

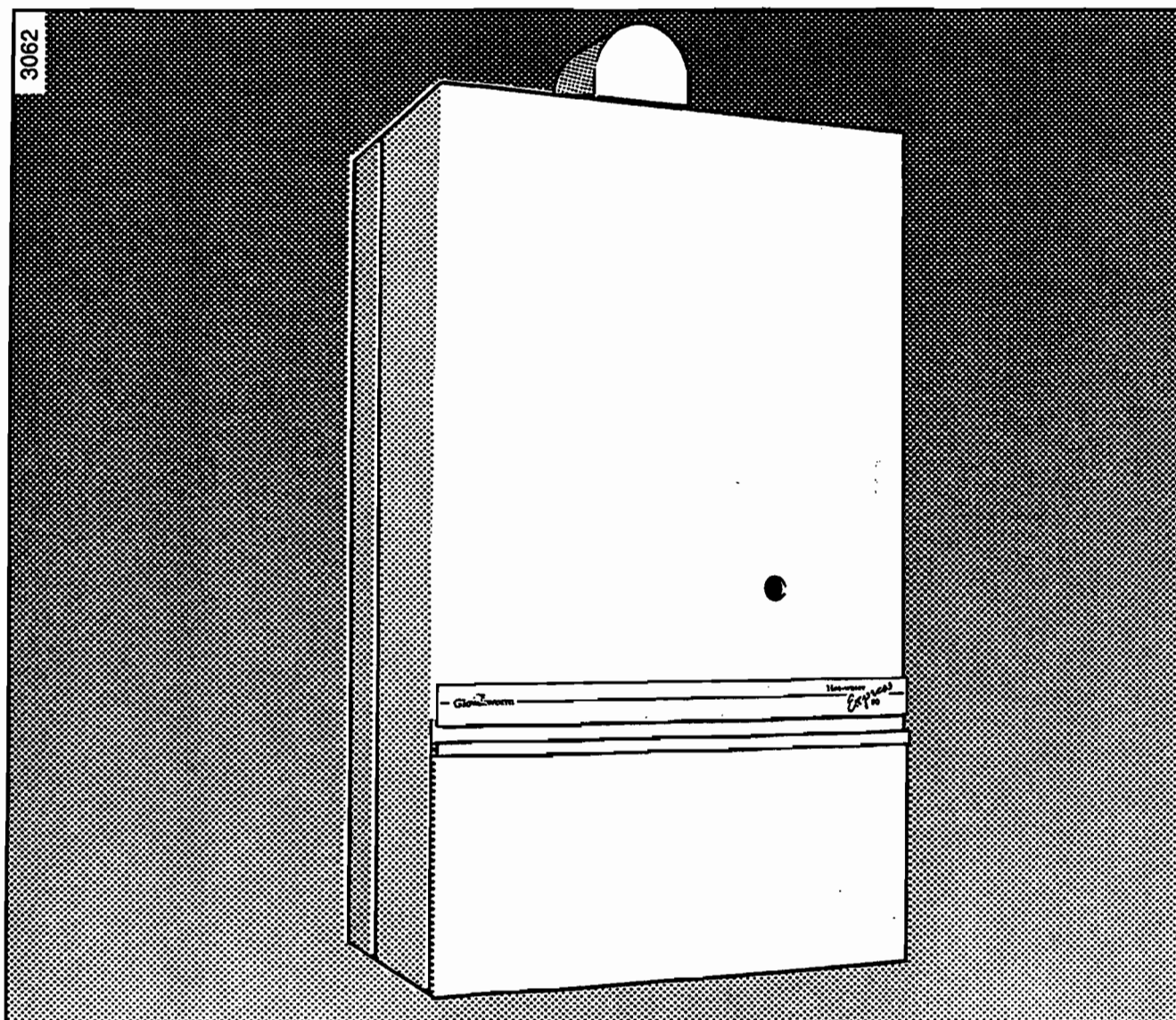
Glowworm

Servicing Instructions

To be left with the user

Hot-water
Express
80

Fanned Flue Combination Boiler
G.C. No. 47 313 04



1.1 Servicing or Replacing Parts

To ensure the continued efficient and safe operation of the appliance it is recommended that it is checked and serviced as necessary at regular intervals. The frequency of the servicing will depend upon the particular installation conditions and usage, but in general once a year, preferably at the end of the heating season should be enough.

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

Replacement of parts should be carried out by a competent person.

Unless stated otherwise all parts removed for servicing or replacing are fitted in the reverse order to removal.

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

Discard all used sealing washers, gaskets and "O" rings when renewing parts. Use the new seals supplied with the spares assemblies.

1.2 Data Badge

The data badge is positioned at the top right hand side of the inner case and is visible when the inner case is removed.

1.3 Isolation of Boiler

Before commencing any servicing or the replacement of parts, isolate the boiler from the electrical supply at the external isolator and close the gas service cock, see diagram 1.1.

Before disconnecting any water containing part, close the appropriate isolating valves and release the water pressure before draining the boiler, see diagram 1.1 and refer to Section 1.6 System Pressure.

1.4 Outer Case Removal

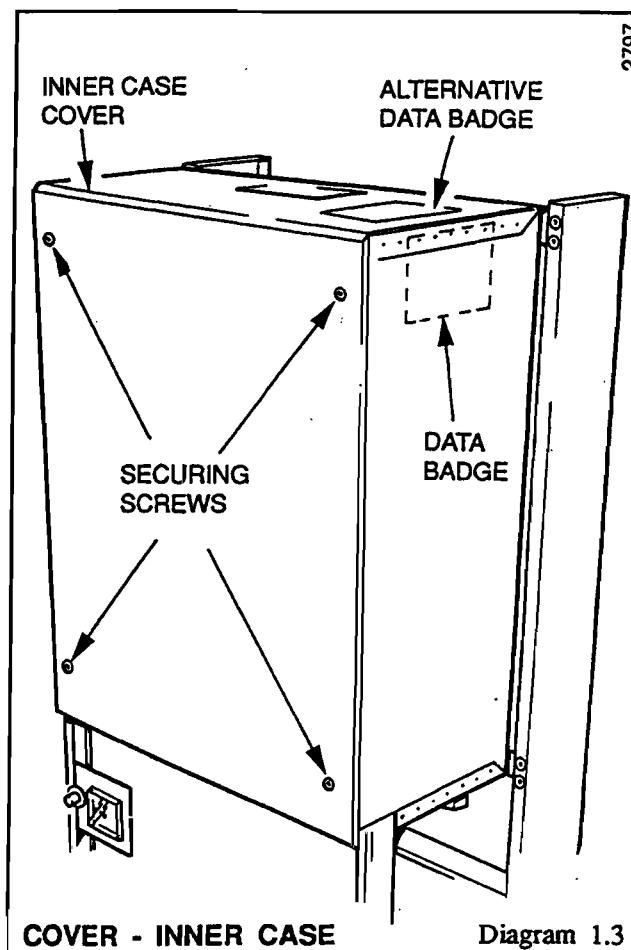
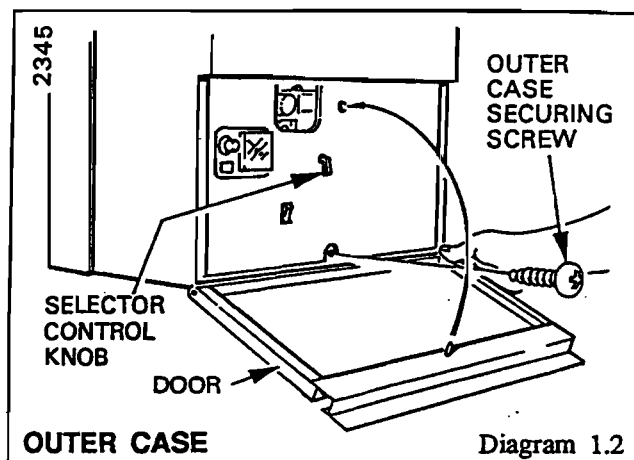
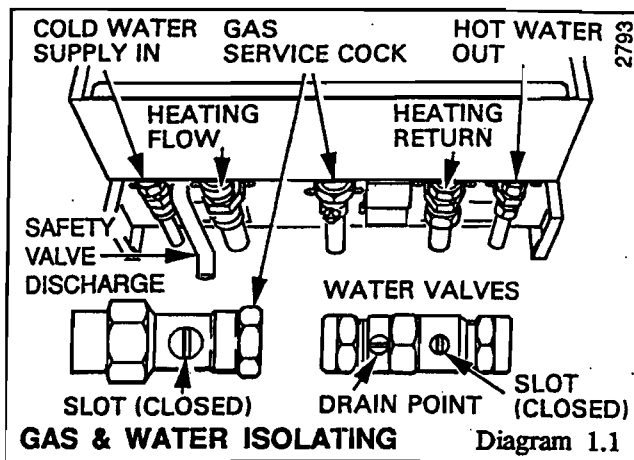
Open the door by hinging it downward, see diagram 1.2.

Pull off the selector control knob from the spindle.

Remove the outer case, secured with a single screw. Unhook the case at the top and remove it forward from the boiler.

1.5 Cover - Inner Case

Remove the cover of the inner case, secured by four screws, see diagram 1.3.



1.6 System Pressure and Draining

All water containing parts of the central heating circuit within the boiler are under the system pressure. Before any parts of this circuit are disconnected, isolate the central heating valves and release the pressure by operating the pressure relief safety valve.

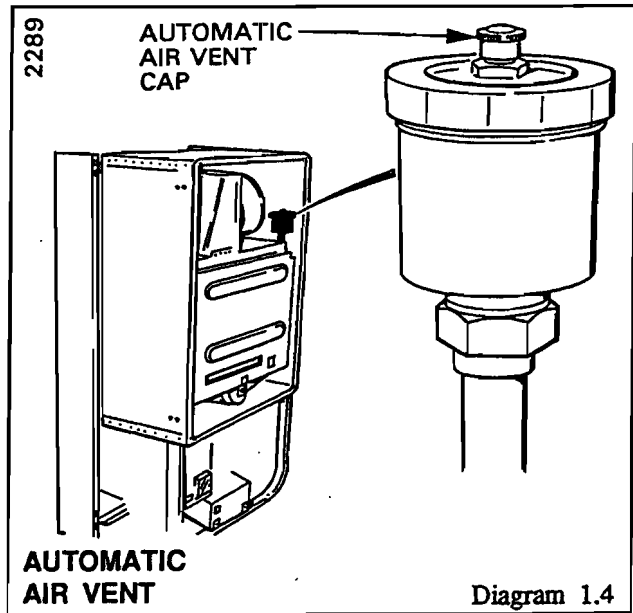
To gain access to the safety valve knob, remove the outer case, refer to Section 1.4. Turn the knob in the direction of the arrow, see diagram 1.3.

Drain the boiler heating circuit at the drain points on the appropriate isolation valves, see diagram 1.1. Ensure that the automatic air vent is working. Remove the cover of the inner case, for access refer to Section 1.5.

All water containing parts of the domestic hot water circuit of the boiler will be under the supply water pressure. Before any parts of this circuit are disconnected, isolate the domestic water valves, open the hot water taps and drain the boiler at the isolation valves, see diagram 1.1.

After replacing any water containing part of the central heating system, make up the water loss, vent all air and pressurise the system, refer to Commissioning in the Installation Instructions.

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



2.1 Pilot Check

Check if the pilot flame is burning correctly and of the correct size, see diagram 4.4. If the pilot flame is not correct, the pilot injector will require removing when accessible.

2.2 Isolation and Access

Before commencing, refer to Section 1.1.

Isolate the boiler from the electrical supply and close the gas service cock, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Remove the fan from the flue collector, refer to Section 4.1

Remove the flue collector, secured with two wing nuts and hook bolts.

Remove the main burner, refer to Section 4.2.

2.3 Cleaning the Heat Exchanger

Place a sheet of paper in the combustion chamber to cover the injector and pilot assembly and also to collect any debris.

Brush the heat exchanger.

Remove the paper together with any debris.

Do not use a brush with metal bristles.

2.4 Cleaning the Main Burner

Use a vacuum cleaner or suitable brush to clean the burner thoroughly, making sure that all the burner ports are not obstructed.

Do not use a brush with metal bristles.

2.5 Cleaning the Pilot Injector

If the pilot flame was not burning correctly, it is necessary to remove the pilot injector, refer to Section 4.5.

Inspect the injector and clean if necessary, by blowing clear only.

Do not use a wire or sharp instrument.

2.6 Service Checks

Inspect the pilot burner, spark electrode, adaptor olive on the pilot tube and thermocouple.

