

IDEAL EXCEL RS. 30, 40, 50 & 60

Wall Mounted, Balanced Flue, Gas Boilers

Installation and Servicing

CAUTION:

To avoid the possibility of injury during installation, servicing or cleaning of this appliance, care should be taken when handling the edges of the sheet steel components.

NOTE: The appliances are for use with NATURAL GAS ONLY.

Ideal EXCEL RS 30

Ideal EXCEL RS 40

Ideal EXCEL RS 50

Ideal EXCEL RS 60

G.C. No.'s

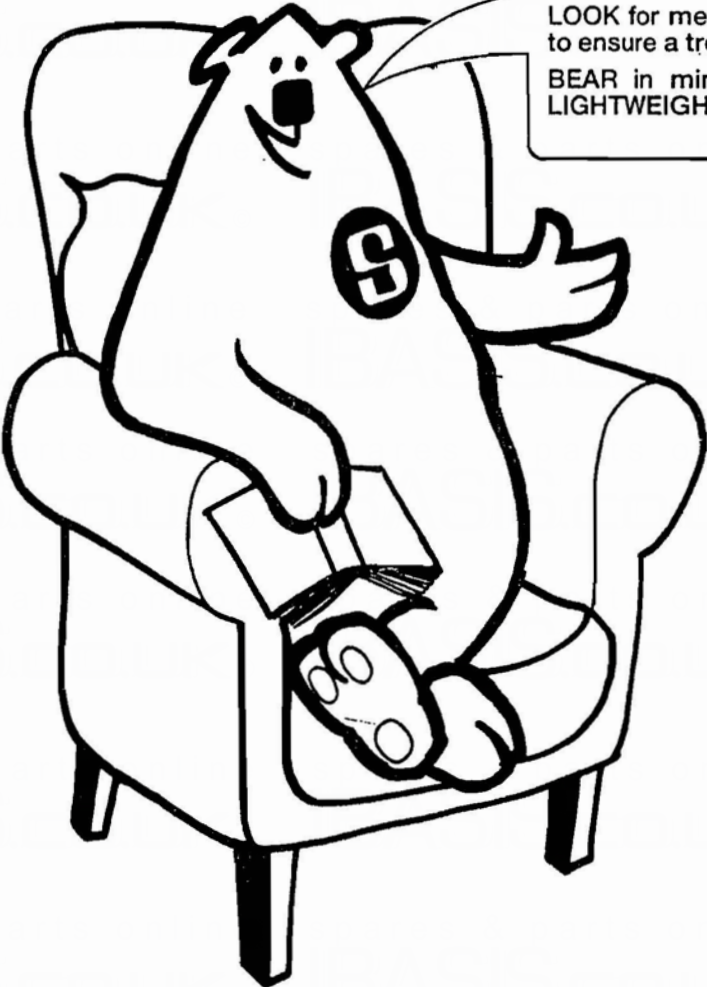
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NOTE TO THE INSTALLER: LEAVE THESE INSTRUCTIONS ADJACENT TO THE GAS METER



LOOK for me in this book and carefully follow my advice to ensure a trouble free installation.

BEAR in mind that the Ideal Excel is a CAST IRON LIGHTWEIGHT boiler and particular attention must be given to the important points below.

1. A **PERMANENT LIVE** electrical supply as well as a switched live **MUST** be provided; see page 5 for details.
2. The pump **MUST** be wired directly to the boiler control box; see page 12 for details.
3. Systems featuring TWIN motorised valves, (e.g. 'S' TYPE PLAN) **MUST** be wired in accordance with the wiring diagram in this book; see page 14.
4. The temperature difference across the boiler **MUST NOT** exceed 15°C under any system conditions.
5. When using thermostatically controlled radiator valves the instructions on page 9 **MUST** be complied with.

Table 1 - GENERAL DATA

Boiler Size		RS. 30	RS. 40	RS. 50	RS. 60
Main Burner		AEROMATIC		AEROMATIC	
Gas Control		1/2 in. BSP HONEYWELL- V.4700E 1007 240V			
Burner Injector		BRAY CAT.10		BRAY CAT.10	
		Size 850	Size 1200	Size 1500	Size 1600
Pilot Injector		HONEYWELL 45003-508-001 0.38/0.36A			
Gas Supply Connection		Rc 1/2			
in. BSP		1/2			
Flow Connection		22mm Copper			
Return Connection		22mm Copper			
MAXIMUM Static Water Head		m	30.5		
		ft	100		
MINIMUM Static Water Head		m	0.61		
		ft	2.0		
Electrical Supply		220/240 Volt 50 Hz			
External Fuse Rating		3 A			
Water Content		litre	0.88	1.1	
		gal	0.2	0.24	
Dry Weight		kg	48.5	60	
		lb	107	132	
MAXIMUM Installation Weight		kg	32	37.5	
		lb	72	83	

Table 2 - PERFORMANCE DATA

Boiler Size			RS. 30	RS. 40	RS. 50	RS. 60
Boiler Input To obtain gas consumption (a) in l/s:- divide heat input (KW) by C.V. of the gas (MJ/m ³) (b) in ft ³ /h:- divide heat input (Btu/h) by C.V. of the gas (Btu/ft ³) Heat inputs are pre-set to the highest nominal rating.	MINIMUM	kW	7.42	11.1	14.74	17.6
		Btu/h	25 300	38 000	50 300	58 200
	MID.	kW	9.2	12.9	16.55	19.7
		Btu/h	31 450	44 000	56 400	67 150
	MAXIMUM	kW	11.0	14.7	18.32	22.32
		Btu/h	37 500	50 000	62 500	76 100
	MINIMUM	kW	5.8	8.8	11.7	13.2
		Btu/h	20 000	30 000	40 000	45 000
	MID.	kW	7.33	10.25	13.2	15.4
		Btu/h	25 000	35 000	45 000	52 500
	MAXIMUM	kW	8.8	11.7	14.7	17.6
		Btu/h	30 000	40 000	50 000	60 000
Burner Setting Pressure (Hot)	MINIMUM	mbar	5.3	6.8	7.5	8.0
		in.w.g.	2.1	2.7	3.0	3.2
	MID.	mbar	8.4	9.5	9.3	11.8
		in.w.g.	3.4	3.8	3.7	4.7
	MAXIMUM	mbar	12.0	12.5	11.3	14.4
		in.w.g.	4.8	5.0	4.5	5.8

INTRODUCTION

The Ideal EXCEL RS 30, 40, 50 and 60 are wall-mounted, cast iron, natural draught, balanced flue, gas boilers, range rated having heat outputs of 5.9 kW (20 000 Btu/h) to 17.6 kW (60 000 Btu/h).

The boiler casing is of white enamelled mild steel, with a removable fascia of smoked brown glass.

The controls pod, also of white enamelled mild steel has fixed sides and a removable bottom panel. A smoked brown access door hinges downwards to reveal the boiler thermostat controls and gas valve, also the programmer if fitted.

When the door is closed, the controls can be seen through an observation window.

The programmer kit is available as an optional extra and separate fitting instructions are included with the kit.

The boilers are suitable for connection to fully pumped, open vented systems.

Adequate arrangements for completely draining the system by provision of drain cocks, MUST be provided.

(A drain cock is provided on the heat exchanger).

IMPORTANT:

This appliance range is certified by the British Standards Institute for safety and performance.

It is therefore, important that no external control devices - e.g. flue dampers, economisers, etc., - are directly connected to this appliance unless covered by these 'Installation and Servicing' instructions or otherwise recommended by Stelrad Group Ltd., in writing. If in doubt please enquire.

Any direct connection of a control device not approved by Stelrad Group Ltd., could invalidate the B.S.I. certification and the normal appliance warranty and could also infringe the Gas Safety Regulations.

Gas safety (Installations and Use) Regulations: 1984

It is the law that all gas appliances are installed by competent persons (e.g. CORGI, identified by ) in accordance with the above Regulations.

Failure to install appliances correctly could lead to prosecution.

It is in your own interest and that of safety, to ensure the law is complied with.

The installation of the boiler MUST also be in accordance with I.E.E. Wiring Regulations, the bye-laws of the Local Water Undertaking, and any relevant requirements of the Local Authority. Detailed recommendations are contained in the following British Codes of Practice:

CP. 331:3	Low pressure installation pipes.
BS. 5376:2	Boilers of rated input not exceeding 60 kW.
BS. 5449:1	Forced circulation hot water systems, (Smallbore and Microbore Domestic Central Heating Systems).
BS. 5546	Installation of gas hot water supplies for domestic purposes (2nd Family Gases)
BS. 5440:1	Flues (for gas appliances of rated input not exceeding 60 kW).
BS. 5440:2	Air supply (for gas appliances of rated input not exceeding 60 kW).

Manufacturer's notes must NOT be taken, in any way, as over-riding statutory obligations.

LOCATION OF BOILER

The boiler MUST be installed on an external wall. The wall MUST be flat and vertical, and capable of adequately supporting the weight of the boiler and any ancillary equipment. The boiler may be fitted on a combustible wall, and insulation, other than that required by the Local Authority and Building Regulations, is NOT necessary.

IMPORTANT NOTICE

If the appliance is to be fitted in a timber framed building it should be fitted in accordance with the British Gas publication 'Guide for Gas with installation in Timber Framed Housing' reference DM2.

If in doubt advice must be sought from the local Gas Region of British Gas.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the I.E.E. Wiring Regulations, and in Scotland, the electrical provisions of the Building Regulations applicable in Scotland, with respect to the installation of the boiler in a room or internal space containing a bath or a shower.

Where installation will be in an unusual location special procedures may be necessary and BS.5376:2 gives detailed guidance on this aspect.

A compartment used to enclose the boiler MUST be designed and constructed specially for this purpose. An existing cupboard, or compartment, may be used provided it is modified for this purpose.

Details of essential features of cupboard/compartment design, including airing cupboard installations, are given in BS.5376:2.

In siting the boiler, the following limitations MUST be observed:

1. The position selected for installation MUST allow adequate space for servicing in front of the boiler and for air circulation around the boiler
2. The position MUST also permit the provision of a satisfactory balanced flue termination.

GAS SUPPLY

The Local Gas Region should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas.

An existing service pipe must NOT be used without prior consultation with the Local Gas Region.

A gas meter can only be connected to the service pipe by the Local Gas Region, or by a Local Gas Region Contractor

An existing meter should be checked, preferably by the Gas Region, to ensure the meter is adequate to deal with the rate of gas supply required.

Installation pipes should be fitted in accordance with CP.331:3.

Pipework from the meter to the boiler MUST be of adequate size.

Do NOT use pipes of a smaller size than the boiler inlet gas connection.

The complete installation MUST be tested for gas soundness and purged as described in the above Code.

FLUING

Detailed recommendations for fluing are given in BS.5440:1

The following notes are intended for general guidance:

1. The boiler MUST be installed so that the terminal is exposed to the external air
2. It is important that the position of the terminal allows the free passage of air across it at all times.
3. The minimum acceptable spacings from the terminal to obstructions and ventilation openings are specified below:

TERMINAL POSITION	Minimum Spacing Natural Draught
1. Directly below an openable window air vent or any other ventilation opening.	300mm (12in.)
2. Below guttering, eaves, drain-pipes or soil pipes	300mm (12in.)
3. Below balconies	600mm (24in.)
4. Above adjacent ground or balcony level	300mm (12in.)
5. From vertical drain pipes or soil pipes.	75mm (3in.)
6. From internal or external corners	600mm (24in.)
7. From a surface facing the terminal	600mm (24in.)
8. From a terminal facing the terminal	600mm (24in.)

4. Where the lowest part of the terminal is fitted less than 2m (6.6ft) above a balcony, above ground, or above a flat roof to which people have access, the terminal MUST be protected by a guard of durable material.

The dimensions of the guard shall be such that, when fitted in accordance with the Manufacturer's instructions it shall be, at least 50mm (2in.) from any part of the terminal -NOT including the wall plate.

The guard shall NOT have any sharp edges likely to cause injury, nor shall ANY opening permit the entry of a ball of 16mm (5/8in) diameter under a force of 5N

The material finish and mechanical strength of the guard shall be such as to ensure a reasonable life in normal working conditions.

The guard shall NOT affect the performance of the appliance.

Terminal guards are available from:

Quinnel, Barret & Quinnel Ltd., 884 Old Kent Road, London SE 15 and from Tower Flue Components Ltd., Vale Rise, Tonbridge, Kent TN9 1TB.

- Where the terminal is fitted within 850mm (30in.) of a plastic or painted gutter, or 450mm (18in.) of painted eaves, an aluminium shield of at least 750mm (30in.) long should be fitted to the underside of the gutter or painted surface.

- The air inlet/products outlet duct and the terminal of the boiler MUST be NOT closer than 50mm (2in.) to combustible material.

Detailed recommendations on protection of combustible material are given in BS.544:1:1978. sub-clause 20:1

IMPORTANT:

It is absolutely ESSENTIAL to ensure, in practice, products of combustion, discharging from the terminal, cannot re-enter the building, or any other adjacent building, through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation/air conditioning.

If this eventuality should occur, the appliance MUST be turned off immediately and the Local Gas Region called in to investigate.

BOILER TERMINAL

The terminal box of the balanced flue can be adapted to accommodate various wall thicknesses - refer 'Packaging'.

AIR SUPPLY

Detailed recommendations for air supply are given in BS.5440:2.

The following notes are intended for general guidance:

- It is NOT necessary to have a purpose provided air vent in the room or internal space in which the boiler is installed.
- If the boiler is to be installed in a cupboard or compartment, permanent air vents are required (for cooling purposes) in the cupboard/compartment, at both high and low levels.

The air vents must either communicate with a room/internal space, or be direct to outside air.

