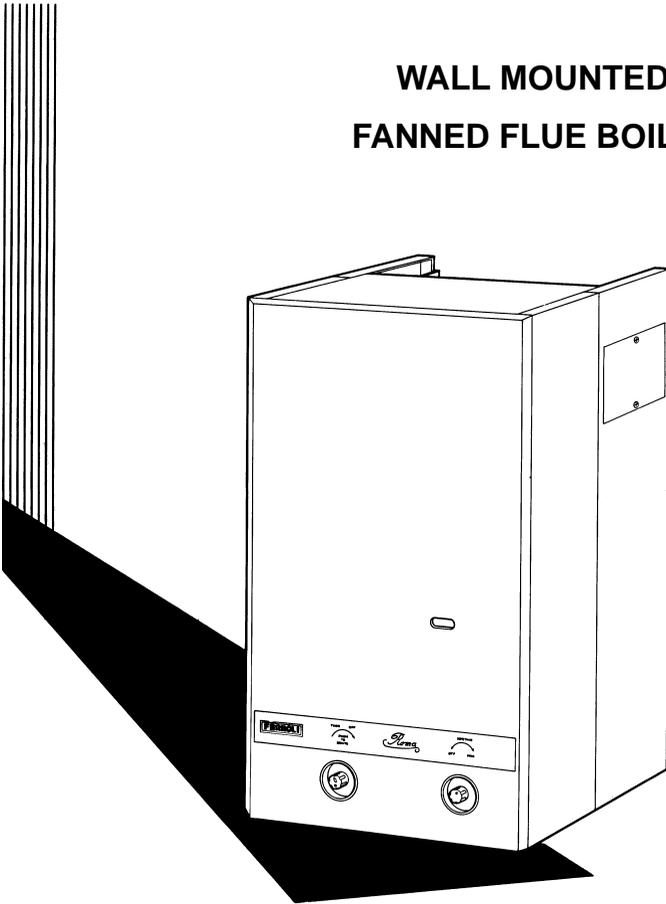




FERROLI ROMA 55 FF

WALL MOUNTED,
FANNED FLUE BOILER



INSTALLATION & SERVICING INSTRUCTIONS

G.C. Appliance No. 4126705
Please read these Instructions
thoroughly before using
the appliance

Phone numbers:

Installer _____

Service Engineer _____

Serial N° _____

FERROLI HELPINE
FOR SERVICE INFORMATION OR
HELP TELEPHONE: 08707 282 885
ALWAYS QUOTE SERIAL NUMBER
FOR IMMEDIATE ASSISTANCE

These Instructions are to be left with the User or adjacent to the gas meter.



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1. General description and information

1.1 Information

1. Installation must be carried out by a competent person, and in accordance with the relevant requirements of the current issues of:

- A. Gas Safety (Installation & Use) Regulations.
- B. Building Regulations.
- C. Building Standards (Scotland) Regulations.
- D. I.E.E. Wiring Regulations.
- E. Bye-laws of the local water undertaking.

Guidance on Installation is provided in this booklet, but due account must be taken of the detailed recommendations of the current issues of:

- BS 5440 Part 1:** Flues.
- BS 5440 Part 2:** Ventilations.
- BS 6798:** Installation.
- BS 5449:** Pumped systems.
- BS 5546:** Domestic hot water.
- BS 6700:** Water supply.
- BS 6891:** Gas supply.
- BS 7074 Part 1:** Expansion vessels.

For installation in timber framed buildings, refer to the British Gas Publication **Guide for gas installation in timber framed housing - REF DM2**.

- 2. It is essential that the boiler be installed strictly in accordance with these Instructions and the documents, detailed above.
- 3. To avoid the possibility of injury, care must be taken when handling sheet metal components.

1.2 General description

The **ROMA 55 FF** is a wall mounted fanned flue boiler, suitable for connection to sealed or open vented water systems, supplying central heating and/or indirect (stored) domestic hot water.

A balanced flue system is supplied, suitable for horizontal and vertical termination only, but which can, if desired, be taken from the rear, sides or top of the boiler*.

NOTE

* Side exit or vertical exit requires the optional side / vertical flue turret.

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2. Technical data

| GAS | MAXIMUM OF RANGE | | MINIMUM OF RANGE | |
|--------------------------------|--------------------------------------|-----------------------|------------------------|-----------------------|
| | HEAT INPUT | 20 KW | 68,200 Btu/h | 10 kW |
| HEAT OUTPUT | 16 KW | 55,000 Btu/h | 7.3 kW | 25,000 Btu/h |
| BURNER PRESSURE | 12 mbar | 4.7 in wg | 2.4 mbar | 1.0 in wg |
| GAS RATE - AFTER 10 MINUTES | 1.9 m ³ /h | 66 ft ³ /H | 0.95 m ³ /h | 33 ft ³ /h |
| GAS CONNECTION SIZE / POSITION | 1/2" Bsp / left hand side, rear base | | | |

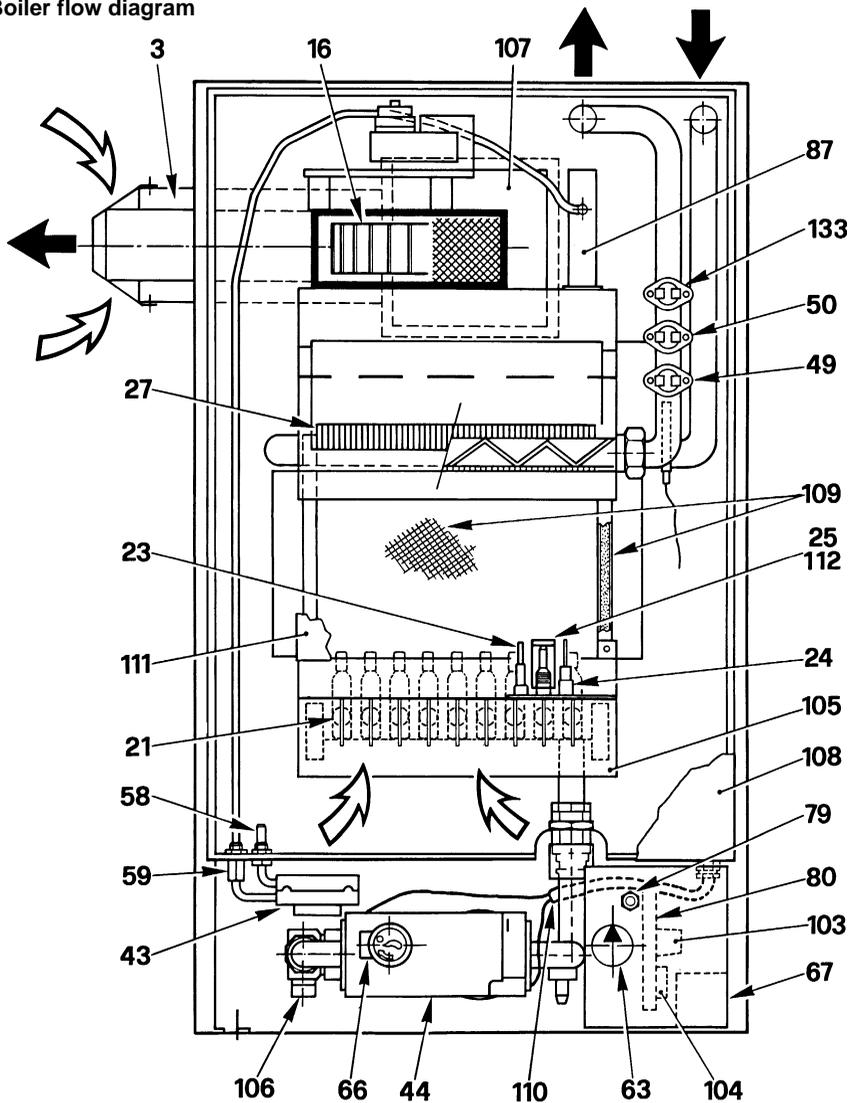
| WATER | OPEN VENTED | | SEALED | |
|--------------------------|--|------|-------------------------|----------|
| | MAXIMUM HEAD OR PRESSURE | 30 m | 43.5 psi | 3.0 bar |
| MINIMUM HEAD OR PRESSURE | 0.2 m | 8" | 0.8 bar | 11.6 psi |
| | | | if pressurised type | |
| MAXIMUM FLOW TEMPERATURE | 85° C | | 85° C | |
| TEMPERATURE DIFFERENTIAL | 11° C between flow and return connections, recommended | | | |
| MINIMUM WATER FLOW RATE | 0.36 m ³ /h | | 12.7 ft ³ /h | |
| WATER CONTENT | 0.5 litres | | 0.11 gal. | |
| CONNECTIONS | 22 mm compression, right hand side, rear, top | | | |

| ELECTRICAL | |
|-----------------------------|--|
| SUPPLY | Mains supply 230 V ~ 50 Hz fused 3 Amp. |
| POWER CONSUMPTION | 50 Watt (without pump) |
| CONNECTIONS MAINS / CONTROL | 5 wire electrical lead |
| | Brown - Live } Permanent |
| | Blue - Neutral } mains supply |
| | Green/Yellow - Earth } 230 V ~ |
| | Black - Switched Live from external controls |
| | Red - Live to external controls |
| CONNECTIONS PUMP | 3 wire electrical lead |
| | Brown - Live } To |
| | Blue - Neutral } circulating |
| | Green/Yellow - Earth } pump |



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3. Boiler flow diagram



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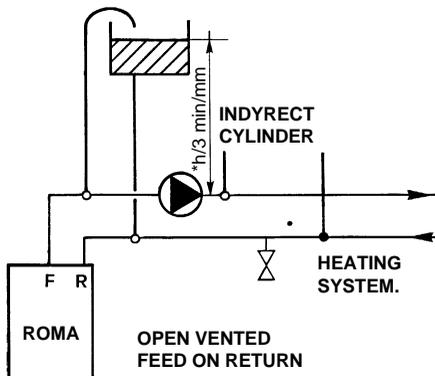
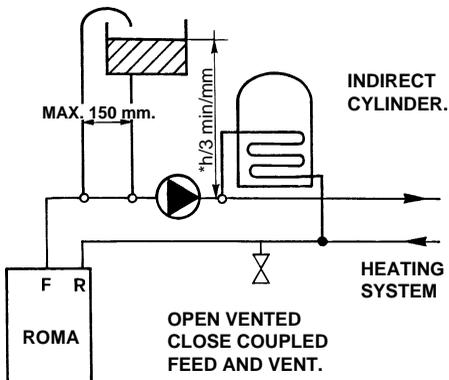
4. Key boiler flow diagram

| POS. | G.C. No. | DESCRIPTION | Q.ty |
|-------|----------|---|------|
| 3. | | Flue/air intake (side outlet) | 1 |
| 16. | | Complete fan RL 85/0034A1 3025LH 422 | 1 |
| 21a. | | Main injector N.G. 1.25 | 9 |
| 21b. | | Main injector L.P.G. 0.72 | 9 |
| 23. | | Thermocouple | 1 |
| 24. | | Complete spark electrode | 1 |
| 25. | | Pilot | 1 |
| 27. | | Copper heat exchanger | 1 |
| 43. | | Air pressure switch | 1 |
| 44. | | Combination gas valve V4600C 1193 | 1 |
| 49. | | Overheat cut/off thermostat | 1 |
| 50. | | Central heating limit thermostat | 1 |
| 58. | | Combustion chamber pressure test point (+) | 1 |
| 59. | | Flue outlet pressure test point (-) | 1 |
| 63. | | C.H. boiler thermostat | 1 |
| 66. | | Microswitch combination gas valve | 1 |
| 67. | | Ignition transformer (CAST) | 1 |
| 79. | | Capacitor fan IMF | 1 |
| 80. | | Complete P.C.B. VF.1 | 1 |
| 87. | | Venturi flue testpoint | 1 |
| 103. | | Relay | 1 |
| 104. | | Fuse 2A | 1 |
| 105. | | Complete burner set | 1 |
| 106. | | Gascock | 1 |
| 107. | | Flue/air intake flange rear outlet | 1 |
| 108. | | Combustion chamber outlet cover | 1 |
| 109. | | Combustion chamber insulation, back and sides | 1 |
| 110. | | Eco split wire | 1 |
| 111. | | Combustion chamber front panel | 1 |
| 112. | | Pilot injector N.G. 0.27 | 1 |
| 112b. | | Pilot injector L.P.G. 0.22 | 1 |
| 133. | | Pump overrun thermostat | 1 |



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5. Installation data



* h = maximum head developed by pump.