Clean if necessary or renew, refer to Sections 4.4, 4.5 and 4.6.

Check the main injector, cleaning or renewing as necessary, refer to Section 4.3.

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

Check the condition of the combustion chamber insulation. If renewing, refer to Section 4.30.

Check the spark gap, upon assembly, see diagram 4.4.

2.7 Initial Assembly

Assemble the following parts only, in the reverse order of removal.

Make sure that the main burner is located on the main injector and is horizontal, the tips of the rearmost blade under the two burner guides.

The combustion chamber front panel should be fitted loosely, then the flue collector also fitted loosely, ensuring that it is seated correctly on the heat exchanger and over the top edge of the front panel.

Fit the fan, locate it into the flue elbow and the clip at the rear, then secure with the two screws.

Connect the electrical cables to the fan, the polarity of the two connectors is not important.

Secure the flue collector and combustion chamber front panel by tightening the wing nuts and screws evenly.

2.8 Operational Checks

Check the safety valve manually by turning the knob in the direction of the arrow.

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

2.9 Completion

Hook the outer case on the top and secure with the screw previously removed, see diagram 1.2.

Fit the selector control knob and close the door.

3.1 Initial Checks

If the boiler fails to operate, first check the following and rectify the problem if possible.

Check that the electrical supply is available at the boiler and that the fuses are in order.

Ensure that the system pressure gauge registers 0.6bar minimum and that the automatic air vent works. Refer to Installation Instructions Section 11.2.

The electronic control board of the boiler can be damaged by incorrect testing with the power on.

Check that the gas supply is available at the boiler and purged of air. Is the pilot burner lit? If the pilot burner will not light, refer to Section 3.2. If the pilot burner fails to remain alight, refer to Section 3.3.

Check that the boiler is set for the correct mode of operation.

With the boiler in the "Hot Water" mode, check that the domestic water supply is available and water flows freely from the hot water taps.

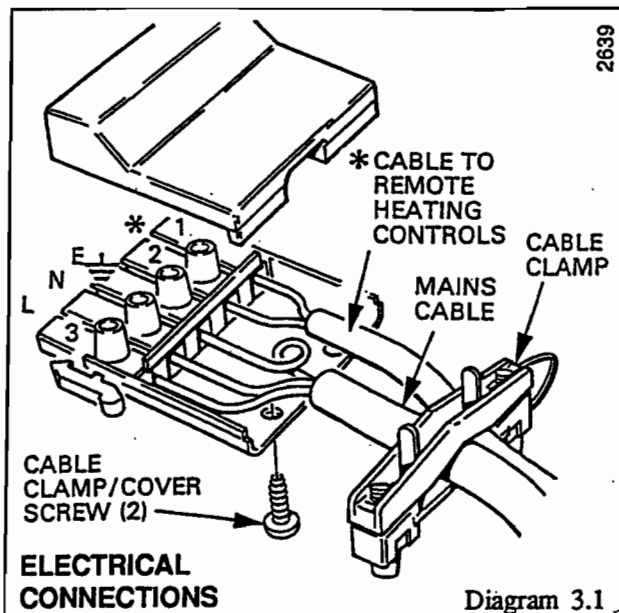
With the boiler in the "Hot Water+Central Heating" mode, check that all heating system controls, (if fitted) are functioning correctly and calling for heat. Isolate the boiler from the electrical supply.

Disconnect the rear multi-pole connector at the base of the boiler and release the cable from the clamp. Remove connector cover and test for continuity of the remote heating control circuit at terminals 1 and 2, see diagram 3.1.

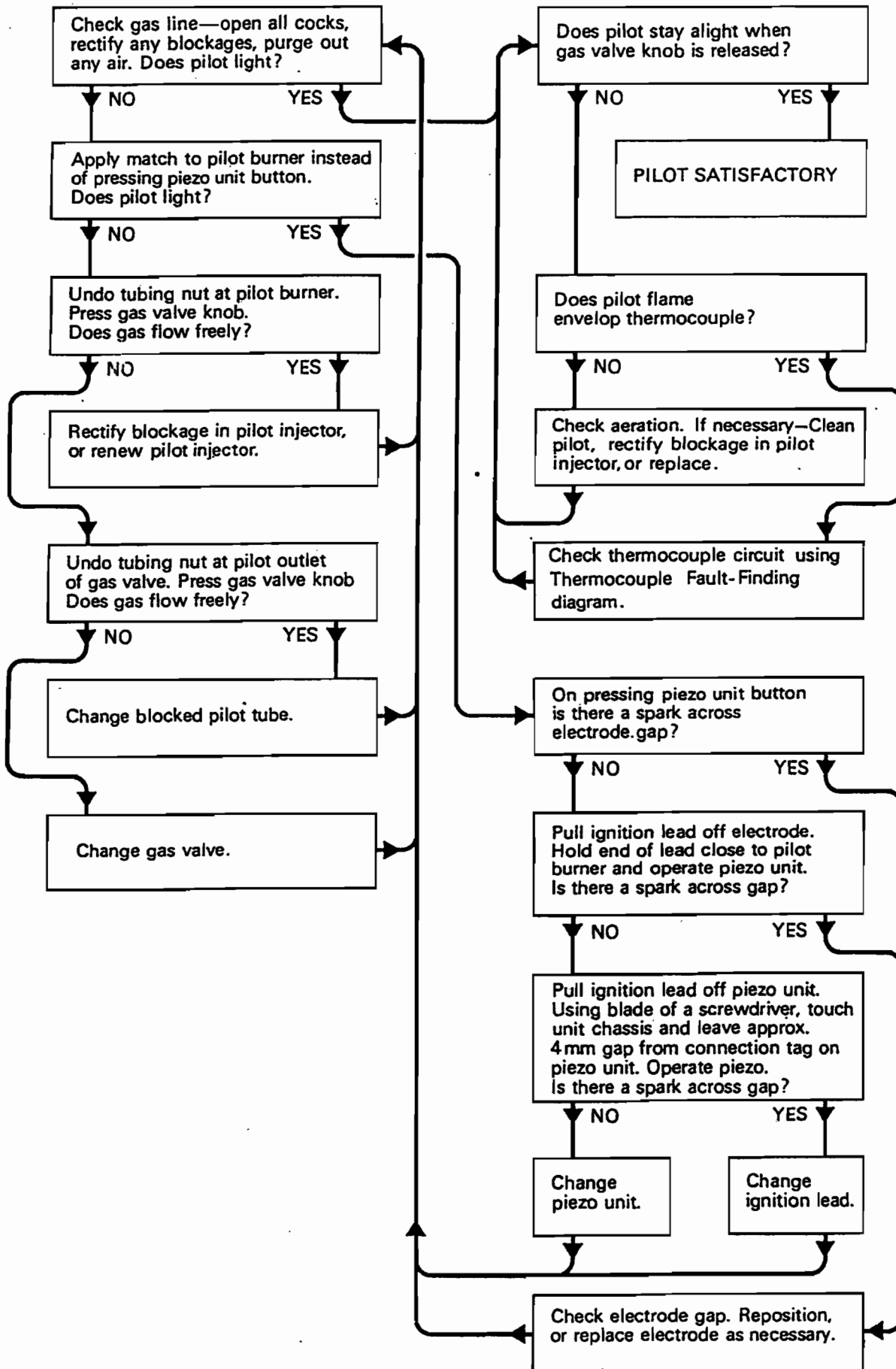
If there is continuity at these connections, proceed with the detailed fault finding, refer to Section 3.4. If there is no continuity, a remote heating system fault is indicated, which must be put right.

3.2 Pilot Burner and Ignition System

Symptom. The pilot burner will not light or stay alight. Test the pilot burner and ignition system as described in the fault finding procedure, see chart 3.



**PILOT WILL NOT LIGHT
START HERE**



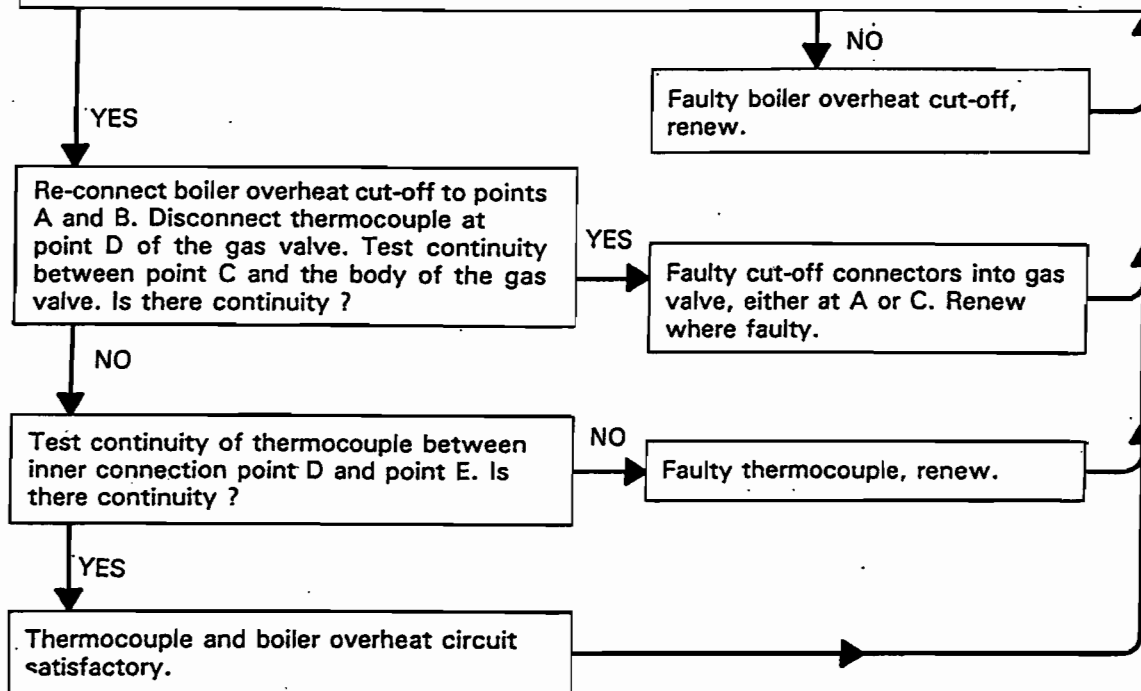
PILOT / IGNITION FAULT FINDING

Diagram 3.2

THERMOCOUPLE AND BOILER OVERHEAT CUT-OFF FAULT FINDING

2327

With the boiler cold, check connections of the thermocouple, boiler overheating cut-off and gas valve. Disconnect overheating cut-off connectors at points A and B at the gas valve, see diagram. Test continuity of the overheating cut-off. Is there continuity?



THERMOCOUPLE AND BOILER OVERHEAT CUT-OFF FAULT FINDING

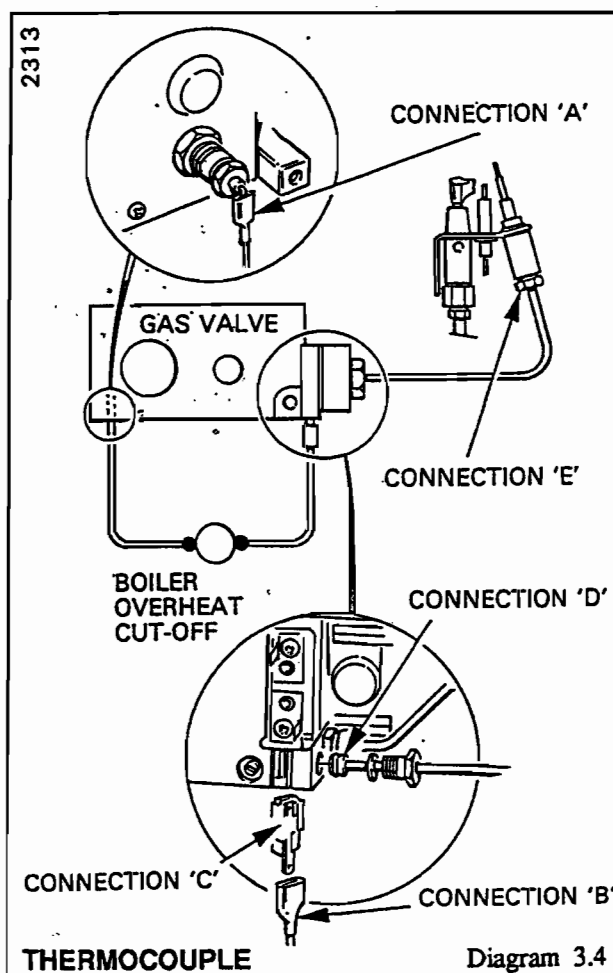
Chart 3.3

3.3 Thermocouple and Overheat Cutoff

Symptom. The pilot burner fails to stay alight.

