

IMI WATERHEATING		GC No.
POWERMAX 135	STANDARD MODEL	41 389 01
POWERMAX 135C	WITH FITTED PROGRAMMER	
POWERMAX 135 P	WITH FITTED PUMP	
POWERMAX 135 CP	WITH FITTED PUMP & PROGRAMMER	

FROM SERIAL NO. 019001 ONWARDS

Powermax

Installation and Servicing Instructions

CE

IMI WATERHEATING



POWERMAX

FLOOR STANDING HEATED THERMAL STORE

(Integrated storage water heater/domestic balanced flue boiler)

THIS APPLIANCE IS FOR USE WITH NATURAL GAS ONLY.

Contents

Section		Page
1.	Safety Regulations	2
2.	Description	3
3.	Natural Gas Supply	3
4.	Electric Supply	4
5.	Siting the Appliance	4
6.	Flueing Options	5-7
7.	Ventilation Requirements	7
8.	Technical Data	8
9.	Installing the Appliance	8-10
10.	Electrical Connection to the Appliance	10-12
11.	Water Supply	12-14
12.	Commissioning	14-16
13.	Servicing Instructions	16-19
14.	Fault Finding	20
15.	Functional Flow Diagrams	21
16.	Short List Spare Parts	22-23
17.	Installing an Extended Flue	24-27

1. SAFETY REGULATIONS

In your own interest and that of safety, it is the law that all gas appliances are installed by competent persons in accordance with the Gas Safety Regulations. Installers must be CORGI Registered, failure to install appliances correctly could lead to prosecution.

This appliance must be installed in accordance with the relevant requirements of the Current Gas Safety (Installation and Use) Regulations 1994, Local Building Regulations, Building Standards (Scotland) Regulations, Current IEE Wiring Regulations Health and Safety Document No. 635 "The Electricity at Work Regulations 1989" and the Byelaws of the Local Water Undertaking.

The installation must also comply with the relevant recommendations of the following British Standards:

BS6891:1988

Specification for low pressure gas pipework in domestic premises

BS5440:Part 1:1990

Specification for installation of flues

BS5400:Part 2:1989

Specification for installation of ventilation for gas appliances

BS5546:1990

Specification for installation of gas hot water supplies

BS5449:1990

Specification for forced circulation hot water central heating systems

BS6798:1987

Specification for installation of gas fired hot water boilers of rated input not exceeding 60kW

2. DESCRIPTION

'Powermax' is a combination appliance in which the gas burner heats the contents of a built-in thermal store. This heated water is used as 'primary' water and circulated, as required, to the radiators. Domestic hot water ('secondary' water) is heated by a heat exchanger in the store.

A fully pre-mixed burner is used to ensure that the gas is burned cleanly and efficiently. Ignition is fully automatic and the ignition controller incorporates a flame safety device. There is no pilot flame.

A small diameter twin pipe flue system has been designed for a length of up to 7.0 metres (including a balanced flue terminal) through which to draw inlet air and expel exhaust gases. The terminal suits a wall thickness of 100mm to 500mm.

This integrated appliance can be used in any of three ways:

- i Combined central heating boiler and domestic waterheater.
- ii As a stand-alone high pressure, high-flow waterheater.
- iii As a Central Heating Boiler
Appliance Output : 13.2kW 45000Btu/h).

This appliance **must** be installed as part of an open vented primary system. It is not suitable for sealed primary systems.

Domestic Hot Water:

Hot water is delivered via a blending valve which is preset to approximately 55°C - 60°C for domestic use.

Operation:

Operation is fully automatic and the boiler control thermostat will try to maintain the thermal store at 82°C. This stored water is circulated through the radiators via a normal domestic pump which is usually fitted within the casing. Provision is made in the terminal block for connecting the pump and room thermostat. A cold start thermostat prevents the pump from operating until working temperature (approx. 60°C) is attained.

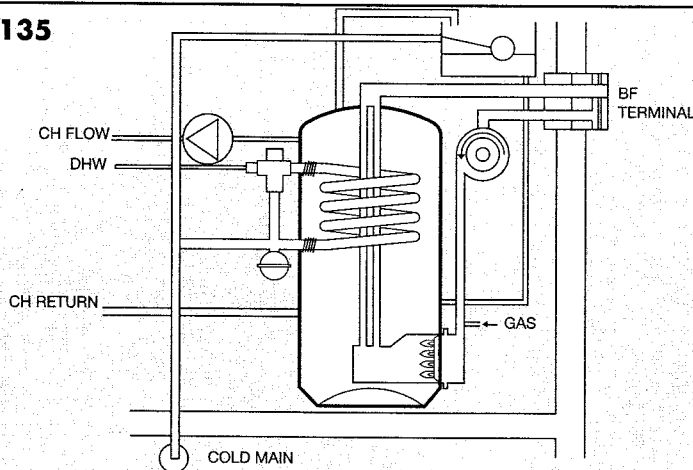
Timed operation of the central heating is essential and the built-in Powermax programmer (CP model) is recommended.

CP models come fitted with both CH pump and an electronic 7-day, 3-event programmer. For summer operation the central heating can be switched off by the user.

The central heating system should also include temperature controls and provision is made for fitting both room and frost thermostats.

This appliance delivers a rapid response to a demand for either central heating or domestic hot water once the store temperature is reached. Both the speed of response and operating efficiency will be optimised when the unit remains switched on during the day (so that the thermal store is maintained at operating temperature).

Powermax 135 Schematic



3. NATURAL GAS SUPPLY

The Powermax 135 requires a natural gas supply of 1.6 cubic metres per hour. The meter on the supply should be governed to, and be capable of maintaining, a supply pressure of 20 mbar (8in wg approximately). The sizing and pressure drop recommendations of BS6891: 1988 must also be adhered to.

The use of 22mm pipework up to within 1m of the boiler is recommended, especially where deadlegs of 3m or longer are used. The gas

connection to the appliance is Rp $\frac{1}{2}$ ($\frac{1}{2}$ in B.S.P.) situated at top centre. Pipes of a size smaller than this should not be used. Entry holes are provided through the controls chassis.

The complete installation must be tested for soundness using the pressure drop method and purged as described in the above Standard.

4. ELECTRIC SUPPLY

The appliance requires a 230V ~ 50Hz single phase 3A fused electrical supply which must be installed in accordance with the CURRENT IEE Wiring Regulations and any Local Regulations which apply. Detailed wiring instructions are given in Section 10. Power consumption is approximately 38W for the standard appliance or 130W with the CH pump fitted.

WARNING : THIS APPLIANCE MUST BE EARTHED

Note: This appliance may be installed in any room or internal space, although

particular attention is drawn to the requirements of the current IEE Wiring Regulations, and in Scotland, the electrical provisions of the Building Regulations with respect to the installation of the appliance in a room or internal space containing a bath or shower. Where a room-sealed appliance is installed in a room containing a bath or shower, 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.

5. SITING THE APPLIANCE

General

The boiler must be installed on a flat floor capable of supporting the weight of Powermax when full of water - ie 200kg.

Its siting should be chosen having regard to the flue system used (see 6 below) and to minimising the length of domestic hot water (draw-off) pipe runs.

The extended flueing capability enables the appliance to be sited well away from an outside wall, thus installation in a first floor cupboard or compartment, basement, utility room or kitchen are all feasible locations. The appliance must not be sited outside or in any outhouse where it could be exposed to the weather.

The location chosen must permit the provision of a satisfactory external flue termination. The location must also provide adequate space for servicing and air circulation.

Flue Protection

When using an extended flue system it is essential to fit the protective ducting supplied with the flue system kit in order to prevent direct contact with the hot exhaust flue pipe.

Compartment Installation

General requirements for cupboard/ compartment installations, including airing cupboards, are given in BS6798.

Specific requirements for Powermax installations are given below.

- a The compartment must be ventilated at high and low level in accordance with BS5440:Part 2 and Section 7 of these instructions.
- b The compartment shall be a fixed rigid structure large enough to allow it and the boiler to be inspected and serviced. A minimum width between the door jambs of 500mm (21in) must be provided.
- c Internal surfaces should be non-combustible or lined with non-combustible material. Examples of non-combustible materials having a fire resistance of not less than 0.5 hour are plaster skimmed plasterboard, and fireproof boarding. The floor need not be lined. Doors or shelves made from combustible material, e.g. wood must be at least 75mm from the front or top of the boiler.

- d The door of an understairs cupboard shall have a BS476:Part 8 fire resistance of not less than 0.5 hour; and air vents must be direct to outside air.
- e The flue pipe must be protected by the ducting supplied by IMI Waterheating or by another no less suitable non-combustible enclosure.
- f When sited in a cupboard, householders should be discouraged from storing clothes etc. on the boiler itself. A removable shelf at least 75mm above the boiler is acceptable.

Requirements for balanced flue terminations

Detailed recommendations for flueing are given in BS5440:Part1. The following notes are intended to give general guidance. The appliance must be installed so that the flue terminal is exposed to the external air, preferably on a clear expanse of wall.

Avoid positions where the terminal is adjacent to projections; particularly immediately under a balcony, inside a re-entrant position, or immediately adjacent to a drain pipe.

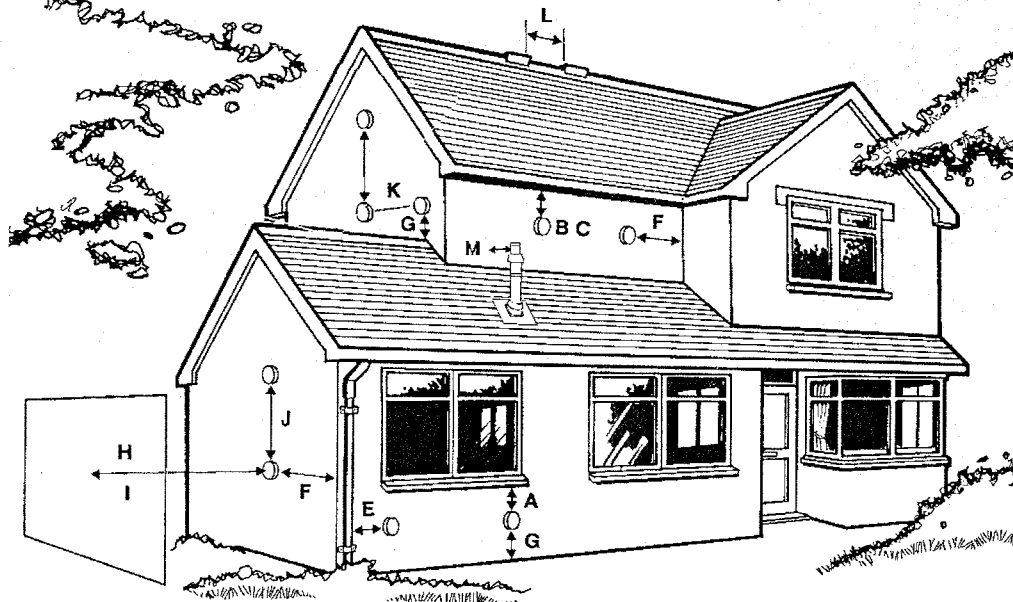
If the appliance is fitted under a ventilator or opening window, the terminal must be at least 300mm (12in) from any part of the window or ventilator, and in accordance with BS5440:Part 1 and local gas undertaking regulations. Acceptable positions are indicated in Fig.5.1.

The flue pipe to the terminal must not be closer than 25mm (1in.) to combustible material. Additional clearance must be provided when passing the flue through timber walls.

Note: If this appliance is to be fitted into a timber framed building - consult British Gas publication Guide for Gas Installations in Timber Framed Housing (DM2) 2nd edition, or your local Gas Region.

Where the lowest part of the terminal is less than 2m (6ft) above the level of any ground, balcony, flat roof or place to which people have access, the terminal must be protected by a guard of durable material. A Terminal Guard Kit is available as an optional extra Part No.P210 from IMI Waterheating Limited. The guard requires a flat wall surface of approximately 450mm diameter, concentric with the terminal assembly.

Fig 5.1 Requirements for balanced flue terminations



Terminal Position

Terminal Position	Min. Distance
A Directly below an openable window or other opening eg: an air brick	300mm
B Below gutters, soil pipes or drain pipes	75mm
C Below eaves	200mm
D Below balconies or car port roof (not illustrated)	200mm
E From vertical drain and soil pipes	75mm
F From internal or external corners	300mm
G Above ground or balcony level	300mm
H From a surface facing a terminal	600mm
I From a terminal facing a terminal; or from an opening in a car port into dwelling (not illustrated)	1200mm
J Vertically from a terminal on the same wall	1500mm
K Horizontally from a terminal on the same wall	300mm
L Between ridge terminals (if combustible air is drawn from second terminal)	300mm
M Between vertical terminal and wall	300mm

NB Terminals located less than 2m above ground level must be protected by a terminal guard P210

6. FLUEING OPTIONS

Several flueing systems are available. ALL are 'room sealed' and a choice of terminals is offered:

- 1 **Horizontal balanced flue terminal**
- 2 **Vertical balanced flue terminal**
- 3 **Ridge tile terminal (unbalanced)**

All can be sited up to 5.0m or 7.0m from the appliance, and components for extended flues are supplied either in kits or can be ordered individually - see list in Section 17.

Before starting an installation, check that the correct flue kit has been supplied with the boiler. Kit Number:

P200: Rearwards horizontal balanced flue (supplied as standard). Refer to Section 9 for step-by-step instructions.

P201: 1m Extended horizontal balanced flue

P203: 3m Extended horizontal balanced flue

P205: 5m Extended horizontal balanced flue

P207: 7m Extended horizontal balanced flue

Refer to Section 17 for step-by-step fixing instructions

P220: 5m Ridge tile flue kit. Complete fixing instructions supplied with each kit.

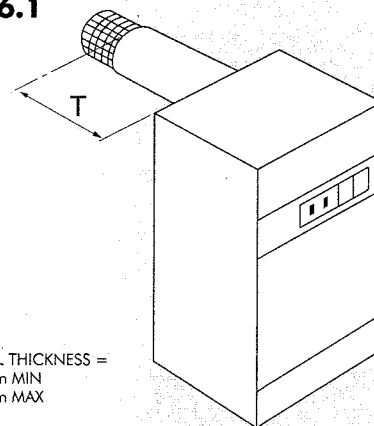
P225: 2.5m Vertical RS balanced flue.

Complete fixing instructions supplied with each kit.

Balanced Flue Terminal

Kit P200 is used for installations where the flue passes through the wall immediately behind the boiler. The terminal is suitable for a thickness of 100mm to 500mm (4 to 20in) as shown in Fig.6.1. An 800mm wall liner P337 can be ordered separately.

