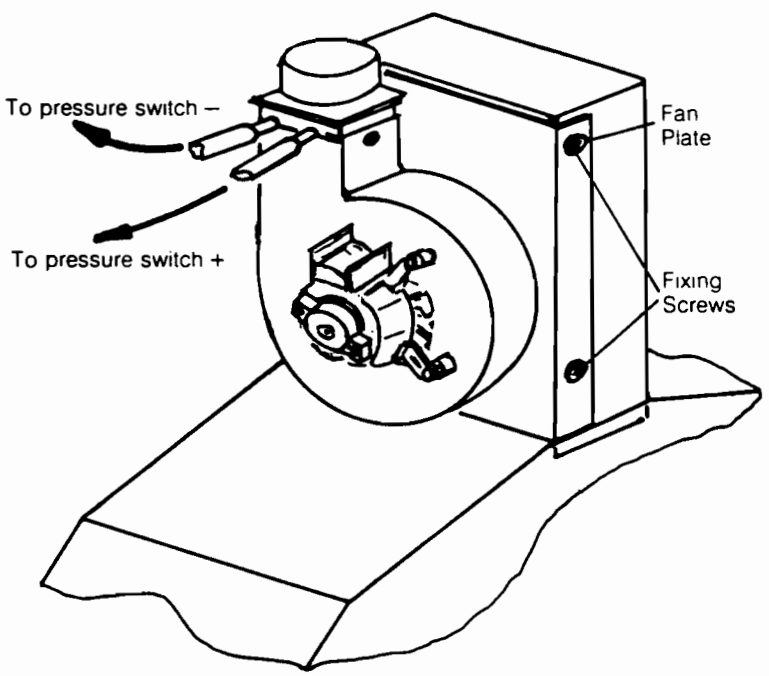
4.7 MAIN BURNER REMOVAL

I) Undo and remove the flame failure thermocouple from the pilot bracket.

II) Undo and remove the pilot supply tube from the pilot bracket. Disconnect the HT lead connection from the spark electrode.

III) Undo the main burner fixing nut. See Diagram 18, and pull the burner forward releasing it from its rear location pegs. The burner can now be completely removed.

Diagram 19



5. CLEANING THE APPLIANCE

NOTE: Care must be taken to avoid debris falling into the control panel area. This may be prevented by protecting the control panel with a piece of material.

IMPORTANT: If the boiler is being cleaned shortly after it has been operating, care should be taken as parts of the boiler may still be extremely hot.

5.1

Thoroughly inspect the heat exchanger fins checking for any blockages and clean using a suitable soft brush.

5.2

Examine the combustion chamber insulation for signs of damage. Replace if required (Section 7.3).

5.3 MAIN BURNER

I) Remove the four main burner gas rail fixing screws from the burner assembly and remove gas rail.
II) Examine the main burner and thoroughly clean using a suitable soft brush to remove any debris.
III) Ensure the pilot burner and injectors are free from debris.
IV) Ensure the main injectors are clear of debris etc... If necessary, remove the injectors for cleaning. When replacing injectors ensure a suitable thread sealing compound is used.
V) Replace the main burner gas rail to the main burner using the four screws previously removed.
VI) Check condition of electrode and thermocouple. Replace if necessary.

THE FOLLOWING CHECKS SHOULD BE CARRIED OUT WHILST SERVICING AND CLEANING THE BOILER.

a) Check the collector hood and flue duct for obstructions. Clean if necessary.
b) Check for free running of the fan. Clean with soft brush if necessary.
c) Check the correct system pressure is being maintained and re-pressurize if necessary. See section 3.2 Filling The Water System.
d) Examine the internal pipe work for water leaks and rectify if necessary.
e) Check the operation of the safety valve (See Section 3.2).

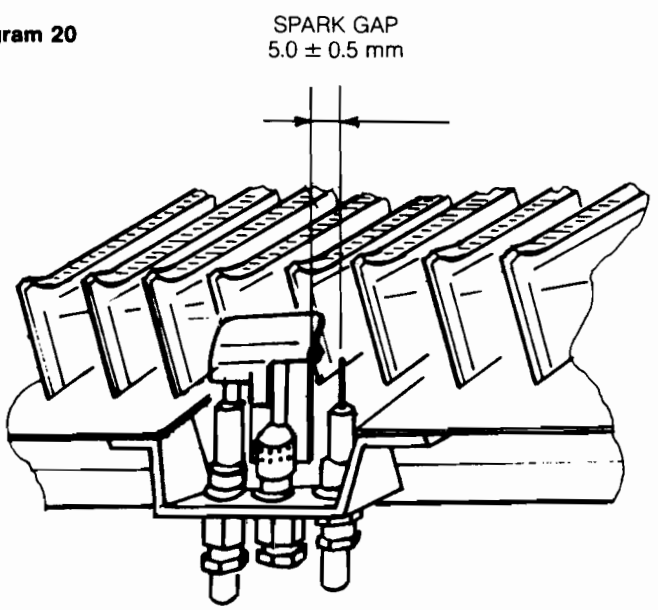
5.4 RE-ASSEMBLY OF COMPONENTS

Re-assemble all components removed during routine servicing in reverse order ensuring:

1) The electrode gap is as shown in Diagram 20.
2) The main burner is correctly positioned onto the rear location pegs.
3) Renew any gaskets that show signs of deterioration.
4) The two screws fixing the collector hood to the combustion chamber sides should not be tightened until the combustion chamber front is fitted.
5) After the removal or servicing of any gas carrying components a test for gas soundness must be carried out. See section 3.7.

NOTE: Ensure the pilot entry grommet into the combustion chamber is correctly located.