Test the thermocouple, overheat cutoff and thermocouple connectors, ensure that the system pressure gauge registers 0.6bar minimum and that the automatic air vent works as described in fault finding chart 3.3, see also diagram 3.4.

Check the milli-voltage of the thermocouple closed circuit at points "A" and "E", see diagram 3.4. This should be within the range of 6 to 11mV.



Carry out the initial fault finding checks described in Section 3.1 and 3.4 Check that gas, water and electricity are available at the boiler.
 Carry out the initial voltage applied to the control board via the central heating controls to the P.C.B. Before commencement of test, isolate the boiler from the electricity supply, ensure that the controls are not calling for duty (no red link in plug and socket).
 Refer to the functional flow diagrams in conjunction with the following fault finding.

Remove the outer case, control housing and its cover. Check all connections on the control board and the boiler components, rectify or renew as necessary. A dummy two-way connector is provided for ease of testing continuity, a spare fuse is also provided.



ELECTRICAL FAULT FINDING - Continued

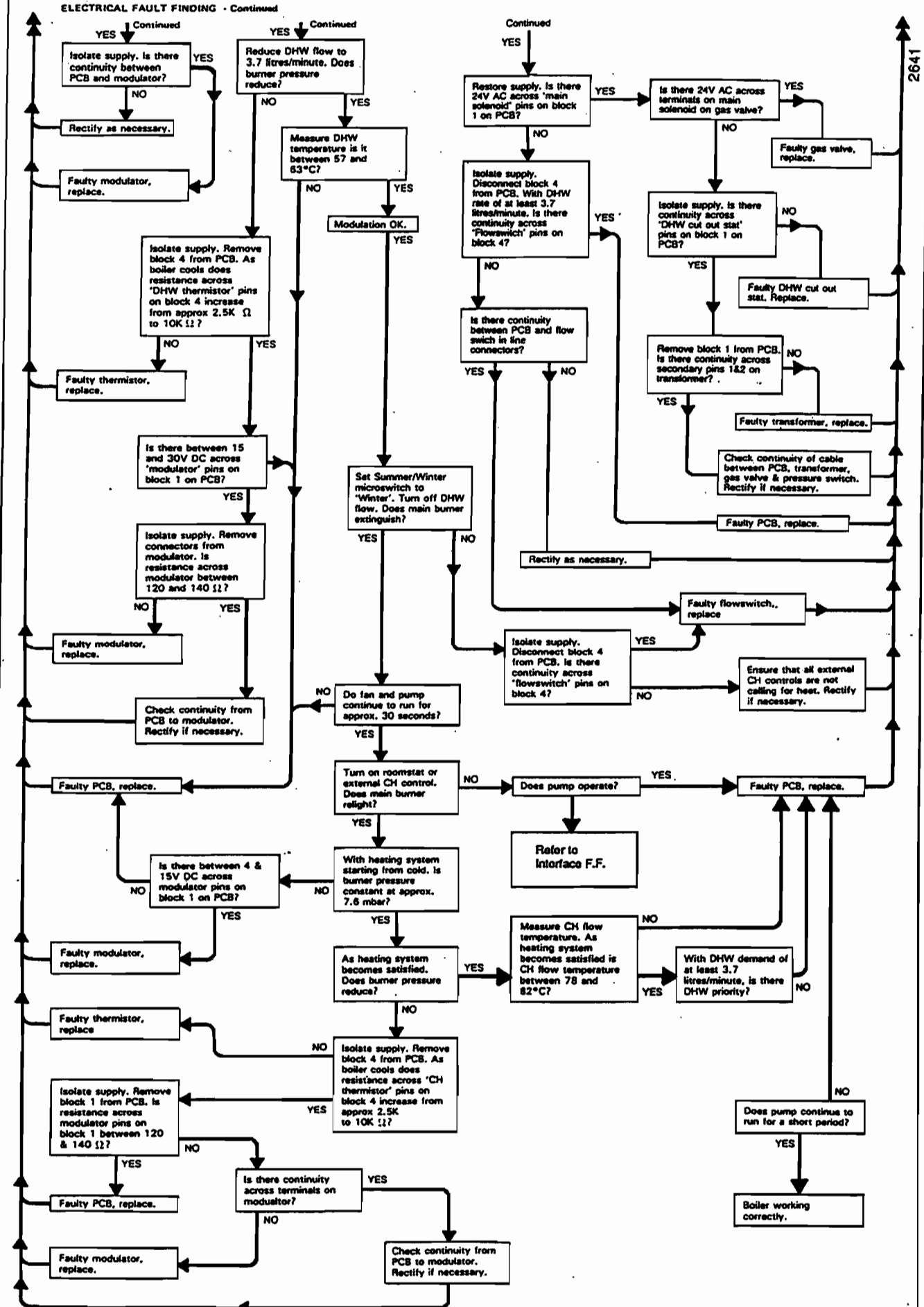


Chart 3.7 continued

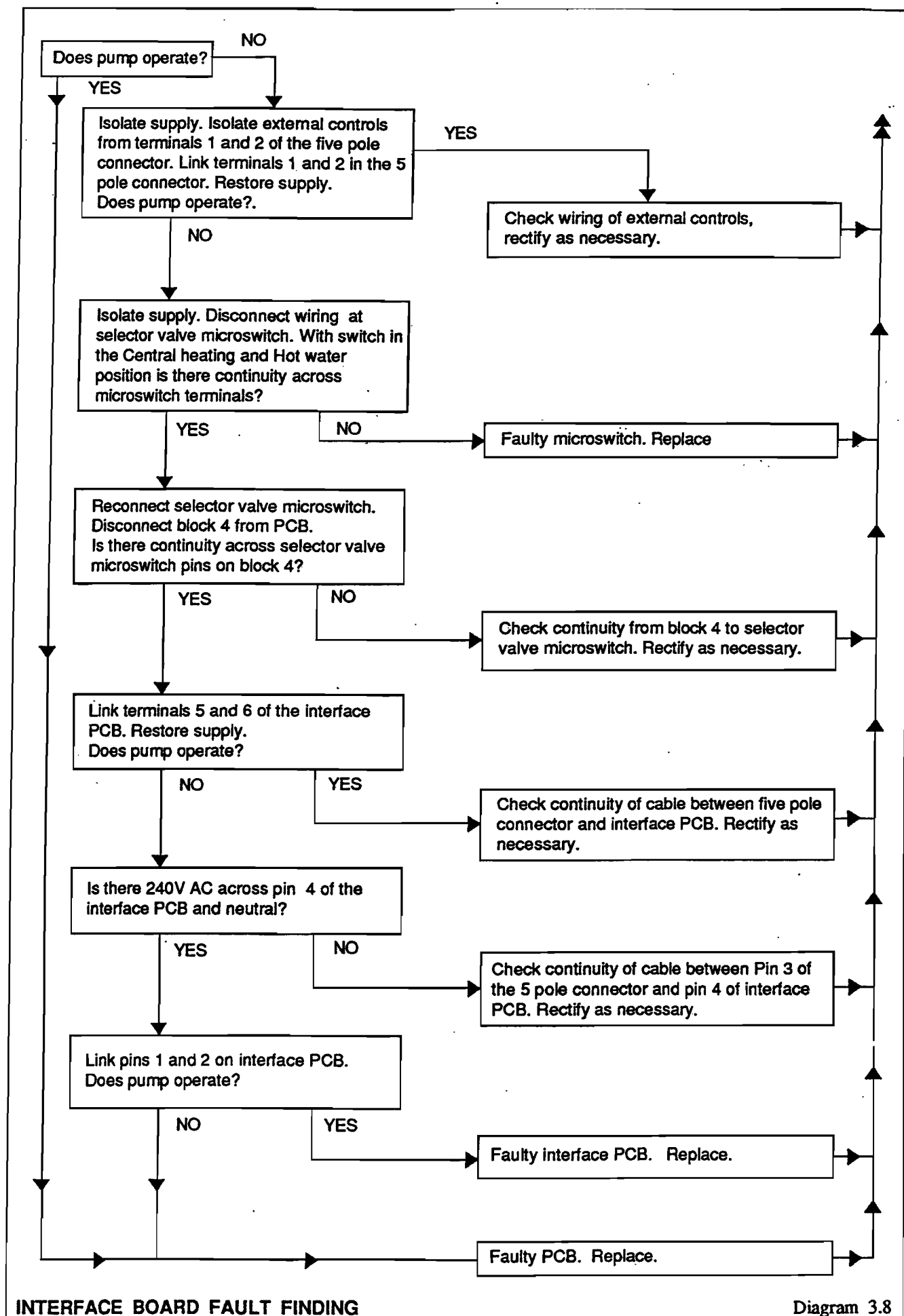


Diagram 3.8

4.1 Fan

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Disconnect the two electrical connectors at the fan, see diagram 4.1. It is not necessary to disconnect the green and yellow earth cable.

Remove the fan, secured with two screws at the front, also located into the flue elbow and clip at the rear.

To renew the motor and impeller, remove the three screws securing it to the housing.

Transfer the earth cable to the replacement motor terminal marked ... , fitting the earth cable and shakeproof washer when securing the fan.

To fit the fan housing, locate it into the flue elbow and the clip at the rear, push fully upward into the flue elbow to ensure a good seal, then secure the fan with the two screws.

Connect the electrical cables, the polarity of the two connectors is not important.

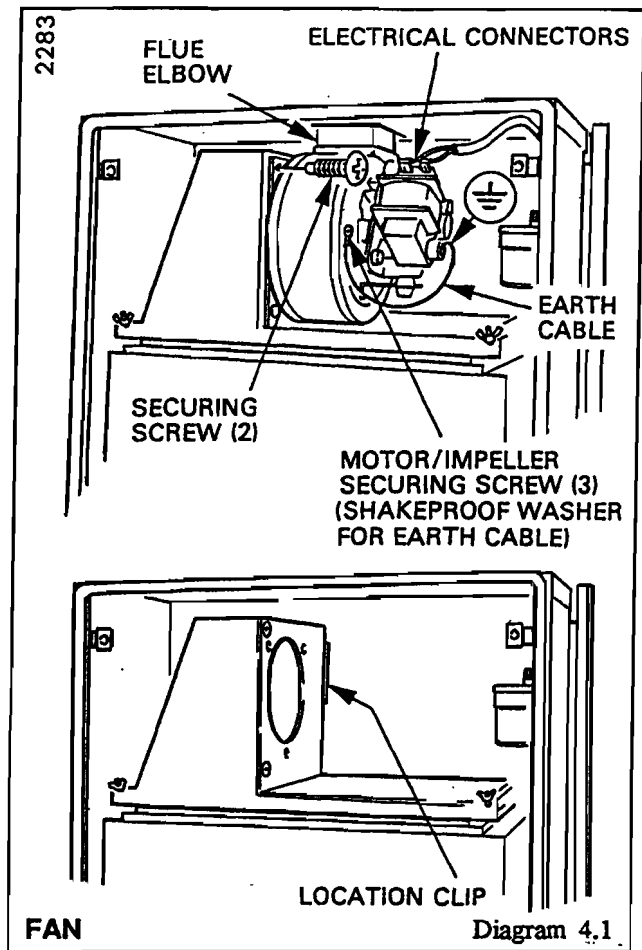


Diagram 4.1

4.2 Main Burner

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Slacken the two wing nuts securing the flue collector, see diagram 4.2.

Remove the combustion chamber front panel, secured with four screws and a wing nut.

Separate the pilot assembly from the main burner secured with two screws and washers, see diagram 4.3.

Remove the main burner from the main injector at the rear. Raise the burner up and forward, easing the pilot assembly forward to clear, taking care not to damage the combustion chamber insulation or the pilot burner assembly.

Make sure that the main burner is fitted correctly on assembly, located on the main injector and horizontal, the tips of the rearmost blade under the two burner guides.

Locate the combustion chamber front panel under the front edge of the flue hood on assembly, then secure all screws and wing nuts.