Fig 6.1



T WALL THICKNESS =
100 mm MIN
500 mm MAX

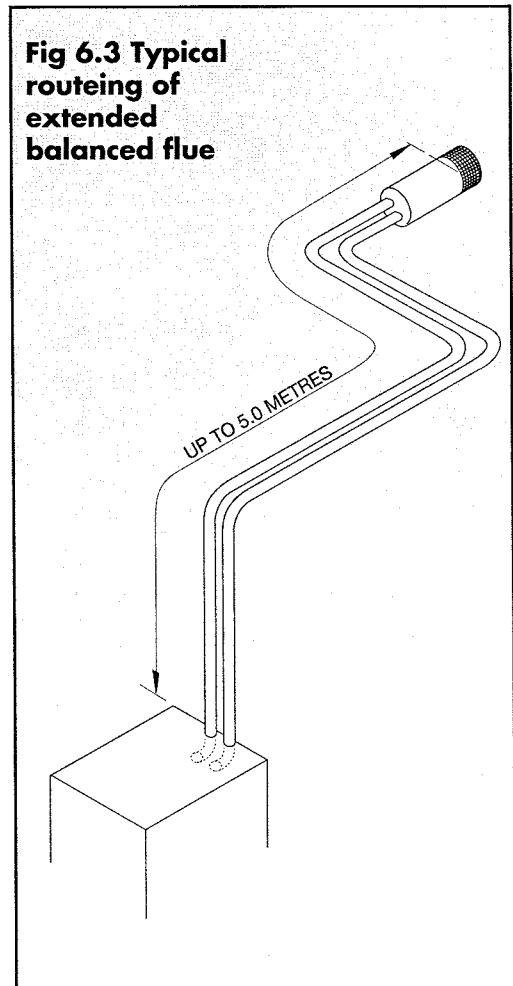
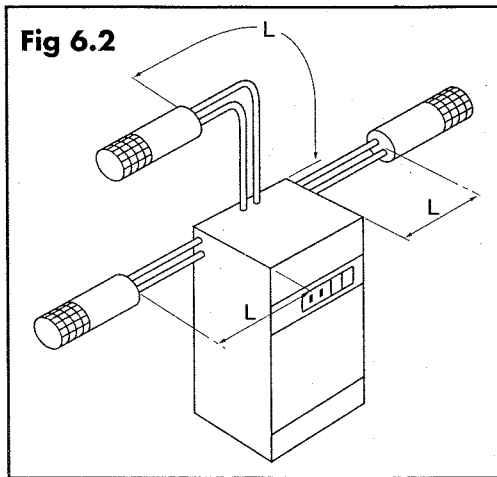
Extended Balanced Flue Systems Figs 6.2 & 6.3

Extended Flue Components can be ordered as required for installations where the boiler is sited some distance from the balanced flue terminal.

The air/flue pipes can be run to an external wall face up to 5.0m away from the appliance, and can leave the appliance horizontally to right or left, rearwards or vertically upwards - see Fig 6.2.

The maximum length of each air/flue pipe run must not exceed 5.0m including the BF terminal if the maximum of 4 bends in each pipe is used - see Fig 6.3. There is no minimum length.

If fewer than 4 pairs of bends are used between the boiler and the flue terminal assembly, then the maximum length of straight pipe can be increased if required - see table below.



MAXIMUM NUMBER OF BENDS - (90° or 135°)			MAXIMUM PIPE LENGTH Including Horizontal BF Terminal
Air Inlet	Exhaust Flue	Total	
4	4	8	5.0 m each
3	3	6	7.0 m each

Note: Disregard length of Vertical RS Terminal

Ridge Tile Terminal Fig 6.3

With this system, combustion air can be drawn from a ventilated loft space or from a second ridge terminal. The air inlet guard must be not less than 300mm above the top surface of the ceiling insulation and the air inlet pipework must be at least 1.5m long and not less than half the length of the flue.

Additional components may be specified

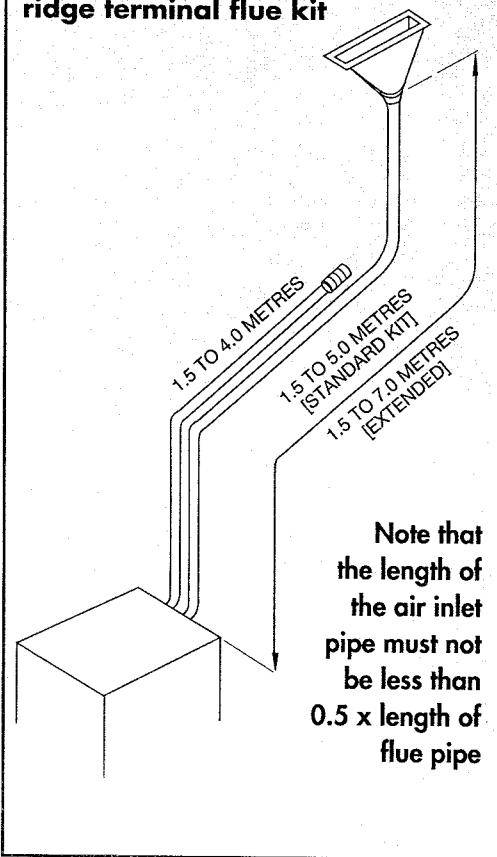
APPLICATION	COMP.	NO. OF BENDS	PIPE LGTH (METRES)
Standard Kit	Air Inlet	2	1.5 min
	Flue	3	1.5 min
Extended Inlet & Flue	Air Inlet	2-3	1.5 to 4.0
	Flue	3	1.5 to 7.0

up to the maximum indicated in the diagram and the table below

Air for combustion must effectively be taken from outside. Typically combustion air will be drawn from a ventilated roof space or from a compartment or duct which is permanently ventilated direct to outside air. The effective open area of the vent must not be less than 153cm² (23in²).

It must be noted that if combustion air is drawn from a roof space or compartment or duct then that area must be effectively sealed from the remainder of the dwelling. A tight fitting trap door or similar is acceptable.

Fig 6.5
Typical routing of
ridge terminal flue kit



Vertical RS Flue System

The Powermax Vertical RS flue system offers an unobtrusive balanced flue terminal as an easy to fit option for both pitched and flat roofs. Where using the horizontal BF terminal is not practical, the Vertical RS system offers a more cost effective alternative to the Ridge Tile Terminal and retains all the advantages of a truly balanced flue system.

The vertical roof terminal Part No. P230 provides a combined air intake and combustion gas outlet in a concentric arrangement. At the bottom the terminal changes into a twin pipe system. Separate roof flashing units should be ordered (specified) for pitched or flat roofs. Roof pitches from 15° to 55° are catered for by selecting one of three pitched roof flashing units.

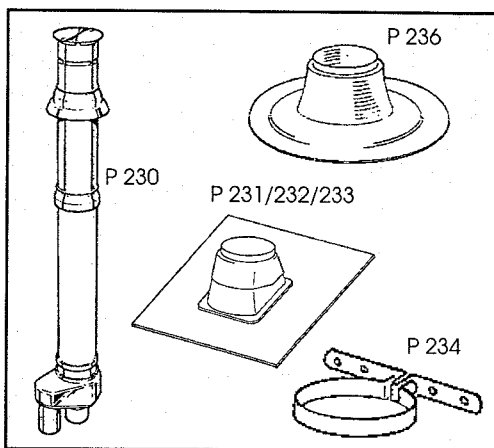
P231 for pitches 15° to 25°

P232 for pitches 25° to 45°

P233 for pitches 35° to 55°

P236 for flat roofs

To connect the Powermax to the vertical terminal a kit Part No. P225 is required. This contains a range of extension air/flue pipes and bends to enable the terminal to be sited up to 2.5m from the appliance. The maximum overall length of the complete flue system must not exceed the limits indicated for extended balanced flue systems.



WARNING

The flue pipe becomes very hot when appliance is working. Householders should be warned not to touch exposed pipe e.g. beyond protective duct within loft. The flue pipe only should be insulated or ducted if accidental contact is likely.

7. VENTILATION REQUIREMENTS

(For the room or compartment in which boiler is installed)

Permanent openings must be provided in accordance with BS5440:Part 2. These requirements are summarised below:

- a Balanced flue terminal or ridge tile terminal, appliance sited in a room - no requirements

- b Balanced flue terminal or ridge tile terminal, appliance sited in a compartment. Air is required for cooling purposes. Use table below.

MINIMUM EFFECTIVE AREA REQUIRED FOR COMPARTMENT AIR VENTS		
Position of opening	Ventilated to	Area of each vent
High and Low Level	Room	153cm ² (23in ²)
High and Low Level	Outside	76cm ² (12in ²)

8. TECHNICAL DATA

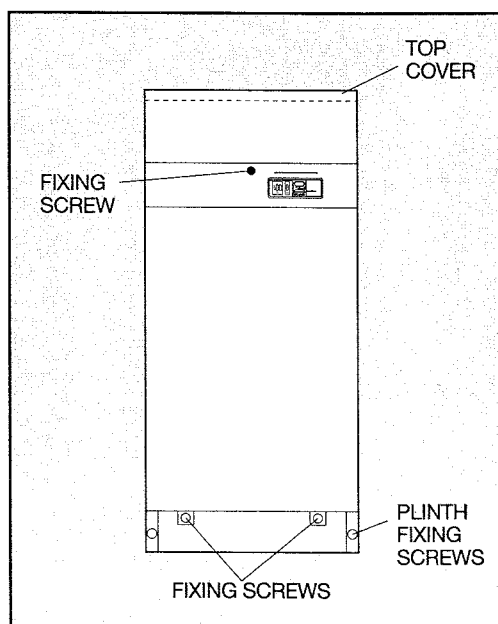
Nominal Heat Input	16.8kW (57300 Btu/h)
Nominal Heat Output	13.2kW (45000 Btu/h)
Category	I _{2H} Gas G 20
Supply Pressure	20mbar
Flue Types	C ₁₃ -C ₃₃ -C ₅₃ (As flue kit supplied)
Burner Pressure	13.8 ± 0.8mbar (5.5 ± 0.3 in w.g.) This is factory set and no adjustment is intended.
Gas Rate	1.55m ³ /h (54.73 ft ³ /h)
Injector	3.2mm
Gas Inlet	Rp ¹ / ₂ (1/2 BSP)
NO _x	<50ppm
CO	<20ppm
Heating Flow	22mm Compression
Heating Return	22mm Compression
Feed and Expansion	15mm Compression
Open Vent Connection	22mm Compression
Domestic Hot Water Inlet	22mm Compression
Domestic Hot Water Outlet	22mm Compression
Domestic Hot Water Flow Rate	20 litres/min - maximum
Thermal Store Capacity	135 litres (primary water)
Primary Flow Design Temperature	82°C
Working Pressures - PRIMARY	10m (1 bar; 33ft head) maximum 300mm minimum
Working Pressures - DHW	6 bar (90psi) maximum - See Page 12. 1.0 bar (15psi) minimum
Mini Expansion Vessel	160ml; pre-charge 6 bar
Overall Dimensions - Height	1225 mm
Width	540 mm
Depth	600 mm
Weight	61 kg empty (without CH pump) : 200 kg full (inc. CH pump)
Clearances Required Top	400 mm (16in)
for Installation and Sides *	10 mm (3/8in) total
Servicing	N/A
Front	450 mm (18in) Unless behind an openable door

* If any pipework is routed through either side panel, additional side clearance (approx 50mm) will be needed.

9. INSTALLING THE APPLIANCE

Guidance on where to locate the appliance is given in Sections 5, 6 and 7. In some instances it will be advantageous to pre-plumb pipework or to pre-fix terminal, air/flue pipes and duct.

1. Move appliance to where it is accessible for flue preparation.
To gain access after unpacking, remove two screws at bottom of front cover, pull forward from bottom, gently ease downwards to free location studs. Remove recessed screw at top of switch panel and keep safe. Lift off upper front cover. The top panel is retained by 4 studs; gently ease upwards to remove. The plinth cover is retained with 2 screws.



2. Carefully set aside the outer covers. Remove small panel(s) either side of casing for plumbing connection (and flue/air pipes) as necessary.
Note: The base of the appliance is cut-away at the front to allow pipework to be brought up from below floor level.

3. Connect one end of electricity supply cable to the user terminal in accordance with sections 4 and 10. The cable must be routed through the bushings in LH side panel and controls chassis.

4. Flueing
If installing boiler with vertical RS balanced flue see separate instructions supplied with vertical flue kit.
If installing boiler with an extended balanced flue go to Section 17 of these instructions.
If installing boiler with a ridge tile terminal see separate instruction supplied with ridge terminal flue kit.
The boiler is supplied as standard with kit P200 containing the following - see Fig.9.1

1 x 330mm flexible duct AIR INLET ONLY
3 x worm drive clips
1 x 40ml tube Hylosil RTV silicone sealant
1 x wall liner

Note: The flue terminal assembly MUST be installed horizontally.

The unit is floor standing and a vertical flat area of wall is required 1200mm high x 550mm wide. If unit is being raised above floor level, eg in a wet floor area, allow for this in marking position of flue liner.

Fig.9.1 Standard flue kit

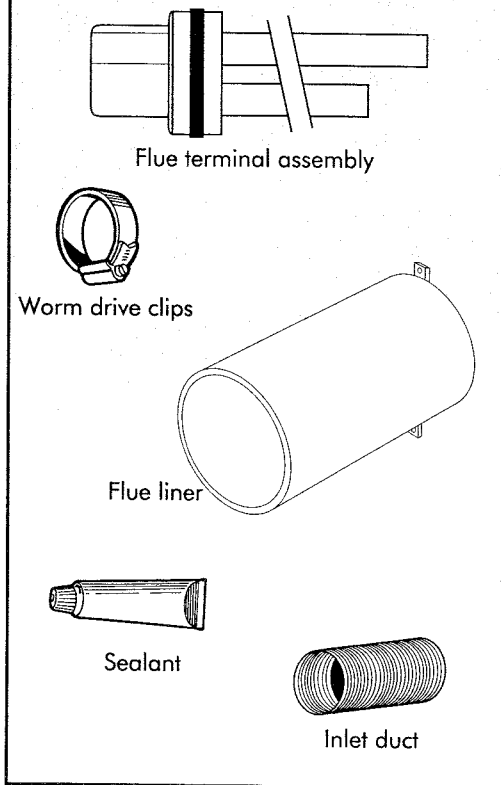
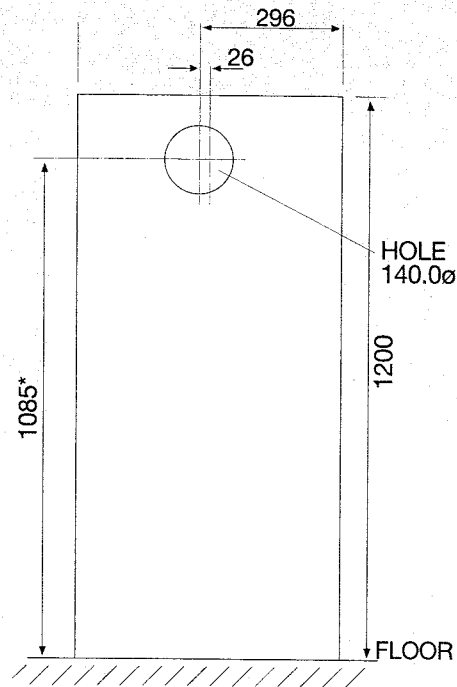
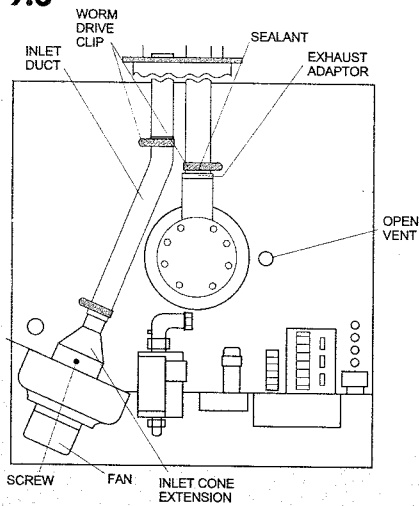