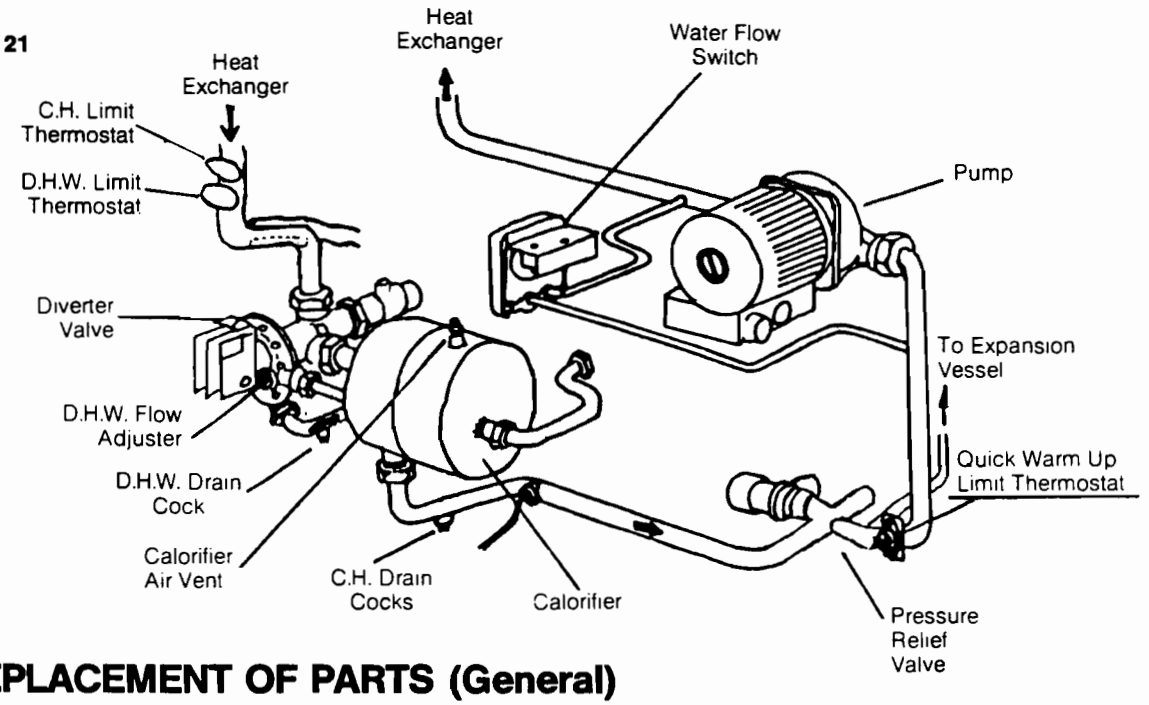
Diagram 20



Pilot Length

The pilot length can be checked as shown in diagram 20. If the pilot length is shorter than shown check the pilot head and injector are clean.

Diagram 21



6 REPLACEMENT OF PARTS (General)

Always test for gas soundness of removed gas carrying components (See commissioning).
The replacement of parts must be carried out by a competent person.

6.1

DISCONNECT THE APPLIANCE FROM THE ELECTRICAL SUPPLY BY SWITCHING OFF AT THE EXTERNAL ISOLATING SWITCH OR REMOVING THE PLUG FROM THE SOCKET.

6.2

TURN OFF THE GAS SUPPLY AT THE APPLIANCE SERVICE TAP.

6.3

PRIOR TO CARRYING OUT THE REMOVAL OF ANY COMPONENT WHICH IS CONNECTED TO THE CENTRAL HEATING SYSTEM CIRCUIT THE PRESSURE IN THE BOILER MUST BE REDUCED. THIS CAN BE CARRIED OUT BY CLOSING THE BOILER FLOW AND RETURN ISOLATING VALVES AND RELEASING THE PRESSURE BY OPENING THE PRESSURE RELIEF VALVE. THIS DONE BY ROTATING THE RED KNOB APPROXIMATELY ¼ TURN.

6.4

A DRAIN POINT IS PROVIDED ON THE DOMESTIC HOT WATER AND CENTRAL HEATING CIRCUIT ON THE BOILER. SEE DIAGRAM 21.

7. REPLACEMENT OF PARTS

7.1 FAN ASSEMBLY

I) Remove the fan from the appliance as described in 4.1 to 4.4 in the servicing instructions.

II) Replace all components in reverse order ensuring a good seal is made between the fan mounting plate and the collector hood. Replace gasket if necessary.

NOTE: Fit the combustion chamber front panel with the three screws prior to refitting and tightening the two hood to combustion chamber side screws.

7.2 MAIN BURNER

I) Remove all components from the appliance as described in 4.1 to 4.3 & 4.5 (Combustion Chamber Front Panel).

II) Remove the main burner as described in 4.8.

III) Replace all components in reverse order ensuring that the electrode gap is as shown on diagram 20 and the burner is correctly positioned on the rear location pegs.

7.3 COMBUSTION CHAMBER INSULATION

I) Remove all components as described in 4.1 to 4.3, 4.5, 4.6 in the servicing instructions.
II) Remove the insulation from the combustion chamber front panel by raising the retaining tag.
III) The side insulation can be removed by sliding forwards and out of the chamber.
IV) Remove the main burner as in 4.7. Remove the two screws securing the rear insulation support bracket and remove bracket.
V) The rear insulation can now be removed by lifting off the lower support studs and lowering the insulation until its top edge clears the underside of the heat exchanger.
VI) Replace all components in reverse order of removal ensuring the electrode gap is as shown on Diagram 20 and the main burner is correctly positioned on the rear location pegs.

7.4 HEAT EXCHANGER

I) Remove all components as described in 4.1 to 4.7 in the servicing instructions.
II) Remove the four screws securing the plastic appliance base panel and remove.
III) For complete removal of the heat exchanger the central heating circuit within the boiler must be de-pressurized and drained as described in 6.3 and 6.4.
IV) Disconnect the push-on connector on the heat exchanger overheat thermostat.
V) Undo the union nut which is connecting the heat exchanger to the air separator shown in Diagram 18 and the front union nut on the bulk head connector on the base of the combustion chamber.
VI) The heat exchanger can now be drawn forward and removed from the appliance. Remove left hand insulation panel holder if necessary (two screews at rear).
VII) The heat exchanger can now be descaled or replaced if required.
VIII) If the heat exchanger is being replaced the copper connecting tube should be marked prior to undoing the union nut to enable the tube to be fitted in the same orientation on the new heat exchanger.
IX) Tighten the union nut on the connecting tube and transfer the overheat thermostat onto the new heat exchanger.
X) Replace all components in reverse order of removal replacing sealing washers if necessary and ensuring the elecrode gap is as shown in Diagram 20 and the burner is correctly positioned on the rear locating pegs.

NOTE: Fit the combustion chamber front panel with the three screws prior to refitting and tightening the two hood to combustion chamber side screws.

7.5 MAIN BURNER INJECTORS

I) Remove all components as described in 4.1 to 4.3, 4.5 & 4.7 in the servicing instructions.
II) Perform operations as described in 5.3 (Main Burner) in the servicing instructions.
III) Replace all components in reverse order of removal ensuring the electrode gap is as shown in Diagram 20 and the burner is correctly positioned on the rear location pegs.

7.6 IGNITION ELECTRODE

I) Remove all components as described in 4.1 to 4.3 in the servicing instructions.
II) Remove the electrode lead. Undo the electrode securing nut on the pilot assembly and remove electrode.
III) Replace all components in reverse order of removal ensuring the electrode gap is as shown in Diagram 20.

7.7 ELECTRODE LEAD

I) Remove all components as described in 4.1 to 4.3 of the servicing instructions.
II) Remove the two screws fixing the control panel. Diagram 15. The control panel is held in position by two stakes which engage in corresponding springs in the side panel. Pull open the control panel by holding the panel at its extreme ends as shown by arrows (a), Diagram 15 and allow the panel to drop forward as shown in Diagram 16.
III) Disconnect the HT lead from the electrode and piezo spark generator and remove the lead from the sealing grommet fitted to the base of the combustion chamber.
IV) Fit the new lead.
V) Replace all components in reverse order of removal.