The minimum effective areas of the permanent air vents, required in the cupboard/compartment, are specified below and are related to the maximum rated heat input of the boiler.

Note: Both air vents MUST communicate with the same room, or internal space, or MUST both be on the same wall to outside.

RS.30

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm ² , (in ² .)	100, (16)	50, (8)
LOW LEVEL cm ² , (in ² .)	100, (16)	50, (8)

RS.40

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm ² , (in ² .)	130, (20)	65, (10)
LOW LEVEL cm ² , (in ² .)	130, (20)	65, (10)

RS.50

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm ² , (in ² .)	180, (28)	90, (14)
LOW LEVEL cm ² , (in ² .)	180, (28)	90, (14)

RS.60

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm ² , (in ² .)	200, (30)	100, (15)
LOW LEVEL cm ² , (in ² .)	200, (30)	100, (15)

WATER CIRCULATION SYSTEM

If it is intended that any chemical additive be used within the heating system served by the boiler then Stelrad Group Ltd Applications department should be contacted in order to ensure compatibility.

The appliance must NOT be used for direct hot water supply.

The appliance is suitable for connection to fully pumped open vented water central heating systems or central heating combined with indirect domestic hot water systems

The central heating system should be in accordance with the relevant recommendations given in BS.5376:2 and, BS.5449:1.

The domestic hot water system, if applicable, should be in accordance with the relevant recommendations of BS.5546. Copper tubing, to BS.2871:1, is recommended for hot water carrying pipework.

The hot water storage cylinder MUST be of the indirect type and should be, preferably, manufactured of copper.

Single-feed indirect cylinders are not recommended.

The hot water cylinder and ancillary pipework, not forming part of the useful heating surface, should be lagged to prevent heat loss and any possible freezing, particularly where pipes run through roof spaces and ventilated under-floor spaces.

Draining taps, MUST be located in accessible positions, which permit the draining of the whole system, including the boiler and hot water storage vessel.

Draining taps should be, at least, 1/2in. nominal size and be in accordance with BS.2879.

The hydraulic resistances of the boilers, at MAXIMUM OUTPUT, with an 11°C (20°F) and 8°C (14.5°F) temperature differential are shown in Table 3.

Pump sizing must take into account the system hydraulic resistance in addition to the boiler's hydraulic resistance in order to ensure that water flow rates are as shown in Table 3. Isolating valves should be positioned as close to the pump as is practically possible.

Table 3 -BOILER WATER FLOW RATE &HYDRAULIC RESISTANCE.

Boiler Size		RS.30	RS.40	RS.50	RS.60
Boiler output (MAX)	kW	8.8	11.7	14.7	17.6
	Btu/h	30 000	40 000	50 000	60 000
Water flow rate at 11°C (20°F)	l/m	11.4	15.2	19	22.8
	gal/h	150	200	250	300
Pressure loss at 11°C (20°F)	mbar	23	32	65	92
	in.w.g.	9	13	26	37
Water flow rate at 8°C (14.5°F)	l/m	15.8	21	26.3	31.5
	gal/h	208	276	346	414
Pressure loss at 8°C (14.5°F)	mbar	35	64	123	172
	in.w.g.	14	25.6	49.2	68.9

ELECTRICAL SUPPLY

Wiring external to the appliance **MUST** be in accordance with the I.E.E. Wiring Regulations and any Local Regulations which apply.

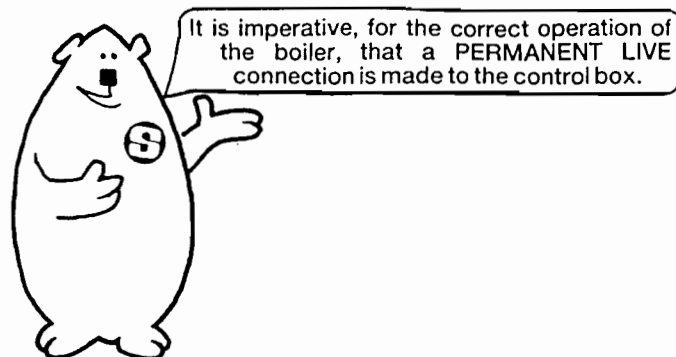
The boiler is supplied for 220/240 Volt, 50 Hz, ~ Single Phase.

Fuse rating is 3 A.

The method of connection to the mains electricity supply **MUST** facilitate complete electrical isolation of the boiler, preferably by the use of a fused three-pin plug and shuttered socket-outlet, both complying with the requirements of BS.1363.

Alternatively, a fused double-pole switch, having a 3mm contact separation in both poles and serving only the boiler may be used.

The point of connection to the mains should be readily accessible and adjacent to the boiler, except that, for bathroom installations, the point of connection to the mains **MUST** be situated outside the bathroom.



INSTALLATION

ALLOW ADEQUATE SPACE IN FRONT OF THE BOILER FOR SERVICING PURPOSES.

PACKAGING

The boiler is supplied fully assembled and despatched in one carton 'A' together with one or two of four cartons 'B', 'B1', 'C' or 'D'.

Carton 'A' contains the boiler body assembly, mounted on a wooden cradle, a bag of fittings, the wall mounting plate, the wall template and the User's Instructions.

Keep the carton the right way up, in accordance with the markings on the outside.

Cartons 'B', 'B1' and 'C' contain the terminal outlet appropriate to the wall thickness, and carton 'D' contains the duct extensions - refer Table 4.

Table 4- Wall Thickness

Thickness	No. of Cartons Supplied	Cartons Supplied
mm 114 - 200 in 4 1/2 - 7 7/8	2	A + C
mm 205 - 290 in 8 - 11 1/2	2	A + B
mm 279 - 364 in 11 - 14 3/8	2	A + B1
mm 360 - 584 in 14 1/4 - 23	3	A + B1 + D

It is **MOST IMPORTANT** that this appliance is installed in a **VERTICAL POSITION**, with the flue/air duct passing through the wall in a **HORIZONTAL PLANE**.

A minor deviation from the horizontal is acceptable, provided that this results in a downward slope of the flue/air duct away from the boiler.

A jacking screw is located at the bottom rear of the air duct, this is provided to facilitate boiler alignment- refer Fig. 1.

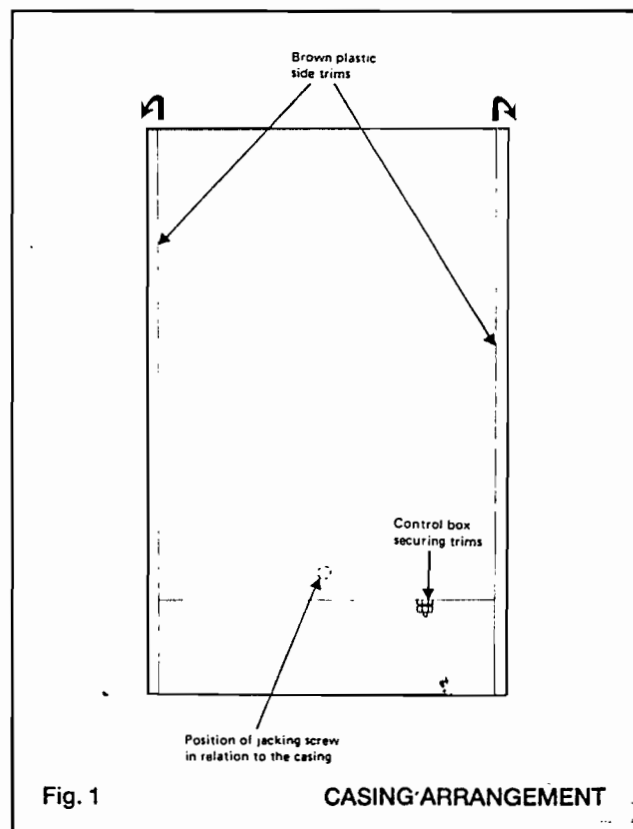
The boiler is to be hung on an external wall, and the space in which it is fitted **MUST** have the following minimum dimensions- refer Fig. 4.

MINIMUM INSTALLATION SIZES

Boiler Size	Width	Depth	Height
RS. 30, 40	mm 360 in. 14 1/8	610	900
RS. 50, 60	mm 460 in. 18 1/4	610	900

The minimum clearances must be as follows:

At the top of the boiler	100mm (4in)
At the left hand side of the boiler	5mm (1/8in)
At the right hand side	5mm (1/8in)
Underneath the boiler	100mm (4in)
At the front of the boiler	310mm (12 1/4in)



To facilitate installation the casing MUST be removed.

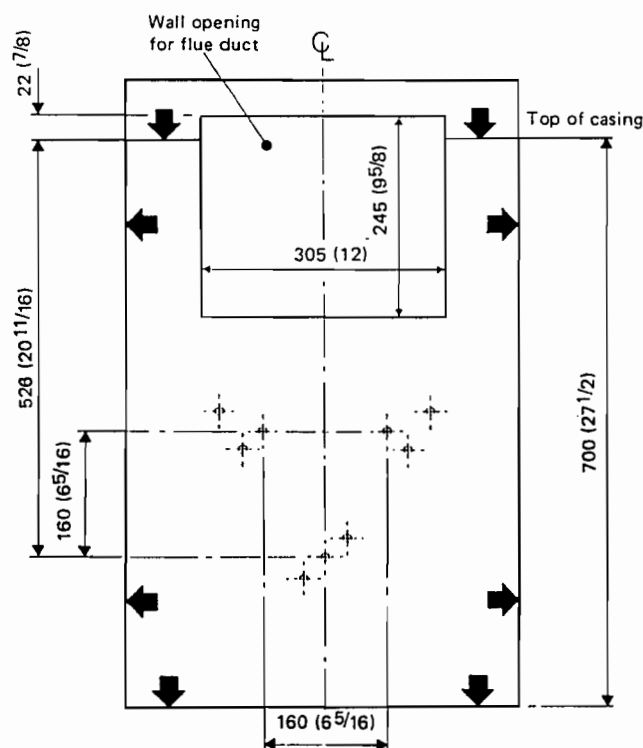
1. Lift up the brown plastic side trims (refer Fig. 1) to clear the controls access door hinge pins and remove the door.
2. Undo the two screws securing the controls pod bottom panel.
3. Slide out the controls pod bottom panel.
4. Undo and remove the nut securing the control box to the bottom of the boiler casing, refer Fig. 1.
5. Lift the back of the control box slightly and swing the box downwards pivoting from the back.
6. Lift the casing clear of the top retaining brackets. The casing can now be removed. Extreme care MUST be taken in order to avoid fouling internal wiring at the top, right hand side. The casing should be safely placed aside to avoid possible damage.
7. Remove the wall mounting plate and the hardware pack from the packaging.

PREPARING THE WALL - Refer Fig. 2

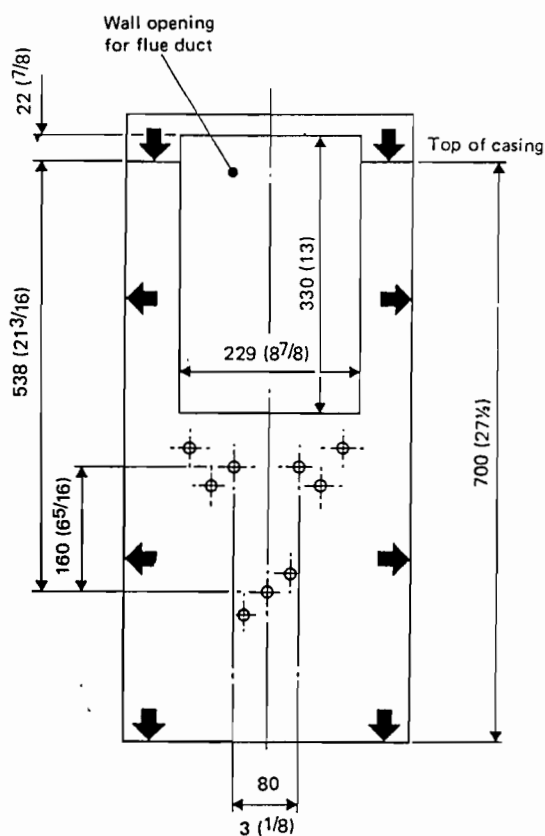
1. Tape the template to the wall in the selected position.
2. Mark out the position of the three mounting plate screws and the position of the hole for the duct.
3. Drill the three holes with a No. 20 (10mm - $\frac{7}{16}$ in) masonry drill and insert the three TP3 plastic plugs provided.
4. Cut the appropriate hole in the wall for insertion of the terminal assembly. No part of the balanced flue assembly may come into contact with combustible material, refer to British Gas publication "Guide for Gas with Installations in Timber Framed Housing" reference DM2.
5. Secure the mounting plate to the wall with the three 8mm x 50mm ($\frac{5}{16}$ in. x 2in) coach screws provided.

Note: If extension duct kit is to be used, it must be fitted to the boiler before mounting on the wall, refer page 11.