Fig 9.2



*Nominal Dimension – Check actual height on appliance: Allow also for floor unevenness

Fig 9.3

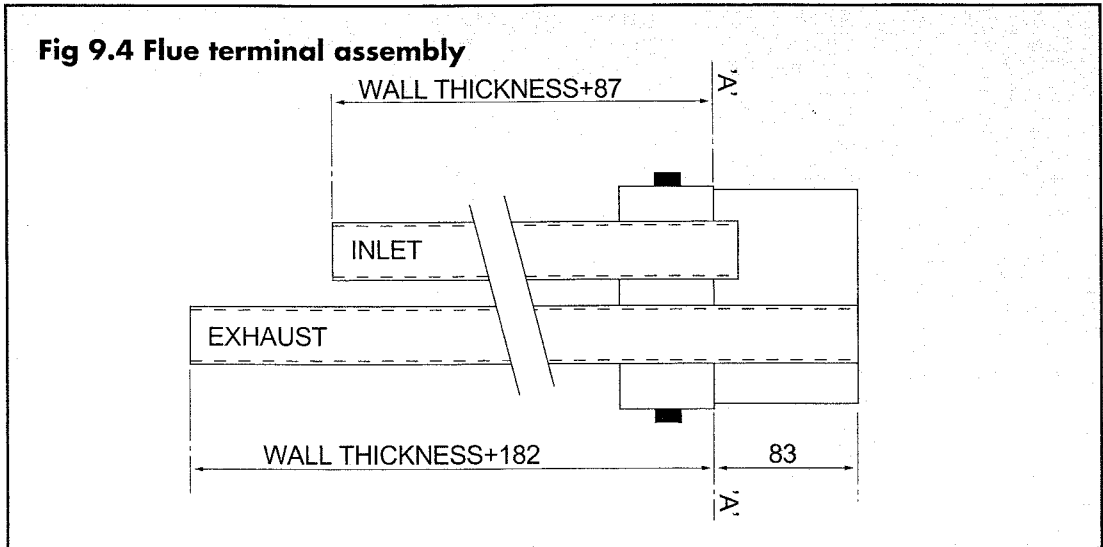


- 4a. Mark off the centre of the 140mm (5½ in) diameter hole as shown in Fig. 9.2 and core drill.
If the wall is clad with a combustible material a 25mm (1 in) wide area around the flue liner must be removed.
Measure the wall thickness and cut the liner to this length. Cut opposite end to lugs.
- b. Fit the liner through the 140mm (5½ in) diameter hole (lugs inside) and cement into position, making good internal and external rendering. The latter may be done with arm extended through the liner.

- c. Slip a worm drive clip over both ends of flexible inlet duct. Push one end of the duct over the fan inlet extension and secure with worm drive clip (see Fig.9.3).
- d. Measure and cut flue pipes with a hacksaw to the following lengths:
Exhaust flue pipe - wall thickness plus 182mm from datum 'A' 'A'
Air inlet pipe - wall thickness plus 87mm from datum 'A''A'
(See Fig.9.4) remove any burrs from cut ends of tubes.
Note: If wall is not truly vertical or appliance is prevented from standing against wall, add stand off distance to wall thickness measurement.
Slip a worm drive clip over the exhaust flue pipe.
- e. Smear a film of silicone sealant (approximately 0.5mm thick) all round the exhaust spigot. Push fully home ensuring inlet air pipe enters flexible duct and exhaust flue pipe engages spigot. Secure both pipes with worm drive clips (See Fig.9.3).
- f. Carefully push appliance into position, entering terminal into wall liner. If necessary, fit terminal guard.

5. Make gas connection as described in Section 3.
6. Fix feed and expansion cistern and make water connections as described in Section 11.
7. Complete electrical connections to appliance strictly in accordance with sections 4 and 10.
8. Test gas pipework for soundness in accordance with BS6891.

DO NOT OBSTRUCT BURNER OR GAS CONNECTION TO BURNER -
See Fig 11.1.



10. ELECTRICAL CONNECTION TO THE APPLIANCE

Wiring must comply with the current IEE Wiring Regulations. The supply cable must be 3-core 0.75sq.mm (24/0.2mm) to BS6500 Table 16.

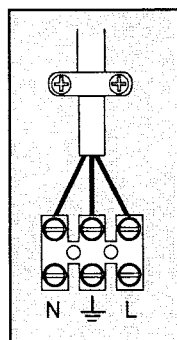
The supply must be of 230V ~ 50Hz. A 3A fused double pole isolating switch may be used, having a minimum contact separation of 3mm in both poles, providing it serves only the boiler and its system controls. Alternatively a 3A 3 pin fused plug may be used.

Wiring diagrams are shown in Fig 10.1 for standard model and Fig 10.2 for model with built-in programmer.

1. Connect the incoming electricity supply cable to terminals:

L - brown
N - blue
⏚ - green-yellow

of the user terminal block. Ensure that the cable is routed via the anchorage and through bushings in control chassis and LH side panel. See Fig 10.3. Trim all excess length from main supply cable.

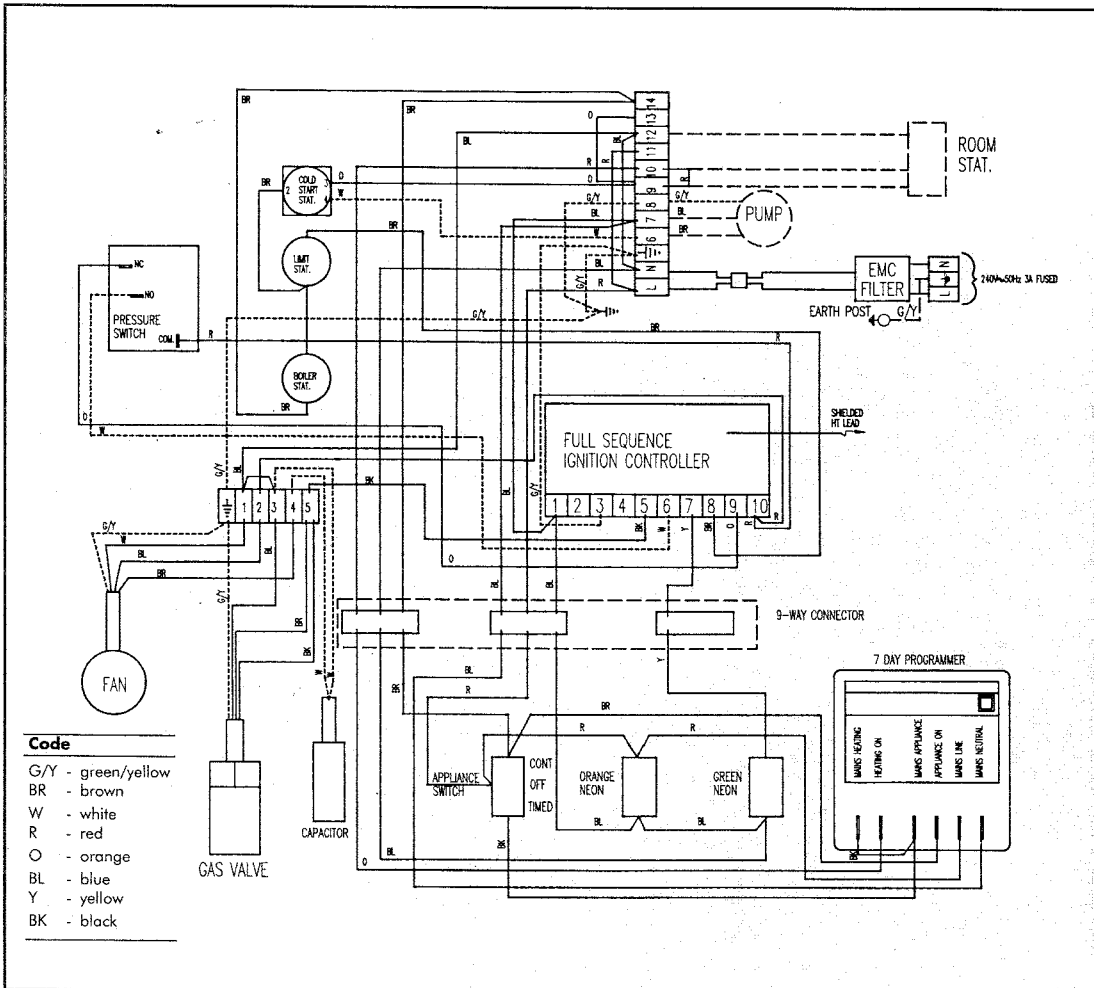
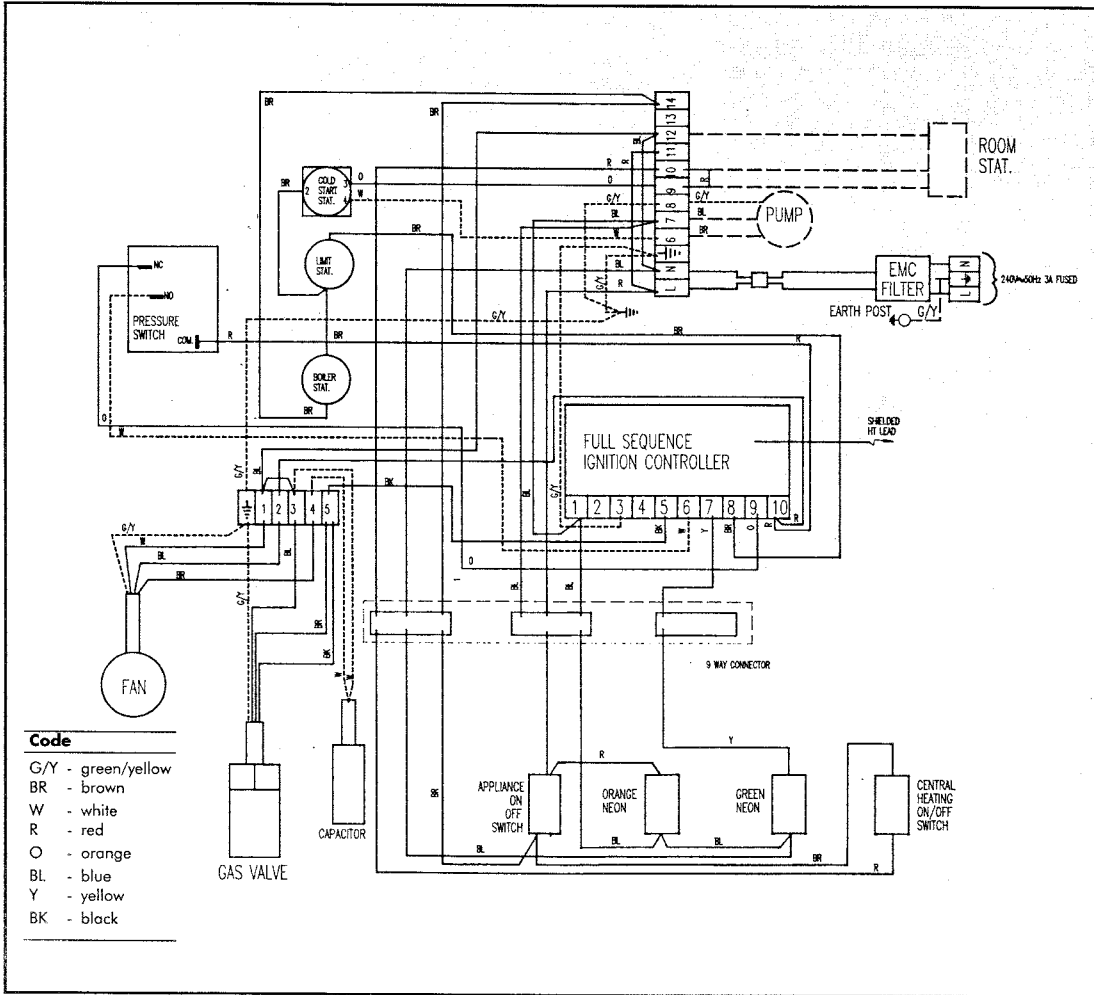


2. Connect the pump cable and any external control cable to the terminal block as indicated and described below - See Fig 10.4 - and route via clips on inside of RH side panel.

Note. The length of the conductors between the cord anchorage and the terminals must be such that the current carrying conductors become taut before the earth conductor if the cable is tugged, ie the earth wire must be longer than both the live and neutral when connecting into the terminal block.

3. If not factory fitted, the central heating pump must be connected to the terminal block at terminal 6 (pump live), 7 (pump neutral) and 8 (pump earth) to allow the cold start thermostat to be operative. All wiring for the pump etc must be suitable for 230V.
4. To provide timed control for non programmer models, a twin channel programmer having voltage free contacts should be used. Connects as follows:

Programmer live to terminal 11.
Prog. live to prog. DHW relay feed
Prog. DHW relay output to terminal 14
Remove link wire terminals 9 and 10
Prog. CH relay feed to terminal 9
Prog. CH relay output to terminal 10
Prog. neutral to terminal 12
NOTE THAT THE APPLIANCE ON-OFF SWITCH IS NOW INOPERATIVE.



5. If a combined clock thermostat is being used to control the central heating, it should be of a type having voltage free contacts. Remove link wire (terminals 9 and 10) and connect the switched wire to terminal 10, feed wire to terminal 9. A permanent live is available at terminal 11 and additional neutral at terminal 12 for supplying power to the clock.
6. If a frost 'stat is required, this should have voltage free contacts and provide a single pole double outlet.
Connect as follows:
Frost 'stat live to terminal 11
Output 1 to terminal 14
Output 2 to terminal 13
The Sopac-Jaeger TA 347-04 (Double Outlet) is a suitable frost protection thermostat.
7. After completing the electrical connections, perform the following electrical system safety checks:

- A - EARTH CONTINUITY**
- B - POLARITY**
- C - RESISTANCE TO EARTH**
- D - SHORT CIRCUIT**

WARNING - THIS APPLIANCE MUST BE EARTHED

Fig 10.3 Route for incoming electric cables

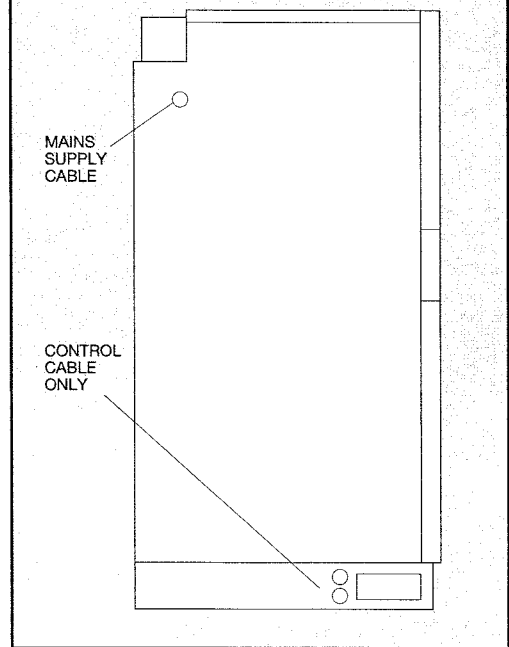
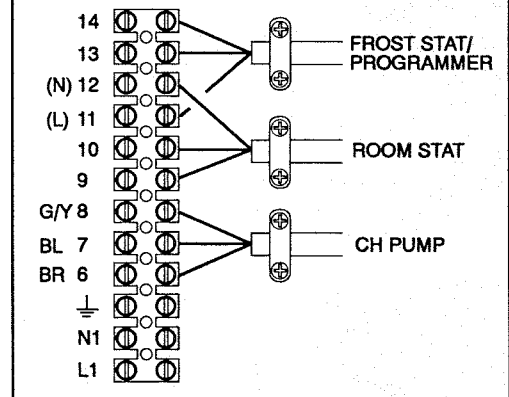


Fig 10.4 Terminal block



11. WATER SUPPLY

Domestic Hot Water System

The hot water for domestic use is automatically blended with cold water by the thermostatic blending valve to provide high pressure hot water at a safe temperature. The blending valve is factory pre-set to an outlet temperature of approximately 55 to 60°C.