7.8 HEAT EXCHANGER OVERHEAT THERMOSTAT (Thermo-electric)

I) Remove all components as described in 4.1 to 4.3 in the servicing instructions.
II Disconnect the two push-on connectors on the heat exchanger overheat thermostat.
III) Remove the two thermostat fixing screws and remove thermostat.
IV) Replace all components in reverse order of removal ensuring connections are clean and tight.

7.9 PILOT ASSEMBLY

I) Remove all components as described in 4.1 to 4.3 in the servicing instructions.
II) Remove the three screws securing the combustion chamber front panel, lower the panel to disengage from the locating pegs on the burner and remove panel.
III) Undo and remove the pilot supply tube from the pilot bracket. Disconnect the HT lead from the spark electrode and undo the nut securing the electrode and remove electrode.
IV) Undo and remove the flame failure thermocouple from the pilot bracket.
V) Remove the two pilot bracket fixing screws and remove assembly.
VI) Replace all components in reverse order of removal ensuring that the electrode gap is as shown in Diag. 20. NOTE: Ensure combustion chamber gasket is in place.
VII) To check the pilot length see Diag. 20.

7.10 FLAME FAILURE THERMOCOUPLE

NOTE: The thermocouple and connecting leads may be connected together at the factory. In the event of the boiler being fitted with this type of thermocouple and lead carry out the operations listed in 7.10 and 7.11 together.
I) Remove all components as described in 4.1 to 4.3 in the servicing instructions.
II) Undo and remove the flame failure thermocouple from the pilot bracket assembly.
III) Disconnect the push-on connectors on the heat exchanger overheat thermostat and remove thermocouple.
IV) Replace all components in reverse order of removal ensuring connections to overheat thermostat are clean and tight.

7.11 FLAME FAILURE THERMOCOUPLE CONNECTING LEAD

I) Remove all components as described in 4.1 to 4.3 in the servicing instructions.
II) Remove the two screws fixing the control panel. Diagram 15. The control panel is held in position by two stakes which engage in corresponding springs in the side panel. Pull open the control panel by holding the panel at its extreme ends as shown by arrows (a), Diagram 15 and allow the panel to drop forward as shown in Diagram 16.
III) Disconnect the push-on connector on the heat exchanger overheat thermostat.
IV) Undo the thermocouple tube nut on the front face of the gas control valve and remove the thermocouple connecting lead through the sealing grommet fitted to the base of the combustion chamber and remove grommet.
V) Fit the new thermocouple lead.
VI) Replace all components in reverse order of removal ensuring connections to overheat thermostat are clean and tight and grommet is correctly placed.

7.12 AIR PRESSURE SWITCH

I) Remove the four screws securing the appliance top cover panel and remove panel.
II) Disconnect the electrical in-line connector onto the switch (the connector can be pulled out at the top of the side panel to allow access for disconnection).
III) Remove the two switch fixing screws and lift the switch to allow the two tubes to be removed. Remove the switch.
IV) Replace the switch ensuring the tube from the top entry connector is fitted to the negative (top connection).
V) Replace all components in reverse order of removal.

7.13 ACCESS TO CONTROL PANEL AND COMPONENTS BEHIND IT

I) DISCONNECT THE APPLIANCE FROM THE ELECTRICAL SUPPLY BY SWITCHING OFF AT THE EXTERNAL ISOLATING SWITCH OR REMOVING THE PLUG FROM THE SOCKET.
II) TURN OFF THE GAS SUPPLY AT THE SERVICE COCK.

III) The front panel is fixed with four stakes at each corner and engaged in corresponding springs in the side panels. Remove the front panel by pulling the panel forward starting at the top.

IV) Remove the two screws fixing the control panel. Diagram 15. The control panel is held in position by two stakes which engage in corresponding springs in the side panel. Pull open the control panel by holding the panel at its extreme ends as shown by arrows (a), Diagram 15, and allow the panel to drop forward as shown in Diagram 16.

7.14 WATER FLOW VALVE/SWITCH ASSEMBLY (Diagram 21)

I) Remove all components as described in 7.13 in the servicing instructions.

II) Remove the four screws securing the plastic appliance base panel and remove panel.

III) De-pressurize and drain the central heating system circuit as detailed in 6.3 and 6.4.

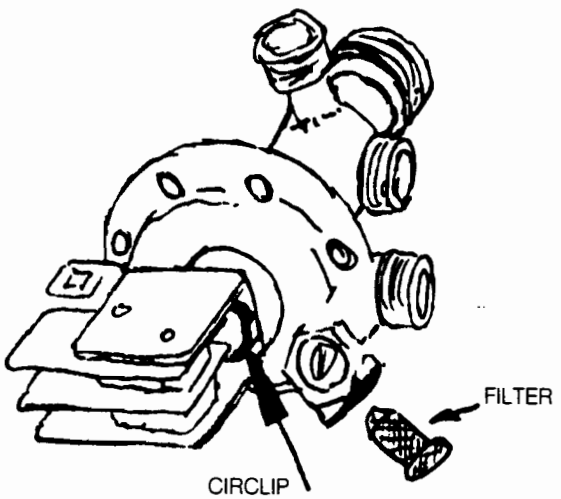
IV) Remove the push-on connectors on the water flow valve/switch.

V) Support the valve/switch assembly and remove the tube clamping screw and bracket.

VI) Remove the valve from the tube.

VII) Replace all components in reverse order of removal referring to the wiring diagram page 18 prior to making any electrical connections.

Diagram 22



7.15 DIVERTER VALVE MICRO-SWITCH ASSEMBLY

I) Remove all components as described in 7.13 in the servicing instructions.

II) Prise off the retaining circlip as shown in Diagram 22 and remove micro-switch assembly.

III) Pull off the electrical connections and remove switch.

IV) Fit the new switch assembly referring to the wiring diagram page 18 prior to making any electrical connections.

V) Replace all components in reverse order of removal.

NOTE: DO NOT ATTEMPT TO CHANGE INDIVIDUAL MICRO SWITCHES.

7.16 DIVERTER VALVE

I) Remove all components as described in 7.13 in the servicing instructions.

II) Remove the four screws securing the plastic appliance base panel and remove panel.

III) Pull off the retaining clip on the micro-switch assembly. Remove the micro-switch assembly from the valve and push to one side clear of the valve body.

IV) Close the central heating flow and return isolating valves and domestic cold water inlet isolating valve.

V) Release the central heating system pressure within the boiler by opening the pressure relief valve. See 6.3 and 6.4.

VI) Open both the central heating and DHW drain plugs see Diagram 21 and turn on the hot water tap which is at the lowest point in the system.