All dimensions in mm (in)



**WALL MOUNTING DIMENSIONS
(RS 50-60)**



**WALL MOUNTING DIMENSIONS
(RS 30-40)**

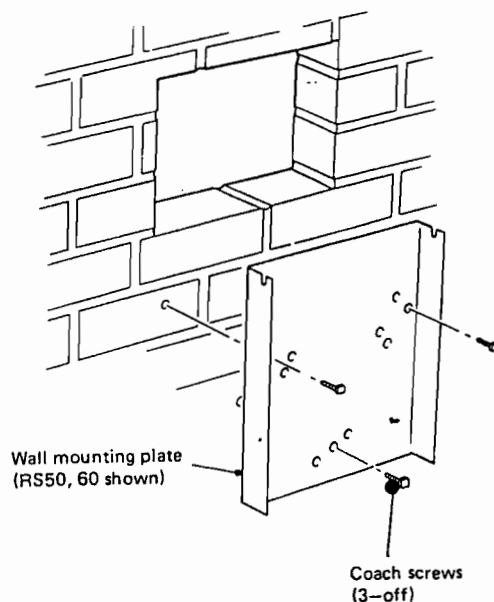
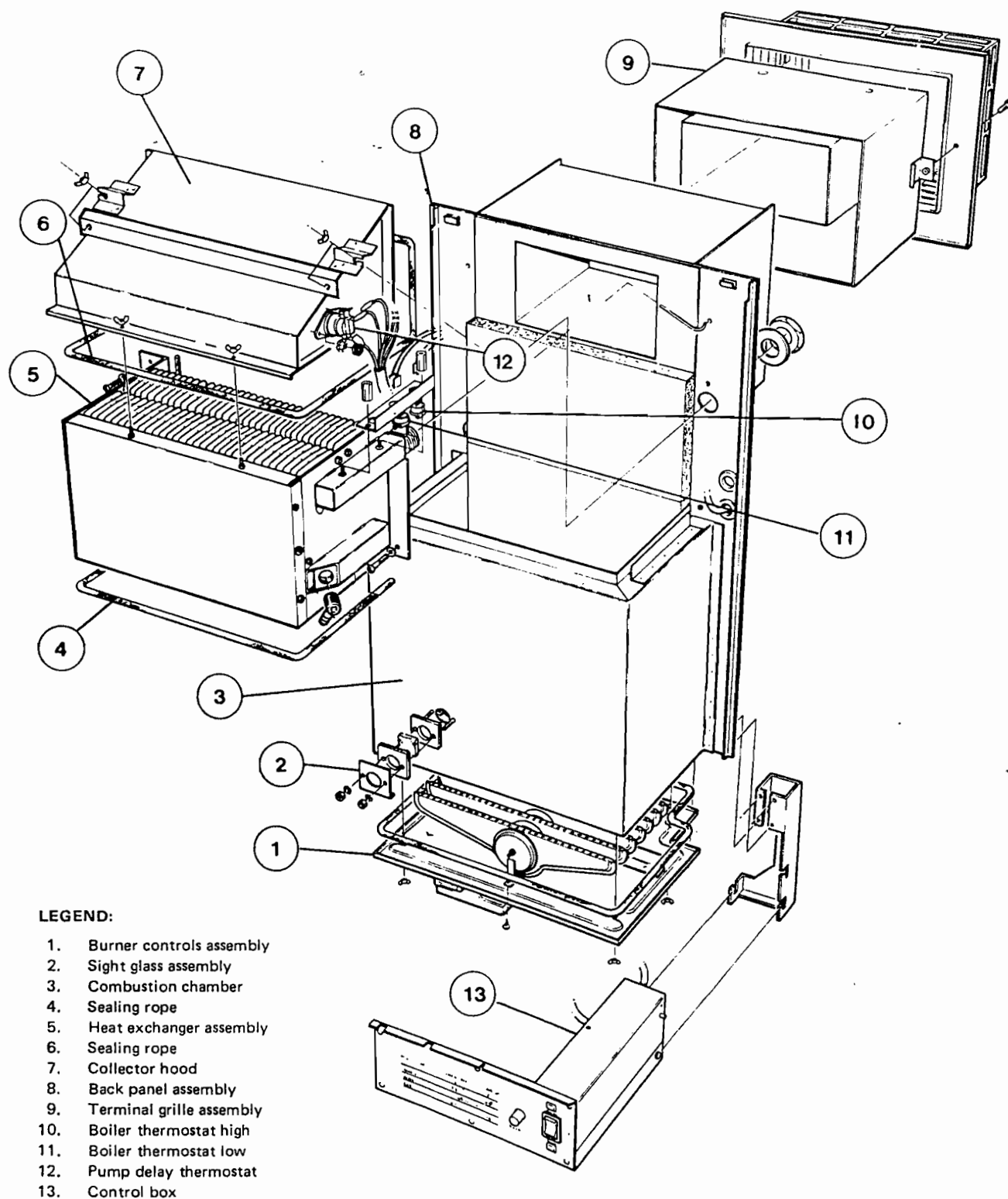


Fig. 2

TEMPLATE AND WALL MOUNTING PLATE



LEGEND:

1. Burner controls assembly
2. Sight glass assembly
3. Combustion chamber
4. Sealing rope
5. Heat exchanger assembly
6. Sealing rope
7. Collector hood
8. Back panel assembly
9. Terminal grille assembly
10. Boiler thermostat high
11. Boiler thermostat low
12. Pump delay thermostat
13. Control box

Fig. 3

BOILER UNIT - EXPLODED VIEW

All dimensions in mm (in)
N.B. Imperial dimensions approximate

RS	30, 40	50, 60
A DIM	350 (13 $\frac{3}{4}$)	450 (17 $\frac{3}{4}$)
B DIM	280 (11)	360 (14 $\frac{1}{4}$)

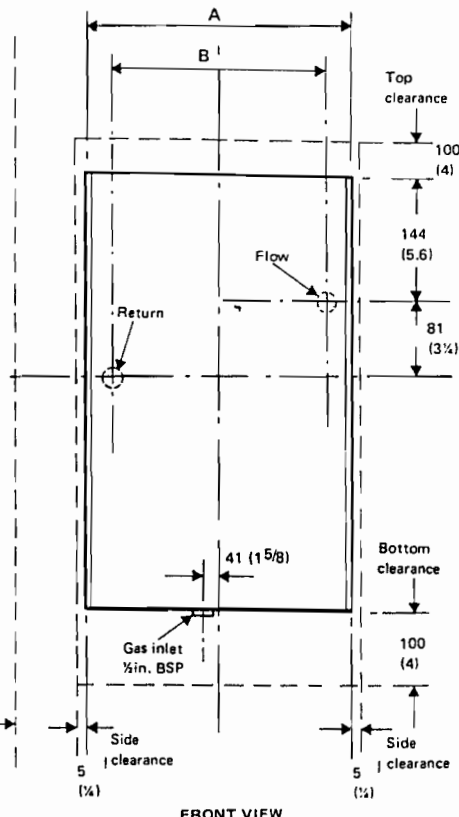
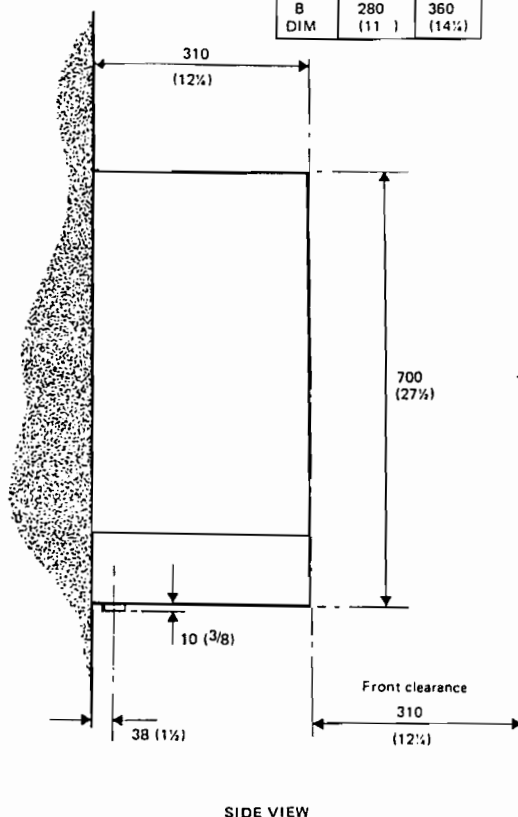


Fig. 4

DIMENSIONS

FITTING TO THE WALL - Refer Fig. 2

1. If side access is limited i.e., less than 100mm (4in.) then pre-pipe the flow and return connections to a suitable position i.e. above or below the boiler casing. Take care on pre-pipe joints.
2. Lift the boiler onto the wall mounting plate, using the lifting handle on the collector hood, entering the projecting flue duct into the opening cut in the wall, and lowering the two suspension studs into the slotted bearer at the top of the wall mounting plate side angles.
3. Using the jacking screw, located at the bottom rear of the air duct, adjust as necessary until the flue duct is horizontal, refer Fig. 1.
Check alignment with a spirit level.
4. Make good the brickwork around the wall opening.

WATER CONNECTIONS - Refer Fig. 5

The two water connections can now be made to the boiler, the system filled and vented, and connections checked for water soundness.

This appliance is NOT suitable for use in direct systems.

GUIDE TO SYSTEM REQUIREMENTS - Figs. 5, 6 & 7

1. The pump MUST be fitted on the flow side of the boiler and must ALWAYS be wired to the boiler control box terminal strip- to ensure the correct operation of the pump delay thermostat.

NO switches or other controls can be wired into the leads between the terminal strip and the pump.

A suitable pump is a domestic circulator providing an 8°C (14.5°F) to 11°C (20°F) differential across the boiler, (e.g. 'Grundfos UPS Series' or equivalent).

It is IMPORTANT to ensure that the differential across the boiler does NOT exceed 15°C (27°F).

Fit a higher duty pump and/or a By-pass if necessary; to ensure that flow rates through the boiler are in compliance with Table 3.

2. The vertical distance between the highest point of the

system and the feed/expansion cistern water level MUST not be less than 610mm (24in).

3. There should be a minimum height of 450mm (18in) of open vent above the cistern water level. If this is not possible then contact Stelrad Group Ltd. for advice on Low Head installations.
4. The vertical distance between the pump and feed/expansion cistern MUST comply with the pump manufacturers minimum requirements to avoid cavitation.

Should these conditions not apply, either lower the pump position or raise the cistern above the minimum requirement of Stelrad Group Ltd., (Fig. 5).

5. The system should be vented directly off the boiler FLOW pipe, as close to the boiler as possible;--where location prevents this, the pipework between the boiler and the vent should be adequately routed to avoid air-locks.

In order to minimise the amount of hot system water likely to expand into the cold feed pipe/extension cistern the cold feed pipe should be inverted as shown in Fig. 5. This inversion should be as long as is practically possible and MUST be positioned between the pump and the vent, and not more than 150mm (6in) away from the vent connection.

Where a By-pass has to be fitted, it should be piped in 15mm (1/2 in.) and MUST incorporate a balancing valve for adjustment.

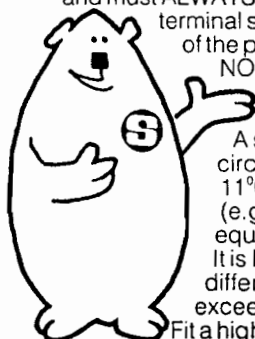
6. BY-PASS ADJUSTMENT

Carry out the routine balancing of the radiators and zones. With the boiler firing, all circuits open and the By-pass approximately half a turn open check that the water flow rate through the boiler complies with Table 3-under all normal operating conditions.

If the flow rate is insufficient then open the By-pass by no more than 1/4 of a turn at a time before rechecking the flow rate.

Note; if thermostatic radiator valves are fitted then refer to pages 9 & 10

If in doubt contact Stelrad Group Ltd. for advice.



Fully pumped systems which may be closed off completely by User's manually operated valves should be avoided. Only electrically operated controls, as recommended in this literature, should be used. If in doubt contact Stelrad Group for advice.

If motorised valves are used to control both central heating and domestic hot water then they must be either independent, two port SPRING CLOSURE motorised valves having auxiliary switch contacts see (a), or a three port valve which allows continuous path for water to flow through the boiler and a domestic hot water or heating circuit or both at all times, see (b).

- (a) Systems fitted with 2 port SPRING CLOSURE valves (suitable valves, are those featured in Fig 16, which also shows the electrical wiring details which **MUST** be adhered to. See also the schematic pipework layout-Fig. 6 for further information.



When this type of system is to be fitted any residual heat contained within the boiler heat exchanger will not be wasted but passed into the domestic hot water storage cylinder when the controls are satisfied and the boiler turns off automatically.

It is recommended therefore that the setting of the cylinder thermostat is reduced by up to 5°C below that normally used during summer time.

During periods when heating is required also, as explained above, residual heat will provide a further boost to the temperature of the stored water and the user will be able, in nearly all circumstances to reduce the cylinder thermostat setting to an even lower value.

However, as individual user requirements vary the amount by which the usual cylinder thermostat setting may be reduced will depend on personal preferences.

As a general guide it is recommended that at the outset a cylinder thermostat setting of (50-55°C) is used during summertime and (45-50°C) is used when heating and hot water are required during Autumn and Winter.

- (b) Systems utilising three port valves.

Note: Valves which do not allow water to flow through the boiler and one or both outlet ports at all times during normal operation **MUST** not be used.

Suitable valves for example are those featured in the Honeywell 'Y' plan and Drayton Flowshare 2 controls packages, refer Fig. 15.

If in doubt these points should be checked with the appropriate controls manufacturer. For schematic pipework layout refer to Fig. 7.

When this type of system is to be fitted any residual heat will be passed into the domestic hot water storage cylinder during summertime when no heating is required.

During periods when both heating and hot water are required, residual heat will be passed into either the domestic hot water or heating circuits depending on the particular cycling characteristics of the system at the time when the boiler is switched 'OFF' by the controls.

A cylinder thermostat setting of between 55°C and 60°C is recommended for both Summer and Winter operation, although user's individual requirements will vary.

General Note:

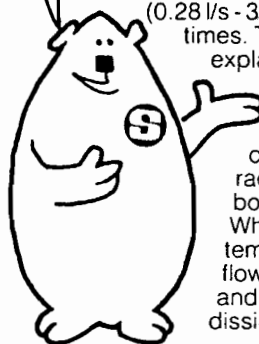
Stelrad Group Ltd., support the recommendations made by leading manufacturers of domestic heating controls that, heating systems utilising full thermostatic radiator valve control of temperature in individual rooms should also be fitted with a room thermostat controlling the temperature in a space served by a radiator(s) not fitted with such a valve. Such an arrangement will provide for a potentially more efficient control of the environment and will also avoid the continuous running of the circulation pump during programmed heating 'On' periods, thus saving electrical energy. It is recommended strongly therefore, when thermostatic radiator valves are used, that space heating temperature control over a living/dining area or hallway having a heating requirement of at least 2kW (7 000 Btu/h) be achieved using a room thermostat whilst other rooms are individually controlled by thermostatic radiator valves, refer Fig. 8 and page 10.