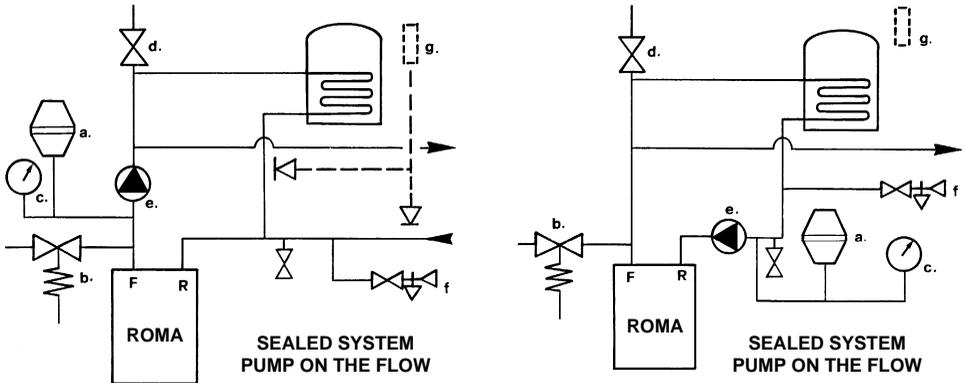
5.1 Water System

General

1. The ROMA 55 FF will supply central heating and, via an indirect cylinder, stored hot water.
2. All water systems must be in accordance with the Bye-Laws of the Local Water Undertaking.
3. Only fully pumped systems can be used.
4. Two pipe heating systems are recommended.
5. Systems can be either of the open (vented) or sealed type.

5.2 Open (Vented) System

1. Further guidance: BS 5449, BS 6798 and British Gas Publications.
2. Two typical systems are shown above. Note that close coupled or combined feed and vents are permitted.
3. Cold Feed: Minimum 15 mm copper but minimum 22 mm if combined with open vent.
4. Open Vend: Minimum 22 mm copper.
5. No valves between the boiler and the open vent.
6. A Bypass must be fitted which allows a minimum flow of 6 litres/min. (1.3 gal/min.)



5.3 Sealed System

1. Further guidance: BS 5449, BS 6798, BS 7074 Part 1, British Gas Publications.

2. Two typical sealed systems are shown, above.

3. COMPONENTS:

a) EXPANSION VESSEL.

To BS 4814. Sized according to BS 5449 and/or BS 7074 Part 1. Positioned on the inlet to the pump.

b) SAFETY VALVE.

Always on the flow and next to the boiler. Non adjustable and set to 3 bar. Routed direct to drain in an area not susceptible to freezing, nor where it is hazardous. Do not reduce pipe size from that on the valve.

c) PRESSURE GAUGE (May incorporate a temperature gauge).

Must have a fill pressure indicator, and be readily visible to the User. Range 0 to 4 bar.

d) AIR VENT. Highest point of the system.

e) PUMP. Suitable for the system. See 5.4.

f) FILLING POINT.

Shall be at low level, in accordance with local Water Authority requirement, and generally have a stop valve to BS 1010, as well as a double check valve. Filling can be achieved either by means of a temporary hose or via a cistern used for no other purpose, with a minimum static head of 300 mm to the highest point of system.

g) SYSTEM MAKE UP.

Can be achieved either automatically - from an independent cistern used for no other purpose, or from a manually filled top up bottle through a double check valve, OR manually, by a temporary hose connection.

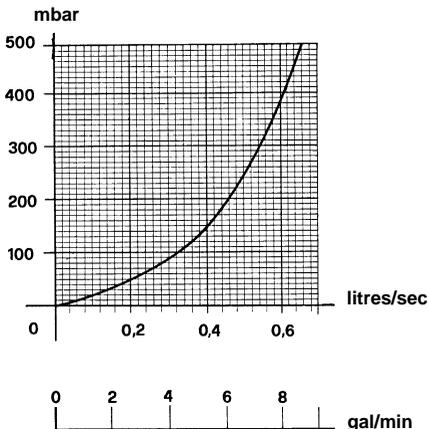
IMPORTANT

Any method of filling and of make up MUST comply with Regulations of the Local Water Authority.



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Boiler pressure loss



5.4 Pump selection

Suitable pump should be fitted taking due account of the pressure loss across the boiler.
Pump to comply with BS 1394. A minimum flow rate of 6 litres/min (1.3 gal/min) is required.

5.5 Drain points

Must be provided to enable the system to be drained - taps to BS 2879.

5.6 Hot water storage cylinder

Must be either of the indirect coil type or a direct cylinder suitably adapted by fitment of an immersion calorifier. Direct cylinders must not be used.

5.7 Quality of components

All components, fittings, and joint must be suitable for temperatures up to 110°C and, for sealed systems, pressures up to 3 bar.

5.8 Flushing

Any system, new or old, must be flushed in accordance with the Commissioning Instructions. It is essential that as much residual sludge and debris be removed as is possible.

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5.9 Flue system

1. Further guidance: BS 5440 Part 1.
2. Flue types: Fanned. Balanced, and hence appliance is room sealed.
3. Termination: Outside. Horizontal. Vertical.
4. Direction: From boiler, to rear, either side and vertical (side & vertical required optional flue turret).
5. Maximum length: Two separate flue kits are available.

| KIT | Part No. | MAXIMUM LENGTH mm | |
|--|----------|--------------------------------|--------------------------------------|
| | | Rear - Inner to outer wallface | Side - Boiler side to outer wallface |
| A (1 m) | 3980221 | 820 | 808 |
| B (2m) | 3980222 | Not Permitted | 1808 |
| Vertical & Side flue turret part No. 3980220 | | | |
| Vertical terminal part No. 39800570 | | | |

Order one kit only - joining of flue kits is not permitted.
 With vertical termination maximum flue length is 2 metres.

5.10 Se duct termination

Termination in the Se Duct is exactly as termination on an outside wall. No adaptation of the flue system is required. Simply ensure that the plastic air duct is flush the inside face of the Se Duct.

Do not remove the terminal.

Don't forget that on Se Duct you will need an adequate width inside to push the flue system through any obstructions before entering the Se Duct. See section 7 (page 13).

5.11 Ventilation

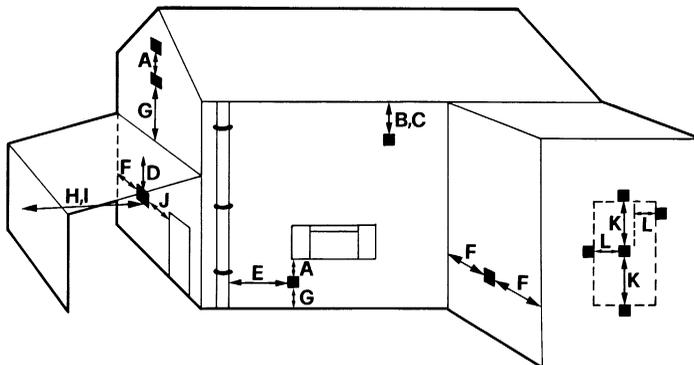
1. Further guidance: BS 5440, Part 2.
2. Ventilation for a room or space: None Required - This is a room sealed appliance.
3. Ventilation for a compartment: Cooling air is required:

| MINIMUM AIR VENT FREE AREA. COMPARTMENTS | | |
|--|----------------------------|--------------------|
| VENT POSITION | Compartment ventilated to: | |
| | Room or space | Direct to outside |
| HIGH LEVEL | 180 cm ² | 90 cm ² |
| LOW LEVEL | 180 cm ² | 90 cm ² |



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6. Terminal position (outside)



A Quinnell Barratt and Quinnell guard (part. no. C2) should be screwed to the wall centrally over the terminal, when the distance is less than 2 m above a balcony, above ground or above a flat roof to which people have access.

6.01 Terminal position

Minimum Clearances (mm)

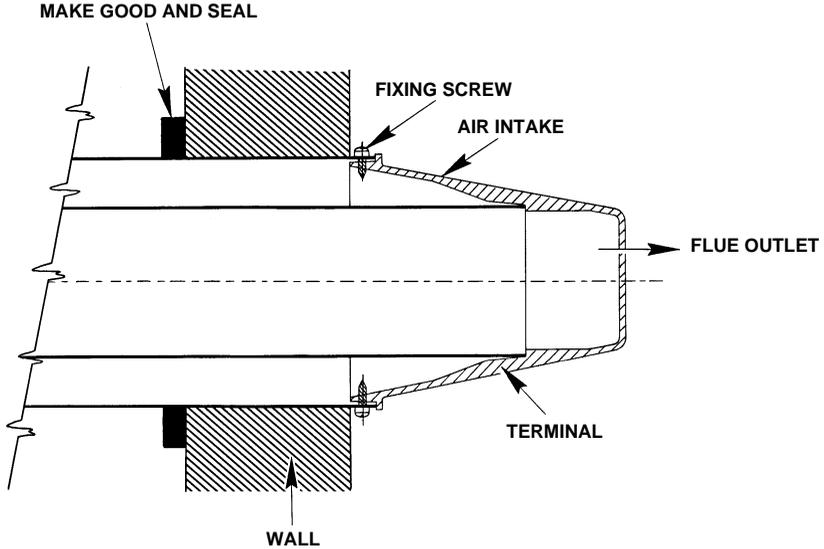
| POS. | mm | TERMINAL POSITION |
|------|------|--|
| A | 300 | Directly below an opening |
| B | 75 | Below gutters, soil and drain pipes |
| C | 200 | Below eaves |
| D | 200 | Below balconies, car port roof |
| E | 75 | From vertical drain or soil pipe |
| F | 300 | From internal or external corner |
| G | 300 | Above ground, roof, or balcony |
| H | 600 | From surface facing the terminal |
| I | 1200 | From terminal facing the terminal |
| J | 1200 | From opening in car port, to dwelling |
| K | 1500 | Vertically from a terminal on same wall |
| L | 300 | Horizontally from a terminal on same wall |
| 1000 | | <ul style="list-style-type: none"> • Below plastic gutter • Below painted eaves etc.} |
| 500 | | |

7. Terminal position horizontal, seduct, u duct

Standard se duct or u duct

Terminal position - The terminal must be situated relative to the Seduct or U Duct as shown. Horizontal Only.