VII) Undo all five connections onto the valve and remove valve. If access is restricted to top connection, disconnect, at other end of pipe.

NOTE: An inlet water filter is situated in lower front connection. See Diagram 22.

VIII) Re-assemble all components using the new sealing washers as necessary.

IX) Re-fill the system as described in the Installation Instructions and carry out checks for leaks.

7.17 PUMP

I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the four screws securing the plastic appliance base panel and remove panel.
III) De-pressurize and drain the central heating system circuit as detailed in 6.3 and 6.4
IV) Disconnect the electrical in-line connector to the pump.
V) Undo the two brass hexagon nuts on either side of the pump and remove pump.
VI) Fit the new pump and replace all components in reverse order ensuring that the pump connection block is at the bottom so that the flow through the pump is from right to left.

NOTE: Alternatively the head only can be changed by removing the four socket head screws around the pump head.

VII) Refill the system as described in the Installation Instructions and carry out checks for leaks.

7.18 SAFETY VALVE

I) Remove all components as detailed in 7.13 in the servicing instructions.
II) Remove the four screws securing the plastic appliance base panel and remove panel.
III) De-pressurize and drain the central heating circuit as detailed in 6.3 and 6.4.
IV) Undo and remove the outlet union on the safety valve.
V) Undo and remove the valve.
VI) Fit the new valve and replace all components in reverse order of removal.
VII) Refill the system as described in the Installation Instructions and check for leaks.

7.19 EXPANSION VESSEL

The expansion vessel on this appliance is fitted to the rear of the back panel. In the unlikely event of the expansion vessel requiring replacement it is recommended that the new vessel be fitted to the return pipe external to the boiler.

If the vessel has to be replaced the boiler must be removed from the wall.

7.20 THERMOMETER (Diagram 23)

I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the thermometer phial securing clip and remove phial.
III) Push the two plastic retaining clips in on either side of the thermometer and remove thermometer.
IV) Replace all components in reverse order of removal.

7.21 MAIN THERMOSTAT (Diagram 23)

I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the thermostat phial securing clip and remove phial.
III) Pull off the control knob.
IV) Remove the two thermostat fixing screws and remove thermostat.
V) Pull of the two electrical connections noting their position. Coil any excess capillary as old thermostat.
VI) Replace all components in reverse order of removal referring to the wiring diagram page 18 prior to making any electrical connections.

7.22 PRESSURE GAUGE (Diagram 23)

I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the four screws securing the plastic appliance base panel and remove panel.
III) De-pressurize and drain the central heating system circuit as detailed in 6.3 and 6.4.

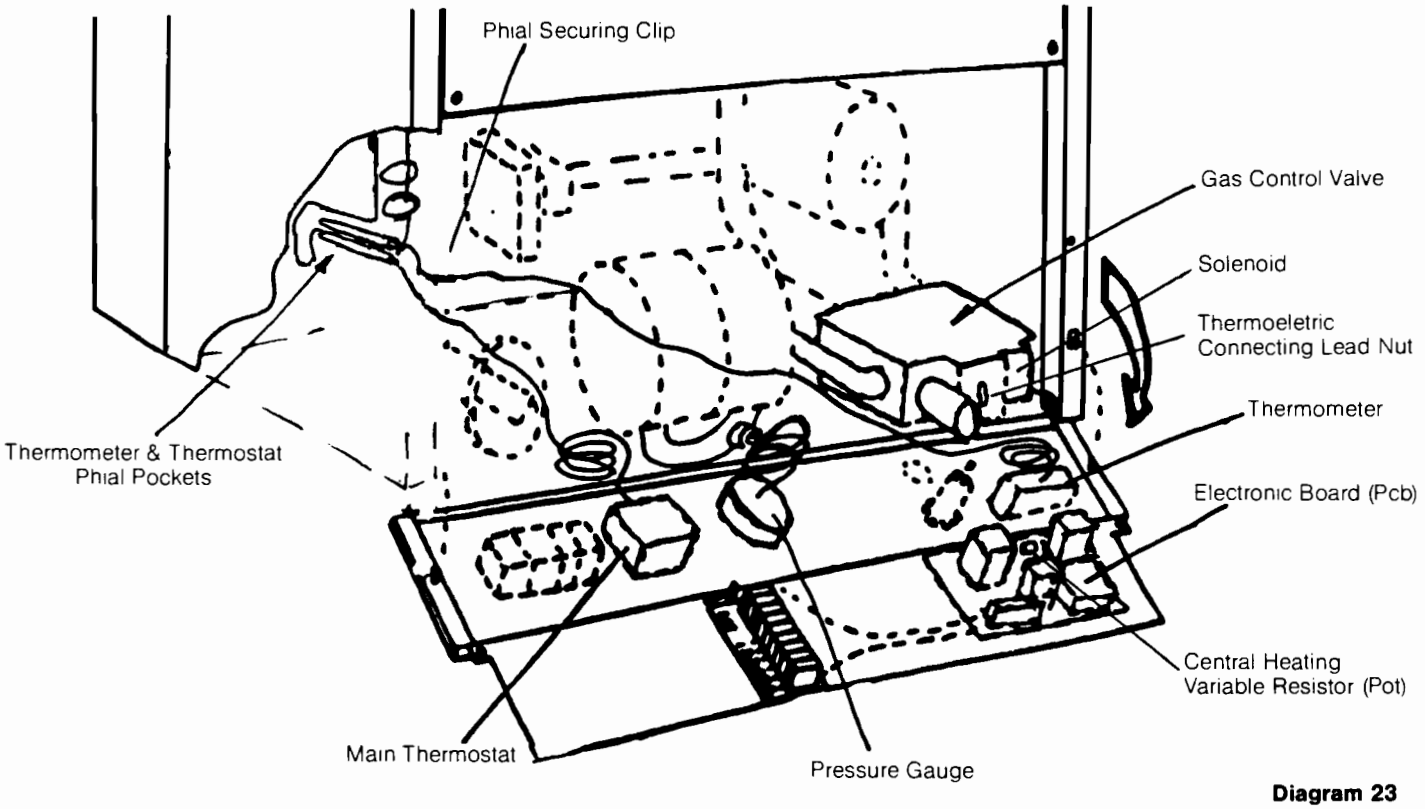


Diagram 23

IV) Remove the pressure sensing element from its adaptor on the CH calorifier outlet pipe.

V) Push in the two plastic retaining clips on either side of the pressure gauge and remove the gauge.

VI) Fit the new gauge into the control panel and refit the new pressure sensing element. Ensure the surplus capillary remains coiled at the rear of the gauge.

VII) Replace all components in reverse order of removal.

VIII) Refill the system as described in the installation instructions and check for leaks.

7.23 GAS CONTROL VALVE (Diagram 23)

I) Remove all components as described in 7.13 in the servicing instructions.