IF A ROOM THERMOSTAT IS NOT TO BE FITTED WHEN FULL CONTROL OF SPACE HEATING IS TO BE ACHIEVED USING THERMOSTATIC RADIATOR VALVES THE FOLLOWING REQUIREMENTS MUST BE COMPLIED WITH:

- 1 The heating system **MUST** include one uncontrolled radiator having a minimum heat loss of 0.9kW (3 000 Btu/h) under design conditions. The radiator **MUST** be fitted with two lockshield valves both of which **MUST** be at least partly open at all times.

A By-pass **MUST** be fitted to ensure the minimum required flow rate, equivalent to a maximum temperature difference of 15°C (0.28 l/s - 3.7 gpm), through the boiler at all times. The bypass setting procedure explained on page 8 **MUST** be followed for all systems fitted with thermostatic radiator valves. In addition, set the system controls so that the water circulates through the uncontrolled radiator and By-pass **ONLY**. Fire the boiler on the 'HIGH' thermostat setting. When the system reaches the control temperature ensure that adequate water flows through the boiler (refer Table 3), and that there is satisfactory heat dissipation.

THERMOSTATIC RADIATOR VALVES



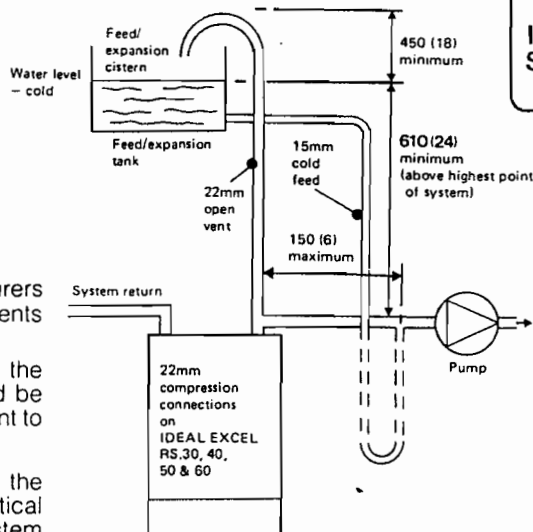
All dimensions in mm (in)

N.B. Imperial dimensions approximate

Note 1. The pump manufacturers minimum head requirements **MUST** be complied with.

Note 2. Any pipework rising above the open vent connection should be fitted with an automatic air vent to avoid air locks.

Note 3. Extend the inverted part of the loop to the maximum practical length (refer 'Guide to System Requirements' Page 8).



FOR LOWER HEAD INSTALLATIONS CONSULT STELRAD GROUP LTD FOR ADVICE

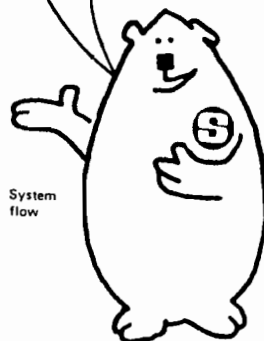


Fig. 5

For advice on the application of thermostat radiator valves refer to Page 9.

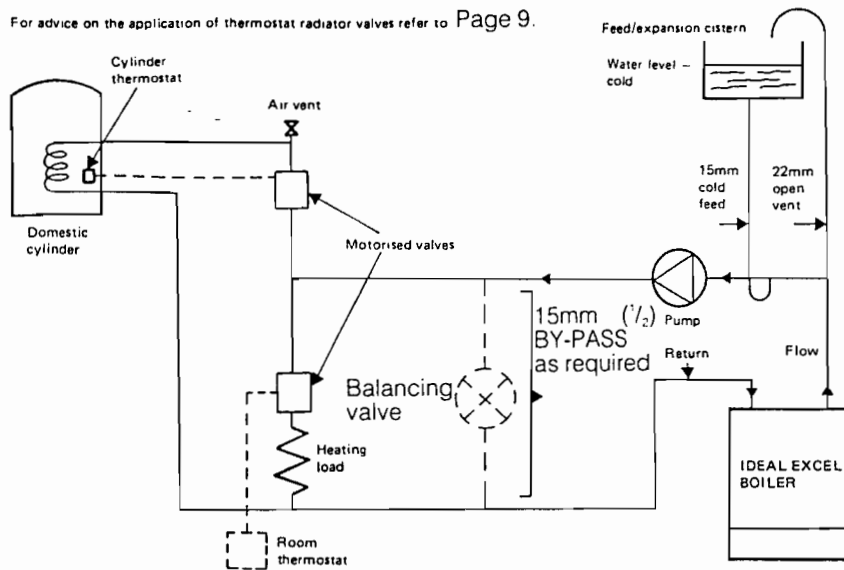


Fig. 6

TWO MOTORISED VALVES SCHEMATIC PIPEWORK LAYOUT

For advice on the application of thermostatic radiator valves refer Pages 9 and 10

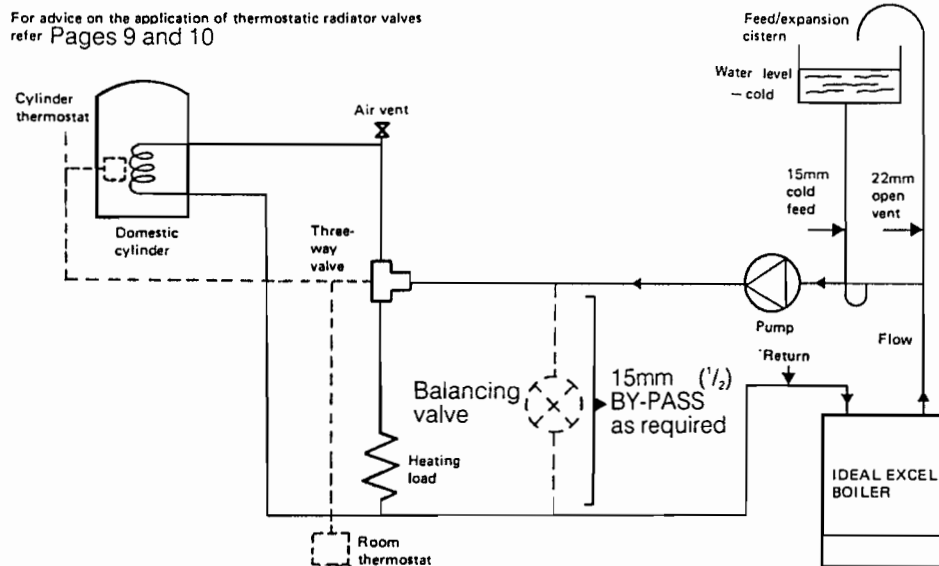
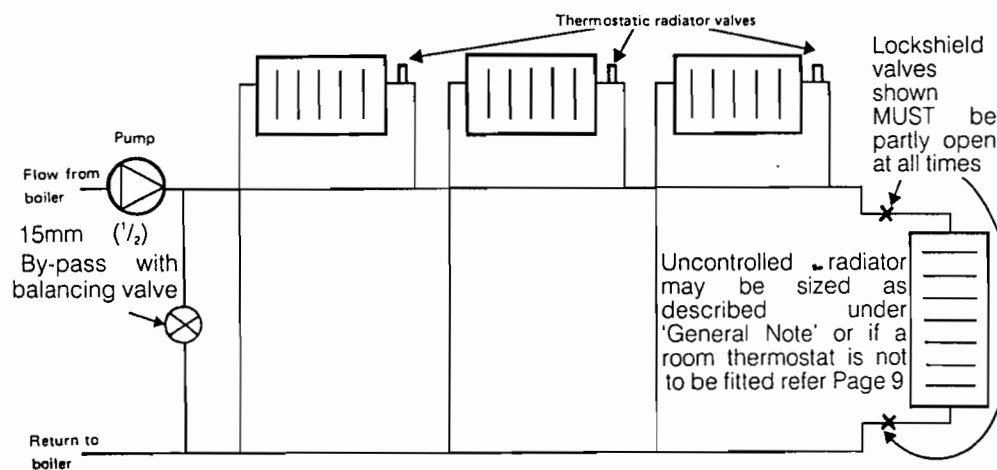


Fig. 7

THREE-WAY VALVE SCHEMATIC PIPEWORK LAYOUT

Note-Domestic hot water circuit and zone valves not shown.



THERMOSTATIC RADIATOR VALVES

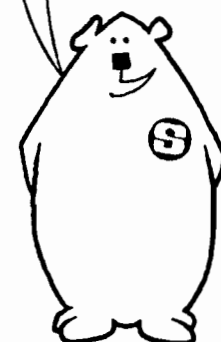
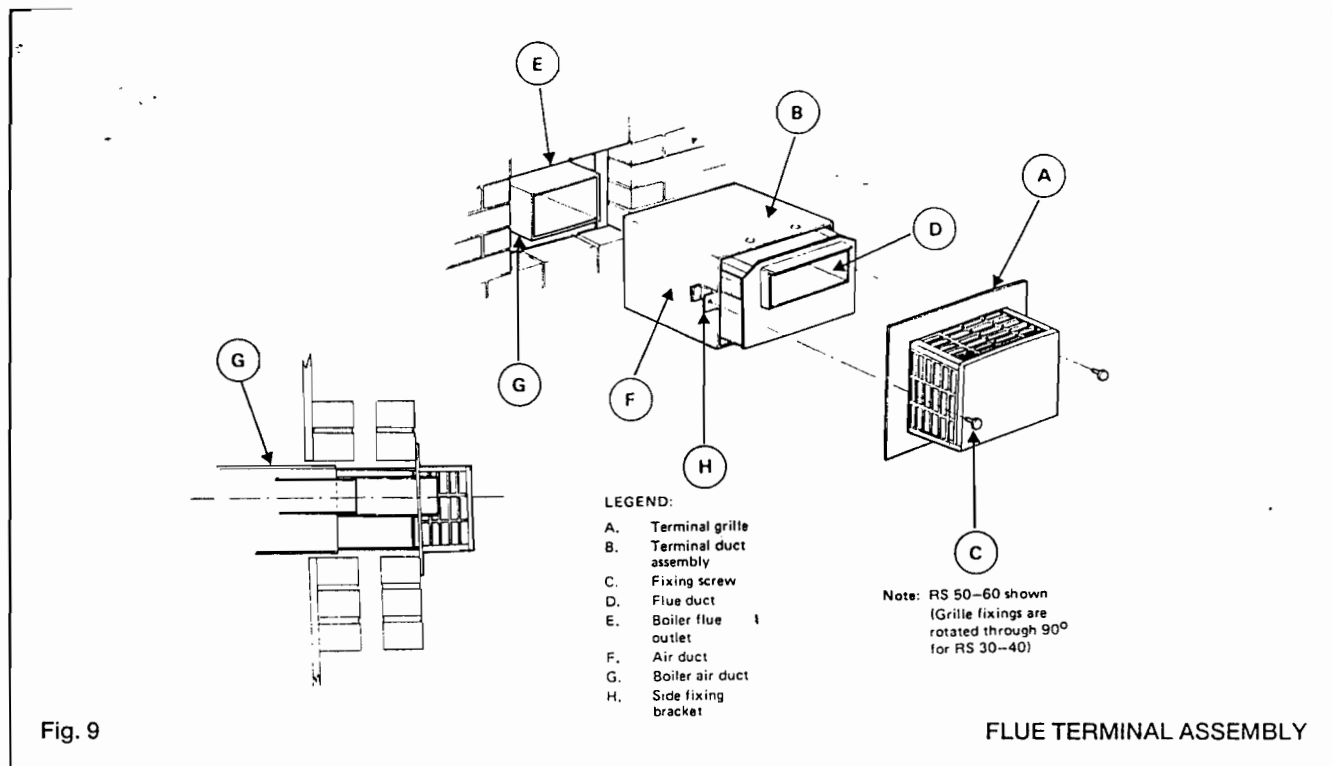


Fig. 8

SCHEMATIC LAYOUT SHOWING

APPLICATION OF AN UNCONTROLLED RADIATOR



FITTING FLUE DUCT ASSEMBLY AND TERMINAL GRILLE - Fig. 9

Separate the terminal grille (A) from the terminal duct assembly (B) by removing the two screws (C).

From OUTSIDE the building, pass the duct assembly (B) through the opening and slide it into the boiler outlet, ensuring that the flue duct (D) slides OVER the boiler flue outlet, and that the air duct (F) slides INTO the boiler air duct (G).

When correctly entered, push the terminal duct assembly (B) fully in, until the side fixing brackets (H) contact the wall face.

Make good between wall and ducts, inside AND outside the building.

When thoroughly dry, fasten the terminal grille (A) to the flue duct assembly (B) with the two screws (C).

EXTENSION DUCTS - Fig. 10

MUST BE FITTED TO THE BOILER BEFORE MOUNTING ON THE WALL.

Extension ducts are available for installation where wall

thickness exceeds 364mm (14 1/8 in). They are used to bridge the gap between the appliance terminal box and the flue duct assembly, and NO other method should be used.

Neither should the gap be left unbridged.