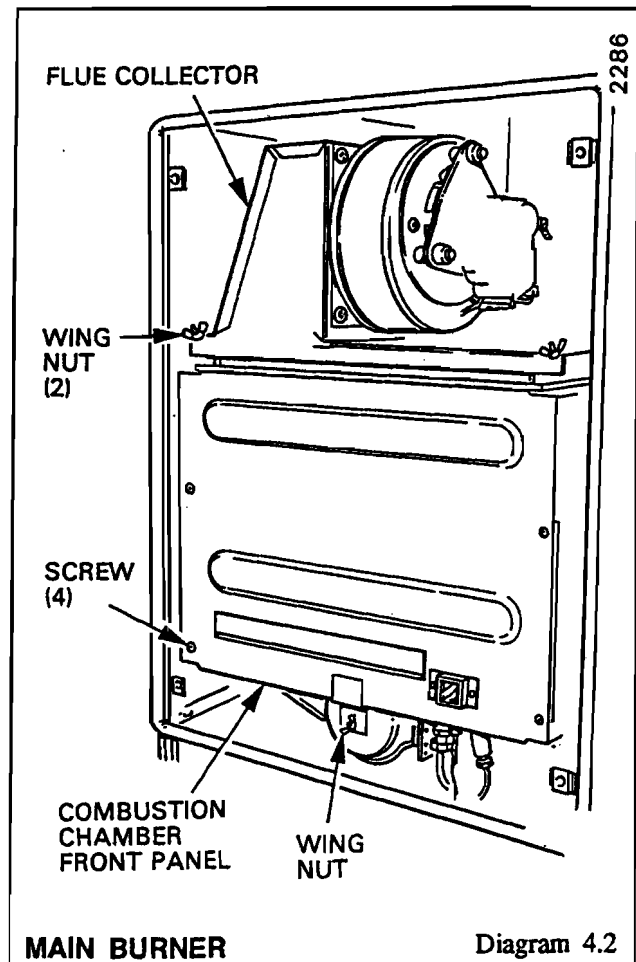


Diagram 4.2

4.3 Main Injector

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Remove the main burner, refer to Section 4.2.

Unscrew the main injector.

Fit the new sealing washer supplied, to ensure gas soundness, when fitting the main injector.

4.4. Pilot Burner

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Remove the main burner refer to Section 4.2.

Remove the sealing angle, secured with a single screw, see diagram 4.3.

Disconnect the ignition lead from the spark electrode.

Remove the spark electrode, secured with a single screw.

Disconnect the thermocouple nut from the pilot burner.

Disconnect the pilot supply tube, holding the pilot injector hexagon with another spanner, then remove the pilot burner.

Check the spark gap upon assembly, see diagram 4.4.

4.5 Spark Electrode

Before commencing, refer to section 1.1.

Isolate the boiler from the electrical supply, refer to section 1.3.

Remove the outer case and the cover of the inner case, refer to sections 1.4 and 1.5.

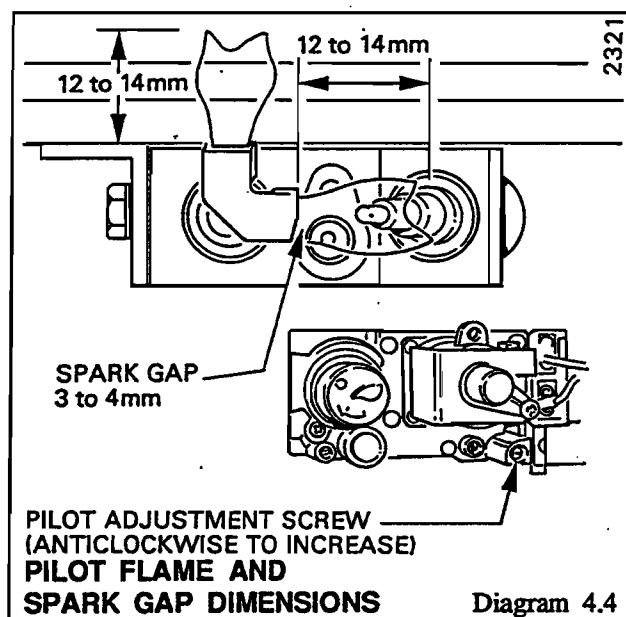
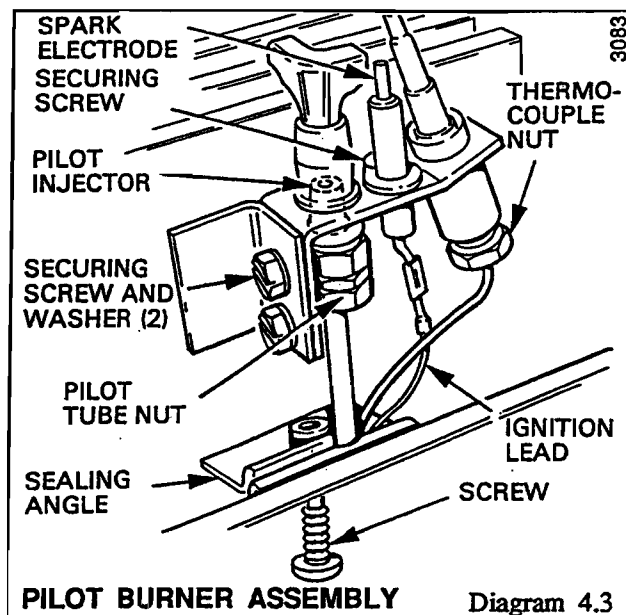
Slacken the two wing nuts securing the flue collector, see diagram 4.2.

Remove the outer combustion chamber front panel, secured with the four screws and a wing nut.

Disconnect the ignition lead from the spark electrode, see diagram 4.3.

Remove the spark electrode, secured with a single screw.

Check the spark gap upon the assembly, see diagram 4.4.



4.6 Pilot Injector

Before commencing, refer to Section 1.1

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Remove the main burner, refer to Section 4.2.

Remove the sealing angle, secured with a single screw, see diagram 4.3.

Disconnect the ignition lead from the spark electrode.

Remove the spark electrode, secured with a single screw.

Disconnect the thermocouple nut from the pilot burner.

Disconnect the pilot supply tube, holding the pilot injector hexagon with another spanner, then remove the pilot burner.

Remove the pilot injector from the pilot assembly by unscrewing it.

Check the pilot flame length on relighting, see diagram 4.4.

4.7 Thermocouple

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Remove the main burner, refer to Section 4.2.

Remove the sealing angle secured with a single screw, see diagram 4.3.

Disconnect the ignition lead from the spark electrode.

Remove the control housing, secured with two screws. Support the control housing on a surface or by screwing it to the front edge of the base, using the outer case securing screw, see diagram 4.5.

Disconnect the pilot supply tube, holding the pilot injector hexagon with another spanner, see diagram 4.3.

Disconnect the thermocouple at both ends, see diagram 4.3 and 4.6.

Remove the pilot burner, secured with two screws, then remove the thermocouple.

Make sure that the overheat cutoff connector is in place in the slot of the gas valve when fitting the thermocouple. Do not tighten the thermocouple nut more than a quarter turn beyond finger tight or make any tight bends in the thermocouple capillary.

4.8 Boiler Overheat Cutoff

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Gain access by removing the pressure gauge bracket, secured with a single screw, see diagram 4.7.

Disconnect the boiler overheat cutoff electrical connectors from the gas valve, see diagram 4.6.

Remove the overheat cutoff, secured with two screws and nuts.

Use a little of the heat sink compound supplied, between the mounting plate and the cutoff when fitting it.

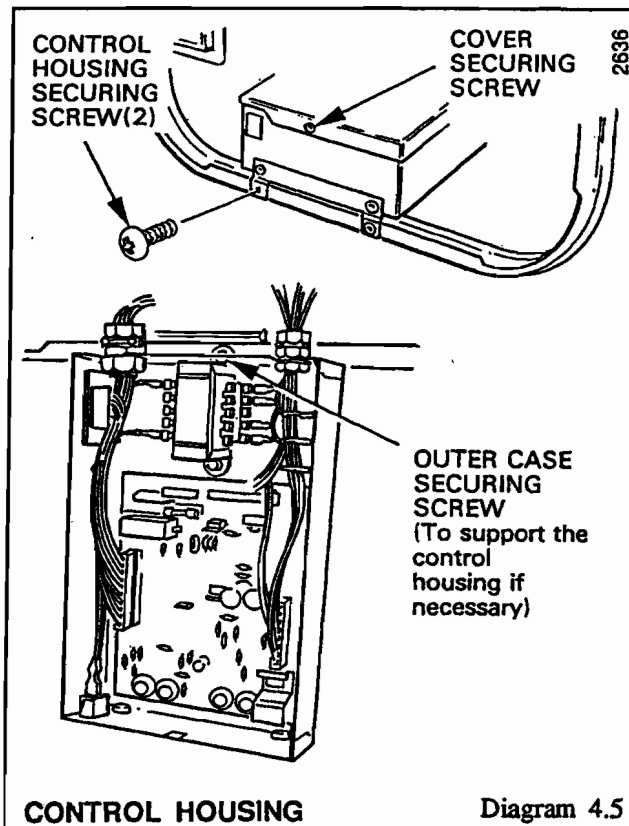


Diagram 4.5

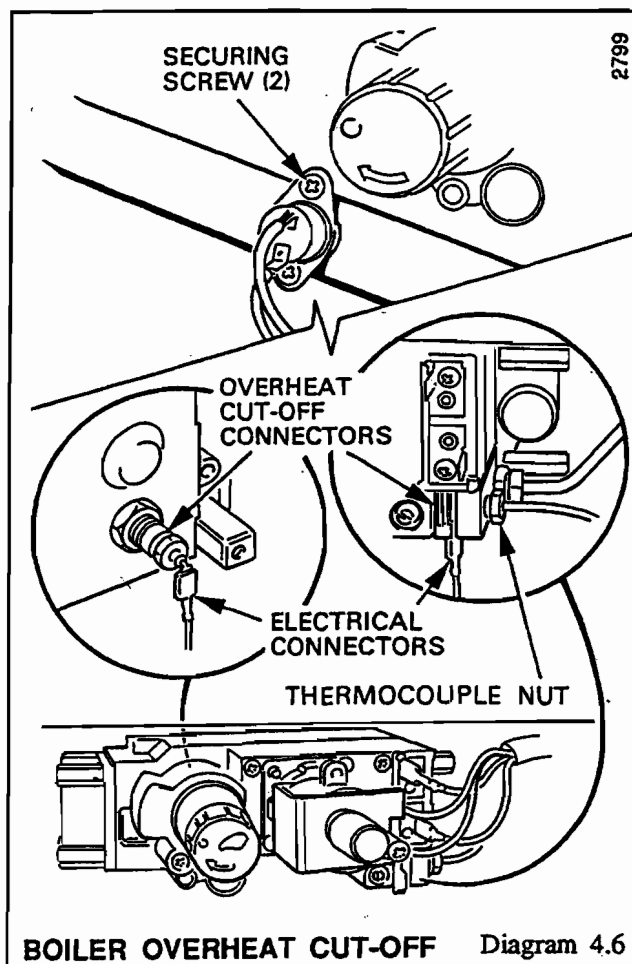


Diagram 4.6

4 Replacement of Parts

4.9 Domestic Hot Water High Limit Control

Before commencing, refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Remove the control housing, refer to Section 4.7 paragraph 7.

Disconnect the electrical connector at the domestic hot water high limit control, see diagram 4.8.

Remove the high limit control from the flow pipe, secured with two screws and nuts.

Use a little of the heat sink compound supplied, between the mounting plate and the control, when fitting it.

4.10 Piezo Unit

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply, refer to Section 1.4.

Remove the outer case, refer to Section 1.4.

Remove the pressure gauge bracket, secured with a single screw, see diagram 4.7.

Disconnect the ignition lead at the piezo unit.

Remove the piezo unit from the bracket.

4.11 Ignition Lead

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Remove the pressure gauge bracket, refer to Section 4.10 paragraph 4. secured with a single screw, see diagram 4.7.

Disconnect the ignition lead at both ends and remove it. Take care not to damage the seals when passing the connectors between them.

Make sure that the clear insulated connector is fitted to the spark electrode and the lead follows the same route, being secured in the same manner as the original.