II) Remove the four screws securing the plastic appliance base panel and remove panel.

III) Undo the thermo-electric connecting lead nut and remove lead.

IV) Undo the pilot supply tube nut.

V) Remove the single screw securing the front grey plastic cover plate and remove plate.

VI) Carefully remove the two push-on connectors now revealed under the cover plate and remove the three push-on connectors on the solenoid on the right hand side of the valve. The solenoid may be removed to enable easy access to the push-on connectors by removing the two solenoid fixing screws and withdrawing the solenoid forward from the valve (Diagram 23).

VII) Undo the gas supply tube nut connector on the back panel of the appliance and the tube nut connector on the bulk head at the base of the combustion chamber.

VIII) Pull out the pilot supply tube from the valve and pull forward the valve/tube assembly and remove the appliance.

IX) Remove the eight screws securing the supply pipes onto the valve and remove pipes.

X) Fit the supply pipes to the new valve and replace all components in reverse order of removal referring to the wiring diagram page 18 prior to making any electrical connections. No adjustment of the replacement valve is necessary. See commissioning for details.

7.24 PIEZO SPARK GENERATOR

I) Remove all components as described in 7.13 in the servicing instructions.

II) Pull off the HT lead connection on the back of the spark generator.

III) Undo and remove the spark generator securing nut and remove generator.

IV) Replace all components in reverse order of removal.

7.25 ELECTRONICS BOARD (PCB) (Diagram 23)

I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the four plug connectors on the board.
III) The board can now be eased off the fixing pegs.
IV) Replace all components in reverse order of removal.

7.26 DHW OVERHEAT THERMOSTAT (Diagram 21) Marked Blue

I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the two push-on connectors on the thermostat.
III) Remove the two thermostat fixing screws and remove thermostat.
IV) Fit the new thermostat and replace all components in reverse order of removal.

7.27 CENTRAL HEATING LIMIT THERMOSTAT (Diagram 21) Marked Green

I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the two push-on connectors on the thermostat.
III) Remove the two thermostat fixing screws and remove thermostat.
IV) Fit the new thermostat and replace all components in reverse order of removal.

7.28 QUICK WARM UP THERMOSTAT (Diagram 21) Marked Yellow

I) Remove the four screws securing the base panel and remove panel.
II) Remove the two push-on connectors on the thermostat.
III) Remove the two thermostat fixing screws and remove thermostat.
IV) Fit the new thermostat and replace all components in reverse order of removal.

7.29 ON/OFF SWITCH

I) Remove all components as detailed in 7.13 in the servicing instructions.
II) Remove the electrical connections on the rear of the switch.
III) Press in the retaining lugs on the switch body and remove the switch from the control panel.
IV) Fit the new switch by pushing back into the control panel with the four switch connections to the top and replace all components in reverse order of removal. Refer to the wiring diagram page 18 prior to making any electrical connections.

7.30 SUMMER/WINTER SWITCH

I) Remove all components as detailed in 7.13 in the servicing instructions.
II) Remove the electrical connections on the rear of the switch.
III) Press in the retaining lugs on the switch body and remove the switch from the control panel.
IV) Fit the new switch by pushing back into the control panel and replace all components in reverse order of removal. Refer to the wiring diagram page 18 prior to making any electrical connections.

7.31 QUICK WARM UP SWITCH

I) Remove all components as detailed in 7.13 in the servicing instructions.
II) Remove the electrical connections on the rear of the switch.
III) Press in the retaining lugs on the switch body and remove the switch from the control panel.
IV) Fit the new switch by pushing back into the control panel with the two connections to the bottom and replace all components in reverse order of removal. Refer to the wiring diagram page 18 prior to making any electrical connections.

7.32 CALORIFIER

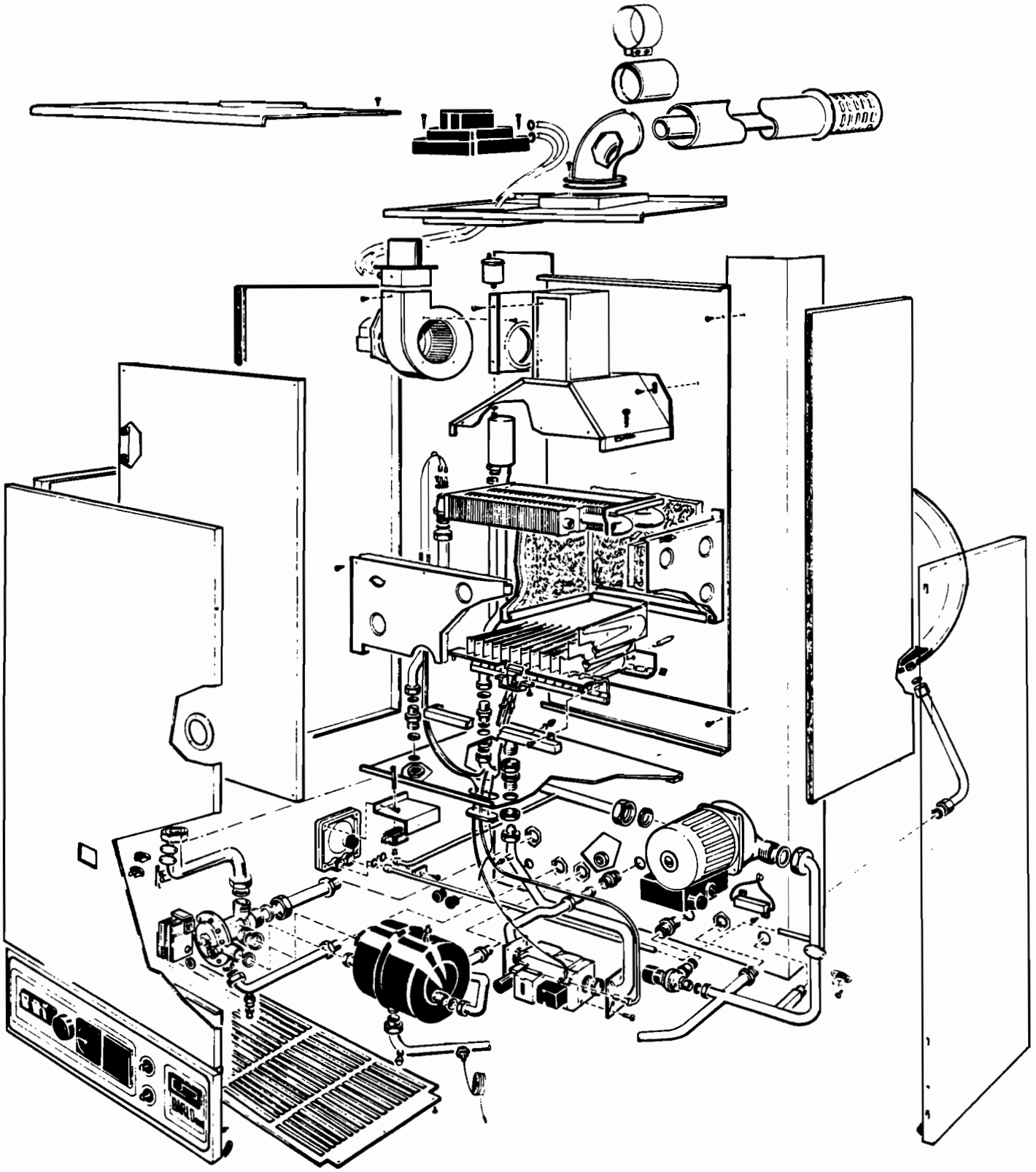
I) Remove all components as described in 7.13 in the servicing instructions.
II) Remove the four screws securing the appliance plastic base panel and remove panel.
III) De-pressurise and drain the central heating circuit as detailed in 6.3 and 6.4.
IV) Undo the four union connections onto the calorifier and remove calorifier.
V) Fit the new calorifier and replace all components in reverse order of removal renewing washers where necessary.
VI) Refill the system as described in the installations instructions and check for leaks.