The recommendations of BS6700 should be observed in the design and specification of the domestic hot water services.

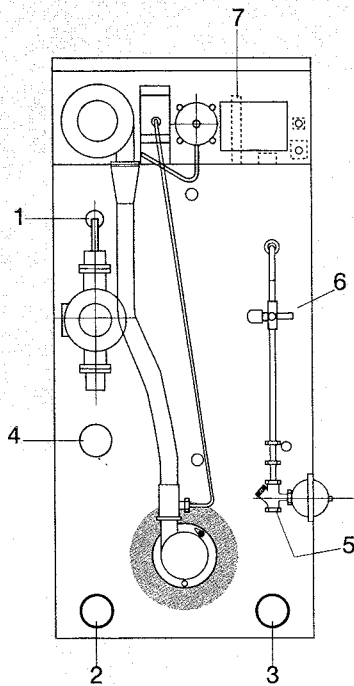
Mains Supply Requirement

It is essential that the mains water supply pressure and flow availability are capable of meeting both the hot and cold water services demand. Powermax is capable of giving 20 litres/min of hot water at 2 bar. Where the mains pressure is in excess of 6 bar, pressure reduction to between 2 to 3 bar is recommended for splash free tap operation.

Unless consistently high mains pressures are available, it is unlikely that a mains service pipe of less than 22mm OD (copper) or 25mm OD (Blue MDPE) will provide an adequate flow rate to the system. Powermax is not recommended for use where the prevailing mains pressure is below 1.0 bar (14.5 psi; 33ft head).

A full way isolating valve (e.g. gate valve or quarter-turn valve) should be fitted in the supply pipe before, but adjacent to, the unit.

Ensure pipework does not obstruct the removal of burner for servicing, indicated on illustration by the shaded area.

Fig 11.1 Water connections**Water Connections**

1. Central Heating Flow (22mm Compression).
2. Cold Feed/Drain.
3. Cold Feed/Drain.
4. Central Heating Return (22mm Compression).
5. DHW Cold Inlet (Mains) (22mm Compression).
6. Mixed Domestic Hot Water Outlet (22mm Compression).
7. Open Vent Pipe (22mm Compression).

Distribution Pipe Sizing

It is recommended that a 22mm draw-off is provided from which 15mm or smaller pipes can then be used to supply hot water services to individual terminations to give a balanced distribution system. Some further balancing may be necessary to ensure design discharge rates under simultaneous draw-off conditions.

Terminal Water Fittings

Taps: Ensure that all terminal fittings will withstand mains pressure.

Showers: Because of the draw-off profile, thermostatic shower mixers are recommended to optimise performance; these must be suitable for use at mains pressure.

Where it is possible for a flexible shower handset to reach below the bath spillover level compliance with the Local Water Undertaking Byelaws is essential.

Use in Hard Water Areas

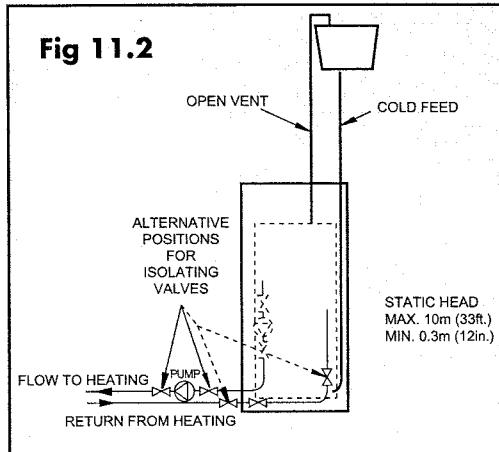
In areas where temporary hardness exceeds 200mg/L, treatment of the mains water supplied to the appliance is recommended to maintain its performance. An in-line scale reducer (conditioner) or ion-exchange softener will be most effective when fitted immediately before appliance.

Central Heating (Primary) System

Figs 11.1 & 11.2

The thermal store within the boiler must be supplied with primary water from a low pressure source e.g. a feed and expansion (F&E) cistern. The unit is suitable for a maximum working head of 10 metres (33ft head). The minimum static head is 300mm.

Note: Where the central heating system rises above the thermal store the minimum static head may have to be increased and an anti-gravity valve (check valve) inserted into the central heating flow to resist any gravity circulation.

Fig 11.2

DO NOT CONNECT THE STORE TO A HIGH PRESSURE e.g. MAINS WATER SUPPLY.

Open Vent Pipe

The vent pipe connection is situated at the top of the unit and behind the controls bracket (see Fig. 9.3) and is accessible with the top of the casing removed.

The unit requires a 22mm open vent pipe from the top connection, which must rise continuously, unimpeded, to above the feed and expansion cistern. The top rear panel is cut-away to enable the vent pipe to run on the wall behind the appliance.

Feed & Expansion System

When Powermax is used as the boiler of a central heating system, the F & E cistern should be positioned such that the water level is at least 1 metre above the highest point of the primary/circulation system. The cistern should not be positioned at a height greater than 10 metres above the unit.

An unvalved 15mm feed and expansion pipe must be provided from the feed and expansion cistern to the unit.

Two connections are provided near the base of the appliance. A Draincock is factory fitted to the left hand connection with the right hand connection being 15mm compression for the cold feed and expansion pipe. These positions may be reversed if more convenient. See Fig. 11.1.

The top rear panel is cut-away to enable the feed and expansion pipe to be run on either side of the thermal store.

Flow & Return Connections

Two 22mm compression connections are accessible with the front cover removed. The central heating flow is positioned above left and the return is located below left See Fig.11.1.

The fitting of an isolating valve in the return close to the unit is recommended as indicated in Fig11.2.

There is space to run flow and return pipework between the front cover and the storage cylinder but the pipes must not obstruct the burner or prevent the removal of the burner or ignition electrode. Observe shaded 'no-go' area indicated in Fig. 11.1.

Central Heating Pump

If the central heating pump is not factory fitted it should be sited in the flow (as Fig. 11.2) and isolating valves incorporated as close to the pump as possible. Alternatively the pump may be fitted within the appliance casing. When selecting pump consult head loss graph Fig.11.3.The circulating pressure and flowrate available from factory-fitted pump is shown in Fig.11.4

System Flushing

It is essential to flush the complete system thoroughly, to remove any contamination from the pipework and appliance. A suitable inhibitor should be added to the primary system after flushing.

Fig 11.3

HYDRAULIC RESISTANCE OF THE PRIMARY STORE

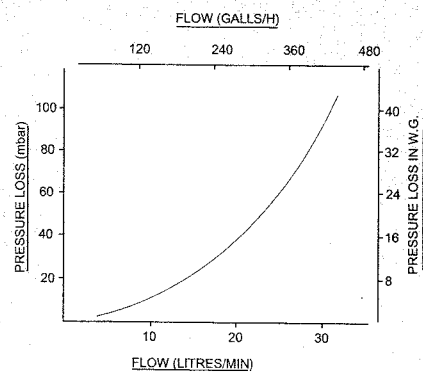
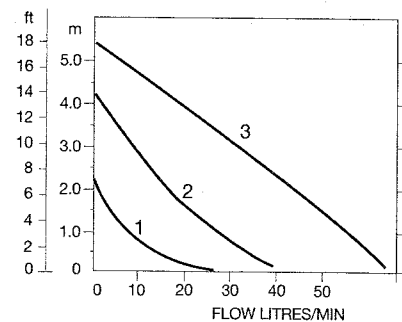


Fig 11.4

PUMP PERFORMANCE AT 230V ~ 50Hz
TEMPERATURE 80°C



12. COMMISSIONING

WARNING: DO NOT ATTEMPT TO START THIS APPLIANCE UNLESS THE THERMAL STORE (PRIMARY CIRCUIT) HAS BEEN FILLED WITH WATER

Primary System

- Ensure Draincock is closed.
- Open isolating valves either side of central heating pump (if fitted).
- Admit water to the F&E cistern and thence to the thermal store within the appliance and the remainder of the central heating system.
- Open any radiator valves and air bleed valves so as to ensure that the store and radiators are full.

Note: Drain and flush the system. Refill as above and check for leaks.

Domestic Hot Water System

- Open one or more hot water tap.
- Turn on mains water supply and observe air free water issuing from tap(s).
- Close tap(s) and check mains water pipework for leaks.

- The blending valve is pre-set to supply water at approximately 55 - 60°C and does not require adjustment.

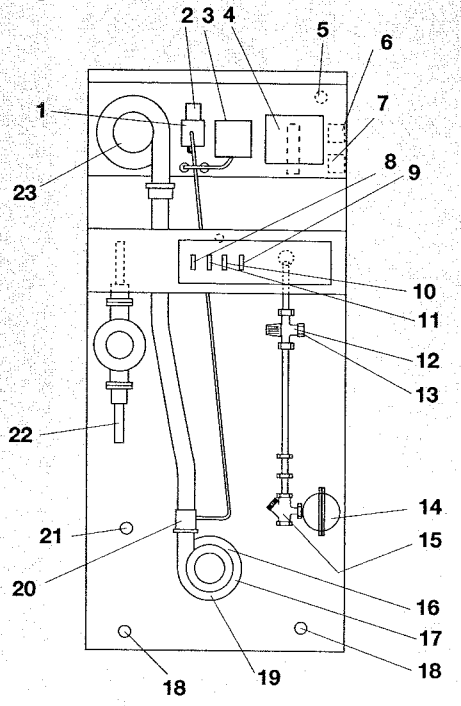
Starting (Lighting) The Appliance

Remove screw from solenoid valve pressure test point Fig.13.5 and attach a suitable gauge.

- Turn any in-line gas cock 'on' and turn the appliance gas cock 'on'.
(Indicated by the screwdriver slot being in line with the direction of gas flow.)
See Fig.12.3.
- Remove the sealing screw from the cold start drain at the base of the combustion chamber (beneath burner) Fig 12.1 and place a small receptacle underneath to catch any condensate that is discharged.
- Switch electricity supply on at the isolating switch and observe orange neon on control panel indicating the mains supply is live.

Note: Switch panel layouts are shown in Fig 12.4 for standard model and Fig. 12.5 for model with built-in programmer.

Fig 12.1

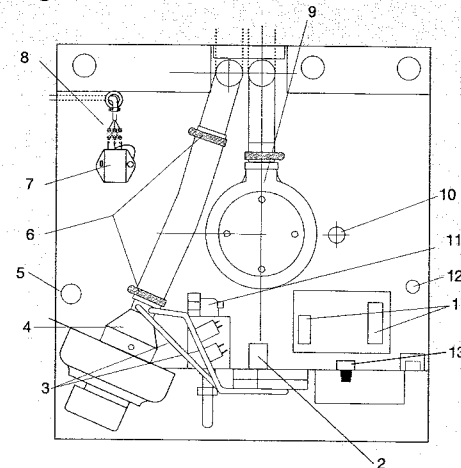


- | | |
|---|--------------------------------------|
| 1. Pressure Test Points. | 12. Blending Valve. |
| 2. Double solenoid gas valve. | 13. Mixed domestic hot water outlet. |
| 3. Pressure Switch. | 14. Mini expansion vessel. |
| 4. Full sequence controller. | 15. D.H.W. cold (mains) inlet. |
| 5. Limit Thermostat. | 16. Electrode. |
| 6. Cold Start Thermostat. | 17. Burner. |
| 7. Control Thermostat. | 18. Cold feed/drain. (optional) |
| 8. Appliance ON/OFF Switch. | 19. Cold start drain. |
| 9. Central Heating control switch. | 20. Injector module. |
| 10. Green neon (burner on). | 21. Central heating return. |
| 11. Orange neon (electrical supply on). | 22. Central heating flow. |
| | 23. Fan. |

Replace sealing screw securely after checking - no sealant required. Note that the gas valve is factory pre-set and the burner pressure is not adjustable. If unable to obtain correct burner pressure consult IMI Waterheating Ltd.

- h Turn appliance off, remove gauge and test for gas soundness.
- i After approximately twenty minutes (or when there is no further wet discharge) replace the sealing screw in the cold start drain. Fig.12.1.

Fig 12.2



- | | |
|--------------------------|------------------------------|
| 1. Terminal Blocks | 8. User Terminal Block |
| 2. Capacitor | 9. Flue Collector Hood |
| 3. Pressure Switch Tubes | 10. Open Vent Pipe |
| 4. Inlet Extension Cone | 11. Union Gas Cock |
| 5. Route For Gas Pipe | 12. Route For Cold Feed Pipe |
| 6. Worm Drive Clips | 13. Limit Thermostat |
| 7. EMC Filter | |

d Move the appliance on-off switch to the 'I' (on) position (standard model) or 'CONT' (programmer model) and observe external rotor of fan begin to rotate almost immediately. After a few seconds the automatic ignition sequence will be initiated and the burner will light.

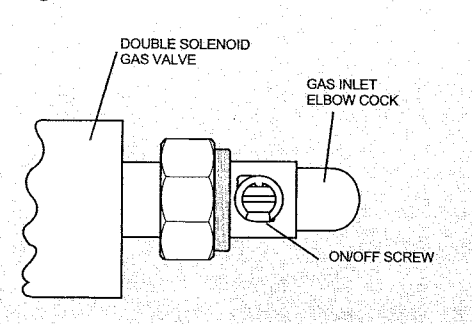
e Observe green neon on control panel indicating the burner is operating. Note: If the burner fails to light at the first attempt, the ignition controller will go to lock-out after five seconds. To reset, switch to 'O' (off) at the appliance on-off switch, wait fifteen seconds and switch to 'I' (on) or 'CONT' again.

f With the appliance operating check the green neon is stable.

Note: After first filling with cold water some noise may occur within the combustion chamber as the flame settles on the burner. This is normal and will disappear after approximately one minute. It does not occur in normal use.

g Check that the burner pressure is within the limits given in the section on TECHNICAL DATA. If outside these limits check meter governor pressure setting and ensure that the gas supply pipework to the appliance is correctly sized and free from obstruction.

Fig 12.3



The Central Heating System

- a On programmer model, commission the programmer by moving the slider switch (accessible behind the switch panel) to the right. Press SELECT HW and SELECT CH buttons (repeat if necessary) until the indicators align with either ALL DAY or 24HR, Fig 12.5, and press SET button to align left hand indicator with RUN. On standard model move central heating switch to the 'I' (on) position, Fig 12.4.
- b Check that any connected room thermostat or combined clock/thermostat is calling for heat.