Fitting the extension duct - Fig. 10

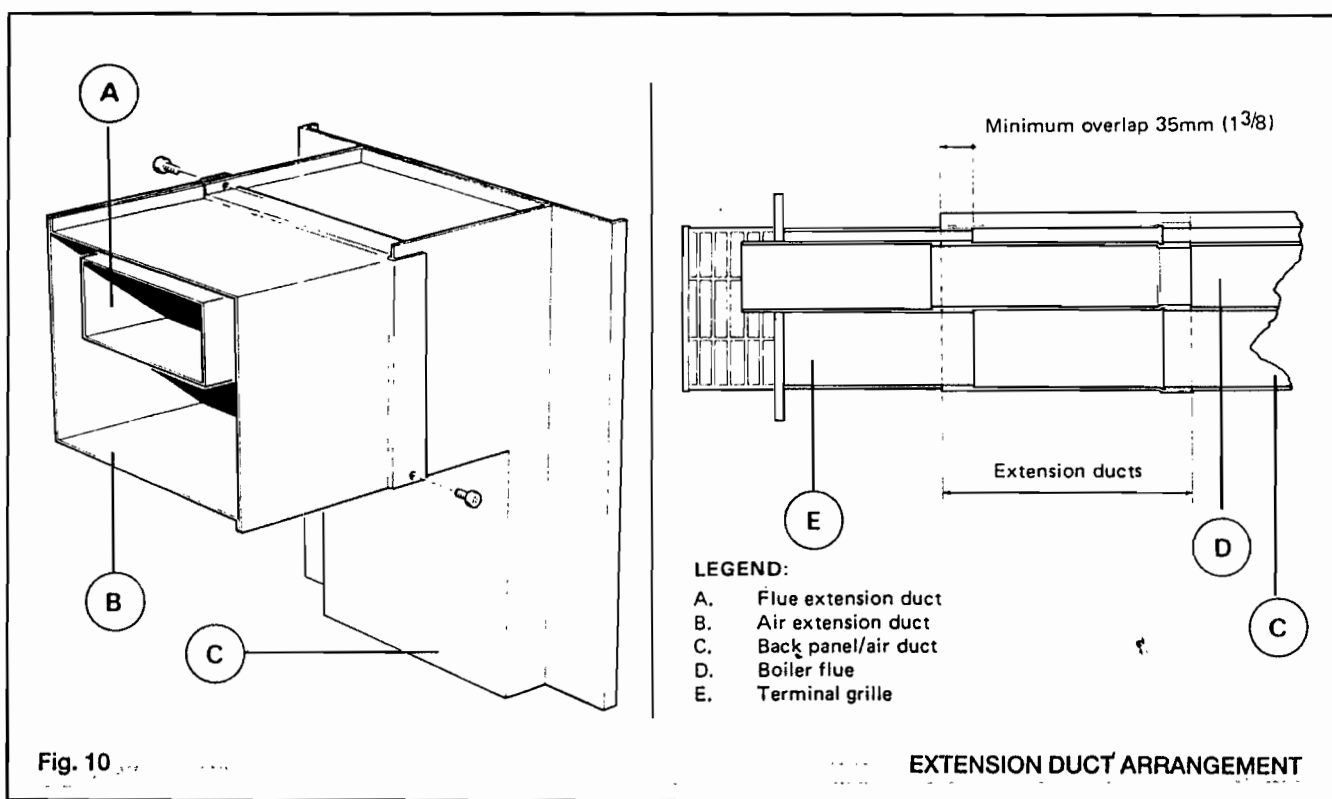
Both sections of the duct have a 40mm (1 1/2 in) joggled portion at one end. This allows the ducting to mate and be secured to the boiler air duct (C) or flue duct (D).

The air extension duct (B) fits over the boiler air duct (C), whereas the flue extension duct (A) inserts into the boiler flue duct (D).

Slide the flue extension duct into the boiler flue duct and seal the joint with the aluminium tape provided.

Slide the air extension duct over the boiler air duct - ensure there is a full over-lap on all four sides - secure with the two screws provided, and seal with the aluminium tape provided.

The boiler may now be mounted on the wall with the flue duct assembly and terminal grille to be fitted in the normal way.



GAS CONNECTIONS

A MINIMUM gas pressure of 20 mbar (8in.w.g.) MUST be available at the boiler inlet.

The main gas cock is at the rear of the boiler with the inlet facing downwards.

Note: Ensure that the gas supply pipe does not foul the boiler casing when fitted.

ELECTRICAL CONNECTIONS

WARNING: The appliance MUST be efficiently earthed:

A mains supply of 220/240 volt, 50 Hz, ~ Single Phase, is required.

ALL external controls and external wiring MUST be suitable for mains voltage.

Wiring should be in three-core, PVC insulated cable, NOT LESS than 24/0.2mm.

Wiring external to the boiler MUST be in accordance with the I.E.E. Wiring Regulations and any Local Regulations which apply.

The supply connection may be made via a removable plug to a shuttered socket-outlet and should, such a plug be used for connection to the mains, it MUST be of 3-pin type, wired as shown in Fig. 11, fused at 3 A, and complying with the requirements of BS.1363.

INTERNAL WIRING

The internal wiring of the control box is shown in Figs. 12 and 13.

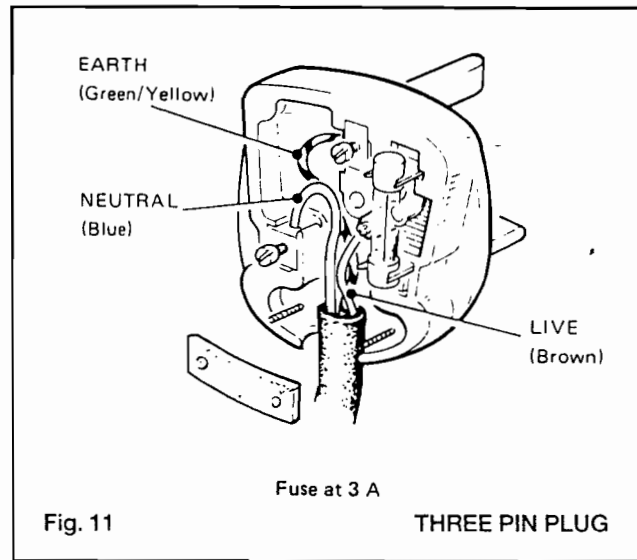
A wiring diagram is also contained in the lighting instruction plate on the bottom of the controls pod.

1. Undo the securing screw on top of the box and remove the cover.
2. Route the mains lead (taking care not to come into contact with hot surfaces or water pipes) in the box via the grommetted hole at the rear and wire into the SUPPLY terminals marked L, N and $\varnothing$ and secure with the cable clamp.

Note: The mains lead connection must be made such that the current carrying conductors become taught before the earthing conductor if the lead slips out of the cord anchorage.

3. The pump MUST be wired into the terminals marked PUMP.

4. Refit the control box cover



EXTERNAL CONTROLS

External wiring MUST be in accordance with the I.E.E. Wiring Regulations.

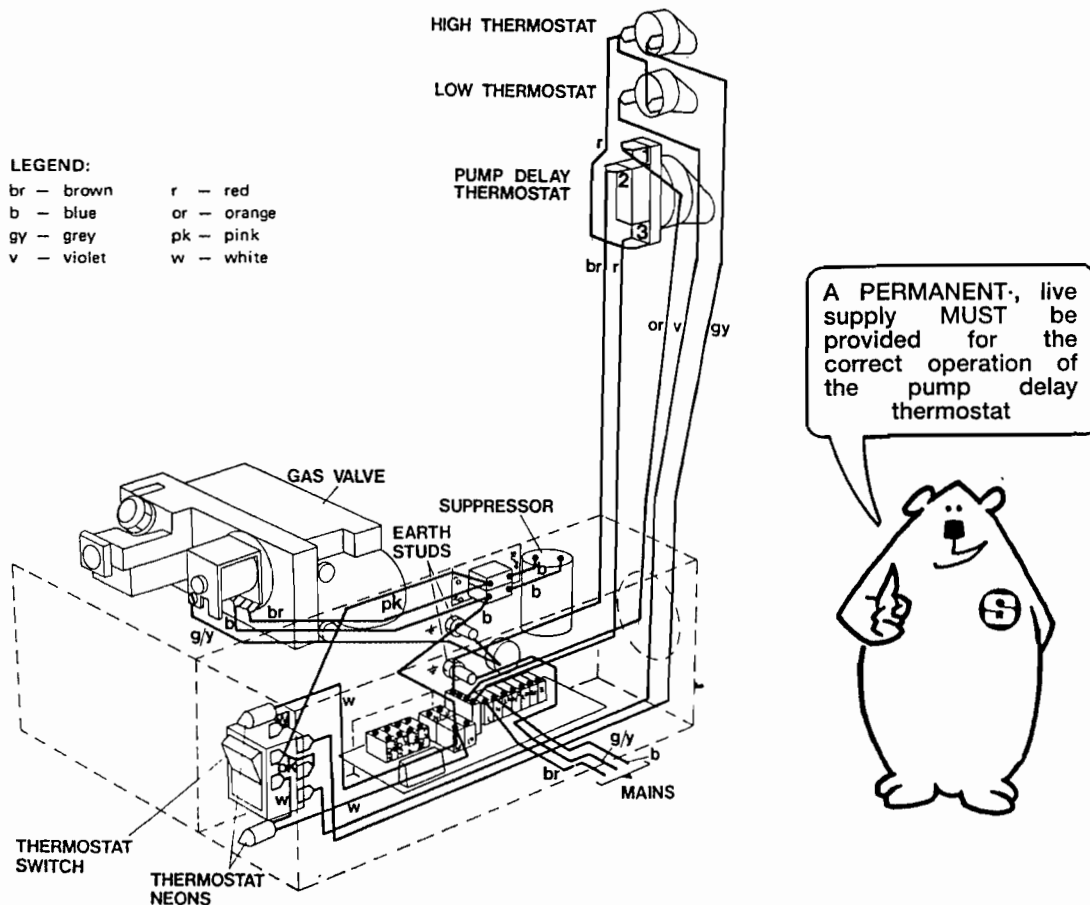
The wiring diagrams illustrated in Figs. 14 - 16 cover the systems most likely to be used with this appliance and are included for guidance only.

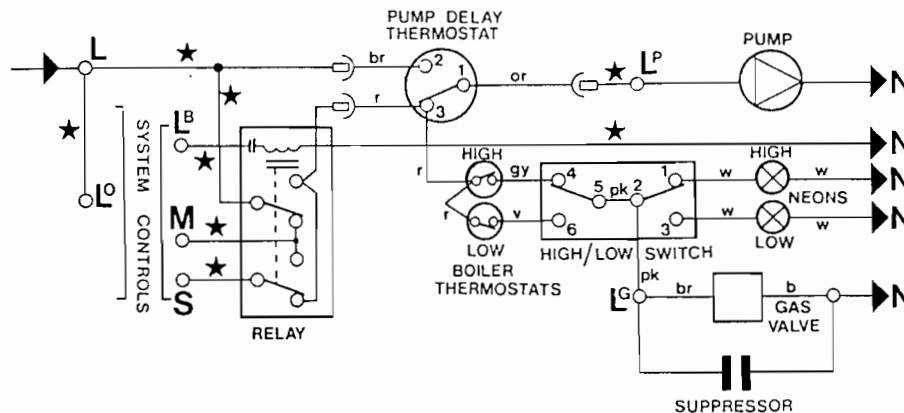
For wiring external controls to the IDEAL EXCEL boiler, reference should be made to the system wiring diagram supplied by the relevant manufacturer, in conjunction with the wiring diagrams shown in Figs. 12 and 13.

Difficulty in wiring should not arise, providing the following directions are observed:

The mains supply must be connected to terminals N, $\varnothing$, L at the boiler control box the system controls must be wired between L^o (live out) and L^a (switched live in). Remove the red link supplied.

The pump must always be wired to the designated boiler terminals, to overrun circuit





N.B. Relay will show open circuit on d.c. continuity meter because of series capacitor

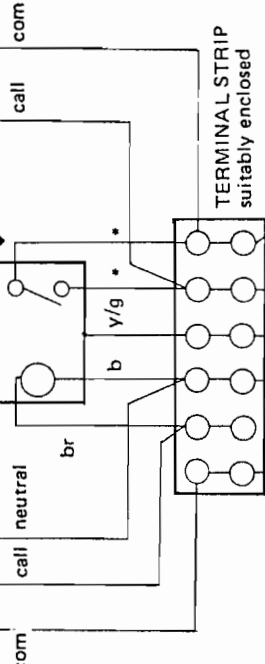
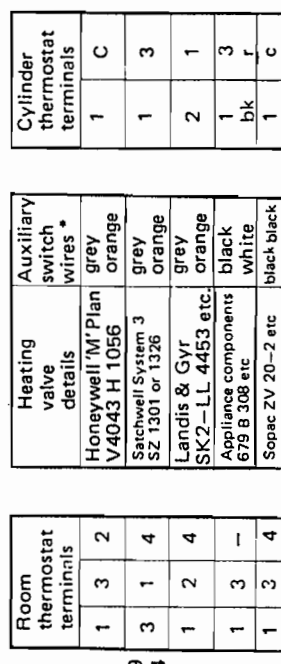
LEGEND-

br - brown gy - grey
b - blue bk - black
r - red or - orange
pk - pink w - white
v - violet ★ - PCB conductor

Fig. 13

FLOW WIRING DIAGRAM

ONE VALVE IN HEATING CIRCUIT



NOTES:

1. Some earth wires are omitted for clarity. Ensure proper earth continuity when wiring.
2. Pump MUST be connected to boiler terminal L_P.
3. Boiler MUST have a permanent live connection to terminal L.
4. Numbering of terminals on thermostats applies only to the manufacturers mentioned.
5. For maximum efficiency set boiler to HIGH_H (unless excessive domestic hot water temperature results during winter).