7.33 OPTIONAL TIMER SWITCH

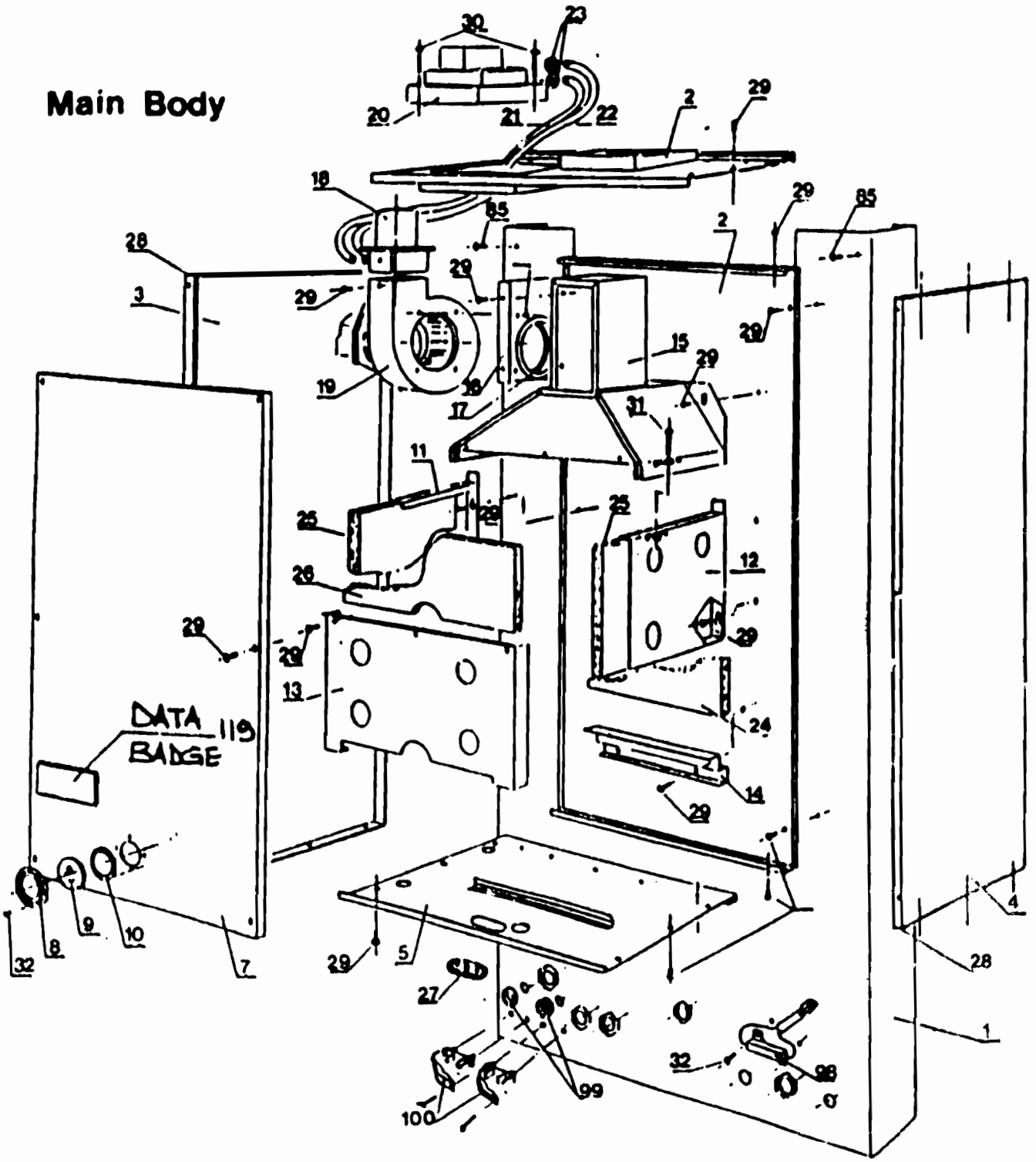
I) Remove all components as detailed in 7.13 of the servicing instructions.
II) Remove the electrical connections on the rear of the switch.
III) Press in the retaining lugs on the switch body and remove the switch from the control panel.
IV) Fit the new switch by pushing back into the control panel and replace all components in reverse order of removal.
Refer to the wiring diagram page 37 to ensure the correct positioning of switch and electrical connections.