Flue lengths - Two lengths are available.



| Part No. / Item | Rear Flues Wall Thickness (Max) | Side Flues Wall Thickness + Distance from side wall (Max) |
|-----------------|---------------------------------------|---|
| 3980221 | 820 mm | 808 mm |
| 3980222 | not permitted | 1808 mm |

Installation - The exposed wall face **MUST** be made good and SEALED.

Note that the air duct **MUST** be retained by screws at the appliance. Further guidance BS 5440: Part 1.



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8. Location

1. Further guidance: BS 6798.
2. **Not** suitable for external installation.
3. **Mus**be mounted on a suitable load bearing flat wall.
4. **Combustable walls** are not suitable.
5. **Dimensions** of the boiler.

| | | |
|-------------------|---------|---------|
| WEIGHT EMPTY | 30 kg | 66 lb |
| WEIGHT FULL | 30.5 kg | 67 lb |
| HEIGHT | 655 mm | 26.8 in |
| WIDTH | 370 mm | 14.6 in |
| DEPTH | 300 mm | 11.7 in |
| CLEARANCES | | |
| IN FRONT | 600 mm | 24.0 in |
| TO SIDES | 5 mm | 0.2 in |
| ABOVE | 100 mm | 4.0 in |
| BELOW | 150 mm | 6.0 in |

6. The space for installation will need to take into account **minimum clearances** required for safe operation and subsequent Servicing. Note that the minimum clearance at the front can be via an openable door.

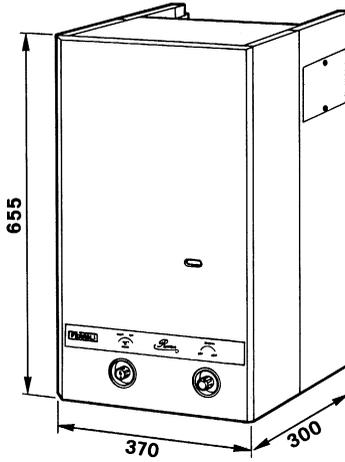
* A top clearance of at least 150 mm (6 in) is desirable at installation.

7. The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations, and, in Scotland, the electrical provisions of the Building Regulation applicable in Scotland, with respect to the installation of the boiler in a room or internal space containing a bath or shower. When this boiler is installed in a room containing a bath or shower, any electrical switch or appliance control, utilising mains electricity should be so situated that it cannot be touched by a person using the bath or shower.

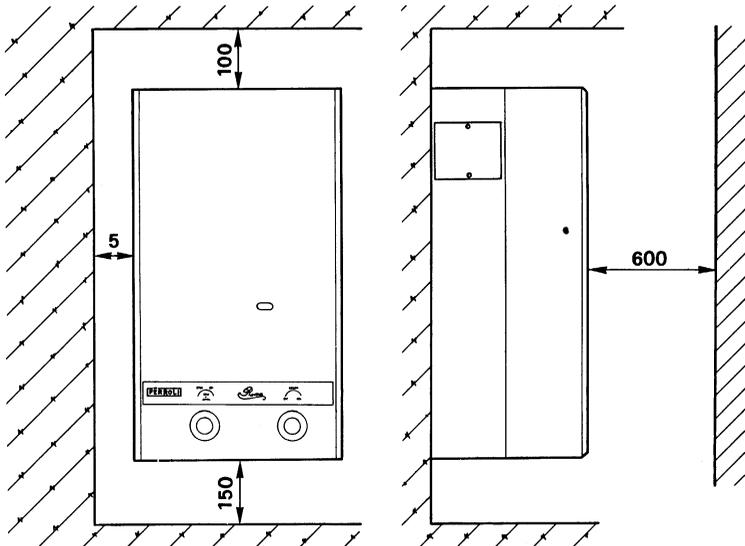
ROMA 55 FF



8.1 Boiler location Dimensions (mm)



Minimum Clearances (mm)

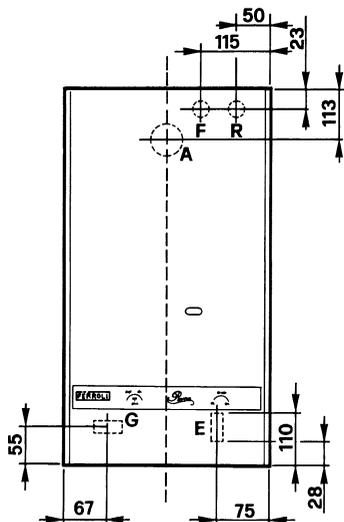




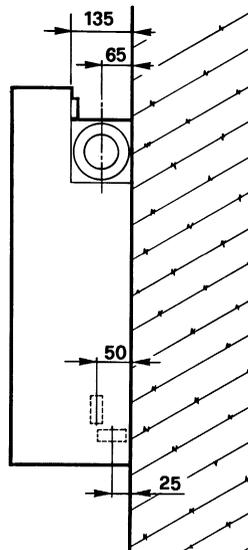
ROMA 55 FF

9. Boiler connections

Gas, Water and Electrical



Front View. All Connections at rear.



Side View.
(with optional side flue turret)

- | | | |
|----|-----------------------------|---------------------|
| A. | Air pipe for flue System | 4" (100 mm) PLASTIC |
| G. | Gas Service Cock Connection | 1/2" BSP FEMALE |
| F. | Flow | 22 mm compression |
| R. | Return | 22 mm compression |

9.1 Gas supply

1. Further guidance: BS 6891, BS 6798, Gas Safety (Installation and Use) Regulations.
2. Ensure the supply pipe is at least the size of the boiler connection (1/2 in BSP or 15 mm copper), and the gas meter and existing and/or new pipework will serve the maximum gas rate of all the appliance served by the meter.
3. An inlet working pressure of 20 mbar will be required at the boiler.
4. Always test for soundness of gas supply pipes in accordance with BS 6891.

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10. Electricity supply and connections

All electrical installation work must be carried out by a qualified electrician, and all work shall be in accordance with the current issue of the IEE wiring regulations.

Supplied for use on 230 V – 50 Hz supply, protected by a 3 Amp fuse.

The boiler must be earthed.

The method of connection to the mains supply must allow complete isolation from that supply either by:

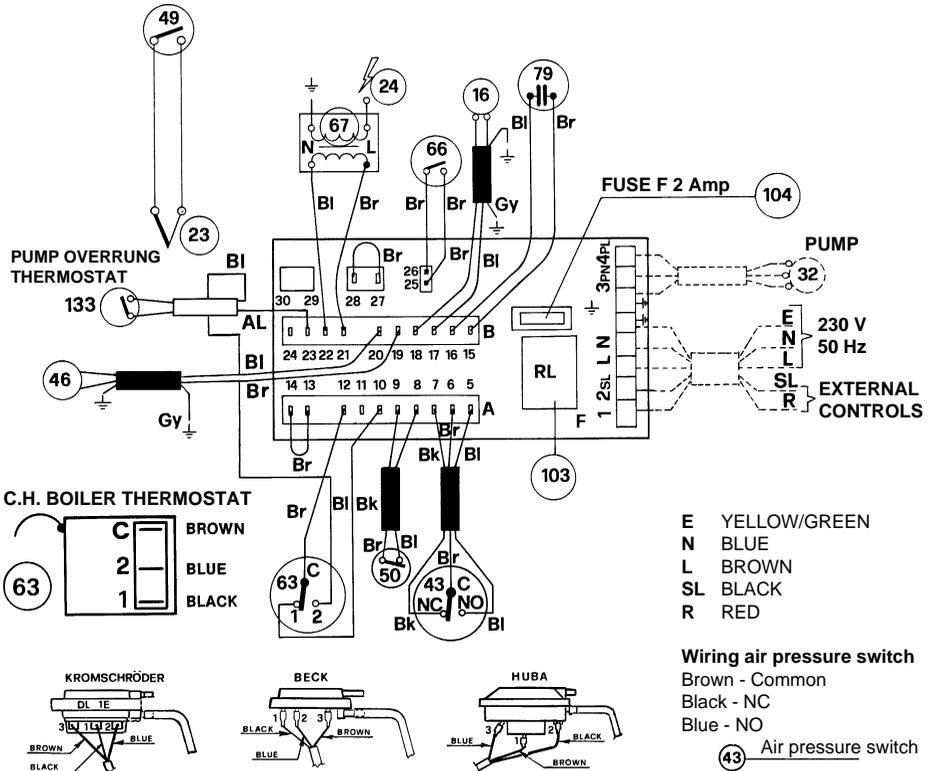
a) Use of 3 A fused double pole switch having a contact separation of at least 3 mm. Such a switch must supply the appliance and immediate control circuits **only** (eg room thermostat, programmer etc.)

OR

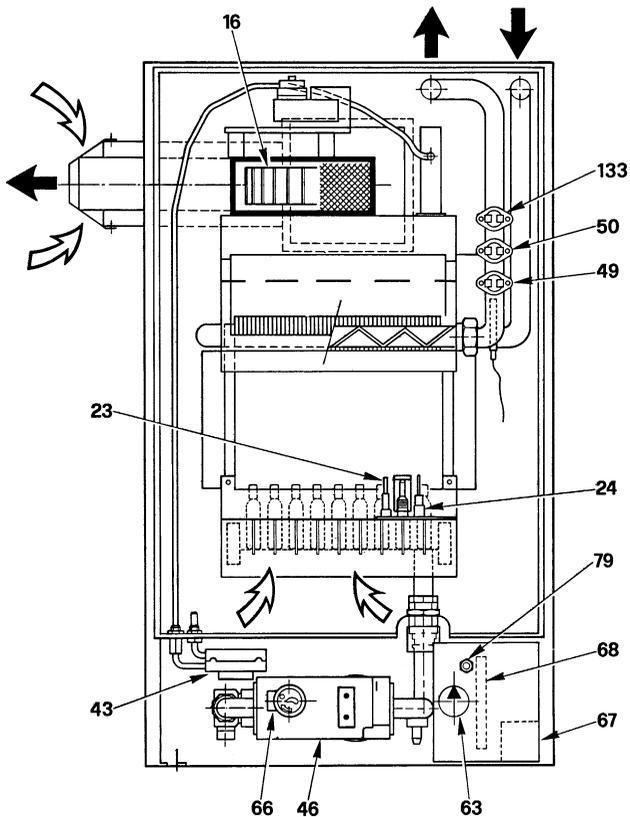
b) Use of an unswitched shuttered socket outlet and 3 A fused 3 pin plug both complying with BS 1363.

All external cables must be suitable for mains voltage and should be PVC insulated cable at least 0.75 mm² (24/0.2 mm), to BS 6500.

All external circuits for the control of the boiler must be wired and isolated from the same isolator as that which serves the boiler.