Fig. 14

WIRING DIAGRAM - PUMPED ONLY SYSTEM

WIRING DIAGRAM - PUMPED ONLY SYSTEM

- NOTES:**
1. Some earth wires are omitted for clarity. Ensure proper earth continuity when wiring.
 2. Pump MUST be connected to boiler terminal LP
 3. Boiler MUST have a permanent live connection to terminal L.
- Typical Programmer (CH cannot be selected without HW)
4. This is a fully controlled system - set boiler thermostat to 'H/GH'.
5. Numbering of terminals on thermostats applies only to the manufacturers mentioned.

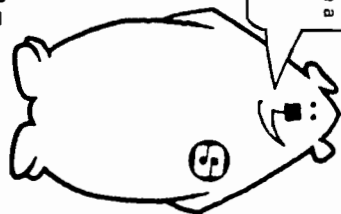
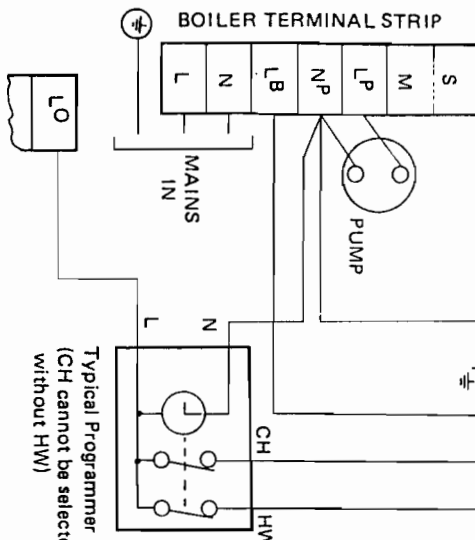


Fig. 15

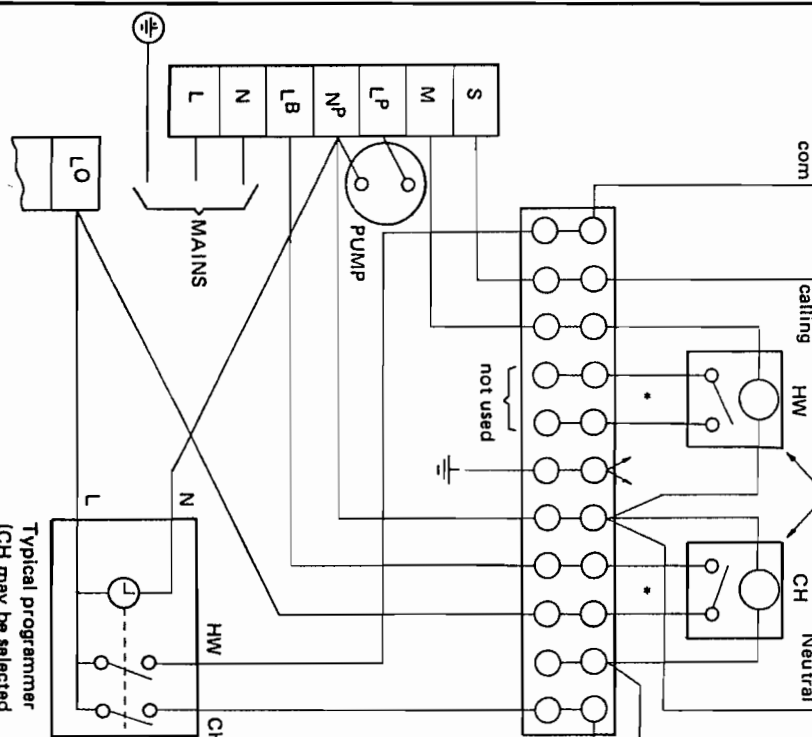
MID POSITION VALVE

Room thermostat terminal	Mid-Position valve details	Cylinder thermostat terminals
1 3 2	Honeywell 'V' Plan V4073 A 1039	1 2 C
3 1 4	Satchwell Unishare DT 1701	1 2 3
1 2 4	Landis & Gyr (LGM) SK3 - LT 2701	2 3 1
1 3 -	Appliance components 679.B.340.30U.O	1 2 3
1 2 4	Drayton Flowshare 2	bk y r
3 1 N	Sopac 'Centra Share' ZV20-EB-MID	2 3 1
1 3 4		1 2 C



TWO SPRING CLOSED VALVES

Cylinder thermostat terminals	Spring - closed valve details	* Aux switch wires	Room thermostat terminals
C 1	Honeywell 'S' Plan V 4043H 1056	grey	2 3 1
3 red	Appliance components 679B . 308 etc.	orange	3 3 1
1 black	Sopac ZV20 - 2 etc.	black	4 3 1
C 1		black	



- NOTES:**
1. Some earth wires are omitted for clarity. Ensure proper earth continuity when wiring.
 2. When there is no call for heat, the HW valve will remain open for pump delay thermostat operation.
 3. Permanent live supply and pump connection MUST be as shown, for correct operation of pump delay thermostat.
- Typical programmer (CH may be selected without HW)

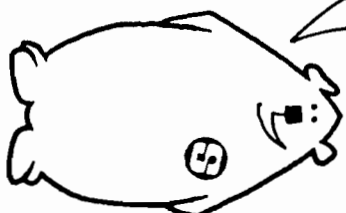
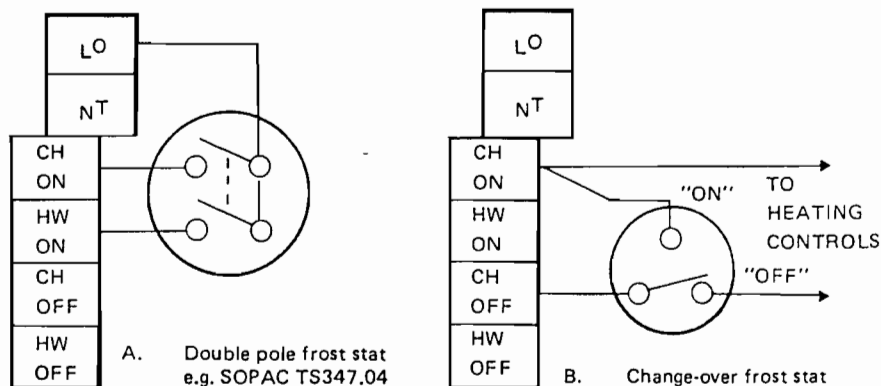


Fig. 16

WIRING DIAGRAM - PUMPED ONLY SYSTEM



Central heating systems fitted wholly inside the house do not normally require frost protection, since the house acts as an overnight 'storage heater', and can generally be left at least 24 hours without fear of frost damage.

If, however, parts of the pipework run outside the house, or if it is desired to leave the boiler off for more than a day or so, then a frost-stat should be wired into the system. This is normally done at the programmer, in which case the programme SELECTOR switches are set to 'Off' and all other controls **MUST** be left in the running position. The frost stat should be sited in a cold place, but where it can sense heat from the system. Wiring for our programmer kit should be as shown, with minimal disturbance to other wiring to the programmer. IF ANOTHER PROGRAMMER BE USED, the principles are the same, but obviously the frost thermostat will be wired to the user's programmer, and NOT to the terminals illustrated.

Diagram A shows a double pole frost stat, which should suffice for all systems which do not use the 'OFF' terminals of the programmer.

Diagram B shows a 'change-over' frost stat, which will cover most systems which do use "CH OFF". If, however, on such a system, the HW pipework is in an isolated part of the house, a second frost stat may be used to protect it also. If in doubt, ask your installer for advice.

Fig. 17

WIRING DIAGRAM - FROST PROTECTION

FITTING THE CASING

1. Lift the boiler casing up to the boiler assembly and hook the top two fixings over the brackets. Extreme care **MUST** be taken in order to avoid fouling the internal wiring at the top right hand side.
The casing **MUST** seat correctly:
2. Swing the control box into position and secure to the casing with the nut provided.
3. Slide the controls pod bottom panel into position.
4. Replace the bottom panel securing the screws.
5. Lift up the brown plastic side trims (refer Fig. 1), locate the controls access door hinge pins into the casing and drop the plastic side trims into place.

COMMISSIONING AND TESTING

Electrical Installation:

Checks to ensure electrical safety should be carried out by a competent person.

ALWAYS carry out the preliminary electrical system checks as detailed on pages 6 - 9 of the Instructions for the British Gas Multimeter.

Gas Installation:

The whole of the gas installation, including the meter, should be inspected, tested for soundness, and purged in accordance with the recommendations of CP.331:3.

Purging air from the gas installation may be expedited by the removal of the controls pod door and bottom panel, loosening the union on the inlet gas cock and purging until gas is smelled.

Retighten the union and check, again for gas soundness.

WARNING: Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish all naked lights and **DO NOT SMOKE**.

Water Circulating system:

The whole of the system should be thoroughly flushed out with cold water - **WITHOUT** the pump in position.

Ensure all valves are open.

With the pump fitted, the system should be filled and airlocks cleared.

Check for water soundness.

Check all drain cocks are **CLOSED**, and stop valves in the flow and return lines are **OPEN**.

INITIAL LIGHTING INSTRUCTIONS - Refer Fig. 18

1. Remove the controls pod access door and bottom panel.
2. Check the inlet gas cock (K) is **ON** and the boiler thermostat selector switch (D) is **OFF**.
3. Remove the screw in the burner pressure test nipple (G) and connect a gas pressure gauge via a flexible tube.
4. Slide the gas control button (A) to the right until resistance is felt and then release it.
5. Push in the gas control button (A), press and release the piezo unit button (F) repeatedly until the pilot is seen to light through the sight glass (B).
6. Hold the gas control button depressed for 15 seconds after the pilot burner has ignited.
7. Should the pilot light be extinguished at this, or any other stage, slide the gas control button (A) to the right and release it.

Wait for three minutes and then repeat the procedure detailed above, but wait longer than 15 seconds before releasing the gas control button (A).

The pilot flame is factory set and no adjustment should be necessary.

8. Check the electricity supply and all external controls are **ON**.
9. Set the boiler thermostat selector switch to **HIGH** - the boiler will then light and the **HIGH** indicator neon will glow.
10. Test for gas soundness around the boiler gas components, using a leak detection fluid.
11. Operate the boiler for ten minutes to stabilise the burner temperature.
12. Check the burner setting pressure against the values quoted in Table 2.
13. If the burner setting pressure requires adjustment, swing the control box down as previously described and remove the gas valve cover.

Turn the pressure adjusting screw (H) **ANTI-CLOCKWISE** to **INCREASE** the pressure and

CLOCKWISE to DECREASE it

- 14 Replace the valve cover and swing the control box back into its working position
- 15 Set the boiler thermostat selector switch to OFF
- 16 Remove the pressure gauge and tube, and replace the sealing screw in the pressure test nipple.
- 17 Set the boiler thermostat selector switch to HIGH
- 18 Check for gas soundness around the test nipple
- 19 Replace the controls pod bottom panel and access door

GENERAL CHECKS

Make the following checks for correct operation:

- 1 Turn the boiler thermostat selector switch from OFF to HIGH and from OFF to LOW, and check the main burner and appropriate indicator neon light and extinguish in response.
- 2 Check the appearance of the pilot flame to ensure it envelops 13mm (1/2 in) of the thermocouple tip, -refer 'Pilot Burner Servicing', page 18.
- 3 Check the operation of the flame failure device in the gas control.
The flame failure device MUST cut off the gas to the burner within 60 seconds.
With the burner alight again, slide the gas control button to the RIGHT until resistance is felt and then release it. The burner and pilot flames should shut down immediately.
Note: A latch in the gas control provides a safe delay period before the boiler can be relit.
- 4 The correct operation of the programmer, if fitted, and all other system controls should be proved.
Operate each control separately and check the main burner responds.
- 5 With the system HOT, examine all water connections for soundness.
Then turn OFF the gas, electricity and water supplies to the appliance and drain down whilst the system is still hot, in order to complete the flushing process.
Refill and vent the system, and again check for water soundness.

6. Finally, set the controls to the User's requirements.

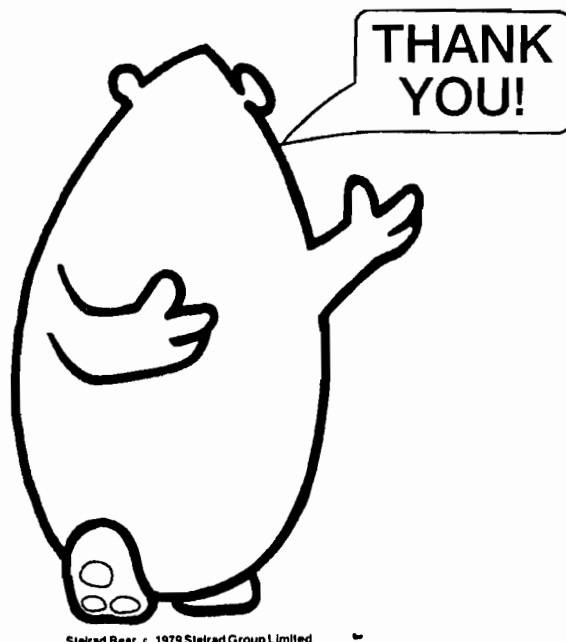
Thermostat Setting	Flow Temperature	
	°C	°F
HIGH	82	180
LOW	60	140

Note: The HIGH or LOW indicator neons will glow whenever that thermostat is 'Calling for Heat'

HANDING OVER

After completion of installation and commissioning the system, the Installer should hand over to the Householder by the following actions:

1. Hand the User's Instructions publication to the Householder and explain his/her responsibilities under the Gas Safety (Installation and Use) Regulations: 1984.
2. Draw attention to the Lighting Instruction Plate affixed to the inside of the controls access door.
3. Explain and demonstrate the lighting and shutting down procedures.
4. The operation of the boiler and the use and adjustment of ALL system controls should be fully explained to the Householder, to ensure the greatest possible fuel economy, consistent with household requirements of both heating and hot water consumption.
Advise the User of the precautions necessary to prevent damage to the system, and to the building, in the event of the system remaining in-operative during frost conditions.
5. Explain the function and the use of the boiler thermostat and external controls.
6. Explain and demonstrate the function of time and temperature controls, radiator valves, etc., in the economic use of the system.
7. Stress the importance of regular servicing by the Local Gas Region, or by a qualified Heating Engineer.