7.34 OPTIONAL TIMER

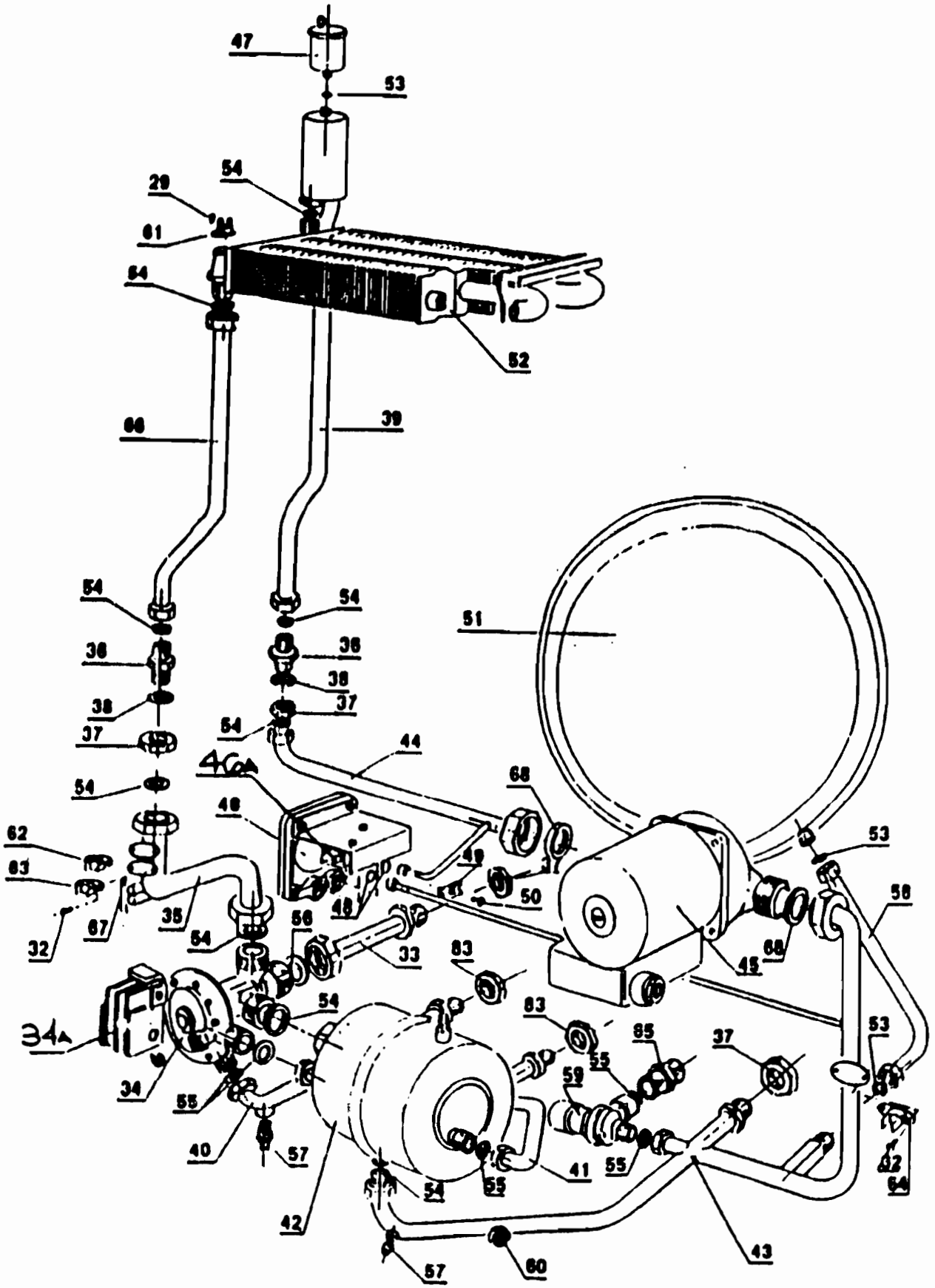
I) Remove all components as detailed in 7.13 of the servicing instructions.
II) Remove clear plastic cover (Diagram C) Page 38 from the front of the timer by rotating the cover clockwise and pulling clear from the timer.
III) Undo the screw shown in Diagram C, Page 38 and remove the electrical connection plate from the rear of the timer.
IV) Remove the clamping plate from the timer body easing open the two plastic lugs and sliding the plate off the body and remove timer.
V) Fit the new timer and replace all components in reverse order of removal.