11. Boiler flow diagram



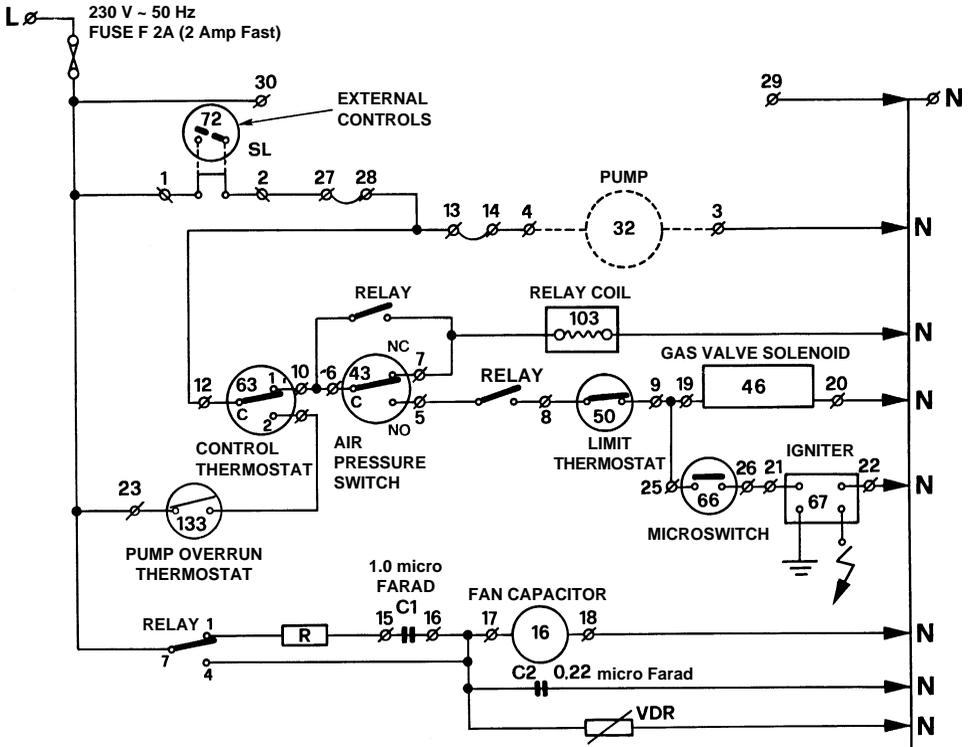
Key

- | | |
|-------------------------------------|---------------------------------------|
| 16. Fan | 63. C.H. boiler thermostat |
| 23. Thermocouple | 66. Microswitch combination gas valve |
| 24. Spark electrode | 67. Ignition transformer |
| 32. Pump (not fitted) | 68. Control box with P.C.B. |
| 43. Air pressure switch | 79. Capacitor |
| 46. Solenoid gas valve | 103. Relay |
| 49. Overheat cut-off thermostat | 104. Fuse |
| 50. Heat exchanger limit thermostat | 133. Pump overrun thermostat |

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12. Electrical functional drawing



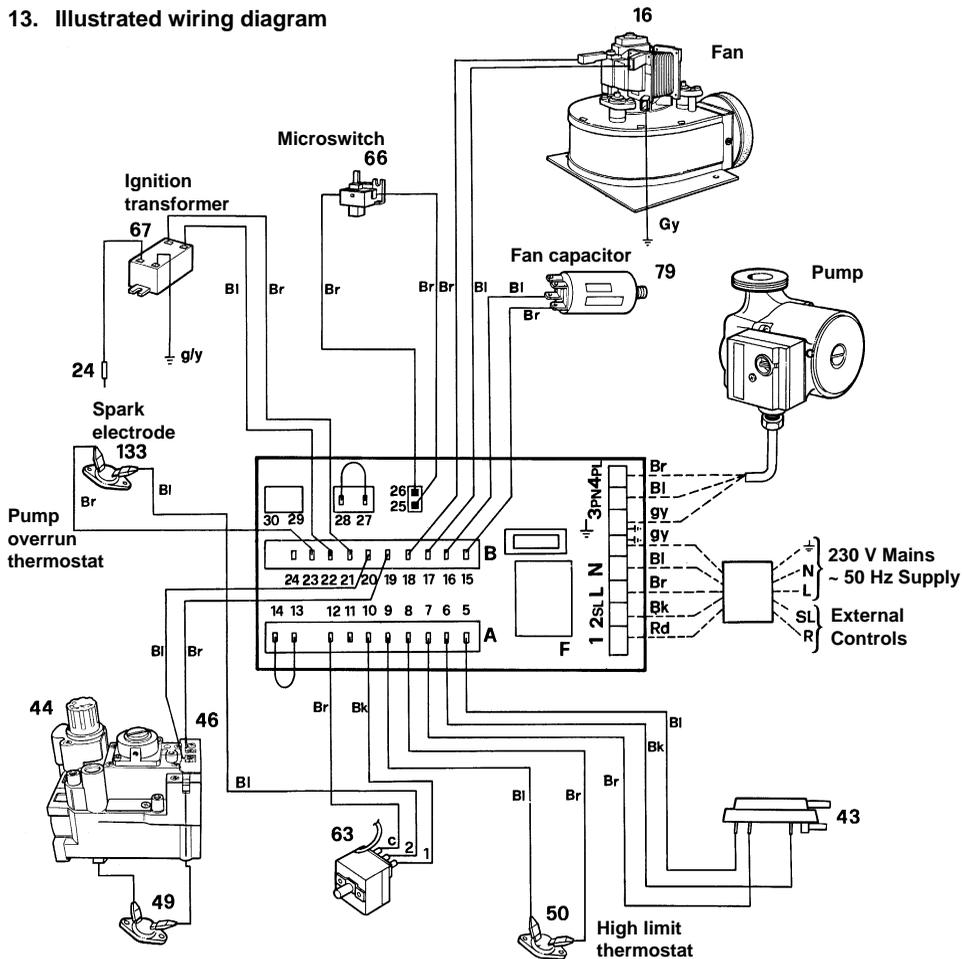
Key

- | | |
|-------------------------------------|---------------------------------------|
| 16. Fan | 66. Microswitch combination gas valve |
| 23. Thermocouple | 67. Ignition transformer |
| 24. Spark electrode | 68. Control box with P.C.B. |
| 32. Pump (not fitted) | 72. External controls |
| 43. Air pressure switch | 79. Capacitor |
| 46. Solenoid gas valve | 103. Relay |
| 49. Overheat cut-off thermostat | 104. Fuse |
| 50. Heat exchanger limit thermostat | 133. Pump overrun thermostat |
| 63. C.H. boiler thermostat | |



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13. Illustrated wiring diagram



Key

- 16. Fan
- 24. Spark electrode
- 43. Air pressure switch
- 44. Combination gas valve
- 46. Solenoid gas valve
- 49. Overheat cut-off thermostat
- 50. Heat exchanger limit thermostat
- 63. C.H. boiler thermostat
- 66. Microswitch combination gas valve
- 67. Ignition transformer
- 79. Capacitor
- 133. Pump overrun thermostat

14. Installation procedure

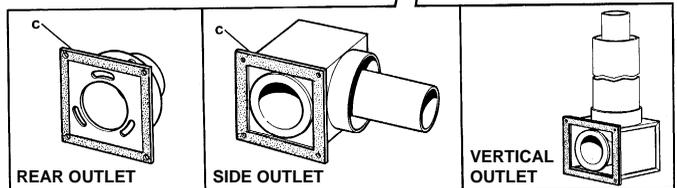
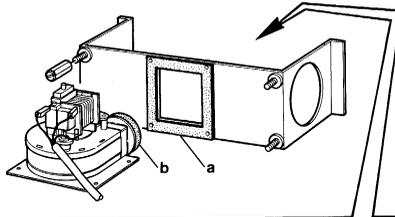
In most cases it will be easy and desirable to install the boiler with only the front section of the outer case and the lower cover removed. However, if it is wished to install the flue system without the boiler on the wall, the upper rear frame is easily detached from the boiler, the framed fixed to the wall, and the flue system fully assembled to the frame. Only when there is a clearance of less than 50 mm from the side wall through which the side exit flue is to pass or if the top clearance is less than 150 mm is this method essential.

14.1 Unpacking

1. Unpack the boiler and separate flue pack.
2. Check the contents of the boiler pack:
 - 1 x Boiler.
 - 1 x Rear flue socket.
 - 1 x Air sealing sleeve.
 - 1 x Ancillaries pack containing wood screws and self tapping screws.
3. Check the contents of the flue pack:
 - 1 x Flue pipe (metal).
 - 1 x Air pipe (plastic) complete with terminal.
4. If ordered, unpack the optional side flue turret.

14.2 Prepare the boiler

1. Remove the outer case and lower cover (section 17.2.1 & 3).
If the boiler is to be mounted complete with the upper frame, go to 4 below.
2. Remove the inner case (section 17.2.2).
3. Remove four extended hexagon nuts securing the upper frame.
4. Push the foam gasket onto the rear boiler spigot.
5. For vertical flue go to 14.5.
6. For rear flues fit the rear flue socket to the upper frame using the fibre gasket and 4 self tapping screws provided.
For side flues fit the side flue turret, facing the appropriate direction of exit. Use the fibre gasket. Discard the rear flue socket.
7. For left hand side exit flues, interchange the two rear side panels, 1 screw each top and bottom.
8. For side exit flues, remove the infill plate on the exit side, 2 screws.

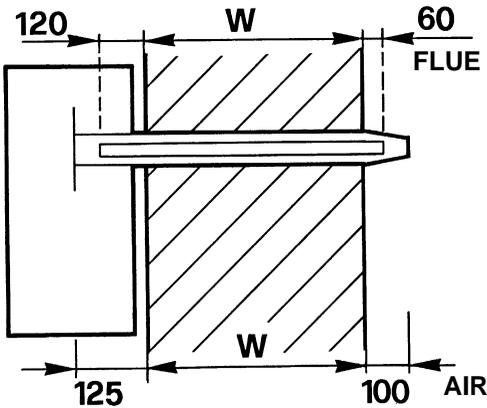


- a) seal air inlet
- b) seal fan outlet
- c) gasket

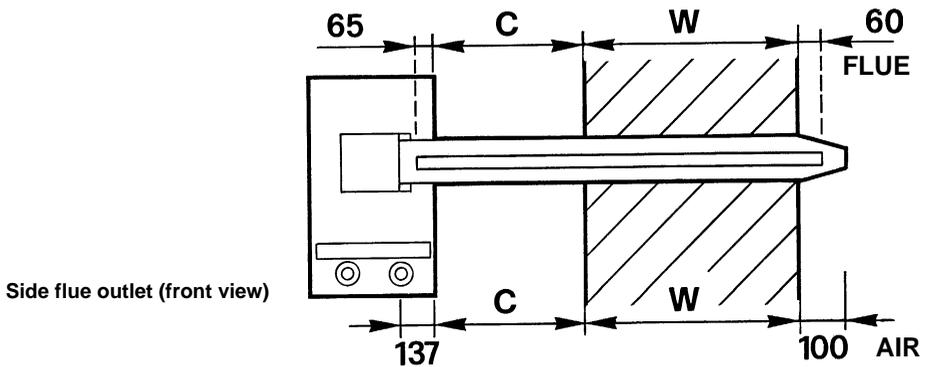


14.4 Prepare the flue and air pipes rear and side flue outlet

1. Measure the wall thickness, W .
2. For rear flues; cut the plastic air pipes to length: $W + 125 + 100$ mm including terminal;
cut the metal flue pipe to length: $W + 120 + 60$ mm.
This allows for expansion. Go to Step 4.
3. For side flues; cut the plastic air pipe to length: $W + C + 137 + 100$ mm Including terminal;
cut the metal flue pipe to length: $W + C + 65 + 60$ mm.
This allows for expansion.
4. Locate the flue pipe fully into the terminal and place the assembly into the wall (from outside if internal space is not sufficient). Ensure the assembly cannot fall outside.