SERVICING

Before removing the casing or attempting to undertake any work on the appliance:-Set the boiler thermostat switch to OFF and wait for 2 minutes.

WARNING: ALWAYS turn OFF the gas supply at the gas cock and switch OFF and DISCONNECT the electricity supply to the appliance BEFORE SERVICING.

A COMPREHENSIVE SERVICE SHOULD BE CARRIED OUT ONCE A YEAR.

THE USER IS ADVISED TO MAKE A CONTRACT WITH THE LOCAL GAS REGION OR A QUALIFIED HEATING ENGINEER.

BURNER ASSEMBLY - Refer Fig. 19

1. Lift up the brown plastic side trims (refer Fig. 1) to clear the controls access door hinge pins and remove the door.
2. Undo the two screws securing the controls pod bottom panel.
3. Slide out the controls pod bottom panel.
4. Undo the nut securing the control box to the bottom of the boiler casing.
5. Lift the back of the control box slightly and swing the box downwards - (complete with programmer if fitted) - pivoting from the back.
6. Lift the casing clear of the top retaining brackets. The casing can now be removed.
7. Undo the screw securing the plastic cover of the gas valve and remove the cover.
8. Disconnect the electrical leads from the gas valve solenoid.
9. Disconnect the igniter lead from the piezo unit body.
10. Undo the union nut on the gas inlet cock.
11. Undo the four wing nuts securing the burner and controls assembly to the bottom of the air duct, and carefully support the loose assembly.
12. Remove the complete assembly by lowering downwards until the burner is clear of the combustion chamber and draw it forwards.

If necessary tip the control box completely from its bracket, and rest it on the intervening surface.

Remove to a convenient working surface for attention. Brush off any deposits which may have fallen on to the burner head, ensuring the flame ports are unobstructed, and remove any debris which may have collected.

Note: Brushes with metallic bristles must NOT be used. Remove the main burner injector by removing the burner light back baffle which pulls away from the burner after undoing the two pozi screws. Ensure there is no blockage or damage.

Replace the injector, using an approved jointing compound, and burner light back baffle.

Inspect the pilot burner, thermocouple and ignition electrode, ensure they are clean and in good condition.

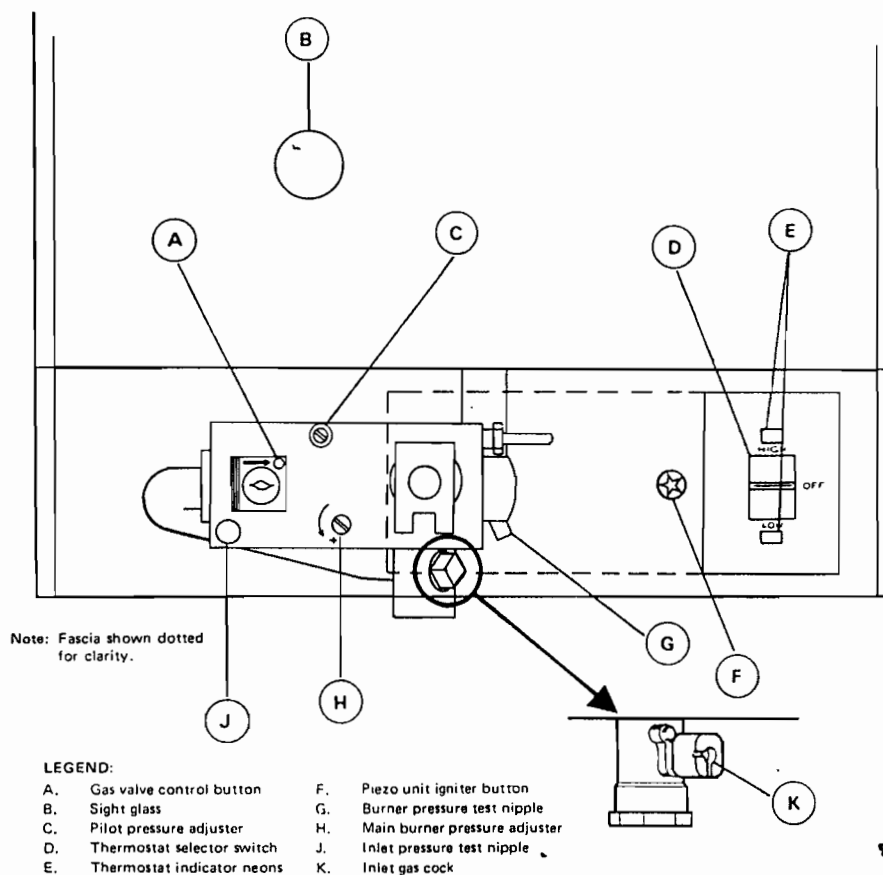
In particular check:

- (a) The pilot burner is firmly secured.
- (b) The pilot shield is clean and unobstructed.
- (c) The ignition electrode and lead are clean, undamaged and secure.
- (d) The thermocouple tip is not burned or cracked.
- (e) The thermocouple terminal, at the gas valve, is clean.

FLUEWAYS

With the main burner and controls assembly removed as previously described:

1. Disconnect the pump delay thermostat leads noting their positions. Remove the four wing nuts retaining the flue collector hood and remove the hood.
2. Remove the flue baffle.
3. Remove all loose deposits from the heat exchanger finned assembly, brushing from above and below as necessary using a suitable brush - available from the Pinnacle Brush Company, Fishponds, Bristol. Ref. No. SK4798N.



Note: CONTROLS ARE SHOWN WITH THE GAS VALVE COVER REMOVED.

Fig. 18

4. Refit the flue baffle and the flue collector hood in reverse order of removal, replacing any damaged or deteriorating sealing gaskets.
5. Refit the burner and controls assembly in reverse order of removal ensuring the sealing gasket is in good condition and correctly positioned.
6. Complete gas and electrical connections.
7. Ensure the sightglass in the combustion chamber is clean and undamaged.
8. Swing the control box back to its working position.
9. Refit the boiler casing, controls pod bottom panel and access door in reverse order to removal.

PILOT BURNER

Light the boiler and check:

1. The pilot flame impringes on the thermocouple, relative to the pilot burner and the main burner, is as shown in Fig. 20.
2. The pilot flame covers 13mm ($\frac{1}{2}$ in) of the thermocouple tip and is of the correct size (Fig. 20).
The pilot adjuster screw is factory set to a maximum and no further adjustment should be necessary.
However, if the pilot flame appears small, check the adjustment of the pilot pressure adjuster screw -(C), Fig. 18 - as follows:
 - (a) Slide the gas control button, (A), Fig. 18, to the RIGHT until resistance is felt and then release it.
 - (b) Remove the gas valve cover.
 - (c) Turn the pilot pressure adjuster screw CLOCKWISE until fully CLOSED.
 - (d) Turn the pilot pressure adjuster screw ANTI-CLOCKWISE four full turns to give maximum setting.
 - (e) Refit the gas valve cover
 - (f) Relight the pilot in accordance with the lighting instructions.

ADJUSTMENT OF GAS PRESSURE

After each occasion of servicing, reference should be made to Table 2, which quotes details of the rated output, with the related burner setting pressure and the heat input.

Any required adjustments should be made by using the pressure adjustment screw (H) Fig. 18

REPLACEMENT OF COMPONENTS

WARNING: ALWAYS turn OFF the gas supply at the inlet gas cock and switch OFF and DISCONNECT the electricity supply BEFORE WORKING ON THE APPLIANCE.

Note: To replace the following components it will be necessary to remove the boiler casing as previously described in the Servicing Section of this publication, page 17

Slight Glass

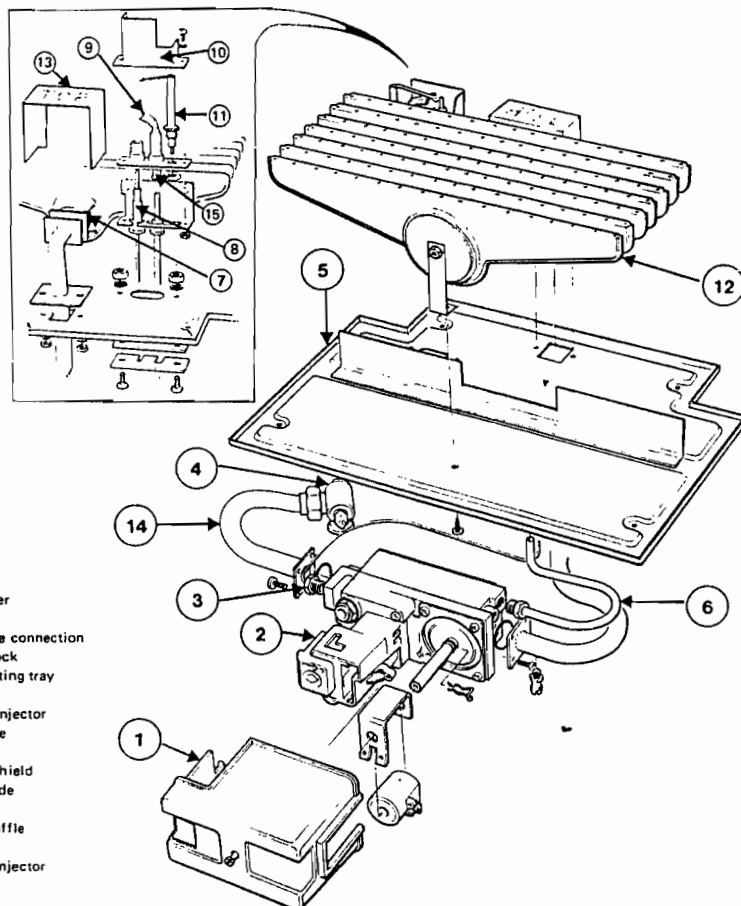
1. Unfasten the two nuts holding the sight glass assembly to the combustion chamber.
2. When fitting the replacement assembly, make certain the parts are in the correct order, i.e. gasket, glass, gasket and frame.
Note: The frame must have the return edge at the bottom.
3. Retighten the two nuts to ensure an airtight seal. Do NOT overtighten.

Boiler Control Thermostat (Fig. 3)

1. Undo the two extended nuts securing the thermostat retaining plate and remove the plate along with the two thermostats, remove collector hood if necessary.
The HIGH thermostat is positioned nearest the back panel with the LOW thermostat in the middle.
2. Pull off the two electrical connections from the thermostat.
3. Fit the replacement thermostat and re-assemble in reverse order.

Pump Delay Thermostat (Fig. 3)

1. Disconnect electrical leads from thermostat noting their position, refer Fig. 12.
2. Undo the securing nuts and remove thermostat.
3. Fit replacement thermostat and re-assemble in reverse order.



LEGEND:

1. Gas valve cover
2. Gas valve
3. Thermocouple connection
4. Gas service cock
5. Burner mounting tray
6. Pilot pipe
7. Main burner injector
8. Thermocouple
9. Pilot burner
10. Pilot burner shield
11. Spark electrode
12. Main burner
13. Light back baffle
14. Gas manifold
15. Pilot burner injector

Fig. 19

BURNER AND CONTROL ASSEMBLY

Piezo Unit

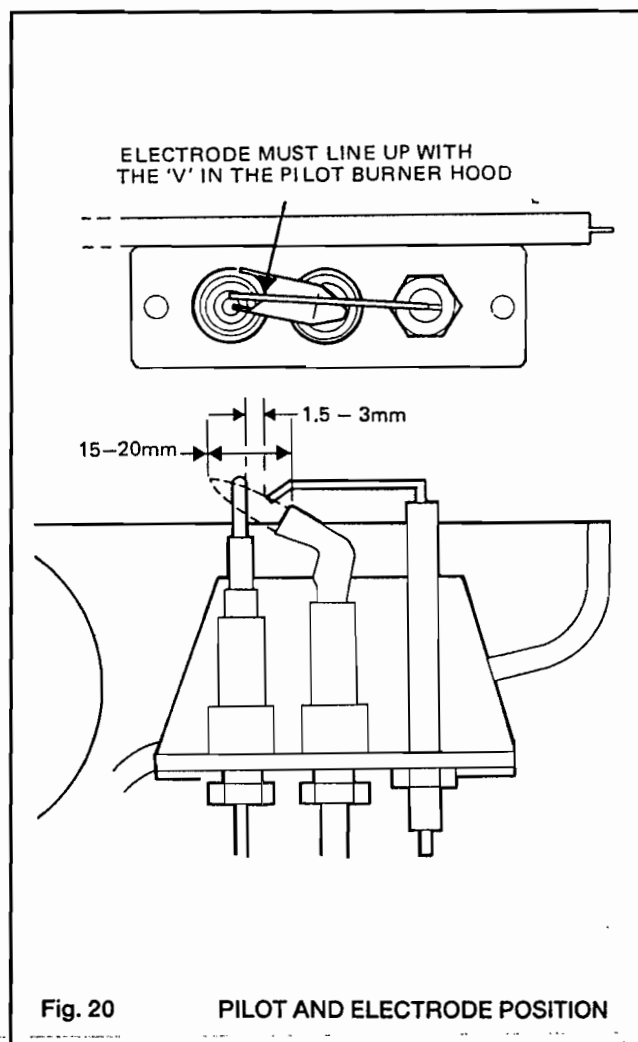
1. Remove the programmer if fitted:
Undo the two screws securing the programmer to the controls mounting panel and move the programmer to the rear.
2. Disconnect the igniter lead from the piezo unit body
3. Undo the two securing screws and remove the piezo unit body.
4. Fit the new unit and re-assemble in reverse order

Gas Valve

1. Undo the screw securing the plastic cover of the gas valve and remove the cover.
2. Disconnect the electrical leads from the gas valve solenoid.
3. Undo the pilot pipe connection at the gas valve.
4. Undo thermocouple connection at the gas valve.
5. Undo the four screws securing the gas valve inlet pipe.
6. Undo the four screws securing the gas valve outlet pipe.
The sealing 'O' rings should be discarded and the new ones fitted.
7. Re-assemble in reverse order, ensuring:
 - (a) The new gas valve is fitted the right way round; and the arrow, engraved on the valve, indicates the direction of flow.
 - (b) The sealing 'O' rings are fitted correctly at the gas valve inlet and outlet flanges.
8. Refit the burner and controls assembly in reverse order of removal and complete gas and electrical connections.
Refit the casing and test for gas soundness.

