

IMI WATERHEATING

POWERMAX 135	STANDARD MODEL
POWERMAX 135C	WITH FITTED PROGRAMMER
POWERMAX 135 P	WITH FITTED PUMP
POWERMAX 135 CP	WITH FITTED PUMP & PROGRAMMER

GC No.

41 389 01

FROM SERIAL NO. 019001 ONWARDS

Powermax

Installation and Servicing Instructions

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IMI WATERHEATING



FLOOR STANDING HEATED THERMAL STORE

(Integrated storage water heater/domestic balanced flue boiler)

THIS APPLIANCE IS FOR USE WITH NATURAL GAS ONLY.

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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.

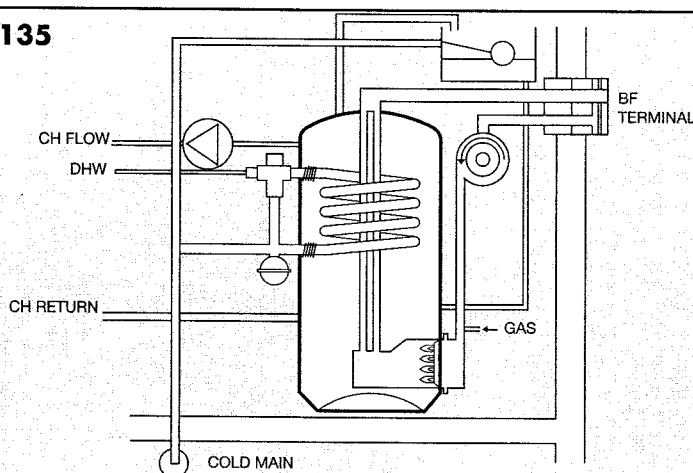
Timed operation of the central heating is essential and the built-in Powermax programmer (CP model) is recommended.

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.

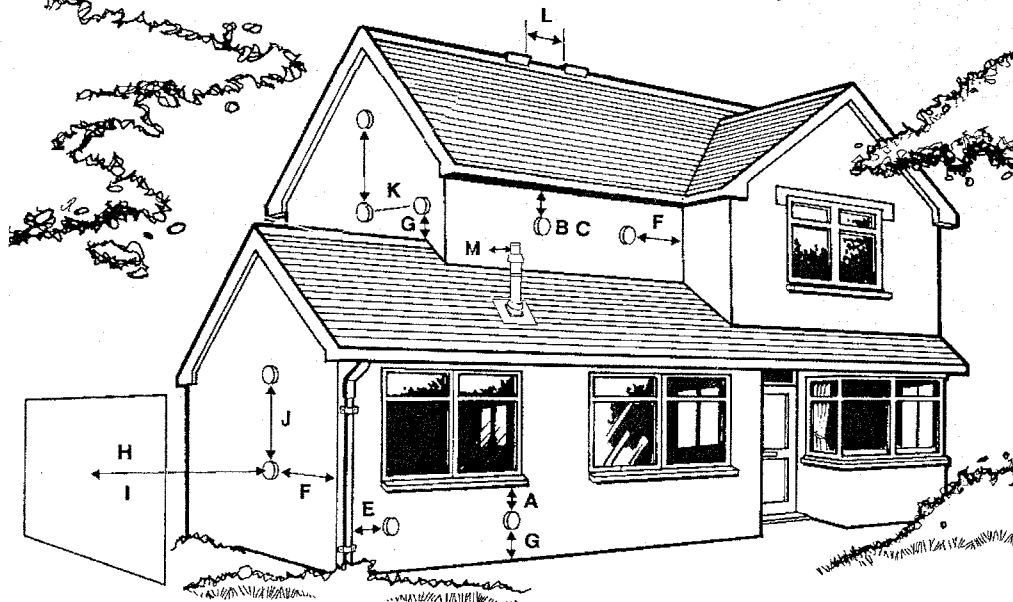
If the appliance is fitted under a ventilator or opening window, the terminal must be at least 300mm (12in) from any part of the window or ventilator, and in accordance with BS5440:Part 1 and local gas undertaking regulations. Acceptable positions are indicated in Fig.5.1.

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.

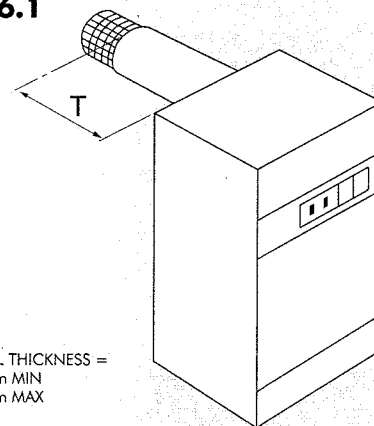
P225: 2.5m Vertical RS balanced flue.