4.12 Pressure Gauge

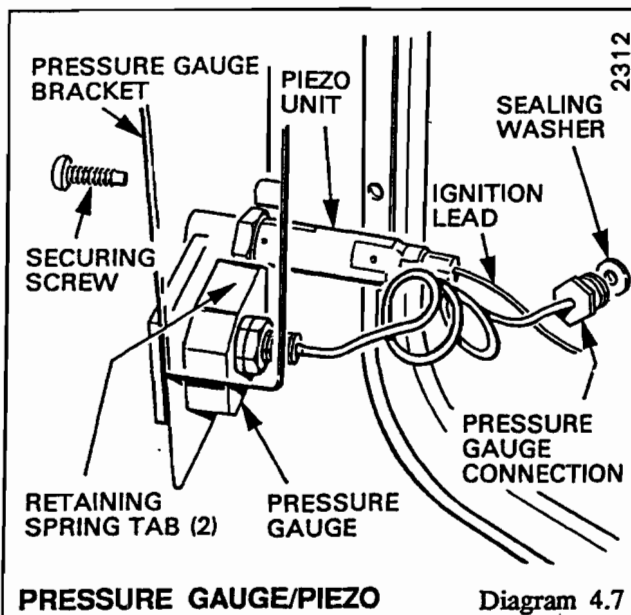
Before commencing, refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

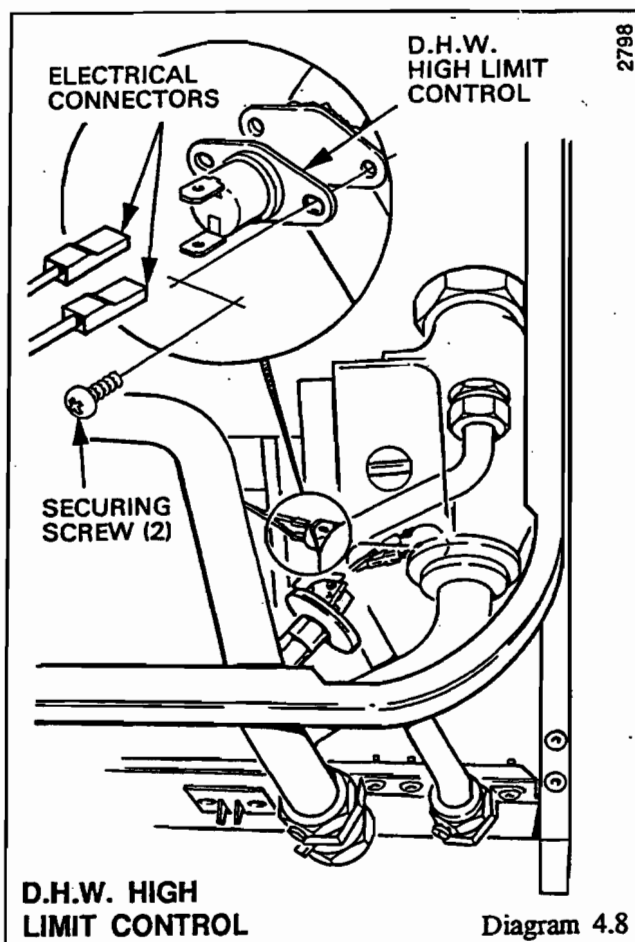
Release the water pressure and drain, refer to Section 1.6.

Remove the pressure gauge bracket, secured with a single screw, see diagram 4.7.



PRESSURE GAUGE/PIEZO

Diagram 4.7



D.H.W. HIGH
LIMIT CONTROL

Diagram 4.8

Remove the control housing, refer to Section 4.10 paragraph 7.

Disconnect the pressure gauge connection from the safety valve, discard the sealing washer.

Remove the pressure gauge secured with the retaining spring tabs.

Locate the supplied sealing washer under the pressure gauge connection when it is fitted to the safety valve.

Make up the water loss and pressurise the system, refer to Commissioning in the Installation Instructions.

4.13 Control Boards

Before commencing refer to Section 1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Remove the control housing, refer to Section 4.7 paragraph 7.

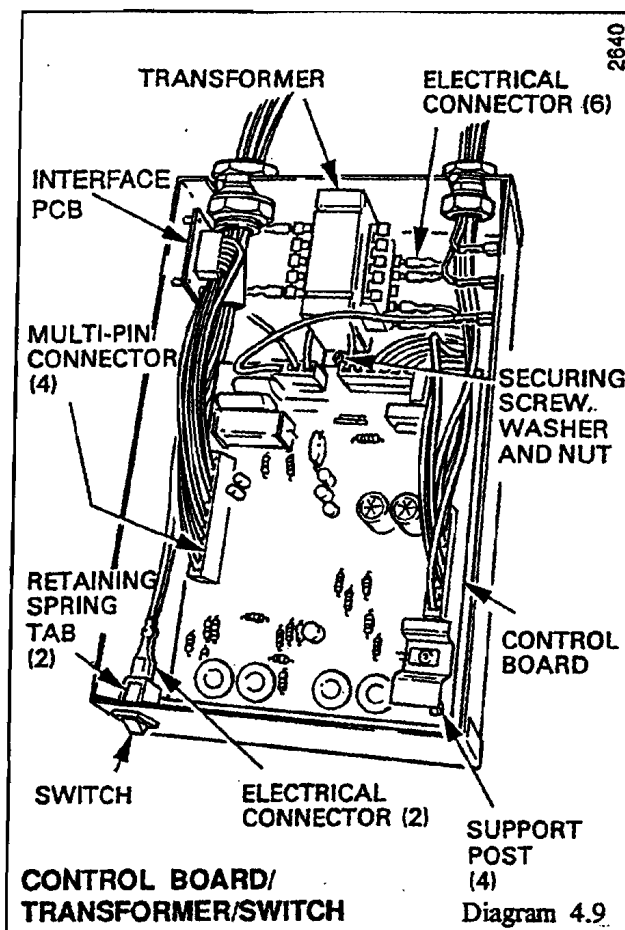
Remove the control housing cover, secured with a single screw.

Disconnect all the multi-pin connectors, see diagram 4.9.

Remove the control boards from the support post, noting the correct positions. Great care must be taken when handling any control board. **THEY MUST BE KEPT IN THE ANTI-STATIC HOLDER UNTIL IMMEDIATE REQUIREMENT.**

To connect the multi-pin connector correctly, see diagram 4.10.

Check and adjust the main burner gas pressure in the hot water and central heating modes, if necessary, refer to Commissioning in the Installation Instructions.



4.14 Switch

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 4.13.

Remove the control housing and cover, refer to Section 4.7 paragraph 7.

Disconnect the electrical connectors from the switch, refer to Section 4.9.

Remove the switch, secured by the retaining spring tabs.

4.15 Transformer

Before commencing, refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Remove the control housing and cover, refer to Section 4.13. Support the control housing but not the casing screw.

Disconnect the electrical connectors from the transformer, see diagram 4.9.

Remove the transformer, noting the correct position.

Reconnect the transformer cables correctly, see diagram 4.10.

4.16 Gas Valve

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply and close the gas service cock, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Remove the control housing, refer to Section 4.7 paragraph 7.

Remove the pressure gauge bracket, secured with a single screw, see diagram 4.7.

Disconnect the five electrical connectors at the front of the gas valve and one at the rear, see diagram 4.1.

Remove the shield, microswitch and insulation, secured to the selector valve with two screws, see diagram 4.12.

Disconnect the thermocouple at the gas valve.

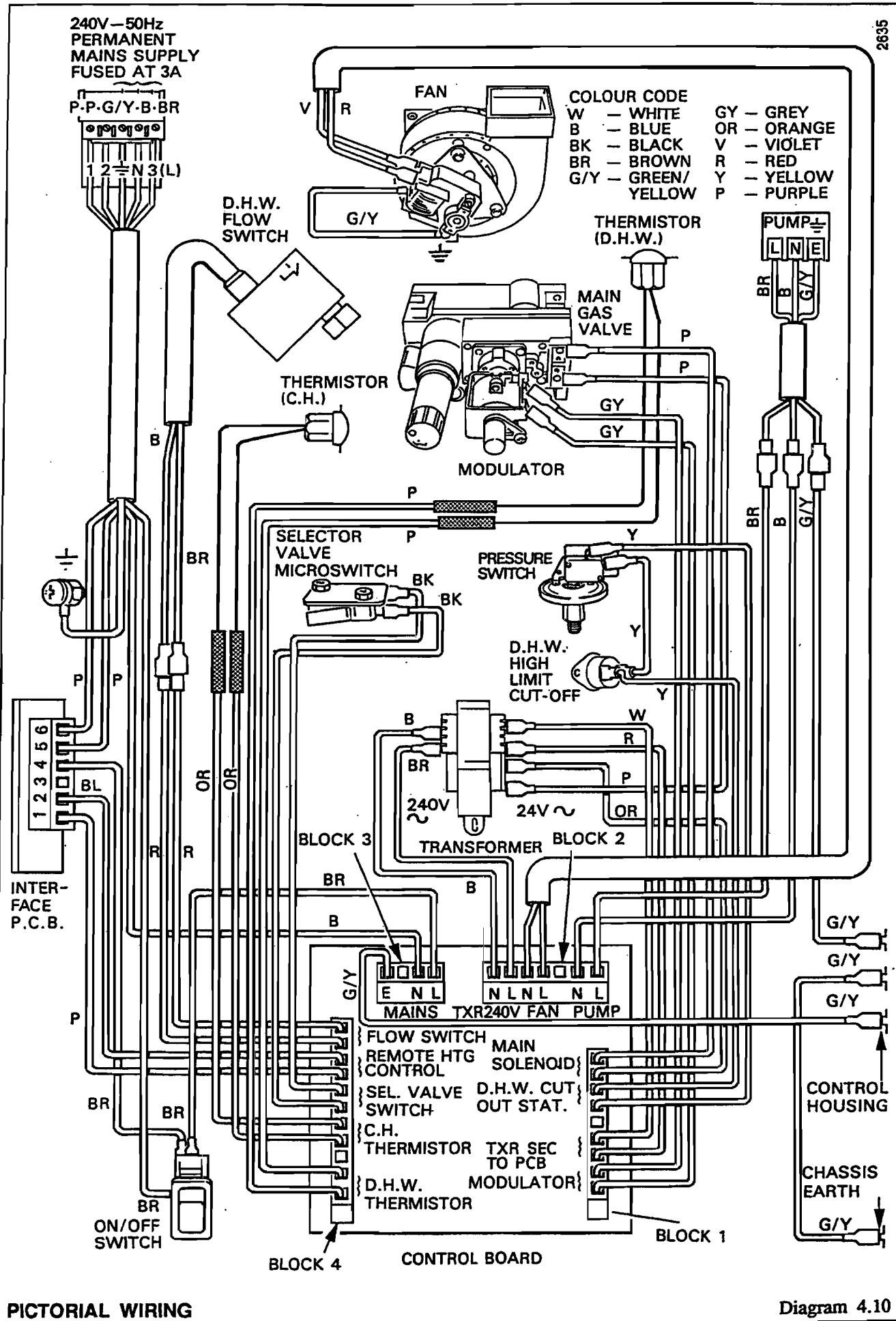
Disconnect the pilot supply tube at the gas valve.

Remove the four extended hexagon screws at the right of the valve.

Support the gas valve, disconnect the union nut of the gas service cock and remove the valve complete with inlet pipe.

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

4 Replacement of Parts



Transfer the pilot tube adaptor and the overheat cutoff connectors to the replacement valve.

Discard the "O" rings and fit the new ones supplied, when fitting the gas valve.

To connect the gas valve cables correctly, see diagram 4.10.

On reassembly, ensure that the insulation is fitted between the microswitch and the shield.

Light and adjust the boiler if necessary, refer to Commissioning in the Installation Instructions. Adjust the pilot flame if necessary, refer to Section 4.4, Pilot Burner.

Check and adjust the main burner pressure in the hot water and central heating modes, refer to Commissioning in the Installation Instructions.

4.17 Microswitch (Selector Valve)

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply, refer to Section 1.3.

Turn the selector control knob fully clockwise to "Hot Water" setting.

Remove the outer case, refer to Section 1.4.

Disconnect the electrical connectors at the microswitch, see diagram 4.12.

Remove the microswitch, secured with two screws which also secure the insulation and shield.

On reassembly, ensure that the insulation is fitted between the microswitch and the shield.

4.18 Modulator

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply and close the gas service cock, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Remove the shield, microswitch and insulation, secured to the selector valve with two screws, see diagram 4.12.