Rear flue outlet (side view)



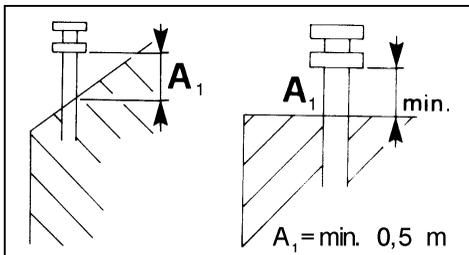
Side flue outlet (front view)



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14.5 Vertical flue

1. Fit the side vertical flue turret bend (facing upwards) to the upper frame, using the fibre gasket and four self tapping screws provided. Discard the rear flue socket.
2. Measure the length for the plastic air pipe vertically from the appliance turret inner stop to the base of proposed terminal position (See drawing for minimum height).

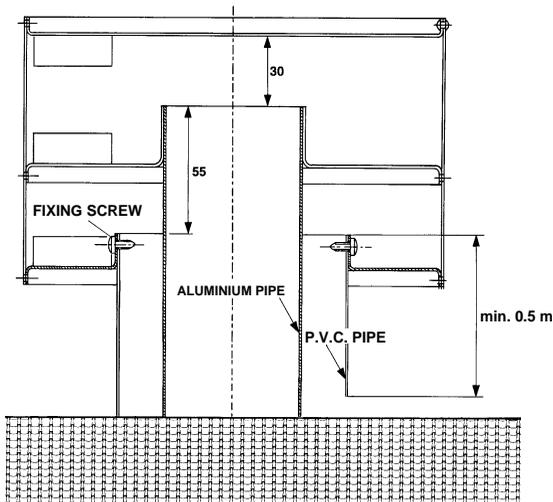


Maximum length of two metre allowed for flue. Ensure terminal position is a minimum distance of 0.3 m from a vertical wall surface or parapet.

3. Cut the plastic air pipe to required length.
4. Cut the inner aluminium metal pipe 35 mm (1" 1/2) shorter than the plastic air pipe.
5. Remove the two screws which retain the outside cage (terminal) on the standard flue pipe assembly. Fit the vertical rain cowl in its place using the two same two screws.
6. Locate the metal flue and the plastic air pipe onto the flue turret bend on the boiler making sure that when all is assembled that the metal inner flue protrudes and locates 50 mm (2") into the external rain cowl.
7. For weather sealing between flue and roof use dekteite pipe flashing:-

Pitched roof - T F L 104
 Flat roof - D F 504

Available from: - John Dek's (UK) Ltd
 (0582) 882058





14.6 Mounting the boiler / completing the flue system

Note - If access is restricted, then pre-plumb the boiler flow and return connections at this stage.

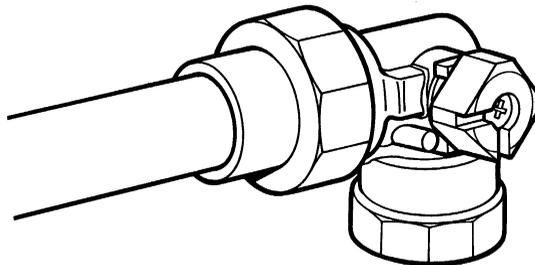
1. Lift the boiler or upper frame only if removed, and locate the upper key hole slots in the back panel over the upper mounting screws, and gently lower onto the screws.
2. Tighten the hex head screw.
3. Pull the metal pipe towards the upper frame and engage fully into the socket.
4. Now pull the plastic air pipe towards the upper frame and engage fully into the appliance socket.
5. Drill (3 mm) through the hole in the socket, into the plastic air pipe only, **not** into the flue pipe. If there is insufficient access to drill a hole through the air socket, mark the air pipe through the hole in the socket, disengage the air and flue pipes, remove the flue assembly and drill the hole reassemble and continue.
6. Secure the air pipe using a self tapping screw provided.
7. Check that the flue pipe protrudes into the terminal and that the terminal is clear of the outer wall face.
8. Make good around the air pipe at the external and internal wall faces.
9. Insert and tighten the lower fixing screws.
10. If detached, refit the boiler to the upper frame, securing with 4 extended nuts. Refit the inner case.

14.7 Connection services

1. Connected the gas supply to the gas service cock, ensuring the cock is off.
2. Connected the water flow and return.
3. Electrical connections - 5 wire electrical lead.

| | | |
|----------------------|---|--------------------------------------|
| Brown - Live | } | Permanent mains supply 230 V ~ |
| Blue - Neutral | | |
| Green/yellow - Earth | | |

Red - Live to external controls
Black - Switched Live from external controls



**GAS COCK IS SHOWN
IN AN OPEN POSITION**



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The pump is connected as follows (3 wire electrical lead).

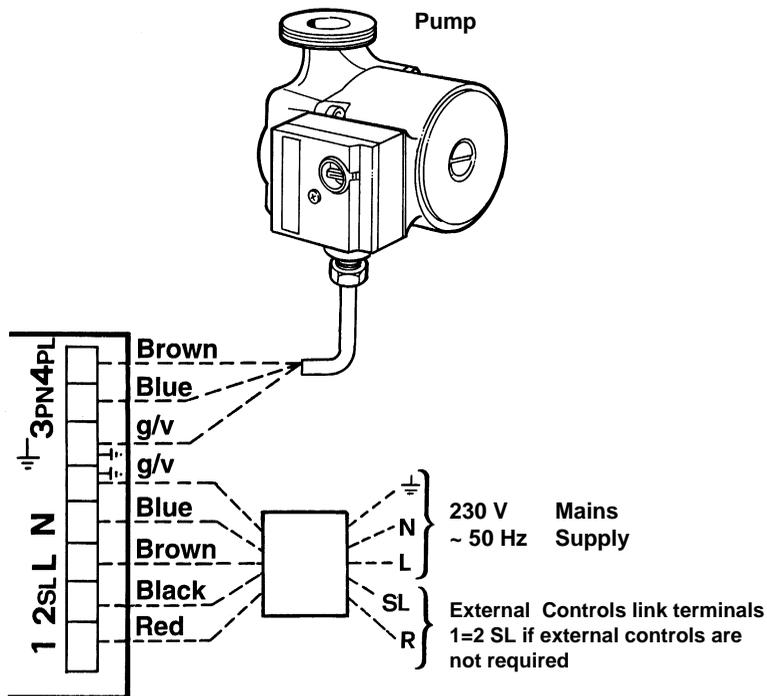
Brown - Live

Blue - Neutral

Green/yellow - Earth

If external controls are not required remove the supplied 5 core electrical lead and replace with a 3 core lead to supply the permanent 230 V live supply to the appliance. Link out terminals 1 and 2 SL on the appliance connection box.

Important: the pump must be supplied from the appliance and not from an independent source.





15. Commissioning

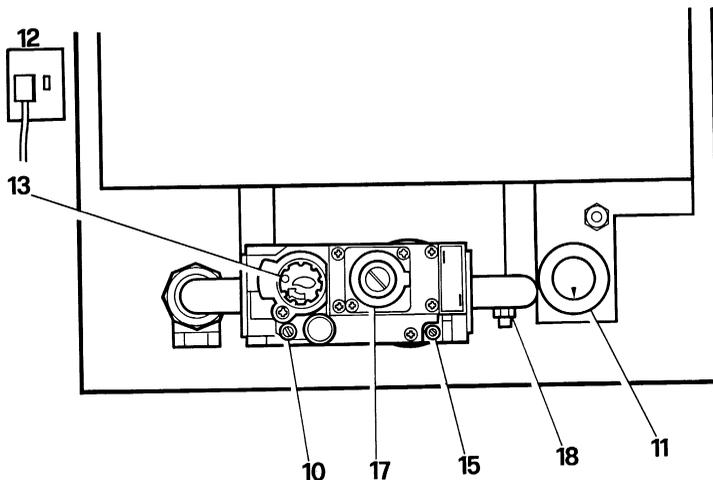
Carry out preliminary electrical system checks i.e. EARTH CONTINUITY, RESISTANCE TO EARTH, SHORT CIRCUIT AND POLARITY using a suitable test meter.

1. Remove the outer case and lower cover (17.2.1 & 3).
2. Test for gas soundness up to the boiler service cock - BS 6891.
3. Flush the system cold, without the boiler and pump in circuit.
4. Fill the complete circuit and vent the system. For sealed systems, fill to about a=1.5 bar at this stage.
5. Check the system for water soundness, rectifying any leaks.
6. For sealed systems, reduce the pressure to the approximate initial design pressure.
7. Open all radiator valves.
8. Loosen the screw within the pressure test point on the burner supply pipe and attach a suitable pressure gauge.
9. Open the boiler service cock.
10. Open all doors and windows, loosen the screw in the inlet pressure test point, and purge the gas supply BS 6891. Retighten the screw. Allow gas to disperse.
11. Set any external control to an **ON** condition, and turn the thermostat knob to maximum.
12. Turn on the electricity supply. Check that the pump runs.
13. Fully depress the gas control valve knob.
A continuous spark will light the pilot (viewed through window).
14. Continue to hold the control valve knob for about 15 seconds after the pilot is lit, then release. The pilot should remain alight and the main burner will light. If the pilot fails to remain alight, twist the control knob clockwise, and release. Wait 3 minutes and repeat steps 13 and 14, holding in the knob a little longer after the pilot has lit.
15. To check the pilot length, simply turn off the electrical supply, extinguishing the main burner and/or preventing its firing. Refer to section 17.4 for details of pilot length. Access can be improved by removing the inner case. Always replace the inner case before firing the main burner. The pilot rate is factory set and should not need adjustment. However, the adjustment screw can be used if needed (clockwise to decrease).
The normal thermocouple outputs is 10 - 18 mV.
16. Turn the thermostat knob to maximum, and set any external controls to **ON**. The main burner will light.
17. Heat Input Adjustment. The Input is pre-set to 16.0 kW but can be adjusted to any value in the range quoted in Technical Data - the burner pressure must always be checked anyway.
Remove the cap from the adjustment screw.

| CH | HEAT INPUT | | BURNER PRESSURE | | CH set to | HEAT OUTPUT | |
|-----|------------|--------|-----------------|---------|-----------|-------------|--------|
| | kW | Btu/h | mbar | in w.g. | | kW | Btu/h |
| MAX | 20.0 | 68,200 | 12.0 | 4.7 | — | 16.1 | 55,000 |
| | 16.7 | 57,000 | 8.1 | 3.2 | — | 13.2 | 45,000 |
| MED | 15.2 | 52,000 | 6.6 | 2.6 | — | 11.7 | 40,000 |
| | 13.7 | 46,700 | 5.2 | 2.1 | — | 10.3 | 35,000 |
| MIN | 10.0 | 34,100 | 2.4 | 1.0 | — | 7.3 | 25,000 |



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Key

- | | |
|-------------------------------|--|
| 10. Inlet pressure test point | 15. Pilot adjustment screw clockwise to decrease |
| 11. Thermostat knob | 17. Adjustment screw burner pressure clockwise to increase |
| 12. Electricity supply | 18. Burner pressure test point |
| 13. Control valve knob | |

18. After 10 minutes, adjust the heat input to the required value. (Anticlockwise to decrease).
Replace the cap.
19. **NOTE** - If the required pressure cannot be obtained, the inlet working pressure should be checked - 20 mbar is required.
20. Allow the system to reach heated equilibrium. On sealed systems check that the pressure does not exceed 2.65 bar (in which case a larger expansion vessel will be needed).
21. Twist the control valve knob clockwise to turn off.
22. Flush the system whilst hot, and refill.
23. Remove the pressure gauge, tighten the screw.
24. Relight and check for gas soundness.
25. Mark the Data Badge to indicate the set heat input.
26. Replace the lower cover and outer case.
27. Adjust the thermostat control knob to the required setting.
28. Hand over to the user:
- a) Explain the function and control of the boiler, including any external controls.
 - b) Advise against obstruction of purpose provided ventilation, and of the flue terminal.
 - c) Give advice on frost protection of parts.
 - d) Advise arrangement of an annual Service Contract.
 - e) Hand all Instructions and literature to the user.
 - f) If electricity supply is interrupted manual resetting of the gas controls may be required, i.e. re-light pilot etc. when the electricity supply has been restored.