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

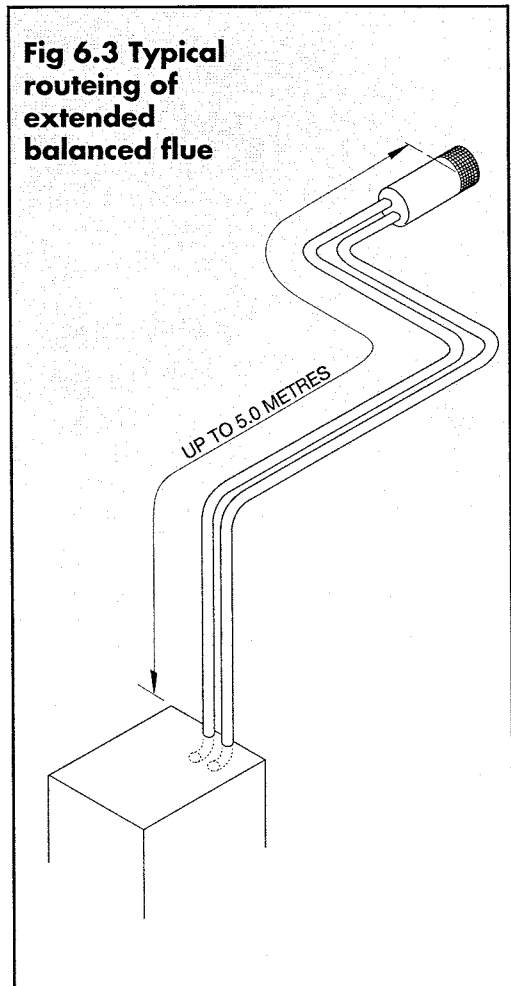
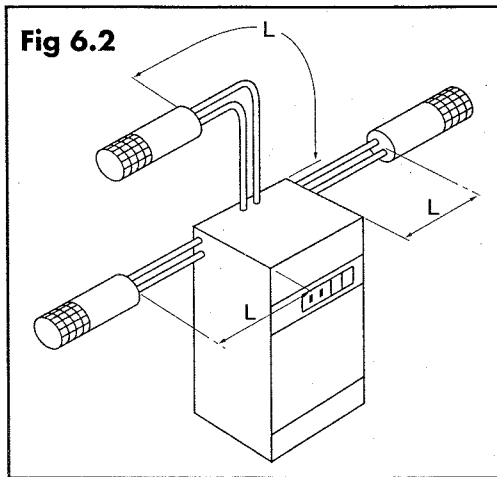
Extended Balanced Flue Systems Figs 6.2 & 6.3

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

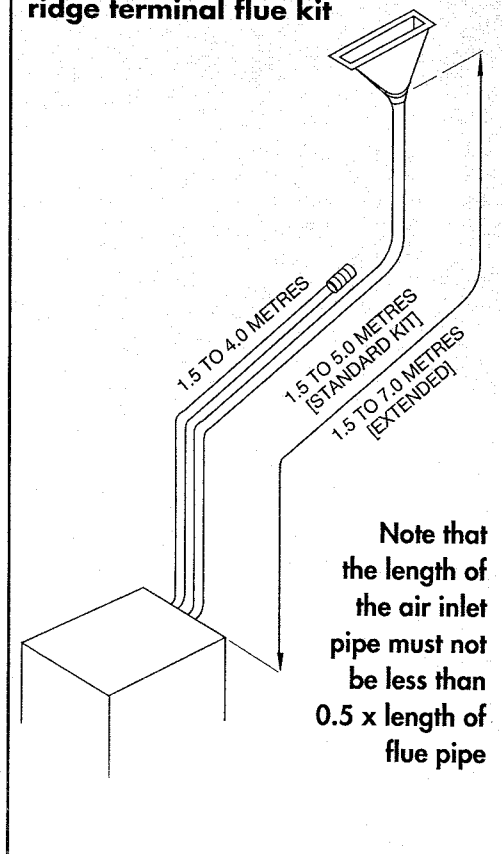
APPLICATION	COMP.	NO. OF BENDS	PIPE LGTH (METRES)
Standard Kit	Air Inlet	2	1.5 min
	Flue	3	1.5 min
Extended Inlet & Flue	Air Inlet	2-3	1.5 to 4.0
	Flue	3	1.5 to 7.0

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.

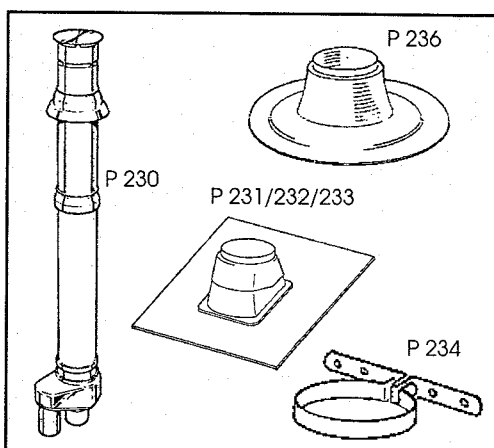
P231 for pitches 15° to 25°

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)