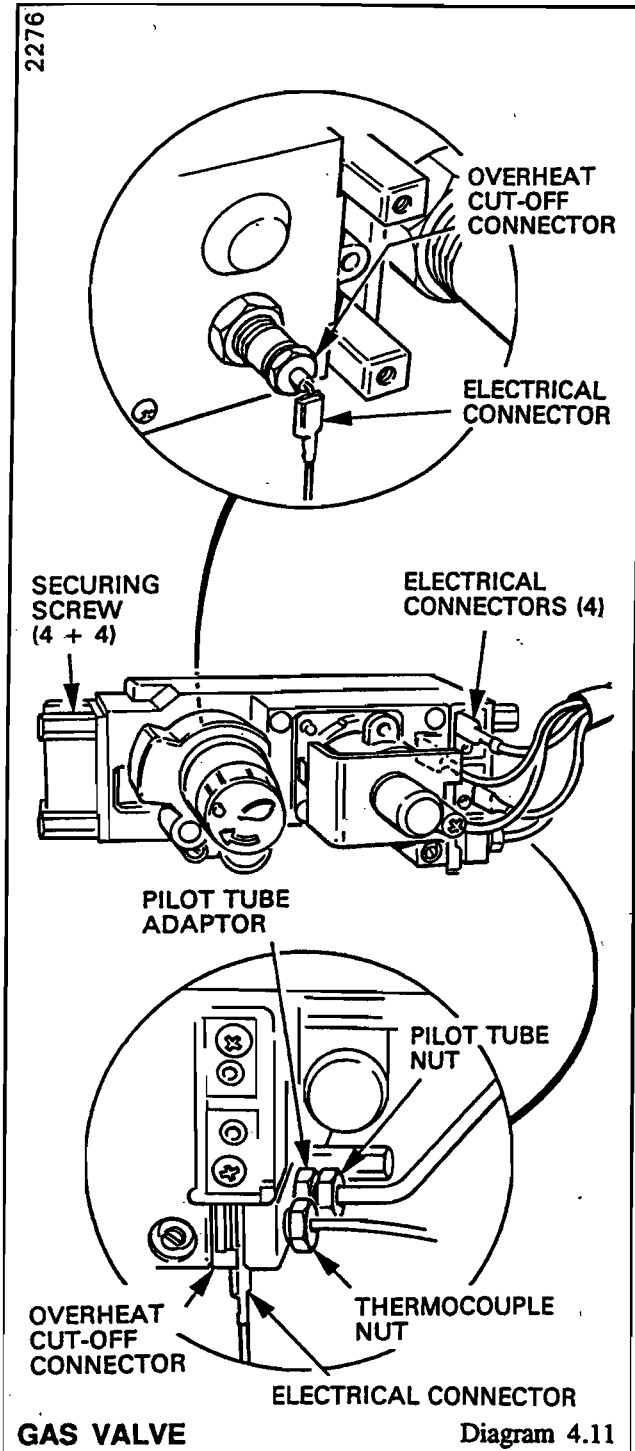
Disconnect the two electrical connectors at the modulator, see diagram 4.13.

Remove the modulator, secured with two screws.

Discard the gasket and fit the new one supplied, when fitting the modulator.

On reassembly, ensure that the insulation is fitted between the microswitch and the shield.

Light, check and adjust the boiler if necessary, refer to Commissioning in the Installation Instructions.



4.19 Selector Valve

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Turn the selector control knob fully clockwise to the "Hot Water" setting.

Remove the outer case, refer to Section 1.4

Release the water pressure and drain, refer to Section 1.6.

Remove the control housing, refer to Section 4.7 paragraph 7.

Disconnect the electrical connectors at the microswitch, see diagram 4.12.

Disconnect the three union nuts of the selector valve.

Disconnect the left hand flow pipe at the isolation valve and remove the pipe.

Slacken other pipework union nuts as necessary to enable the selector valve to be removed.

Transfer the microswitch, insulation and shield, secured with two screws, to the replacement selector valve ensuring that the insulation is fitted between the microswitch and shield.

Make up water loss and pressurise the system, refer to Commissioning in the Installation Instructions.

4.20 Domestic Hot Water Flow Switch

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Isolate the domestic water inlet, release the domestic water pressure and drain, refer to Sections 1.3 and 1.6.

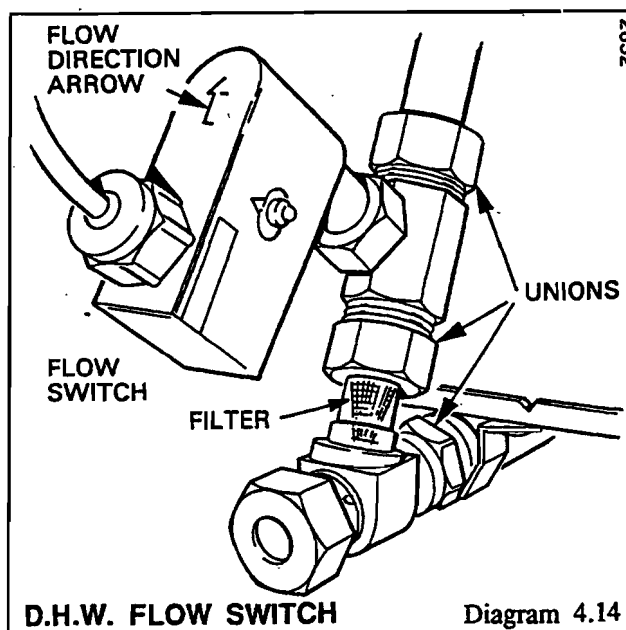
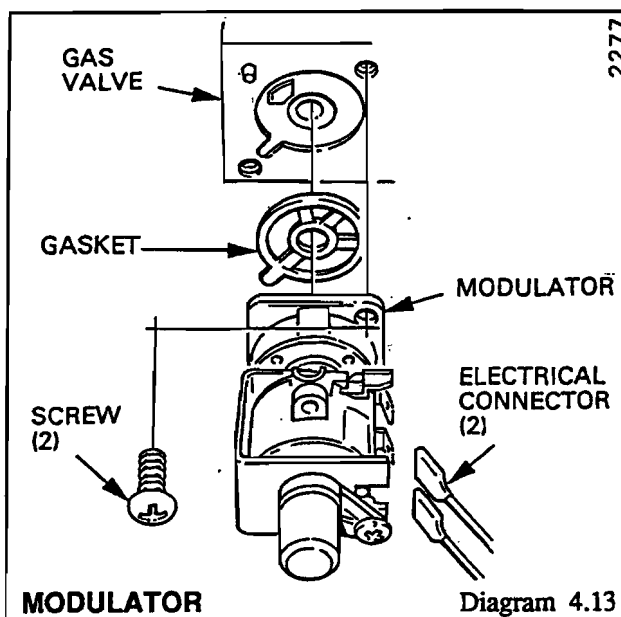
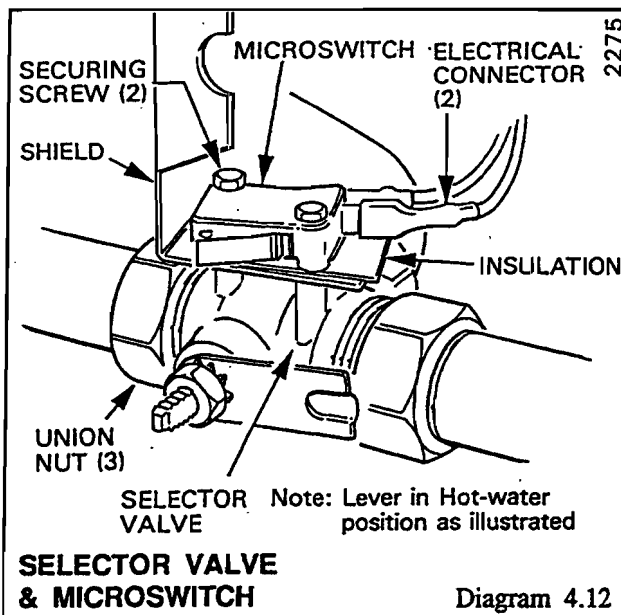
Remove the control housing, refer to Section 4.7 paragraph 7.

Remove the pressure gauge bracket, secured with a single screw, see diagram 4.7.

Disconnect the flow switch cables at the in line electrical connectors.

Remove the flow switch by disconnecting the union nuts, see diagram 4.14, noting the fitted position. Slacken or remove the clip securing the isolating valve to ease removal.

Discard the sealing washer and use the new ones supplied, when fitting the flow switch. It is recommended that the water inlet filter is cleaned or renewed at this stage. Make sure that the switch is positioned correctly, with the flow direction arrow pointing upward.



4.21 Thermistor

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the inner case, refer to Section 1.4.

Release the water pressure and drain the appropriate circuit of the boiler, refer to Section 1.6.

Gain access, central heating thermistor only, by removing the pressure gauge bracket, secured with a single screw, see diagram 4.7.

Remove the control housing, refer to Section 4.7 paragraph 7.

Disconnect the cables from the appropriate thermistor connectors, see diagram 4.15.

Remove the relevant thermistor, complete with "O" ring.

Discard the "O" ring and use the new one supplied, when fitting the thermistor.

Make up water loss and pressurise the system, central heating thermistor only, refer to Commissioning in the Installation Instructions.

4.22 Safety Valve

Before commencing, refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Release the water pressure and drain, refer to Section 1.6.

Remove the control housing, refer to Section 4.7 paragraph 7.

Gain access by removing the pressure gauge bracket, secured with a single screw, see diagram 4.7.

Disconnect the pressure gauge connection from the safety valve, see diagram 4.16.

Disconnect the union nuts to release the safety valve.

Discard the sealing washers and use the new ones supplied, on assembly.

Make up water loss and pressurise the system, refer to Commissioning in the Installation Instructions.

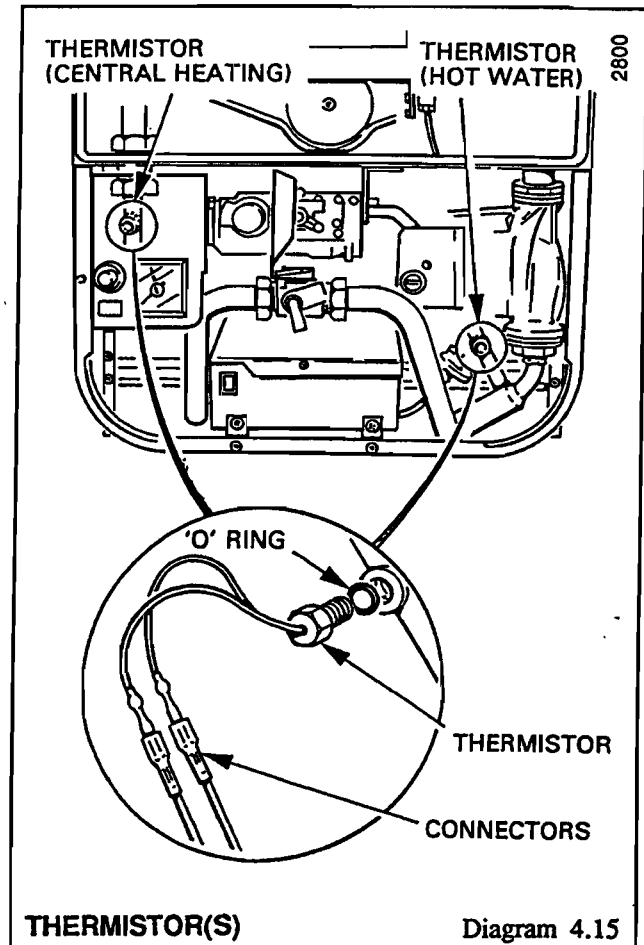


Diagram 4.15

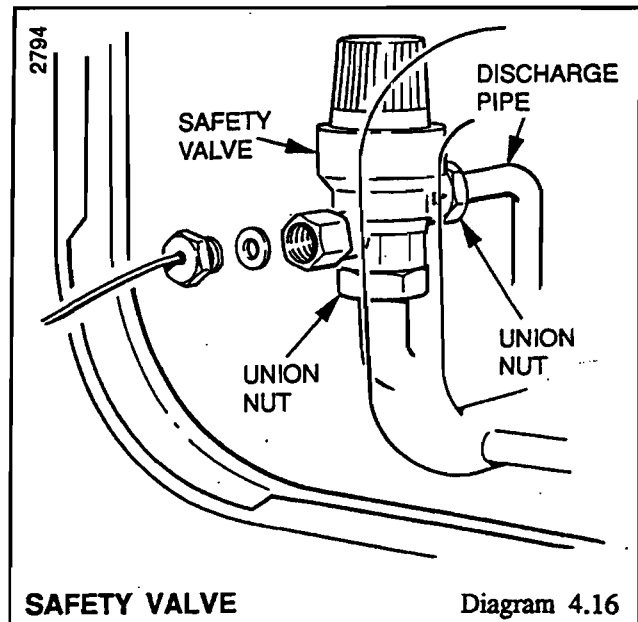


Diagram 4.16

4 Replacement of Parts

4.23 Water Inlet Filter

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

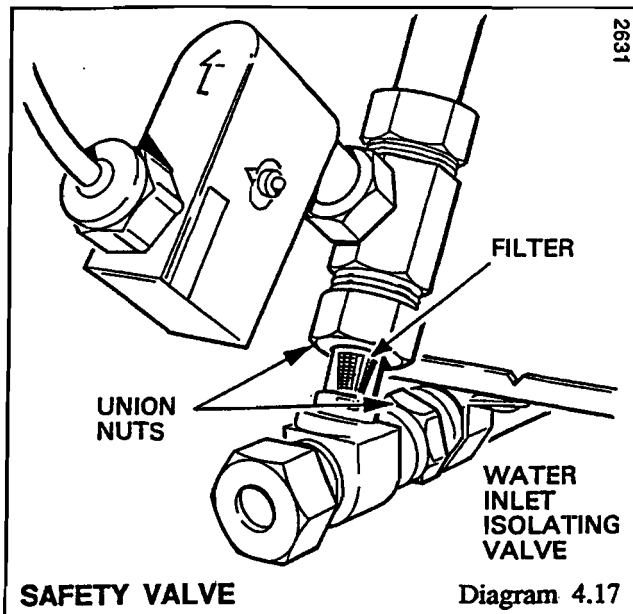
Isolate domestic water inlet, release the domestic water pressure and drain, refer to Sections 1.3 and 1.6.