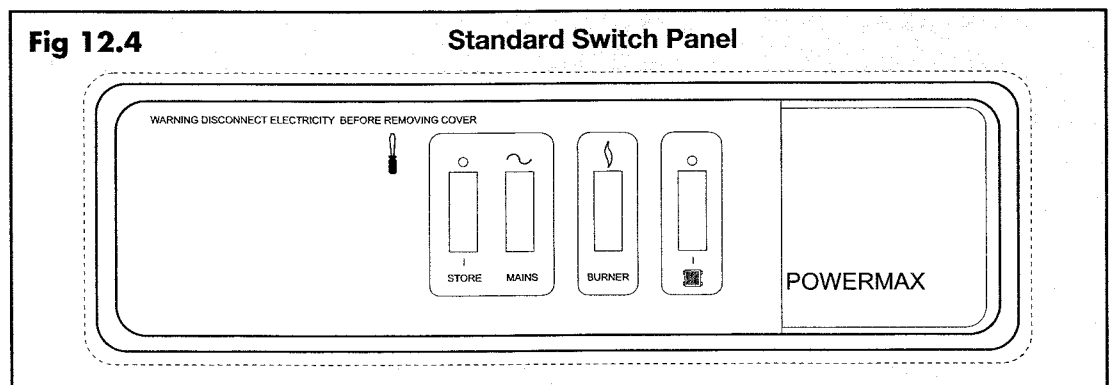
- c Note that the central heating pump will not operate until the storage cylinder contents have reached a temperature of approximately 60°C. After filling with cold water, this will normally take between 20 to 25 minutes.
- d Wait until the thermal store has reached its normal temperature of approx 82°C (by temporarily switching the central heating off again) before balancing the radiators in the usual way to achieve a temperature drop of 10° to 15°C.
- e Set the room thermostat or clock/thermostat according to the manufacturer's instructions. On programmer model press SELECT CH button to align CH indicator with AUTO and press SELECT HW button to align indicator with ALL DAY.
- f With the thermal store fully heated, check DHW output temperature is approximately 60°C using nearest tap

and a flowrate of approximately 5 l/min.

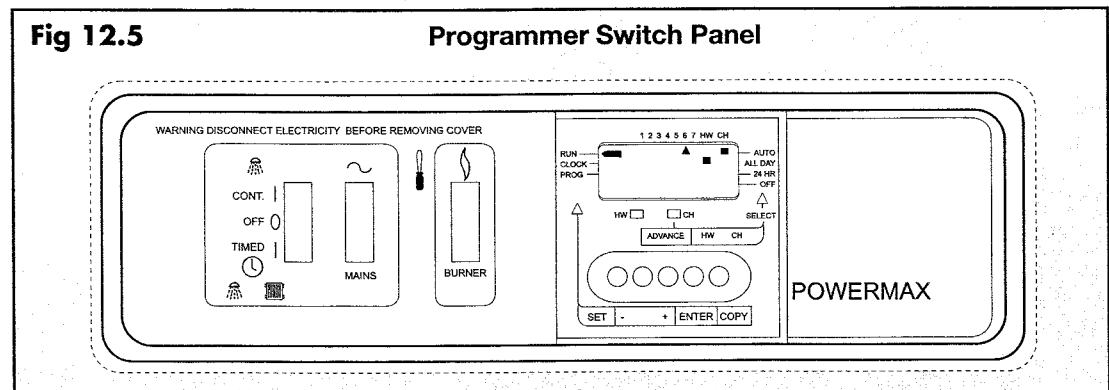
- g Refit outer covers and plinth front in reverse order.

Handing Over to the user

- a Explain the functions of the appliance controls
- b Give guidance if the system is to be shut down for long periods when freezing is possible.
- c Advise that the appliance should be serviced annually.
- d Hand over the Users' Instructions and leave these Instructions either at the gas meter or with the user.
- e Explain to the user that for models with a programmer, the ON - OFF switch must be in winter "TIMED" position in order to obtain central heating.



Note that Central Heating is NOT AVAILABLE when appliance ON - OFF switch is in "CONT" position. This refers to hot water only, eg. for use during summer months.



13. SERVICING INSTRUCTIONS

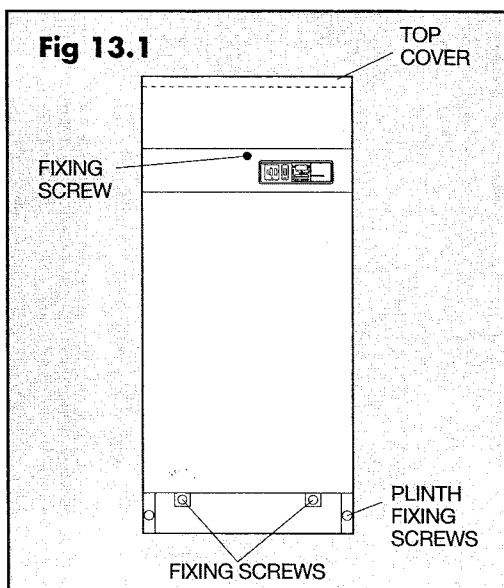
Routine Annual Servicing

To ensure safe, efficient operation of the appliance, it is necessary to carry out routine servicing at regular intervals. The frequency of servicing will depend upon the particular installation conditions and the use to which the appliance is put, but in general, once a year is adequate.

IMPORTANT: Before commencing any servicing or exchange of components, always turn off the gas supply and isolate the electricity supply.

After completing any service work always test for gas soundness.

To gain access remove two screws at bottom of front cover, pull forward from bottom and gently ease downwards to free location studs. Remove recessed screw at top of switch panel and retain. Lift top cover approximately 40mm and withdraw forwards. Remove plinth (2 screws, nuts and washers) See Fig 13.1. Replace any gasket/seal in burner/flue system. NB Service gasket set P531 is available - see page 22.



- a Remove screws from flue collector and remove top cover. See Fig.12.2. Use a pair of pliers to remove the baffles from the heat exchanger pipes. Clean baffles with a brush to remove any deposits. Set aside. Clean and check the collector hood (check and replace gasket if necessary).
- b Release union nut on gas supply to burner.

Note: Hold injector with second spanner to prevent it being disturbed. Remove 8 screws and washers from the burner flange. Pull the burner gently forward until the burner ring clears the combustion chamber front. Gently pull the burner downwards with a twisting motion to enable the burner pipe to disengage from the O ring seal. See Fig 13.2. Inspect and gently remove any deposits from burner face. Check and replace gasket if necessary.
- c Check electrode gap is 3.5 to 4.0mm - Fig 13.3. (Note: Adjustment not normally needed; replace electrode and gasket if outside these limits). Check electrode securing screws are tight.
- d Using a flue cleaning brush, insert the brush from above into each heat exchanger tube in turn. Brush up and down cleaning the tube.
- e Using a vacuum or brush, clean out the combustion chamber taking care not to damage the electrode.
- f After cleaning, replace all components/assemblies in reverse order using new gaskets/joints as necessary.
- g Check that the appliance and controls are functioning correctly. Check for air leakage at O-ring seal between air delivery pipe and injector module.

Note: The DHW expansion vessel will not normally require attention during routine servicing.

Component Exchange Procedures Fig.13

General

Isolate gas and electricity supplies.

To gain access remove two screws at bottom of front cover, pull forward from bottom and gently ease downwards to free location studs. Remove recessed screw at top of switch panel and retain. Lift off upper front cover. The top panel is retained on 4 studs: gently ease upwards to remove.

To remove switch panel unplug the 9-way plug and remove the 4 nuts and washers securing the complete panel which may now be withdrawn.

Note: that any damaged gasket **must** always be renewed. Components are replaced in reverse order unless otherwise stated.

Full Sequence Ignition Controller

Fig.12.1 (Pactrol P16)

- a Refer to 1 General above.
- b Pull off H/T lead from connection at front of controller.
- c Pull out the 10-way connector plug.
- d Unscrew 2 screws and remove controller.

H/T Lead Fig.12.1.

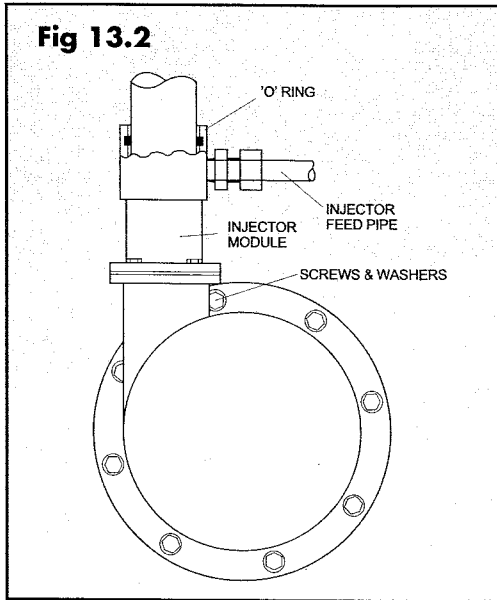
- a Refer to General above.
- b Disconnect lead at electrode and at ignition controller.
- c Push lower sleeve over electrode after re-connecting lead at controller.

Burner Fig.13.2

- a Refer to General above.
- b Remove 2 screws securing plinth Fig.13.1. Release union nut on gas supply to injector module. **Note:** Hold injector with second spanner to prevent it being disturbed.
- c Remove the 8 screws and washers holding the burner to the combustion chamber.
- d Pull the burner gently forward until the burner ring clears the combustion chamber front. Holding the fan to burner air pipe, pull the burner gently downwards with a twisting motion until the burner disengages from the O ring seal.
- e Fit new burner using new gasket making sure all screws and washers are secured.

Note: When re-tightening union nut on gas feed pipe hold injector securely with second spanner to prevent it being disturbed.

- f Check for soundness at gas supply pipe union.



Injector Module Fig.13.2.

- a Refer to General on previous page and remove switch panel.
- b Release union nut on gas feed pipe to burner.
- c Remove 3 nuts and washers securing fan. Remove screws securing fan inlet cone extension (1) and outlet adaptor (2). Gently manoeuvre fan forwards until inlet cone and studs disengage, lift fan approximately 10mm to disengage outlet adaptor; now swivel fan to burner air pipe anti-clockwise and lift clear of module. Temporarily replace fan in mounting bracket.
- d Remove 4 screws securing module to burner and lift module clear.
- e Fit new module and gasket. Reassemble in reverse order.

Note: When re-tightening union nut on gas feed pipe hold injector securely with second spanner to prevent it being disturbed.

- f Check joints for soundness.

Spark Electrode Fig.13.3.

- a Refer to General and Burner on previous page. Remove burner.
- b Disconnect the H/T lead. Remove the screws and washers. Gently pull the electrode away from the combustion chamber. Fit new electrode and gasket and check that the spark gap is as shown.
- c Replace burner using new gasket, and check operation of appliance.
- d Check for gas soundness at gas supply pipe union.

Fig 13.3 Electrode to burner

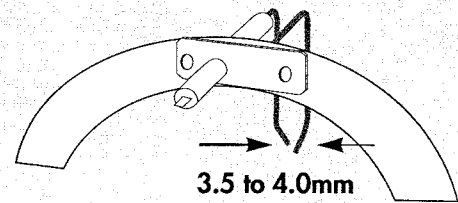


Fig 13.3.1

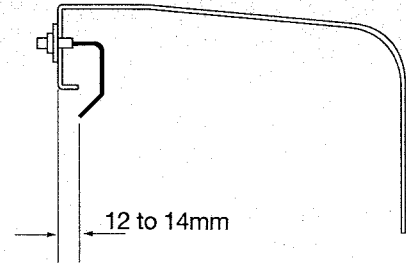
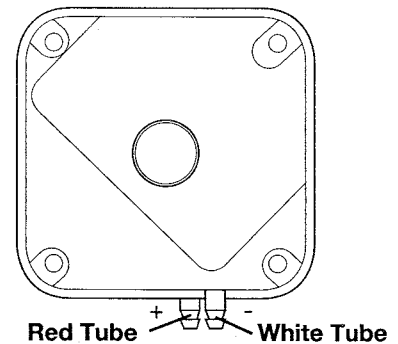


Fig 13.4



Pressure Switch Fig 13.4.

- a Refer to General on previous page.
- b Pull the tubes off the spigots on pressure switch and note relative positions.
- c Pull off front cover. Remove leads.
- d Unscrew 2 screws and nuts to remove switch.
- e When replacing make sure leads and tubes are correctly connected (Refer to wiring diagram Fig.10.1).

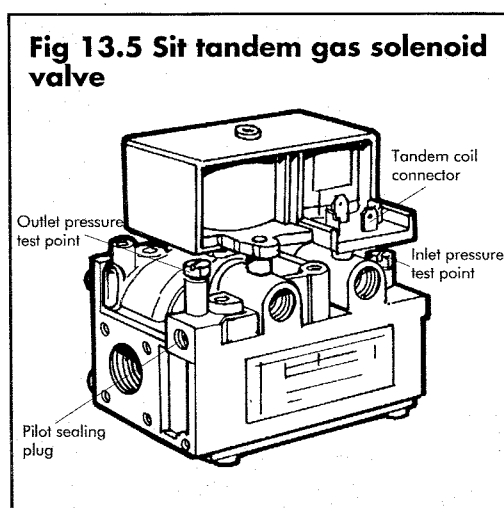
Capacitor Fig 12.2.

- a Refer to General on previous page.
- b Disconnect the two leads from the capacitor at small terminal block.
- c Unscrew the nut and washer holding the capacitor.
- d Remove capacitor and replace ensuring that the leads are correctly replaced. (Refer to wiring diagram Fig.10.1.)

Gas/Solenoid Valve Fig.12.2 & 13.5

- a Refer to General on previous page.
- b Disconnect the gas inlet at the union on the gas service tap, disconnect the outlet pipe at the union nut on flared fitting.

- c Remove two screws retaining front of valve and two screws at rear of valve. Withdraw valve and unplug lead.
- d Remove the union tail from the valve inlet and the flared adaptor from the valve outlet and transfer to new valve.
- e Ensure that the pilot sealing plug is tight (torque 7Nm).
Note: Threads at the valve inlet and outlet must be resealed with a sealant complying with BS5292.
- f Fit new valve in reverse order. Ensure the inlet and outlet connections are fully gas tight and the electrical plug is securely replaced.
- g Check operation of gas solenoid valve at pressure test points. After burner has been operating for at least 10 minutes check that the burner pressure is within the limits given in the section on TECHNICAL DATA. If outside these limits check meter governor pressure setting and ensure that the gas supply pipework to the appliance is correctly sized and free from obstruction. Refer to Section 12 for lighting procedure and instructions to check burner pressure.



Fan Figs.12.1 & 12.2

- a Refer to General and remove switch panel.
- b Disconnect fan leads from small terminal block.
- c Remove the three nuts and washers from the fan mounting studs. Remove screws securing fan inlet cone extension and outlet adaptor.
- d Pull the fan gently forward until extension disengages and the studs clear the mounting bracket. Hold the air delivery pipe, disengage the fan from the pipe.
- e Ensure fan is fitted with new O-ring supplied. Reassemble and check for soundness.

Neon Lights and Switches

- a Refer to General.
- b Push the neon light or switch from the back through the switch panel and replace in reverse order making sure the leads are correctly replaced - See wiring diagram Figs.10.1 (standard model) and 10.2 (model with built-in programmer).

Limit Thermostat Figs.12.2

- a Refer to General.
- b Disconnect the leads.
- c Remove the clip, spacer and phial from the pocket.
- d Remove the retaining nut holding thermostat housing, note the routing of

the capillary tubing and remove.