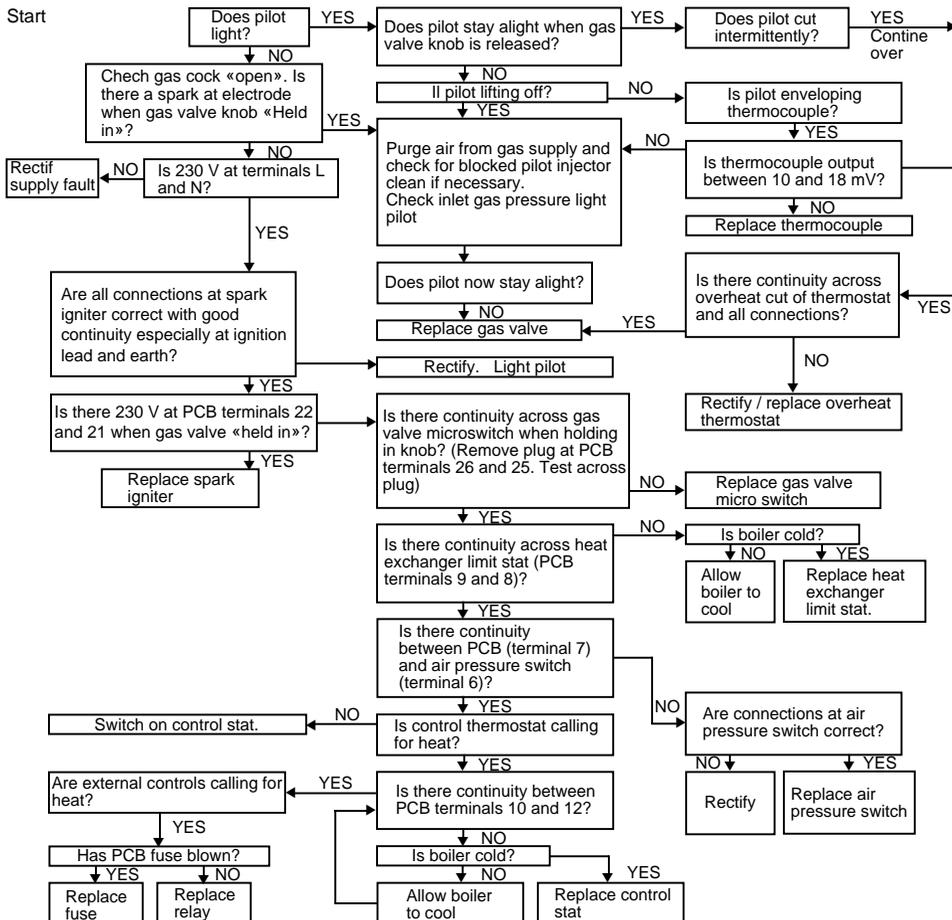
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16. Fault finding

Carry out initial fault finding checks i.e. check that gas, water and electrical supplies are available at the boiler. Before starting, carry out preliminary electrical system checks i.e. earth continuity, resistance to earth, short circuit and polarity with a suitable test meter.

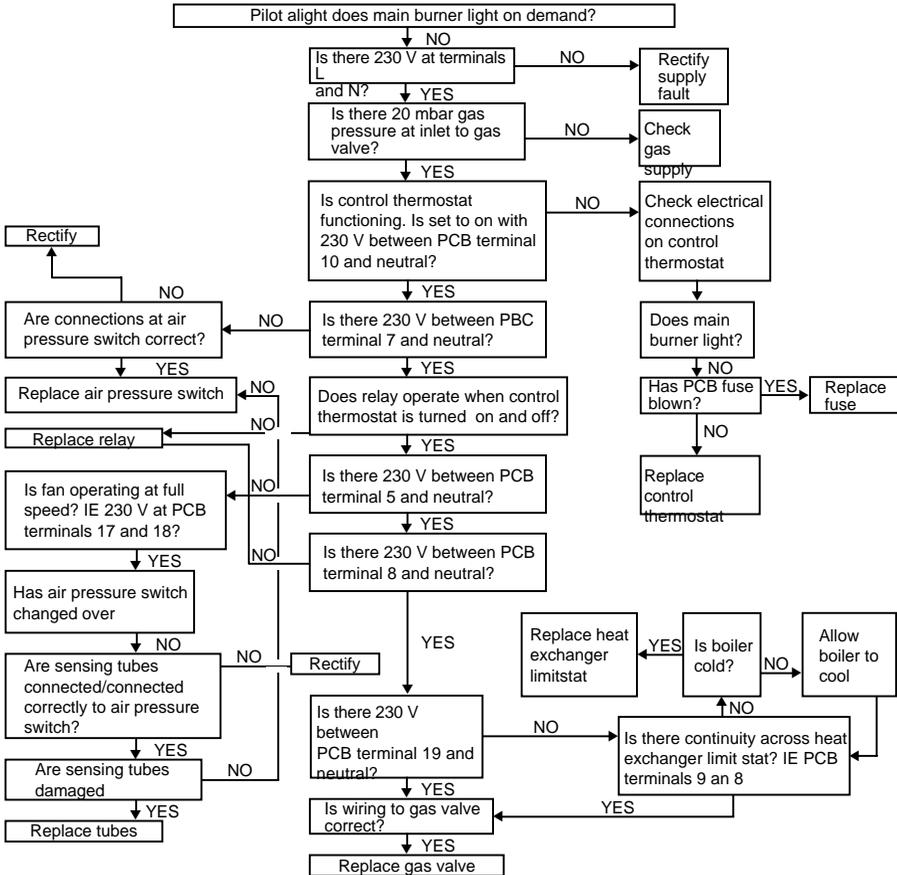
On completion of any servicing/fault finding these electrical checks must be repeated.

NOTE - When carrying out continuity tests ensure electrical supply is isolated (and also before any servicing or replacement of parts). Ensure all external controls are calling for heat and check the external and PCB fuses.



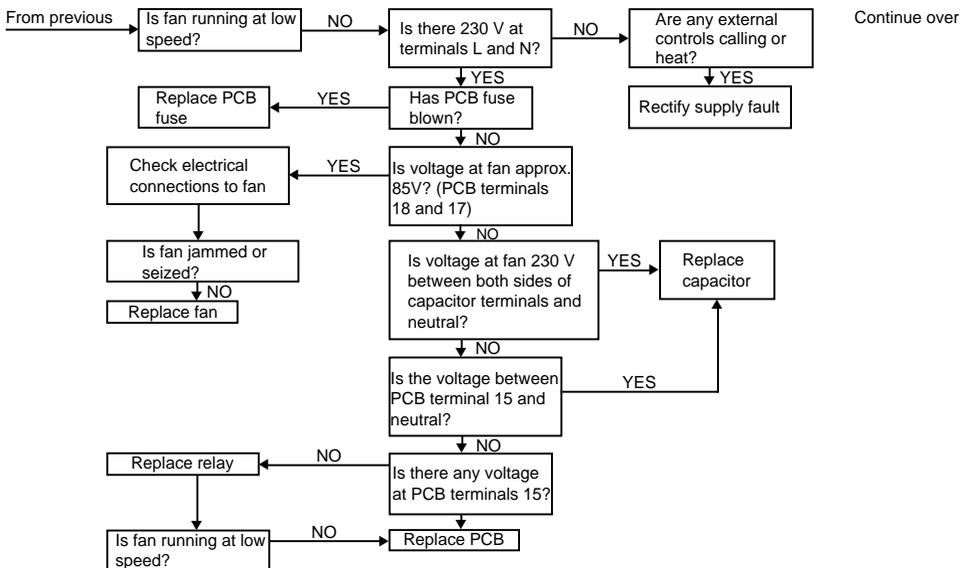


16.1 Fault finding





16.2 Fault finding





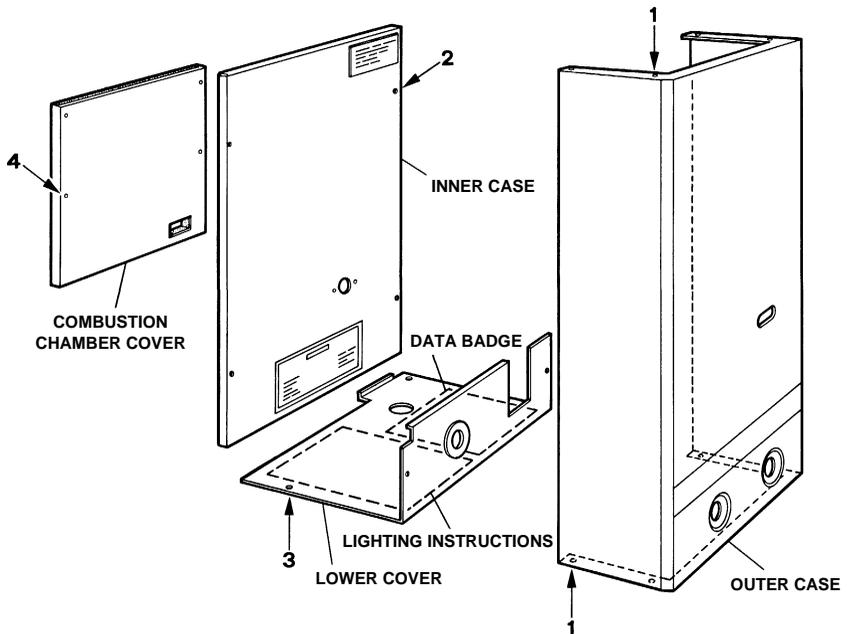
17. Replacement of parts

17.1 General procedures and notes

1. Replacement of parts must be out by a competent person.
2. Isolate the electrical supply and turn off the gas supply (gas service cock).
3. Upon completion always:
 - Check for gas soundness of joints broken
 - Afeter water drainage, refill the system in accordance with Commissioning Instructions, Sec. 15, and check for water soundness.
4. Replacement is in reverse order to dismantling unless otherwise stated.

17.2 Access

1. All procedures - remove the outer case, 8 screws, pull off.
2. Combustion chamber and heat exchanger components - remove the inner case, 4 screws, pull off.
3. Control components - remove the lower cover, 4 screws, pull off.
4. Combustion chamber components - remove chamber cover, 3 screws, lift and pull off.
5. Control box components - remove the box, 1 screw withdraw box and allow to suspend from wire provided.