Remove the control housing, refer to Section 4.7 paragraph 7.

Disconnect the two union nuts to gain access to the filter, see diagram 4.17.

Clean or renew the filter as necessary.

Discard the sealing washer and use the new one supplied, on assembly.



4.24 Domestic Hot Water Throttle

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply, refer to Section 1.3.

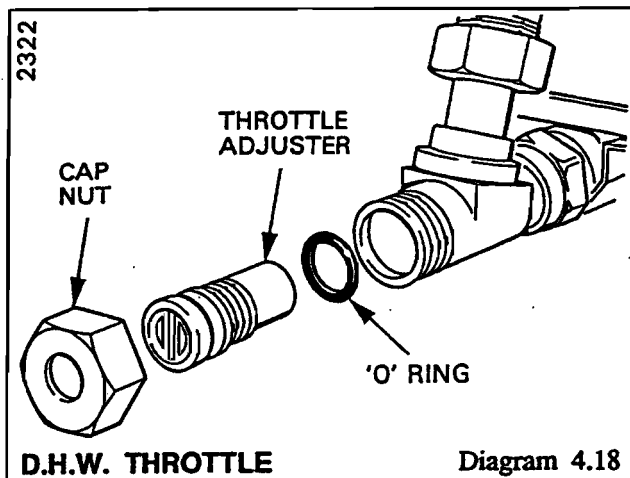
Remove the outer case, refer to Section 1.4.

Isolate the domestic water inlet, release the domestic water pressure and drain, refer to Sections 1.3 and 1.6.

Remove the cap nut and carefully remove the throttle adjuster, see diagram 4.18.

Clean if necessary, taking care not to damage the throttle body.

Discard the "O" ring and use the new ones supplied, when fitting the throttle adjuster.



4.25 Mini Expansion Vessel

Before commencing, refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

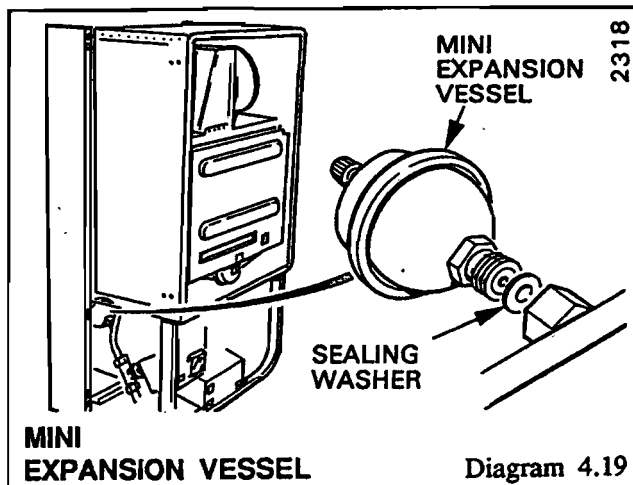
Remove the outer case, refer to Section 1.4.

Isolate domestic water inlet, release the domestic water pressure and drain, refer to Sections 1.3 and 1.6.

Remove the control housing, refer to Section 4.7 paragraph 7.

Remove the mini expansion vessel, see diagram 4.19.

Discard the sealing washer and use the new one supplied, when fitting.



4.26 Pump

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

Release the water pressure and drain, refer to Section 1.6.

Remove the control housing, refer to Section 4.7 paragraph 7.

Disconnect the electrical connectors at the pressure switch microswitch. See diagram 4.22. Remove pressure switch, see diagram 4.22.

Remove the terminal cover from the pump and disconnect the cables, see diagram 4.20

Disconnect the pump at the upper union only.

Disconnect the three union nuts shown in diagram 4.20, then remove the pump complete with lower pipework.

Separate the pump at the lower union, discarding all sealing washers.

Make sure that the flow direction arrow is pointing upward, on the pump, when fitting it to the lower pipework, using the new sealing washers provided.

Refit pressure switch. Use jointing compound to ensure a sound joint.

Set the flow adjuster on the pump to maximum setting. The flow rate should be controlled by means of a valve in the heating system.

Make up water loss and pressurise the system, refer to Commissioning in the Installation Instructions.

Note: Should the pump fail to operate, see diagram 3.7. If all is in order but the pump still does not operate, remove the screw, see diagram 4.20 then turn the pump spindle to release any temporary seizure. DO NOT HIT THE SPINDLE.

4.27 Automatic Air Vent

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Release the water pressure and drain, refer to Section 1.6.

Remove the automatic air vent, see diagram 4.21.

Discard the sealing washer and use the new one supplied, when fitting.

Slacken the small cap on the air vent. This MUST NOT be retightened.

Make up water loss and pressurise the system, refer to Commissioning in the Installation Instructions.

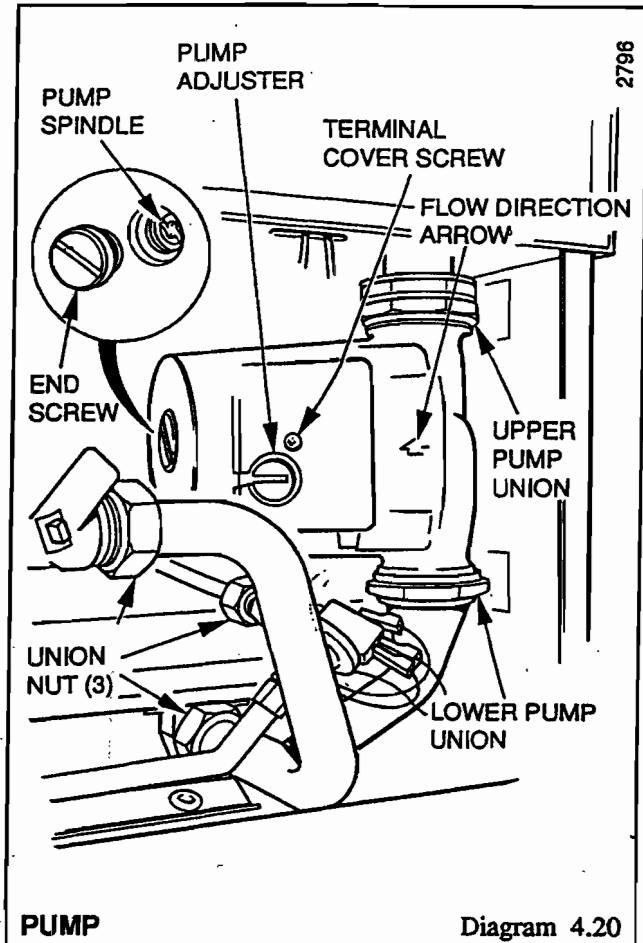


Diagram 4.20

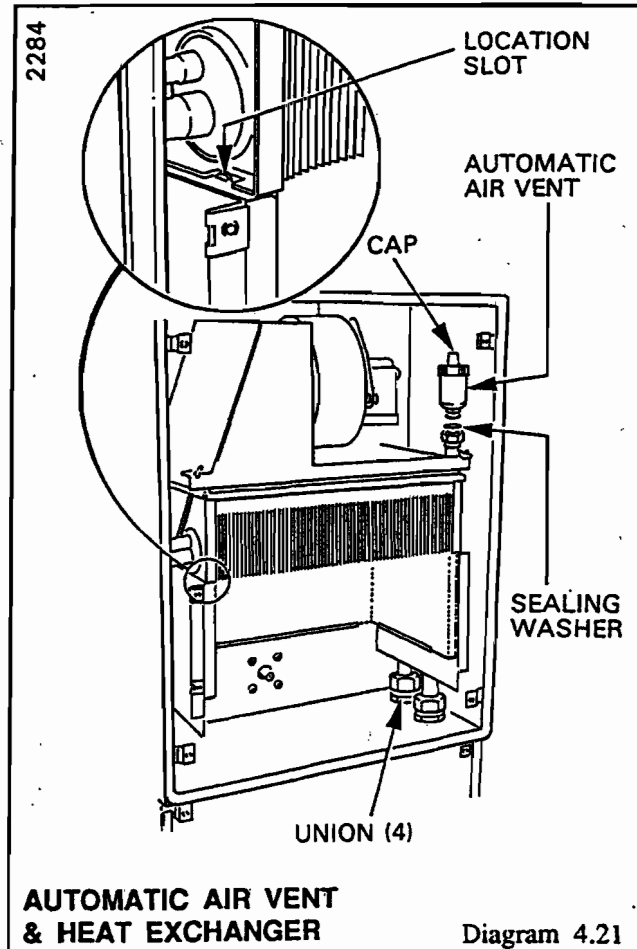


Diagram 4.21

4 Replacement of Parts

4.28 Pressure Switch

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply, refer to Section 1.3.

Remove the outer case, refer to Section 1.4.

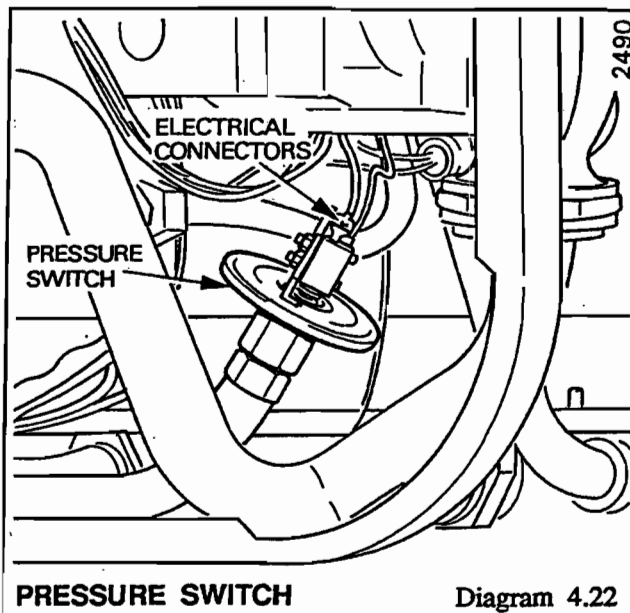
Release the water pressure and drain, refer to Section 1.6.

Remove the control housing, refer to Section 4.7 paragraph 7.

Disconnect the electrical connectors at the microswitch, see diagram 4.22.

Remove pressure switch see diagram 4.22. On assembly use jointing compound to ensure a sound joint.

Make up water loss and pressurise the system, refer to Commissioning in the Installation Instructions.



4.29 Heat Exchanger

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply and close the gas service cock, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4. and 1.5.

Release the water pressure and drain, refer to Section 1.6.

Remove the fan from the flue collector, refer to Section 4.1.

Remove the flue collector, secured with two wing nuts and hook bolts, see diagram 4.2.

Remove the main burner, refer to Section 4.2.

Remove the automatic air vent, see diagram 4.21. If renewing the heat exchanger, transfer the air vent to the new one, using the new sealing washers supplied.

Disconnect the union nuts of the heat exchanger to remove it.

Discard the sealing washers and use the new ones supplied, upon assembly.

Locate the raised location tabs on the combustion chamber sides into the slots on the heat exchanger, when fitting.

Make sure that the main burner is located on the main injector and is horizontal, the tips of the rearmost blade under the two burner guides.

The combustion chamber front panel should be fitted loosely, then the flue collector also fitted loosely, ensuring that it is seated correctly on the heat exchanger and over the top edge of the front panel.

Locate the fan into the flue elbow and the clip at the rear, then secure with the two screws.

Connect the cables, the polarity of the two connectors is not important.

Tighten the wing nuts and screws evenly to secure the flue collector and combustion chamber front panel.

Make up water loss and pressurise the system, refer to Commissioning in the Installation Instructions.

4.30 Combustion Chamber Insulation

Before commencing refer to Section 1.1.