- e Carefully replace the new capillary tubing and phial, ensuring the latter is retained with the spring clip and spacer.
- f Hold thermostat housing in position and replace retaining nut. Reconnect leads.

Control and Cold Start Thermostats

Figs.12.1

- a Refer to General.
- b Disconnect the leads.
- c Remove the clip, spacer and phial from the pocket.
- d Remove the two retaining screws holding the thermostat housing, note the routing of the capillary tubing and remove.
- e Carefully replace the new capillary tubing and phial ensuring that the phial is secured with the spring clip and spacer.
Note: Do not bend capillary tubing to a radius of less than 20mm.
- f Hold Thermostat housing in position and replace retaining screws. Turn spindle of control thermostat fully clockwise
- g Reconnect electrical leads - see wiring diagram Fig.10.

DHW Expansion Vessel Fig.12.1

- a Refer to General.
- b Isolate mains water supply and drain down as necessary.
- c Unscrew vessel from branch connection.
- d Replace using sealant suitable for use with potable water.

Blending Valve Fig.12.1

- a Refer to General.
- b Isolate mains water supply and drain down as necessary.
- c Exchange the valve.
Note: The blender valve is pre-set to supply mixed water at approximately 55°C to 60°C and does not normally require adjustment.

Programmer Fig.12.5

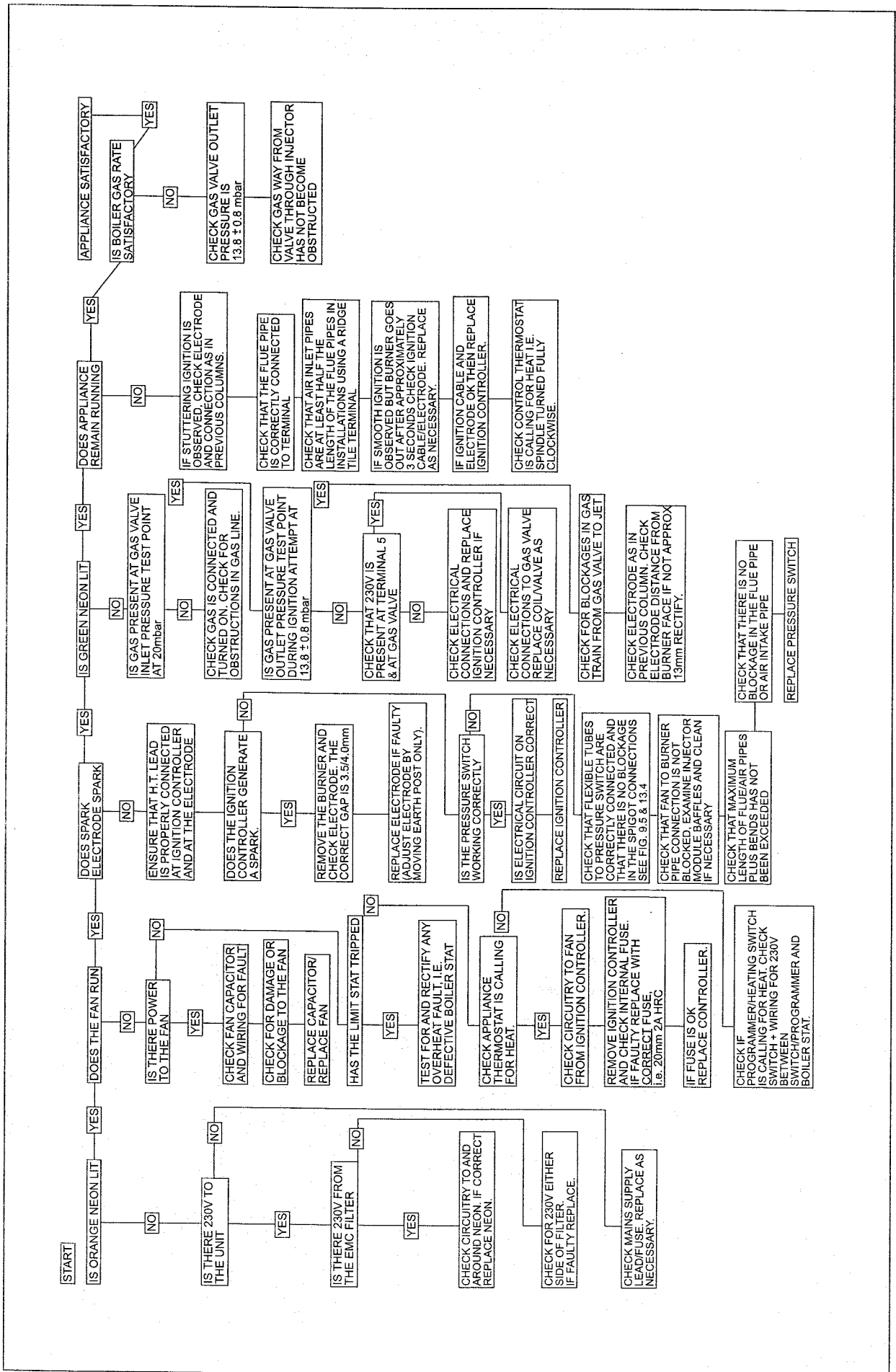
- a Refer to General and remove switch panel.
- b Disconnect leads from programmer noting relative position of colour coded wires.
- c Working from rear of switch panel, remove two 4BA screws and washers and remove programmer.
- d Replace in reverse order ensuring the leads are correctly connected - see wiring diagram Fig. 10.2 - and re-fit switch panel.
- e Before restarting the appliance, switch on the programmer battery by moving the slider switch on rear of programmer body to the right (when facing appliance).

Note: The programmer is fitted with a long-life lithium battery, which should only be replaced by suitably qualified personnel. A discharged battery should be disposed of through a registered professional agency for waste material.

EMC Filter Fig.12.1.

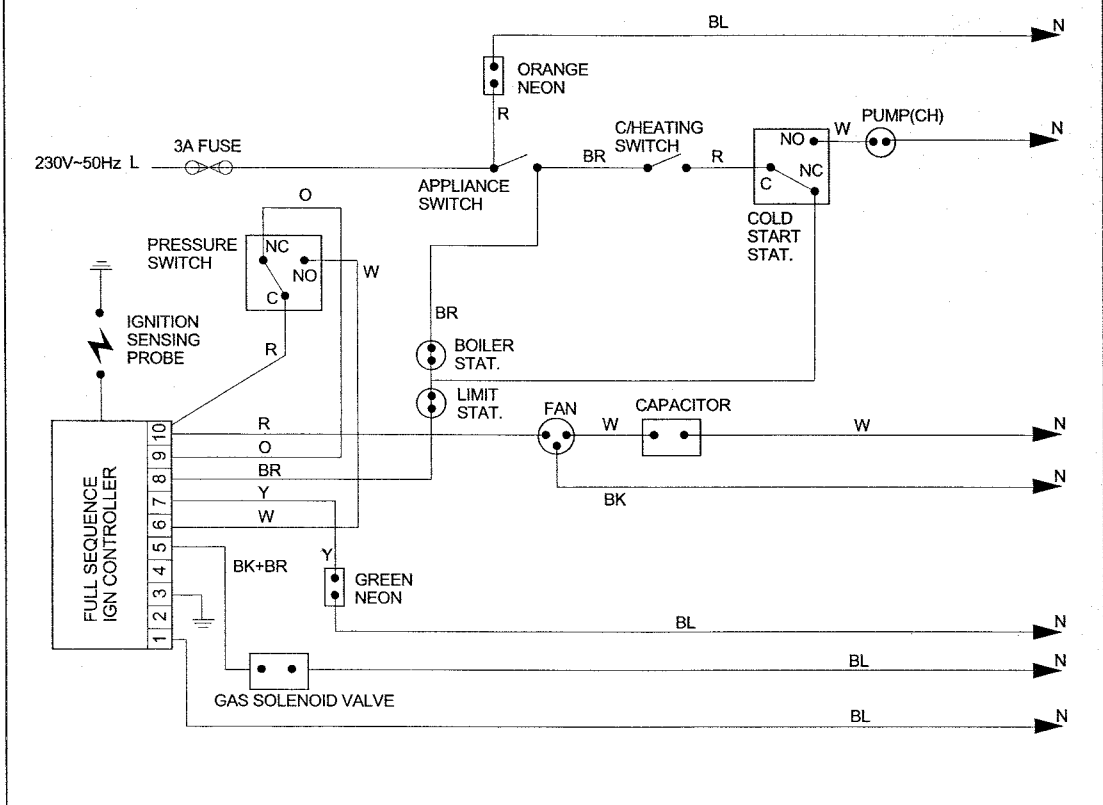
- a Refer to General above.
- b Remove both fixing screws. Release wiring between filter and both terminal blocks.
- c Replace filter. Reconnect wiring (including earth lead) and MAINTAIN CORRECT LINE/NEUTRAL POLARITY See Fig. 10.1.