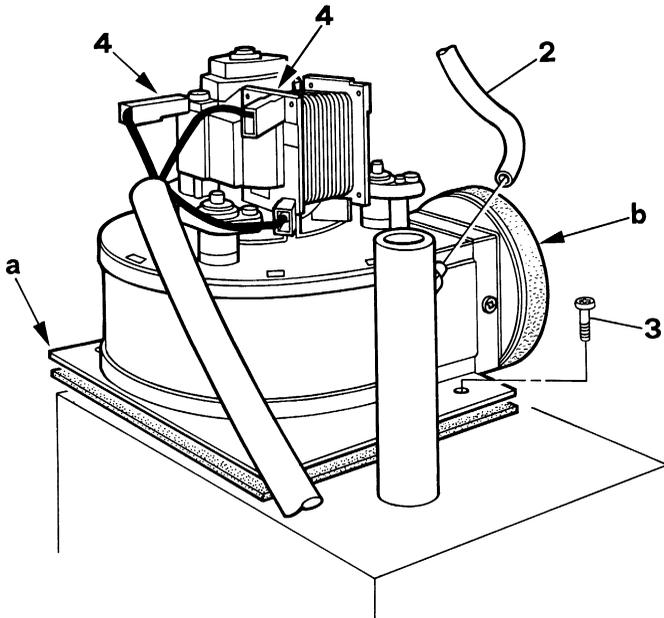
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17.3 Fan

1. Refer to 17.1, then remove the outer and inner cases (17.2, 1 & 2).
2. Disconnect the pressure sensing tube.
3. Withdraw fan complete with collector hood then remove 4 screws.
4. Disconnect 3 electrical leads.

Replacement:

- Ensure that gaskets a. and b. are transferred and are undamaged.
- Refer to wiring diagram for lead reconnection (fig. section 13).



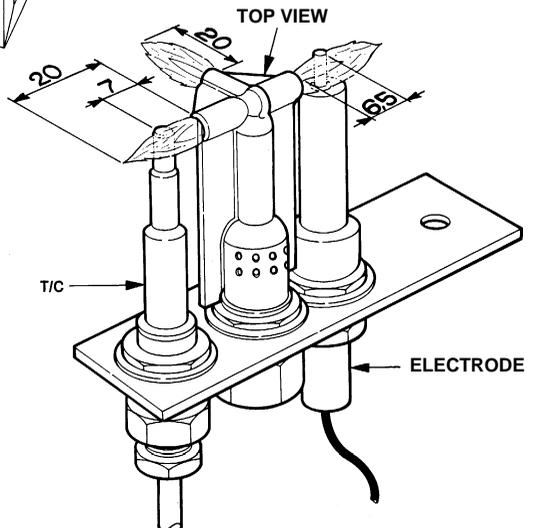
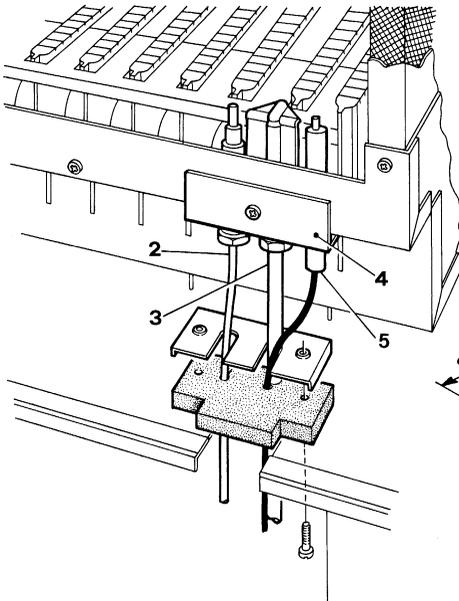


17.4 Pilot burner assembly

1. Refer to 17.1, then remove the outer and inner cases, the lower cover, and the combustion chamber front cover (17.2.1 to 4).
2. Disconnect the thermocouple and withdraw.
3. Unscrew the pilot pipe at **both ends**, and withdraw the pipe from the burner (the injector may fall out).
4. Remove the retention bracket, 1 screw, withdraw assembly.
5. Disconnect electrode lead.

Replacement:

- Transfer the electrode.
- Check the thermocouple to pilot burner to electrode relationship as shown.
- Ensure the pilot length is correct (15.15).





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17.5 Electrode

1. Refer to 17.1, then remove the outer and inner cases, and the combustion chamber front cover. (17.2.1, 2 & 4).
2. Disconnect the electrode lead at the PCB and remove the bush from control box. Unscrew the electrode and withdraw the lead (item 5). Replacement: Check the electrode gap/

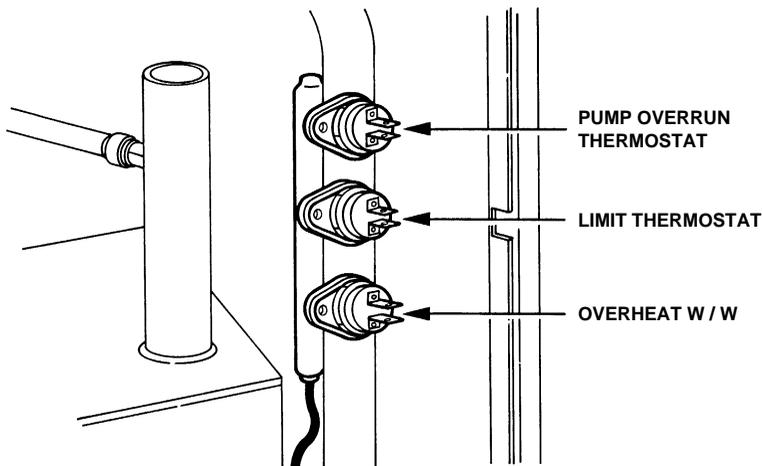
17.6 Thermocouple

1. Refer to 17.1, then remove the outer and inner cases, the combustion chamber front cover, and the lower cover (17.2.1 to 4).
2. Disconnect the thermocouple at both ends.
3. Remove the sealing plate and seal in the base of the sealed chamber, 2 screws.
Replacement:
 - Ensure foam seal and plate are correctly replaced.
 - Check thermocouple to pilot burner relationship.

17.7 Thermostats

There are three such thermostats fitted to the flow pipe of the boiler; an overrun, pump overrun, and also a limit thermostat. Replacement procedures are identical.

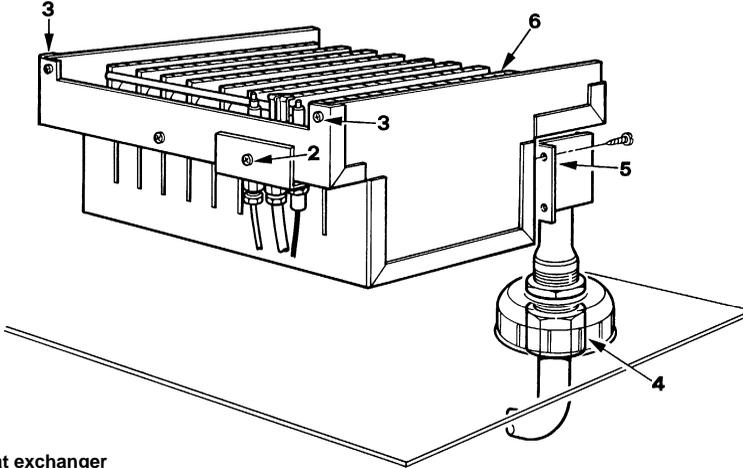
1. Refer to 17.01, then remove the outer and inner cases (17.2 & 2).
2. Remove 2 retaining springs from the faulty thermostat holder with draw thermostat, disconnect leads.
Replacement:
 - Use heat sink compound.
 - Ensure springs are located fully home.
 - Polarity is immaterial.





17.8 Main burner / injectors

1. Refer to 17.1, then remove the outer and inner cases, the lower cover, the combustion chamber front cover, and the control box (17.2.1 to 5).
2. Remove the pilot burner assembly (17.4.2 to 4).
3. Remove the burner from the chamber side panels, 2 screws.
4. Disconnect the burner gas supply union - access is improved by first removing the pressure switch.
5. Injectors may be replaced individually or, alternatively, as a complete manifold set, 4 screws.
Replacement: Ensure the locknut, is fully tightened on the plastic dome.



17.9 Heat exchanger

1. Refer to 17.1 then remove the outer and inner cases and the combustion chamber cover (17.2.1 & 4).
2. Drain the system to below the level of the heat exchanger.
3. Disconnect the pressure sensing tube (item 2 fig. section 17.3)/
4. Withdraw the complete fan/collector hood assembly.
5. Disconnect 3 electrical leads (item 4 fig. section 17.3).
6. Undo 2 unions on the right hand side and remove the heat exchanger.
Replacement: Use new union washers.

17.10 Combustion chamber insulation

A. SIDE and REAR

1. Remove the heat exchanger (17.9).
2. Remove two side, then the rear, panels. Replacement: Use new heat exchanger union washers.

B. FRONT

1. Refer to 17.1, then remove the outer and inner cases, and the combustion chamber cover. (17.2.1, 2 & 4).
2. Bend back three retaining tags and remove panel (careful not to damage the viewing window).
Replacement: Ensure the viewing window is correctly positioned and is tight.

17.11 Viewing window (combustion chamber cover)

Remove the front combustion chamber insulation panel (17.10 B).

Replacement: Ensure the viewing window is correctly positioned and is tight.

17.12 Pressure switch

Note - Any of 3 alternative pressure switches can be used (fig. section 10).

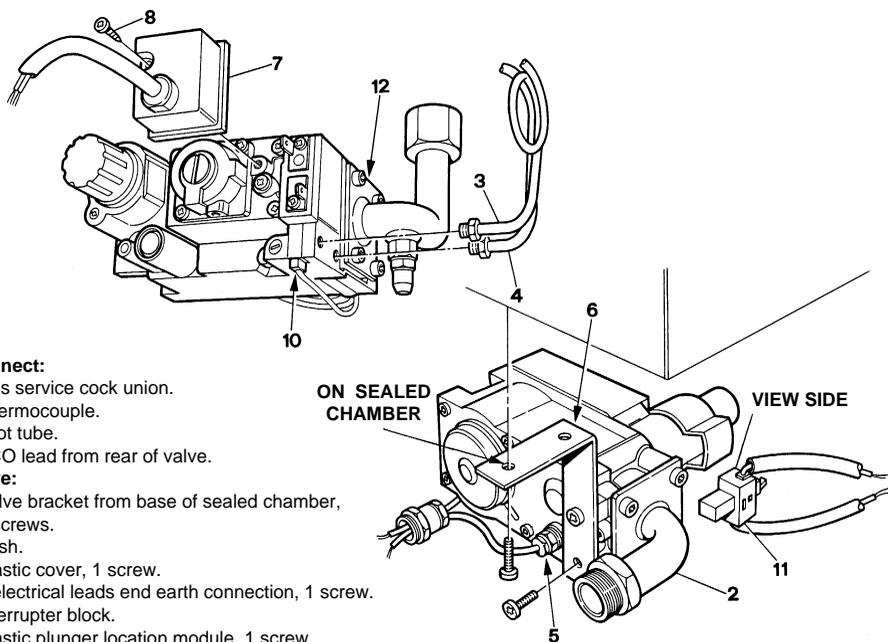
1. Refer to 17.1, then remove the outer case and lower cover (17.2.1 & 3).
2. Remove the switch complete with bracket, 1 screw.
3. Disconnect 3 electrical leads and 2 pressure tubes.

Replacement:

- Transfer the bracket to the new switch.
- Rewire in accordance with wiring diagram (fig. section 13).
- Pressure tube connection is red to red.