Isolate the boiler from the electrical supply and close the gas service cock, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4 and 1.5.

Remove the fan, refer to Section 4.1.

Remove , the flue collector, secured with two wing nuts and hook bolts, see diagram 4.2.

Remove the combustion chamber front panel, secured with four screws and a wing nut.

Remove the front insulation, secured with a clip, see diagram 4.23.

Slide out both side insulation pieces.

Pull the lower rear insulation forward, then slide the upper rear insulation down from behind the heat exchanger.

To fit the flue collector, combustion chamber front panel and fan, refer to Section 4.29.

4.31 Expansion Vessel

Renewal of the expansion vessel requires the boiler to be removed from the wall. As an alternative, in certain circumstances, a separate expansion vessel of the same specification may be connected as close as possible to the boiler, leaving the original in position.

Before commencing refer to Section 1.1

Isolate the boiler from the electrical supply and close the gas service cocks, refer to Section 1.3.

Remove the outer case and the cover of the inner case, refer to Sections 1.4. and 1.5.

Release the water pressure and drain, refer to Section 1.6.

Remove the fan from the flue collector, refer to Section 4.1.

Remove the flue elbow, secured to the boiler with four screws and to the air duct with two screws, see diagram 4.24.

Disconnect the boiler water connection union nuts at the front of the isolating valves, see diagram 1.1.

Disconnect the gas service cock union.

Disconnect the safety valve discharge compression fitting nut at the rear of the boiler.

Separate the two parts of the boiler multi-pole connector.

Slacken the clips of the gas service cock and isolating valves.

Remove the boiler from the mounting frame, secured with two screws at the top, see diagram 4.24. Pull the boiler from the isolating valves and clips at the bottom, taking care not to loose the water filter from inside the boiler inlet. Unhook the boiler at the top and withdraw it forward.

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

Disconnect the union nut connection, see diagram 4.25.

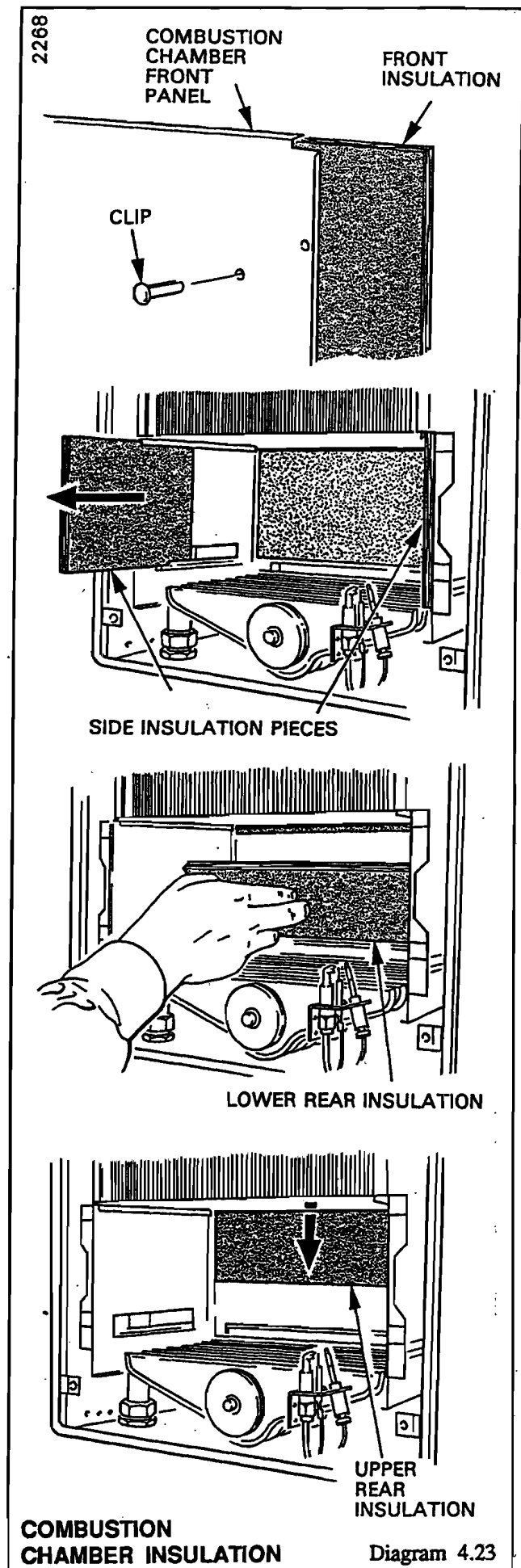
Remove the expansion vessel, secured with three clamps.

Discard the sealing washer and use the new one supplied, when fitting.

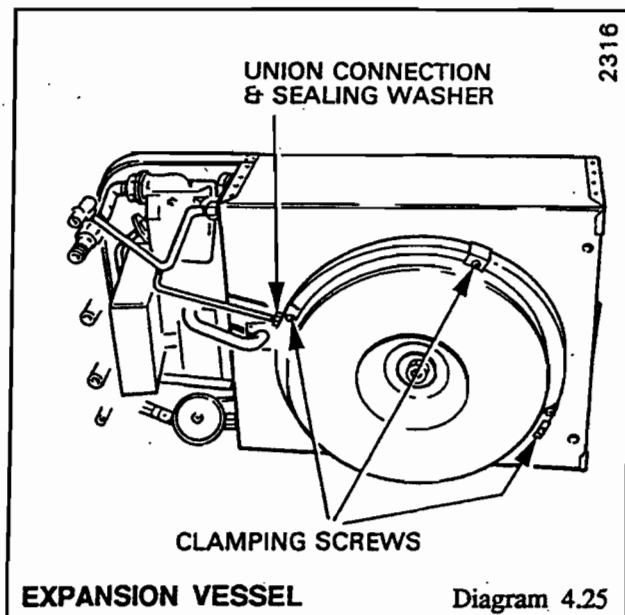
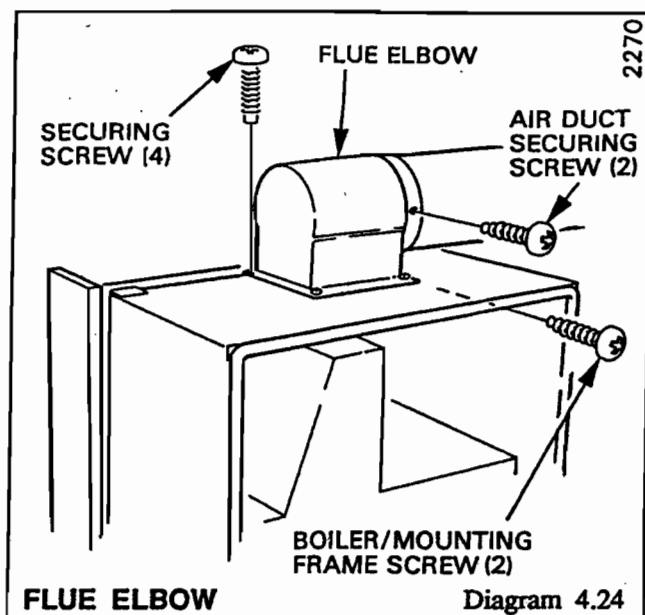
Connect the union nut, when fitting the expansion vessel, before clamping it.

To fit the flue collector, combustion chamber front panel and fan, refer to Section 4.29.

Make up water loss and pressurise the system, refer to Commissioning in the Installation Instructions.



4 Replacement of Parts



5 Spare Parts

5.1 Part Identification

The key number in diagram 5.1 and the first column of the list will help identify the spare part.

5.2 Ordering

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

from the data badge. The data badge is positioned on the top of the boiler, visible when the outer case is removed.

If order from the local gas undertaking also quote the GC appliance number from the data badge and the GC spare part number from the list.

Key No.	G.W. Part No.	Description	G.C. No.
1	432828	Fan impeller and motor	376 976
2	432873	Main injector assembly	376 965
3	203425	Pilot burner	376 967
4	202616	Spark electrode	383 724
5	203516	Pilot injector	376 968
6	900003	Thermocouple	383 719
7	432869	Boiler overheat cutoff assembly	376 988
8	432868	Domestic hot water limit control	313 024
9	900501	Peizo unit	384 146
10	WW4604	Ignition lead	360 211
11	432874	Pressure gauge assembly	313 014
12	202078	Control board (inc 19,20)	313 012
13	202804	Transformer	313 086
14	432870	Gas valve assembly	376 964
15	203345	Modulator assembly	313 021
16	202099	Microswitch	313 022
17	432867	Thermistor assembly	376 987
18	432864	Domestic hot water switch assembly	376 983
19	202107	Fuse 2 BS4265 type T 630mA	313 087
20	202114	Fuse 1 BS4265 type T1.6A	313 068
21	202115	Pressure switch	313 097
22	202118	Interface PCB	-

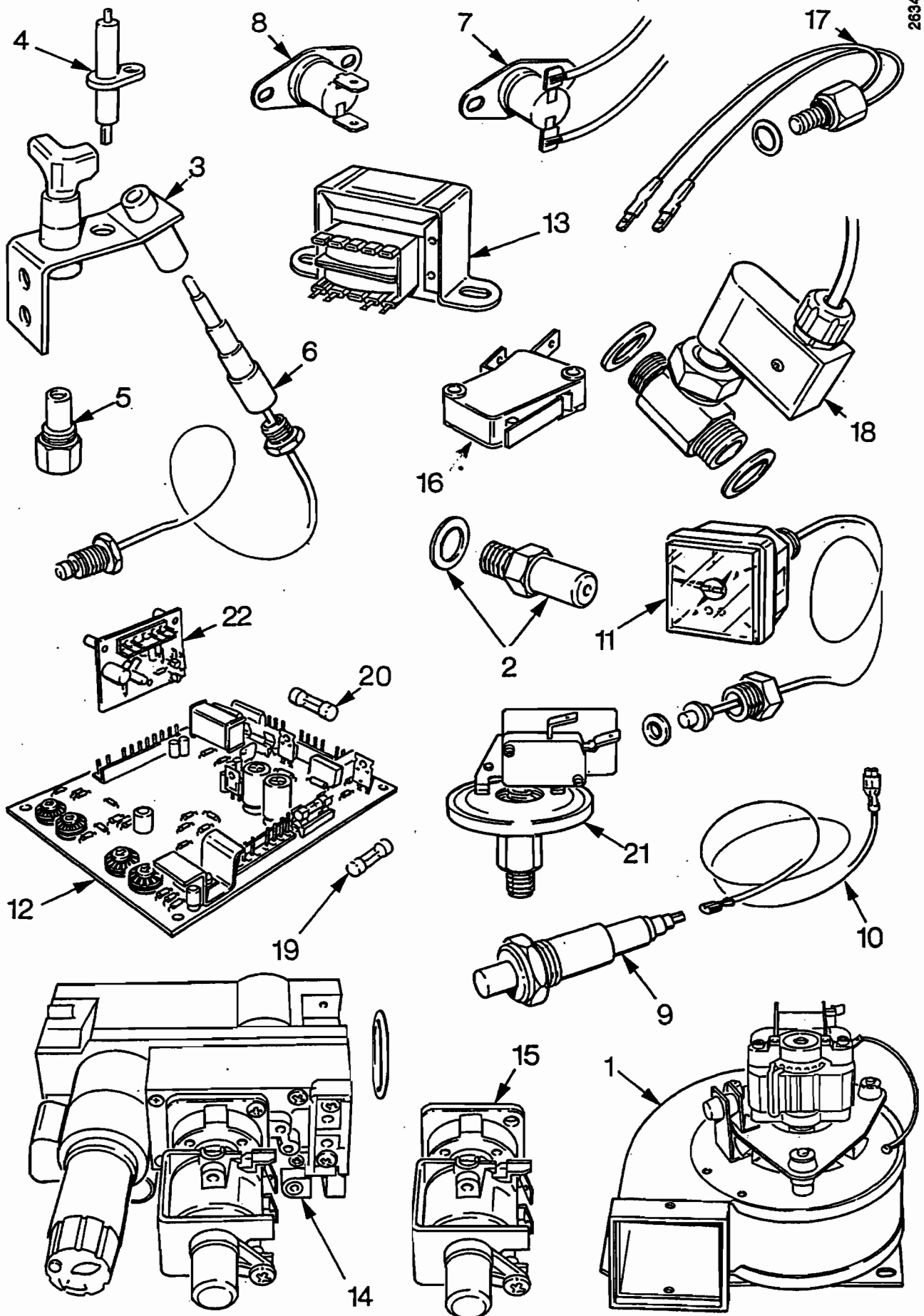


Diagram 5.1

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