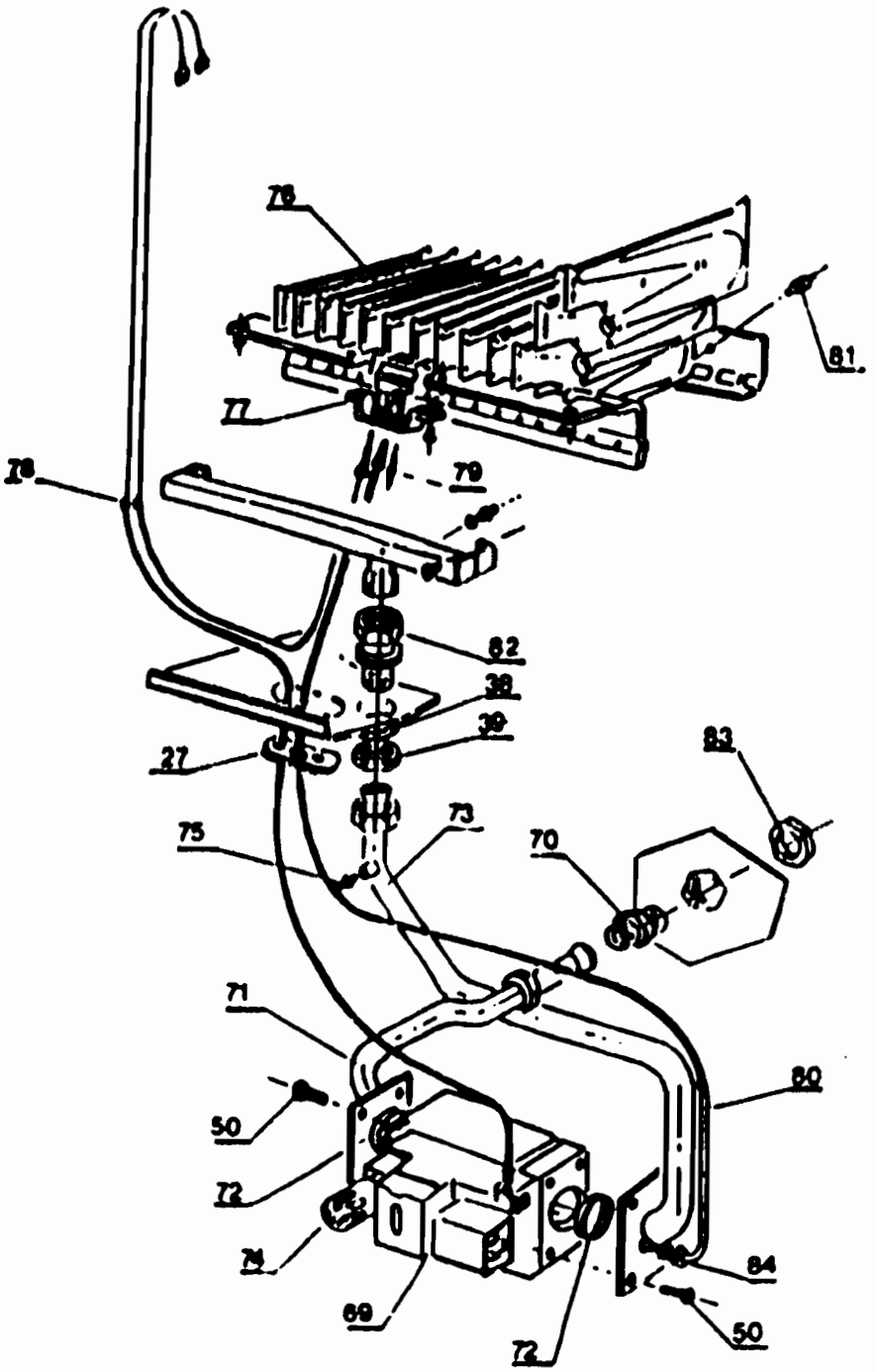
Main Body



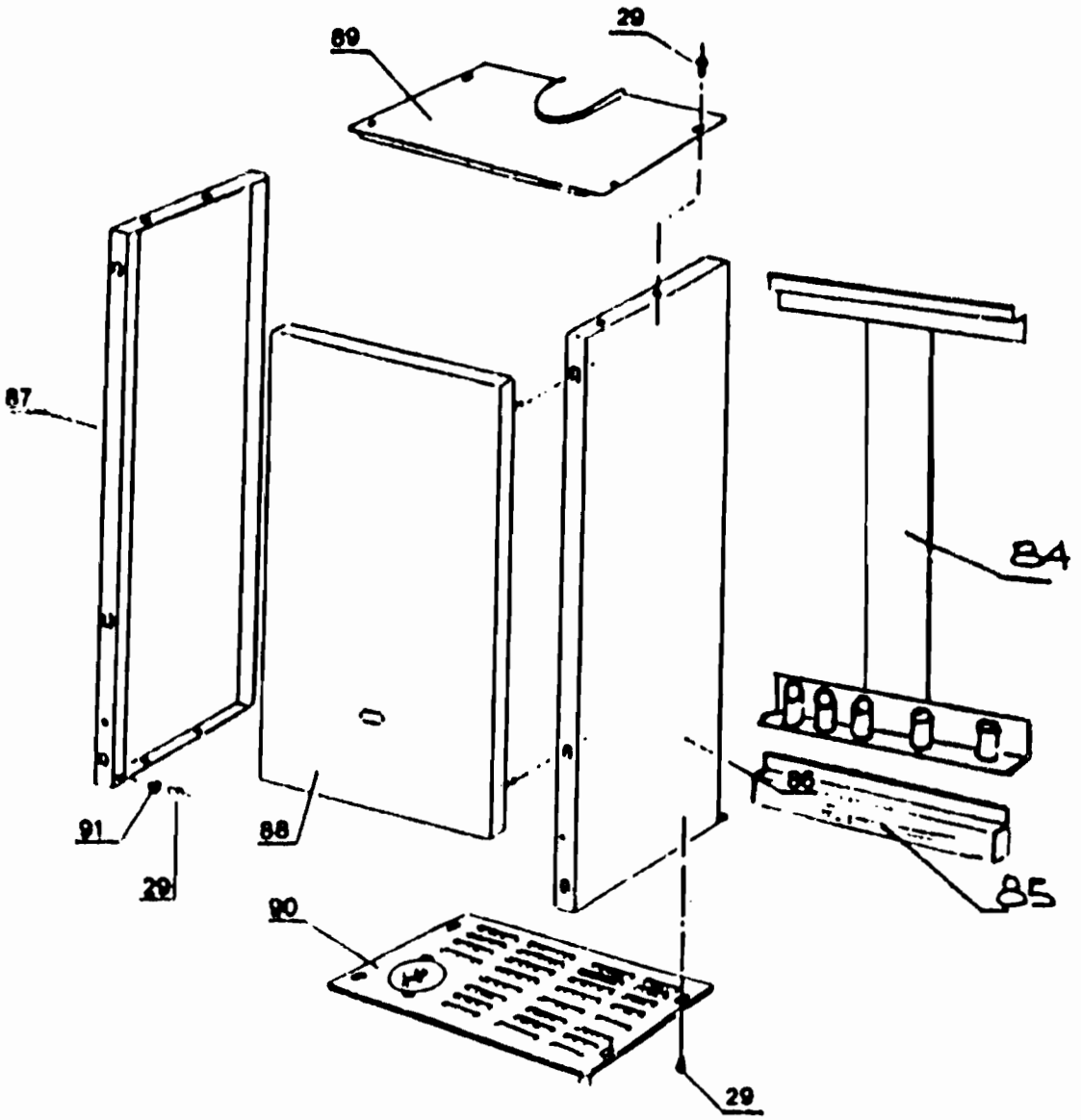
Water System



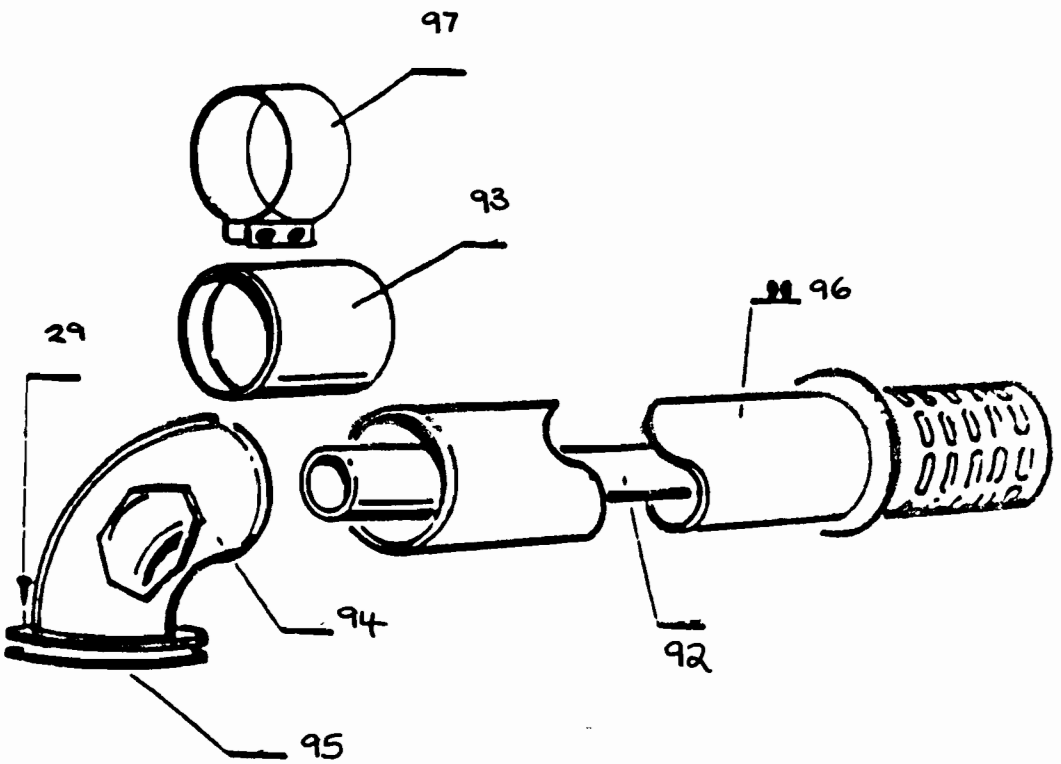
Gas System



Case Assy.



Flue Assy.



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Controls