14. FAULT FINDING CHART: POWERMAX 135

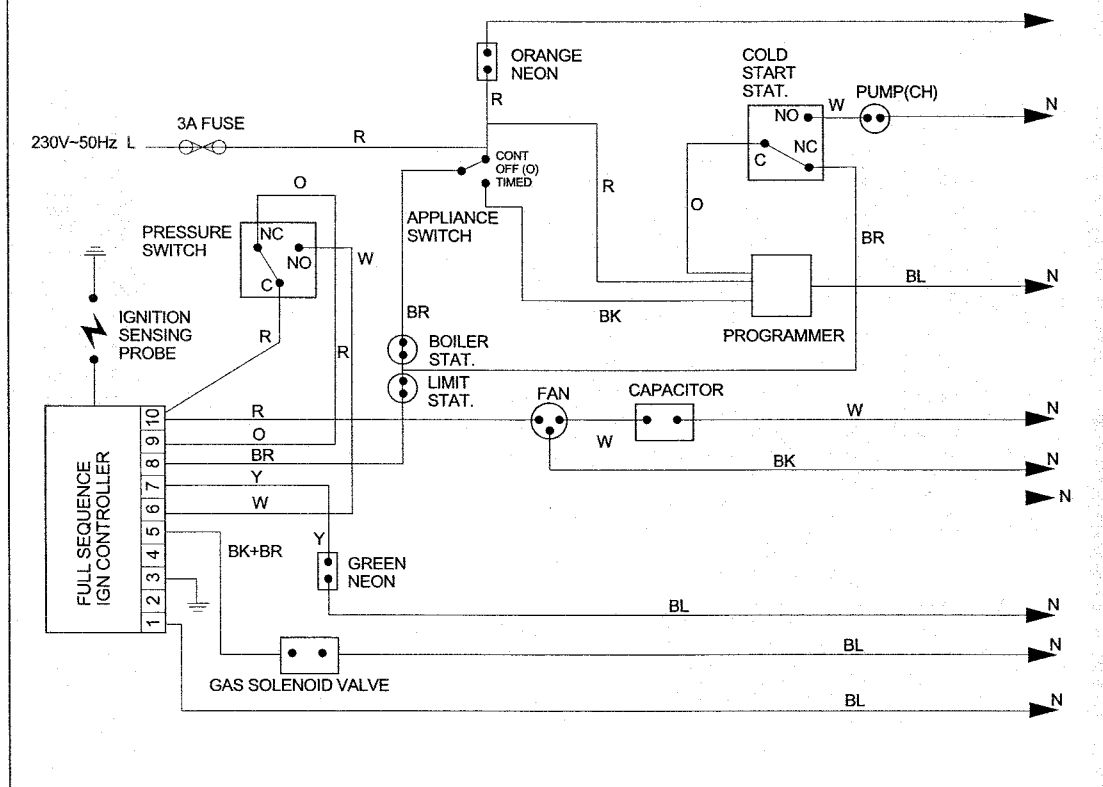


15. FUNCTIONAL FLOW DIAGRAM

Powermax 135 standard model

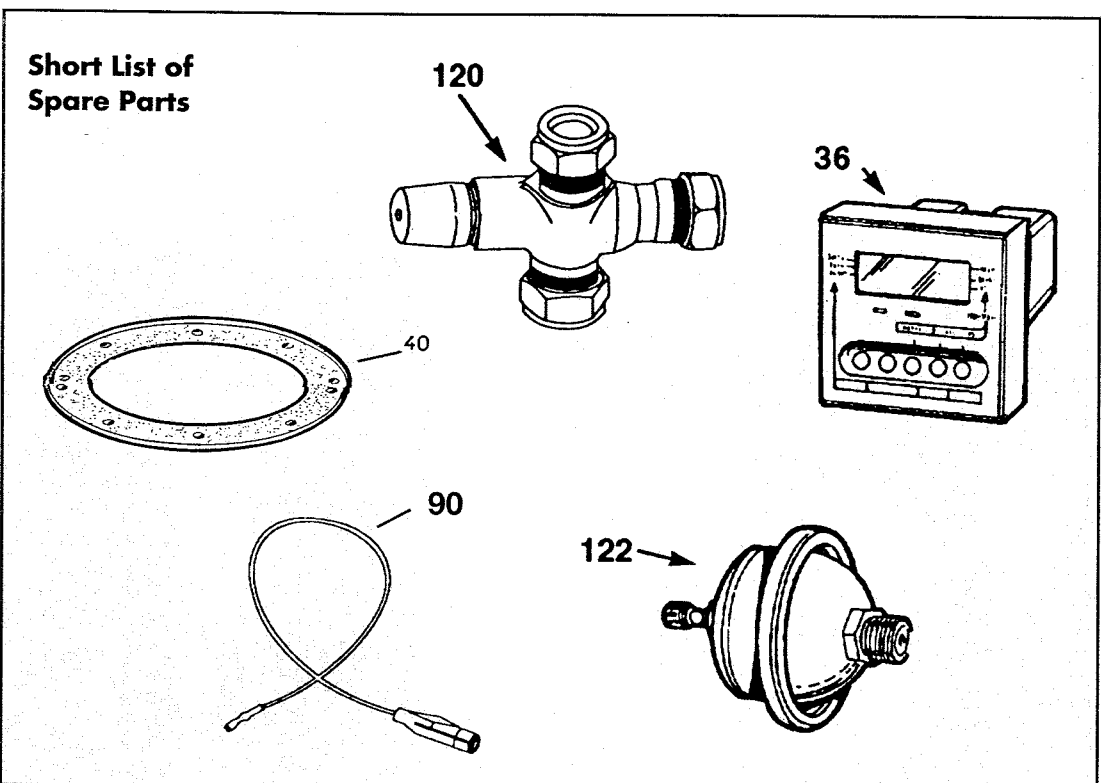


Powermax 135 programmer model

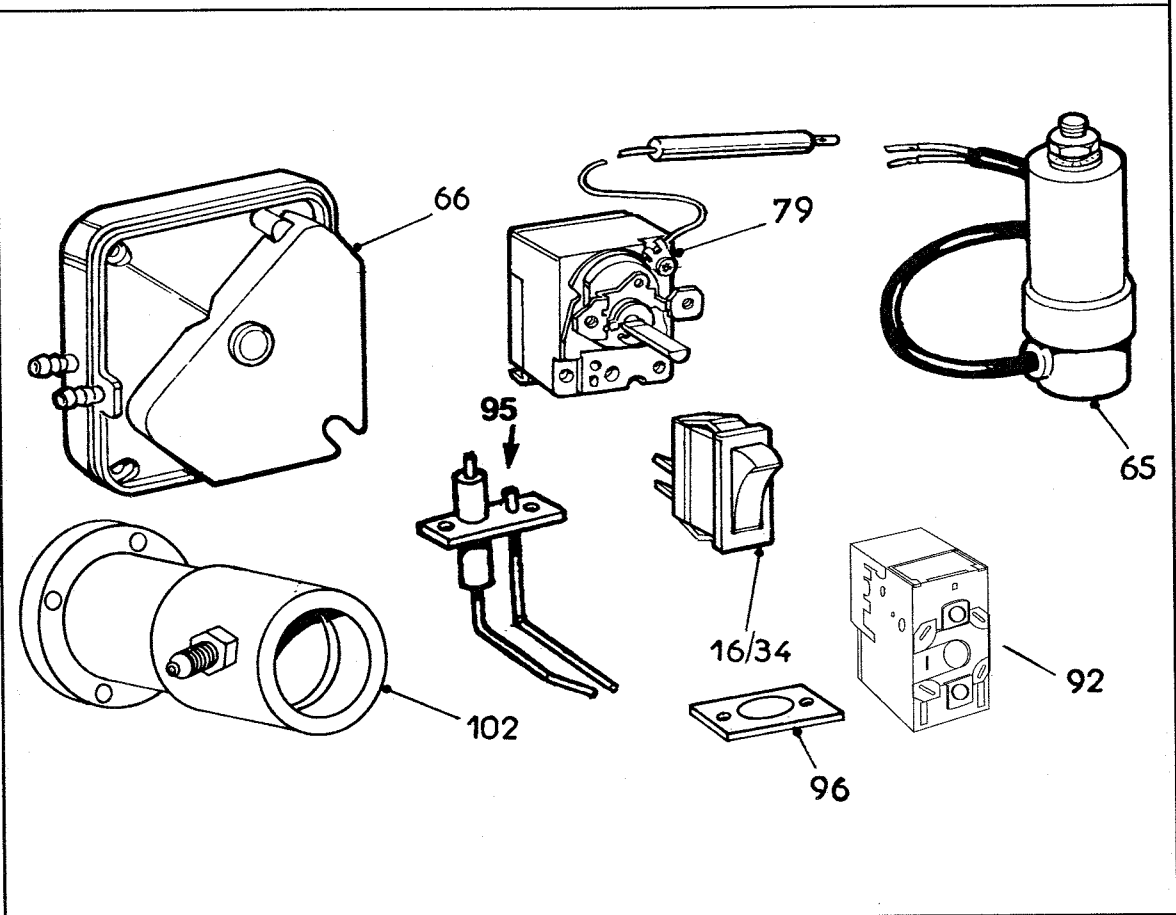
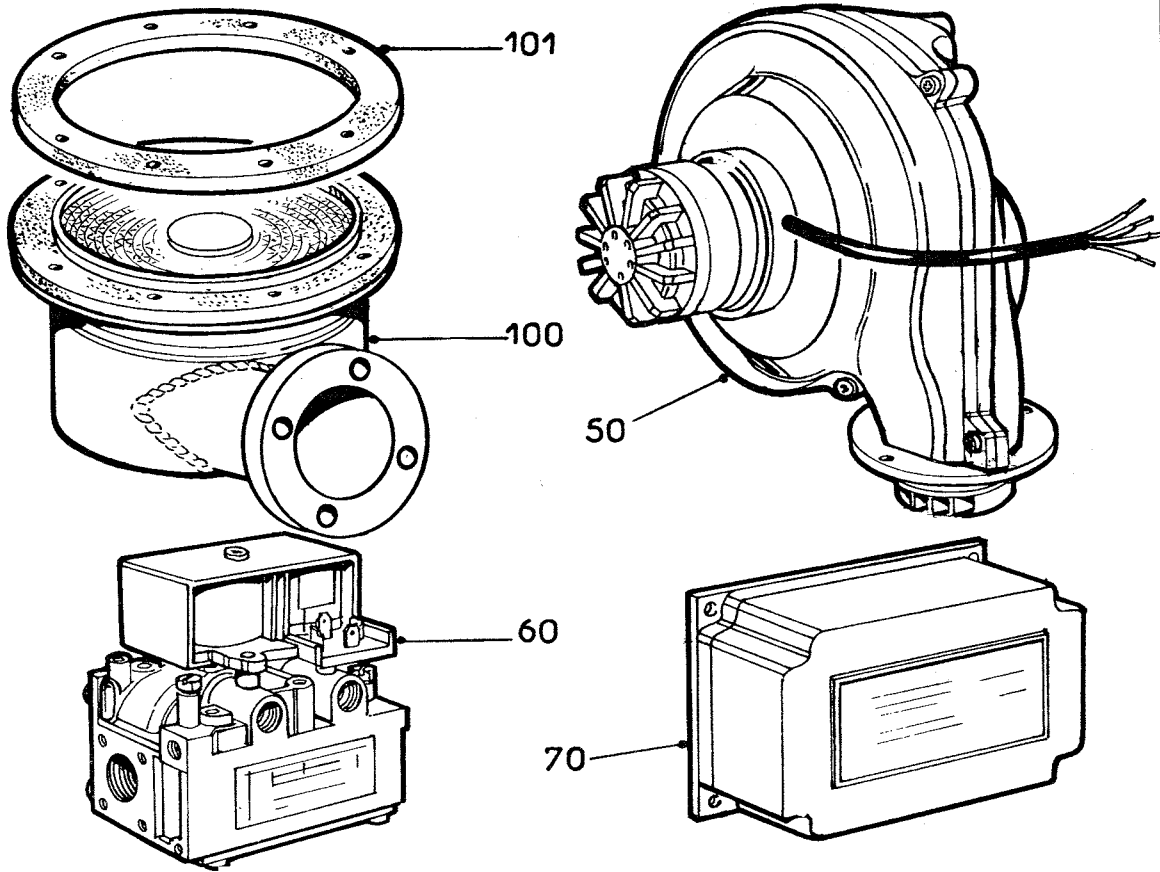


16. SHORT LIST SPARE PARTS

Key Number	Part Number	Qty Per Unit	Description	GC Number
40/96/101	P531		SERVICE GASKET SET	298 117
70	P500	1	Full sequence Ignition Controller Pactrol P16DIS V19	387 800
66	} P117	1	Pressure Switch-Dungs LGW 3A1 2.1RV (Serial No 013320 and on)	379 723
		1	Pressure Switch-Dungs LGW 3A1 1.7RV (Up to Serial No 013319)	387 143
65	P503	1	Capcitor - 1.5mfd	387 144
50	P504	1	Blower (c/w O-ring) G2E-120	387 145
100	P506	1	Burner (c/w gasket)	298 026
101	P507	1	Burner Gasket	298 027
29/45/107	P508	8	Screw M5 x 10 stainless	403 025
95	P624	1	Ignition Electrode c/w gasket	298 240
96	P510	1	Ignition Electrode gasket	298 030
46/97	P511	3	Screw M4 x 8	403 033
16/34	P512	1	Rocker switch (on-off 2 position) Arco C1400 AB	387 154
16/34	P513	1	Rocker switch (3 position) Arco-electric C1420 AB	387 155
102	P516	1	Injector module (c/w gasket)	298 028
60	P578	1	Gas Valve assembly (SIT tandem)	298 065
79	P520	1	Thermostat L & G RAK 512/3303	397 755
92	P616	1	Thermostat, cold start Ranco K36 (Serial No 16001 and on)	378 937
40	P523	1	Flue Collector Gasket	298 032
37	P524	5	Baffles	298 033
120	P498	1	Thermostatic Blending Valve (Serial No. 16001 and on)	298 137
122	P527	1	Expansion Vessel - W & P mini	298 035
90	P487	1	HT Ignition Lead and Sleeving	298 275
36	P458		7 day electronic programmer 5261	378 796
	P532	1	C.H. Pump	298 107



Short list of spare parts



17. INSTALLATION INSTRUCTIONS FOR EXTENDED FLUE COMPONENTS DESCRIBED IN SECTIONS 6 & 9

Installing Terminal Assembly

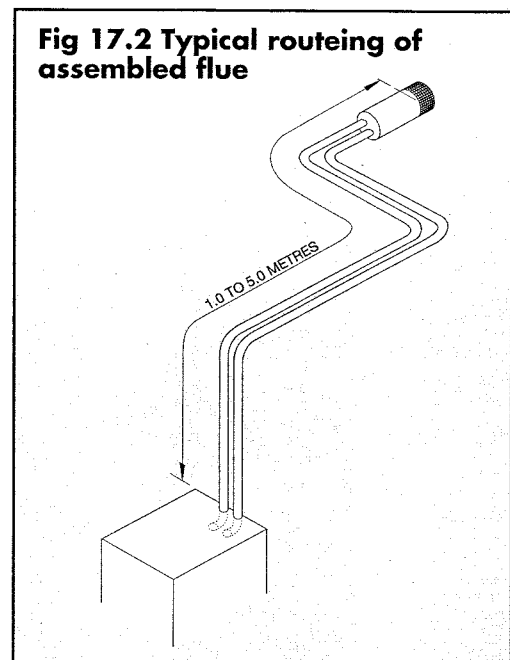
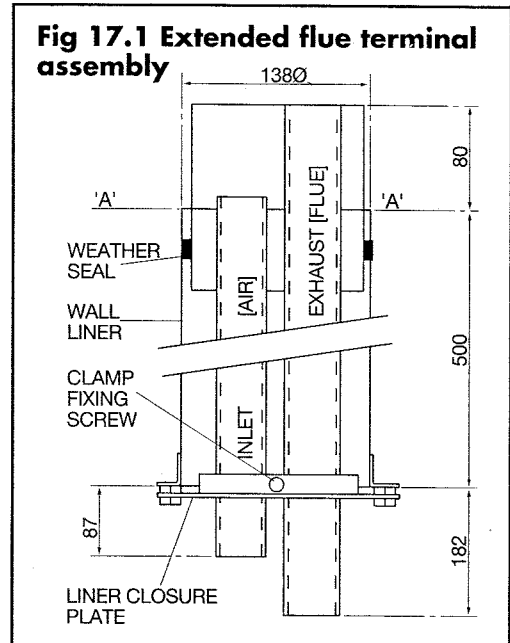
Note: The flue terminal must be installed horizontally.

- a Mark the centre of the 140mm (5½ inch) diameter hole and core drill.
 - Note:** If the wall is clad with a combustible material an additional 25mm wide area must be removed around liner.
- Measure the wall thickness and cut the liner to this length. Cut opposite end to lugs.
- b Fit the liner through the 140mm diameter hole, lugs inside, and make good internal and external rendering. The latter may be done with arm extended through liner.
 - Note:** Ensure lugs are either vertical or horizontal and avoid filling threads in lugs with mortar.
- c Mark wall thickness measurement on terminal air/flue pipes using datum 'A' 'A' shown in Fig. 17.1. Fix liner closure plate on to the pipes at this length using the clamp attached. Avoid crushing pipes with clamp. If either pipe requires cutting to length (eg to allow bends to be fitted) do this now.
- d Push flue terminal assembly into liner. Secure terminal by fixing plate to liner using the screws supplied.

Routing of Air/Flue Pipes

- a Measure distances of flue pipe runs and note as a guide to cutting pipes. The maximum length of each air/flue pipe run must not exceed 5.0m. including the BF terminal if the maximum of 4 bends in each pipe is used - see Fig.17.2. There is no minimum length. If fewer than 4 pairs of bends are used between the appliance and the flue terminal assembly, then the maximum length of straight pipe can be increased if required - see table below. Any exhaust flue pipe accessible to occupiers of the dwelling must be covered with protective ducts - Part No. P307 is suitable. The flue terminal assembly and the (hot)

exhaust products flue pipe must not be closer than 25mm (1") to combustible material. If the flue pipes are run through a timber wall or cupboard, or via a roof space with wooden rafters; ENSURE A 25mm GAP IS LEFT AROUND THE EXHAUST FLUE PIPE; OR EXTEND THE PROTECTIVE DUCT.



MAXIMUM NUMBER OF 90° or 135° BENDS			MAXIMUM PIPE LENGTH
Air Inlet	Exhaust Flue	Total	Air/Flue & Terminal
4	4	8	5.0m each
3	3	6	7.0m each

Preparing Appliance & Protective Duct

- a Slip a worm drive clip over both ends of flexible inlet duct. Push one end of the duct over the spigot on fan inlet and secure with clip.
- b Attach base of bend clamp to rear panel with two M5 screws and nuts - see Fig 17.4 (If air/flue pipes exit to left or right, use alternative L or R position indicated in Fig. 17.3).
Smear a film of silicone sealant (approx 0.5m thick) to the outside of the flue spigot. Push small end of the appliance bend over the adaptor and secure joint with worm drive clip. - see Fig. 17.3. Push the plain end of another bend into the flexible duct and secure with worm drive clip. Fasten outer part of clamp by passing long bolt through rear panel.

Note: If air/flue pipes run horizontally, align bends and fit the first pipe length before securing outer clamp.

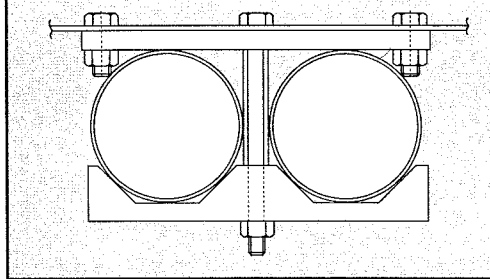
- c Move appliance to its final position. Remove cover plate from side panel if appropriate.

Note: Fixing the first stage of the open vent pipe and F & E pipe is recommended next (See section 11 of main instructions).

- d With appliance in position, determine length of protective duct required and if necessary adjust standard 1.5m length to suit - See Fig 17.5. Fix duct to wall with screws and plugs provided. Temporarily set aside duct cover.

Additional lengths of duct and duct bends are available, see page 27.

Fig 17.4 Flue Clamp



Assembling Air/Flue Pipes

Any route can be taken by the air/flue pipes

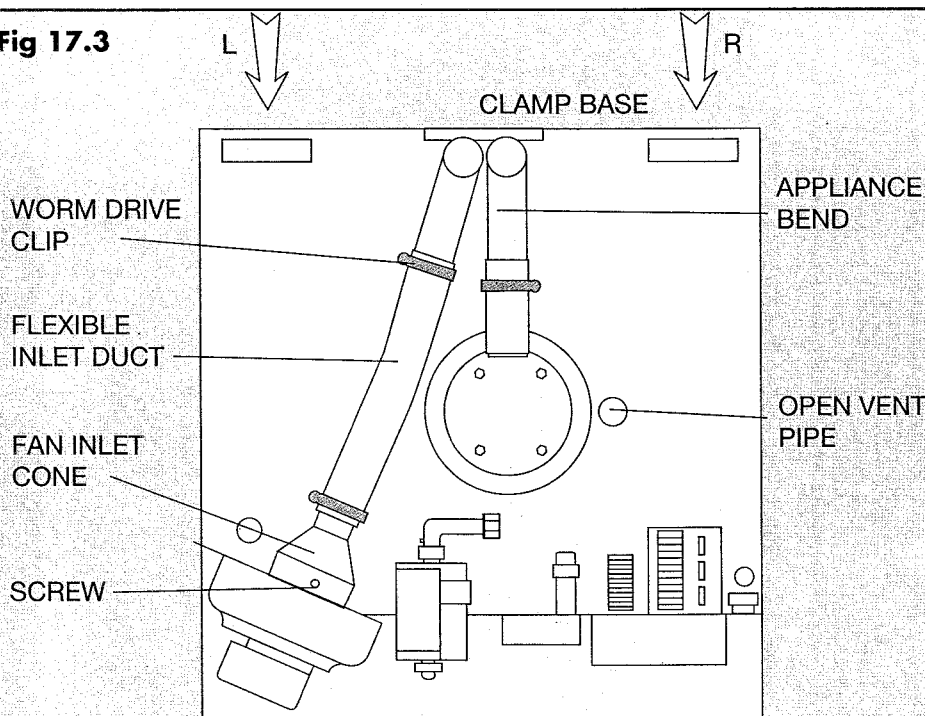
Note: THE FLUE PIPES MUST BE ASSEMBLED WITH THE PLAIN END OF PIPE (OR BEND) NEAREST THE APPLIANCE AND THE FEMALE SOCKET END FURTHEST FROM APPLIANCE.