17.13 Gas control valve

1. Refer to 17.1 then remove the outer case and lower cover (17.2.1. & 3).



Disconnect:

2. Gas service cock union.
3. Thermocouple.
4. Pilot tube.
5. ECO lead from rear of valve.

Remove:

6. Valve bracket from base of sealed chamber, 2 screws.
7. Bush.
8. Plastic cover, 1 screw.
9. 2 electrical leads end earth connection, 1 screw.
10. Interrupter block.
11. Plastic plunger location module, 1 screw.
12. 4 allen screws from right hand flange to free the valve.

Replacement:

- Transfer the left hand flange and the fixing bracket to the new valve.
- Use new 'O' rings at the flanges.
- Rewire in accordance with the wiring diagram (fig. section 13).

17.14 Viewing window (inner case)

If cracked then the complete inner case front panel must be renewed to retain the integrity of the sealed chamber (17.2.2).

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17.15 Control box components

1. Refer to 17.1, then remove the outer case, the lower cover and the control box (17.2.1, 3 & 5).

A. CAPACITOR

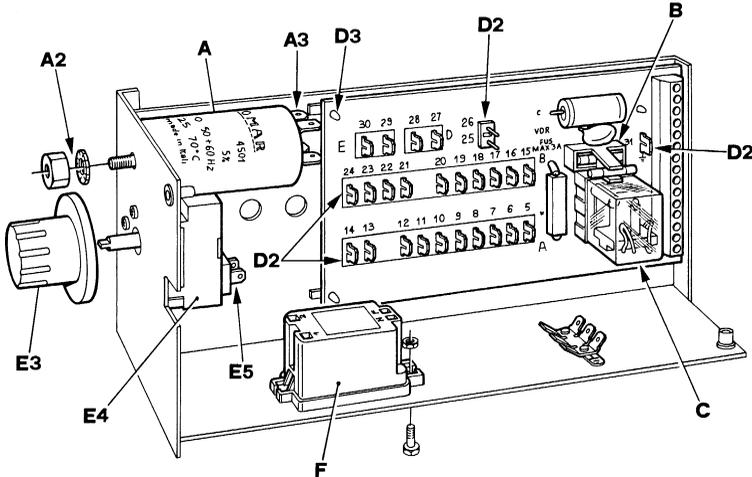
2. Remove nut and washer.
3. Disconnect 2 leads. Replacement: Polarity is immaterial.

B. FUSE

2. Pull from holder. Replacement: A spare is provided.

C. RELAY

2. Unclip and withdraw.



D. PCB

2. Remove four plugs.
3. Pull the board from its pins.
4. Transfer relay fuse and remaining connections to new PCB.

E. CONTROL THERMOSTAT

2. Remove the condenser A above, but do not disconnect leads.
3. Pull off the control knob.
4. Remove 2 screws securing thermostat.
5. Withdraw backwards, remove electrical leads.
6. Remove inner case (17.2.2).
7. Remove the retaining clip and withdraw the phial.
8. Unscrew nut at base of sealed chamber and withdraw the capillary and phial.
Replacement:
 - A rubber seal within the steel bush must be correctly replaced to form a seal.
 - Correct orientation - electrical connections are at the bottom.

F. IGNITER

2. Remove 2 screws from the base of the control box.
3. Pull off the electrode and earth leads.
4. Withdraw the igniter and disconnect remaining 2 leads.
5. Refer to wiring diagram (fig. section 13) when reconnecting.



18. Routine servicing

18.1 General

To ensure the continued, safe operation of the boiler, it is recommended that it is checked and serviced as necessary at regular intervals. Frequency will depend upon particular installation conditions and usage, but in general once a year should be adequate. It is the law that servicing be carried out by a competent person, such as a Service Engineer.

18.2 Pre-service check

Operate the boiler at full output and note any aspects which will require special attention during Servicing.

18.3 Service procedures

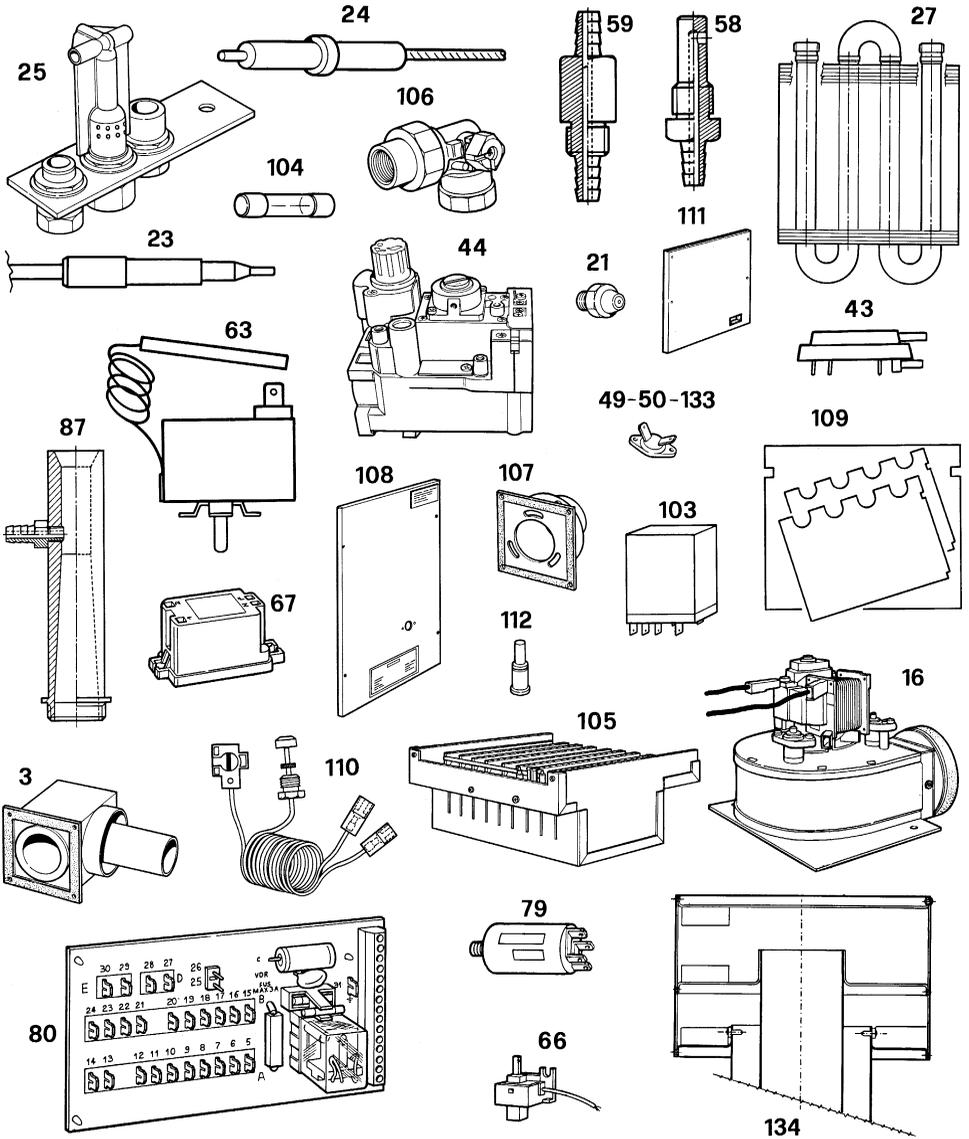
For Routine Servicing, procedures will be restricted to those of the following deemed necessary.

1. Always isolate the electrical supply and turn off the gas supply (service cock).
2. Remove the outer and inner cases and the combustion chamber cover (17.2.1, 2 & 3).
3. **Clean the heat exchanger:**
 - Disconnect the pressure sensing tube (fig. section 17.3).
 - Withdraw the complete fan/collector hood assembly.
 - Disconnect 3 electrical leads.
 - NOW EITHER:
 - Undo 2 unions on the right hand side and remove the heat exchanger to clean.
 - OR
 - Cover the main burner and clean the heat exchanger in situ.
4. Using new washers replace the heat exchanger if removed.
5. Check that the fan impellor rotates freely and refit the assembly.
6. If required, the main burner can be removed, to allow cleaning of both the burner and injector manifold (17.8). Otherwise simply brush away any debris.
7. Check the thermocouple to pilot burner to electrode relationship (fig. section 17.4).

18.4 Reassembly

1. Always reassembly in reverse order, using the wiring diagram where necessary.
2. Test for soundness any joints broken or disturbed, on the gas route.
Any components requiring replacement are covered in Section 17.

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20. Parts list

| POS. | G.C. No. | DESCRIPTION | Q.ty | MAKERS Part No. |
|-------|----------|---|------|-----------------|
| 3. | | Flue/air intake hood side vertical outlet (opt) | 1 | 3980220 |
| 16. | 372368 | Complete fan RL 85/0034A1 3025LH 422 | 1 | 3980224 |
| 21a. | 386174 | Main injector N.G. 1.25 | 9 | 3980146 |
| 21b. | 386175 | Main injector L.P.G. 0.72 | 9 | 3980148 |
| 23. | 372369 | Thermocouple | 1 | 3980149 |
| 24. | 372370 | Spark electrode (complete with cable) | 1 | 3980150 |
| 25. | 372371 | Pilot | 1 | 3980151 |
| 27. | | Copper heat exchanger | 1 | 3980226 |
| 43. | 381691 | Air pressure switch | 1 | 3980014 |
| 44. | 386170 | Combination gas valve | 1 | 3980228 |
| 49. | 386179 | Overheat cut/off thermostat | 1 | 3980124 |
| 50. | 386180 | Central heating limit thermostat | 1 | 3980016 |
| 58. | | Fan air outlet pressure test point | 1 | 3980152 |
| 59. | | Flue outlet pressure test point | 1 | 3980153 |
| 63. | 386171 | C.H. boiler thermostat | 1 | 3980229 |
| 66. | 386813 | Microswitch combination gas valve | 1 | 3980154 |
| 67. | 386172 | Ignition transformer (CAST) | 1 | 3980115 |
| 79. | 386176 | Capacitor far 1 micro farad | 1 | 3980156 |
| 80. | 372372 | Complete P.C.B. VF. 1 | 1 | 3980230 |
| 87. | | Venturi flue test point | 1 | 3980157 |
| 103. | 386173 | Relay | 1 | 3980158 |
| 104. | | Fuse 2A | 1 | 3980138 |
| 105. | | Complete burner set | 1 | 3980231 |
| 106. | | Gascock | 1 | 3980159 |
| 107. | | Flue/air intake flange rear outlet | 1 | 3980232 |
| 108. | | Combustion chamber outlet cover | 1 | 3980233 |
| 109. | | Comb. chamber ins. back + sidee panels | 1 | 3980234 |
| 110. | | Eco split wire | 1 | 3980160 |
| 111. | | Combustion chamber front panel | 1 | 3980235 |
| 112a. | 386177 | Pilot injector N.G. 0.27 | 1 | 3980161 |
| 112b. | 386178 | Pilot injector L.P.G. 0.22 | 1 | 3980147 |
| 133. | | Pump overrun thermostat | 1 | 3980171 |
| 134. | | Vertical flue terminal | 1 | 3980094 |

Phone numbers:

Installer _____

Service Engineer _____

**BECAUSE OF OUR CONSTANT ENDEAVOUR FOR IMPROVEMENT DETAILS
MAY VARY SLIGHTLY FROM THOSE QUOTED IN THESE INSTRUCTIONS.**

Cod. 3540632/0 - 01/01



ALL SPECIFICATIONS SUBJECT TO CHANGE

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