ALWAYS ADJUST LENGTH OF PIPES BY CUTTING PLAIN END. REMOVE BURRS INSIDE AND OUTSIDE.

KEEP THE OUTSIDE OF FLUE PIPES CLEAN AND FREE OF OIL OR GREASE.

THE PIPE SUPPORTS AND CLIPS MAINTAIN A SPACING OF 53mm BETWEEN THE PIPE CENTRES - SEE FIG. 17.6. THUS INNER PIPE(S) OF STACKED RUNS ARE 53mm OR 106mm SHORTER THAN OTHER PIPE DEPENDING ON THE NEXT CHANGE OF DIRECTION.

Fig 17.3



- a Measure and cut the first pair of flue pipes away from the appliance (within duct). Smear a film of silicone sealant (approx. 0.5mm thick) around outside mating surface of pipes. Push pipes firmly into the sockets using a twisting motion to spread sealant.
 - b Measure and cut next pair of air/flue pipes. Slip pipe supports along pipes as required before engaging pipes with socket of preceding pipes or bends.
 - c Smear a film of sealant (approx 0.5mm thick) around all the outside mating pipe surfaces before pushing pipes firmly together. Select the duct bend (if required) and insert pipe bends. Push plain end of pipe bends into pipe sockets. Do not use sealant on female sockets.
- Repeat above procedure to reach terminal. Ensure that air inlet and flue gas connections are correctly made as indicated in Fig 17.1.
- d Fix pipe supports to masonry or woodwork so that flue pipes are held securely in position.
 - e Check especially that every joint within the duct is thoroughly sealed before fitting the duct cover.

NOW REFER BACK TO MAIN INSTALLATION INSTRUCTIONS.

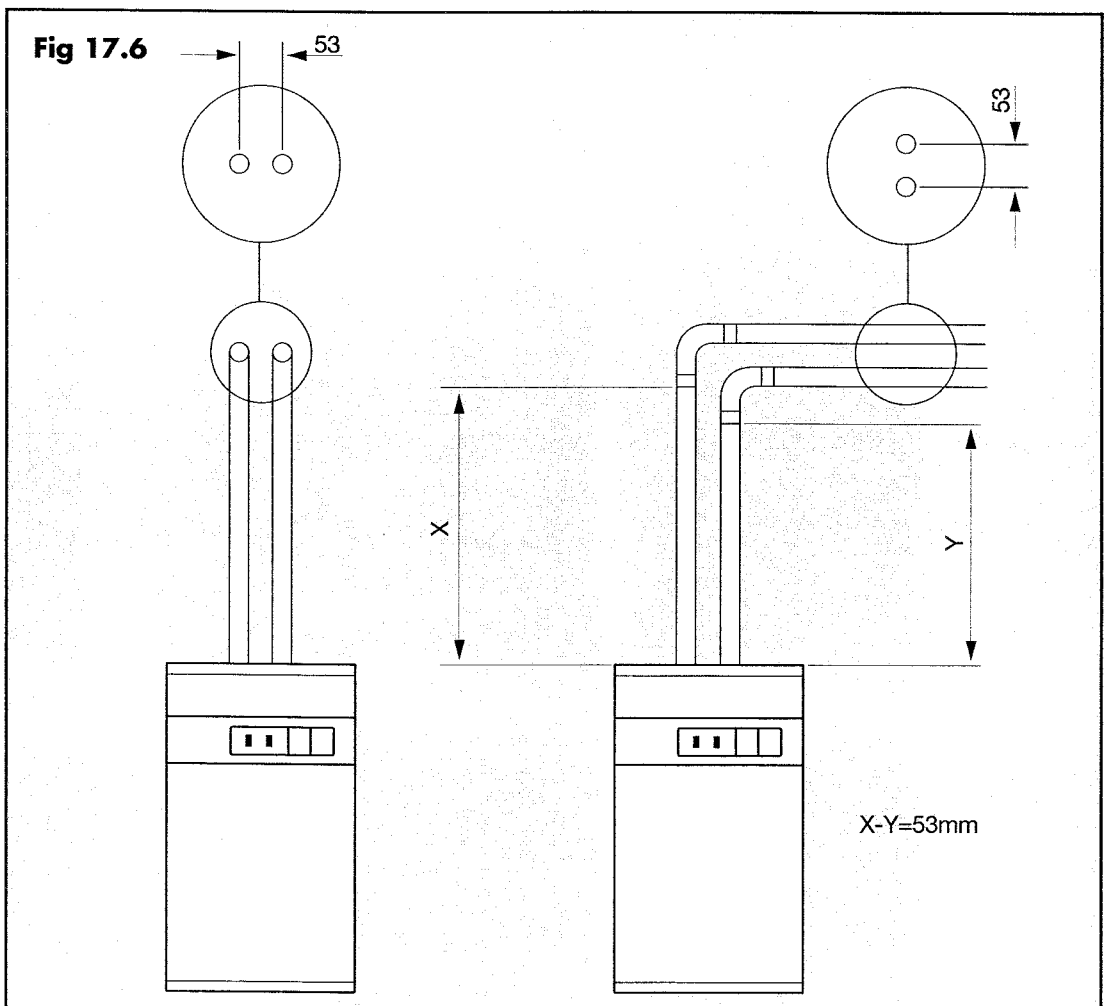
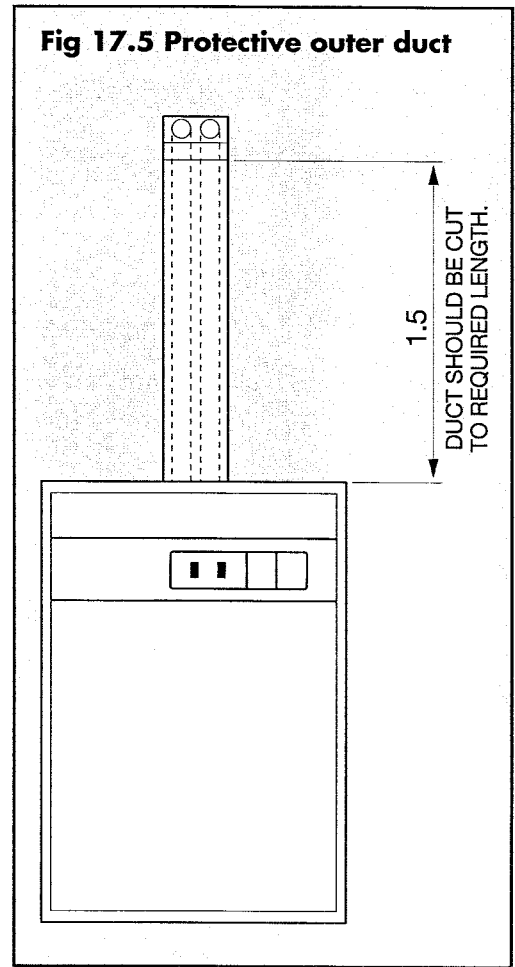
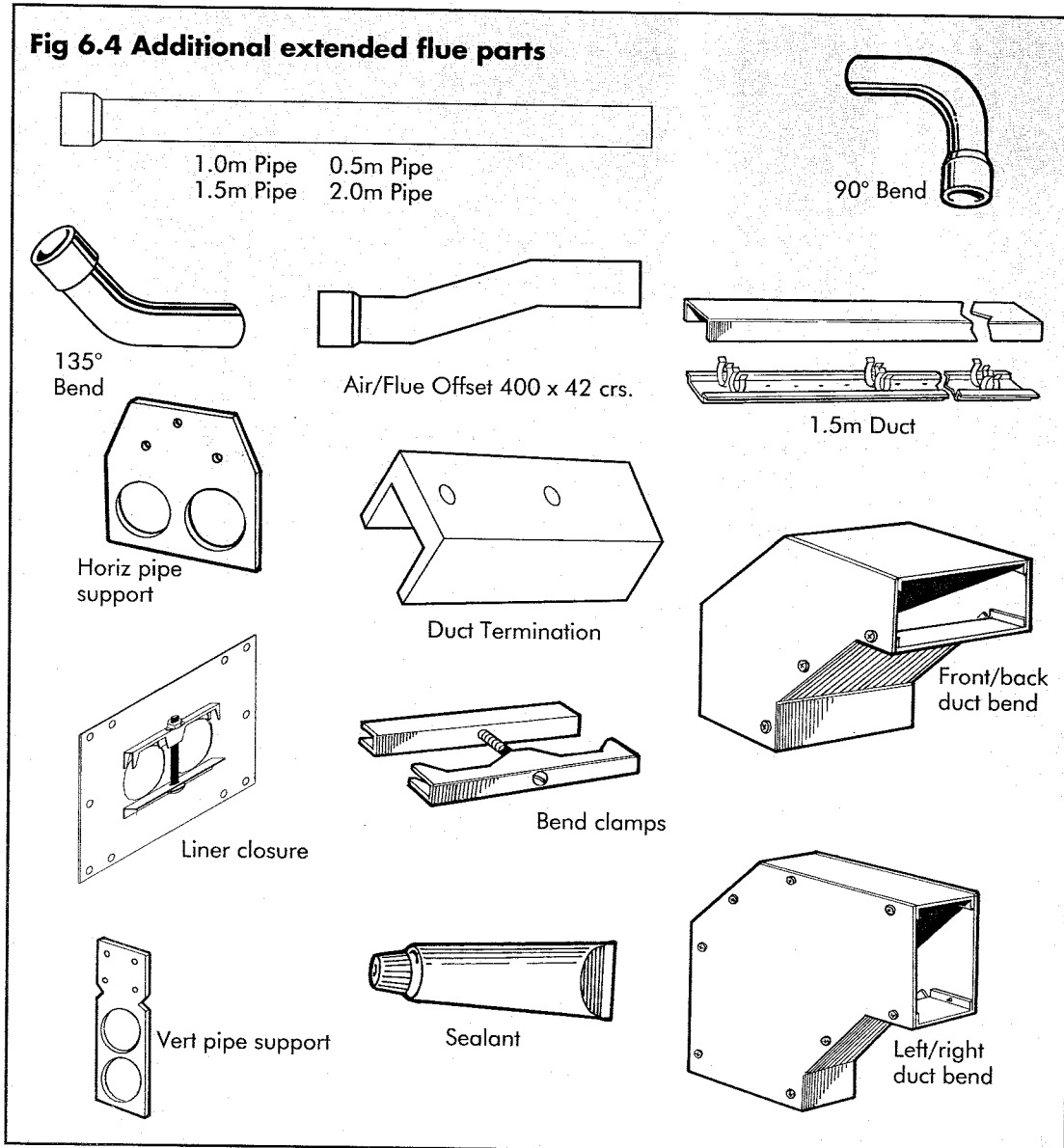
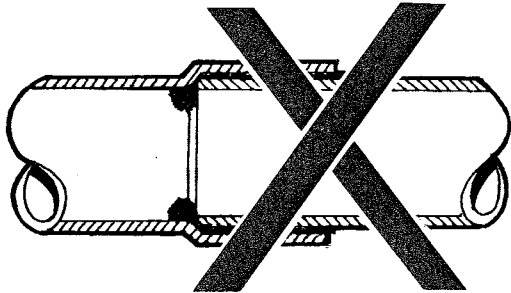


Fig 6.4 Additional extended flue parts**Lists of Extended Flue Parts**

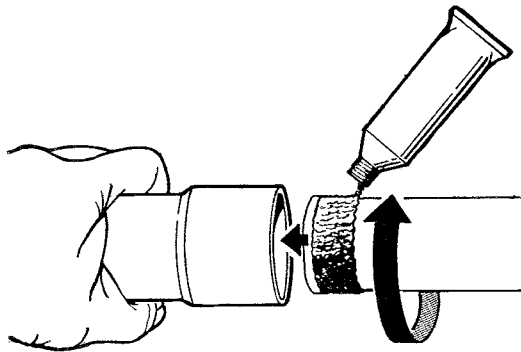
	Part No.	GC No.
Air/flue pipe, socketed at one end		
2.0m long	P301	P301
1.5m long	P302	298 008
1.0m long	P303	298 009
0.5m long	P304	298 010
90° bend	P305	298 011
135° bend	P306	298 012
1.5m protective duct c/w clips and fixings	P307	298 013
Horizontal pipe support, 53mm pipe centres	P308	298 014
Vertical pipe support, 53mm pipe centres	P309	298 015
Bend clamps assembly	P310	298 016
Liner closure plate	P311	298 017
FB duct bend (allows vertical duct to be extended to front or rear to maintain protection of air/flue bends)	P312	298 018
LR duct bend (allows vertical duct to be extended to left or right to maintain protection of air/flue bends)	P313	298 019
Worm drive clip	P314	298 020
40 ml tube 'Hylsil' RTV silicone sealant	P315	298 021
Ridge Terminal Adaptor	P316	298 022
Air Inlet Guard	P317	298 023
Air/Flue Offset 400 x 42 crs.	P318	298 024
Duct Termination	P370	298 024
800mm Long Wall Liner	P337	298 190

IMPORTANT

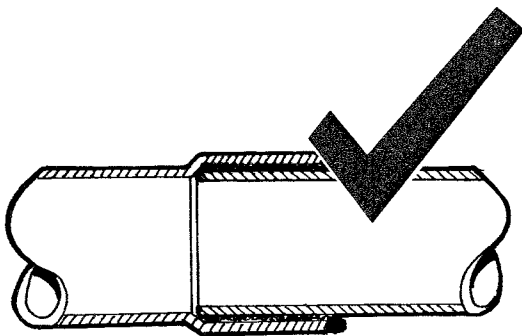
The sockets in Powermax Air/Flue pipes are manufactured to close tolerances to enable secure joints to be made with minimum use of sealant.



- Use of excessive sealant within the socket must be avoided. Otherwise sealant may be pushed in front of the pipe (especially one that is not deburred) thus causing a restriction in the air/flue pipework.



- Experience has shown that an effective technique is to smear silicone sealant around the **OUTSIDE** of a **DEBURRED** pipe end which is then inserted into the socket with a twisting action.



Restricting the flue or air supply can impair the operation of the Powermax appliance and invalidate the manufacturer's warranty.

Refer to Section 17 of Installation Instructions before assembling extended flues.

IMI WATERHEATING

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Wakefield 01924 376026 York 01904 692090

IMI Waterheating has a policy of continuous improvement and the right to change a specification at any time without notice is reserved.

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PMX 1000
P417 11 95