Control Box Printed Circuit Board (Refer Fig. 12).

1. Undo the screw and remove the control box cover.
2. Note carefully the position of all wires to the terminal strip, as these will be different for every installation.
3. Remove all wires along with the connector leading to the boiler thermostats, and the programmer connector, if fitted. Unclip the suppressor.



4. Starting at the back of the control box, squeeze the bars of the printed circuit board support pillars together so that each may be pushed through into the control box
5. When all pillars are free, ease out the P.C.B., and transfer the pillars into the new P.C.B.
6. Fit the new P.C.B. into the control box, reconnect wires as noted in (2) above.
7. Re-assemble in reverse order, and refit the casing.

Note: To replace the following components, it is necessary to remove the burner and controls assembly, as previously described in the Servicing Section of this publication, page 17

Electrode

1. Disconnect the igniter lead from the electrode.
2. Undo the pilot burner fixing screw and nut nearest the electrode and remove.
3. Unfasten the backnut retaining the electrode and withdraw from the pilot bracket.
4. Fit the new electrode and re-assemble in reverse order ensuring correct positioning of the electrode tip, refer Fig. 20.

Pilot Burner

1. Remove the spark electrode as previously described
2. Undo the pilot pipe and thermocouple nuts at the pilot burner.
3. Undo the remaining nut and screw securing the pilot burner to the main burner and remove, complete with the pilot shield leaving the pilot pipe and thermocouple in position.
Do NOT lose the pilot injector, which is a loose fit in the pilot pipe connection to the pilot burner
4. Fit the new pilot burner over the pilot pipe and thermocouple ensuring the pilot injector is in position
5. Transfer the electrode to the new pilot burner.
6. Replace the pilot shield and re-assemble in reverse order.

Igniter Lead

1. Remove the clip securing the igniter lead to the pilot supply pipe.
2. Unplug the igniter lead from the base of the electrode.
3. Undo the two nuts securing the pilot pipe/thermocouple sealing plate to the underside of the burner manifold, remove the plate and gasket, and withdraw the lead.
4. Fit the new lead and re-assemble in reverse order.

Thermocouple

1. Undo the pilot burner fixing screw and nut nearest the thermocouple and remove.
2. Undo the nut securing the thermocouple to the pilot burner.
3. Undo the two nuts securing the pilot pipe/thermocouple sealing plate to the underside of the burner manifold, remove the plate and gasket, and withdraw the thermocouple.
4. Fit the new thermocouple.
Avoid sharp bends in the thermocouple lead, ensuring this follows the same route as previously.
5. Re-assemble in reverse order.

Main Burner - refer Fig. 19

1. Remove the pilot burner as previously described.
2. Undo the screw securing the burner support bracket to the burner controls tray.
Remove the two nuts which fasten the burner to the gas manifold and withdraw burner.
3. Fit the new burner in reverse order.

BOILER INSULATION PADS

Combustion chamber insulation (4 Pads)

1. Remove the burner assembly and place carefully to one side - as previously described.
2. Unfasten the two retention strips at the bottom of the front and rear insulation pads by undoing the two screws on each of the strips.
Discard the old strips.
3. Withdraw, in a downward direction, the rear insulation pad (note that it is tapered to fit the form of the combustion chamber).
4. The front insulation pad can now be pulled free, and removed - allowing the two remaining pads to be withdrawn.

5. Fit the new insulation pads in reverse order - paying particular attention to the tapers on the front and rear pads. Also ensure that the hole in the front pad is aligned with the sight-glass aperture at the left hand side of the boiler, and, that the new retention strips are correctly fitted.

Re-fit the burner assembly - as previously described.

Heat exchanger insulation (2 Pads)

1. Remove the burner assembly and collector hood - as previously described.
- Withdraw the combustion chamber rear and side insulation pads - refer to 'Combustion chamber insulation'.
2. The heat exchanger rear insulation pad is removed by pushing it down into the combustion chamber - where it will fall freely.
3. Remove the plate fixed to the front of the Exchanger assembly by undoing the six screws (3 on each side). The front insulation pad can now be withdrawn and discarded.

4. Fit the new front insulation pad by pushing it down, between the heat exchanger and air duct/backplate, into the correct position.
 5. Fit the new front insulation pad and re-secure the removed plate to the front of the heat exchanger.
 6. Refit combustion chamber rear insulation pad (refer 'Combustion chamber insulation').
- Re-assemble collector hood and burner assembly to the boiler as previously described.

Pilot Filter/Inlet Screen (refer Fig.21)

1. Remove the gas valve (complete with inlet and burner gas manifolds) as previously described under Servicing.
2. Undo the five screws retaining the gas valve bottom plate and remove it.
3. The pilot filter and inlet screen can then be inspected and replaced as necessary.
4. Re-assemble in reverse order.

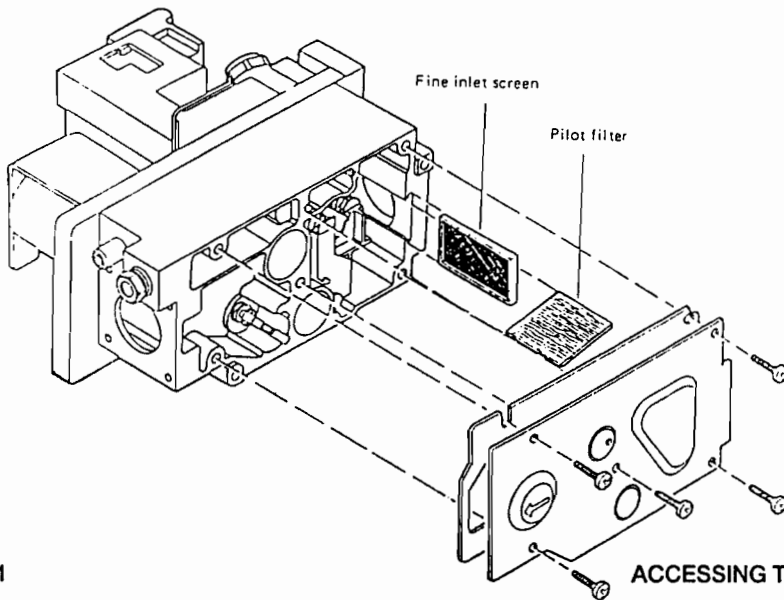


Fig. 21

ACCESSING THE INLET SCREEN AND PILOT FILTER

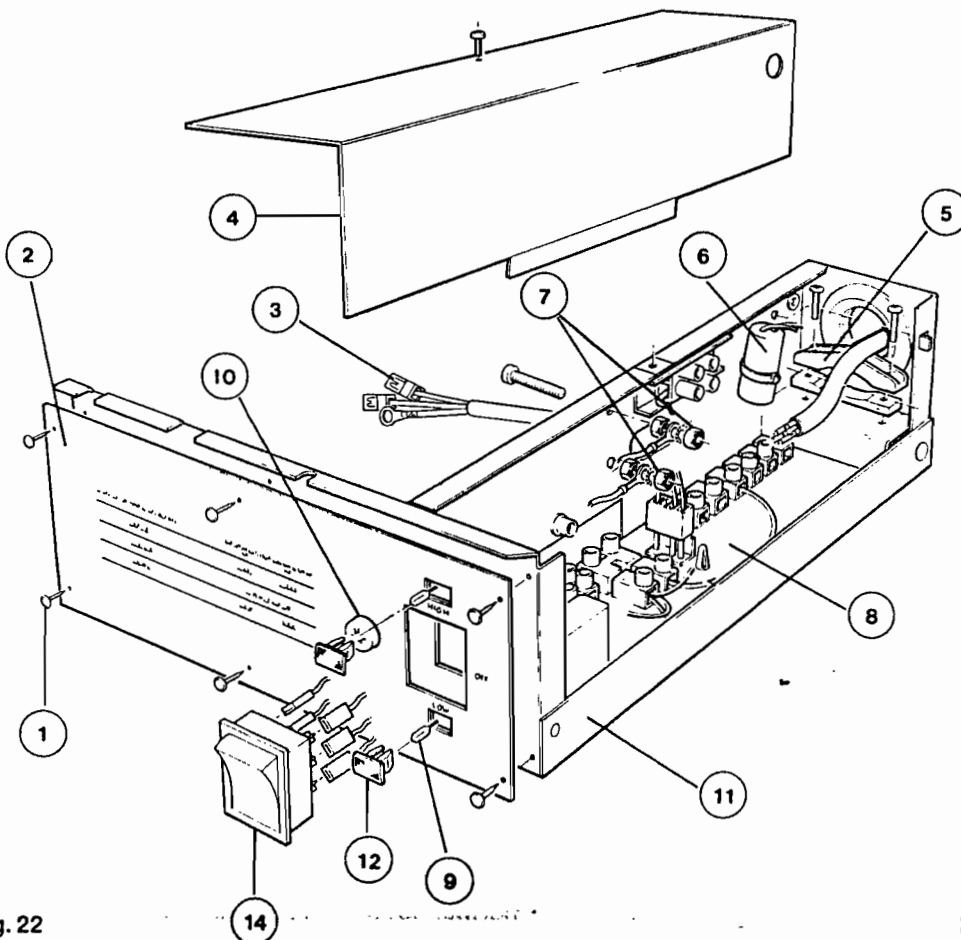


Fig. 22

BOILER CONTROL BOX

LEGEND:

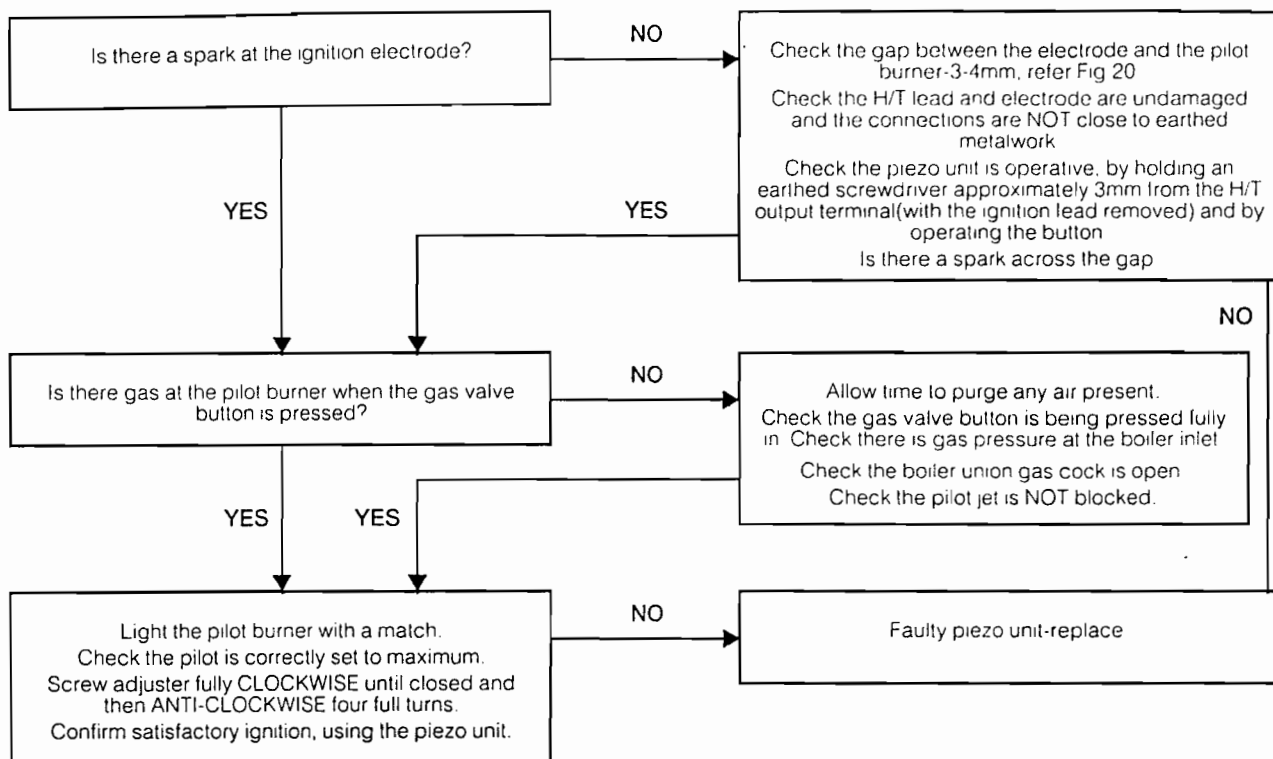
1. Fascia pins
2. Fascia
3. Gas valve lead
4. Control box cover
5. Cable clamp
6. Suppressor
7. Earth stud
8. Printed circuit board
9. Neon indicators
10. Piezo unit
11. Control box
12. Neon indicator lenses
13. Thermostat switch

FAULT FINDING

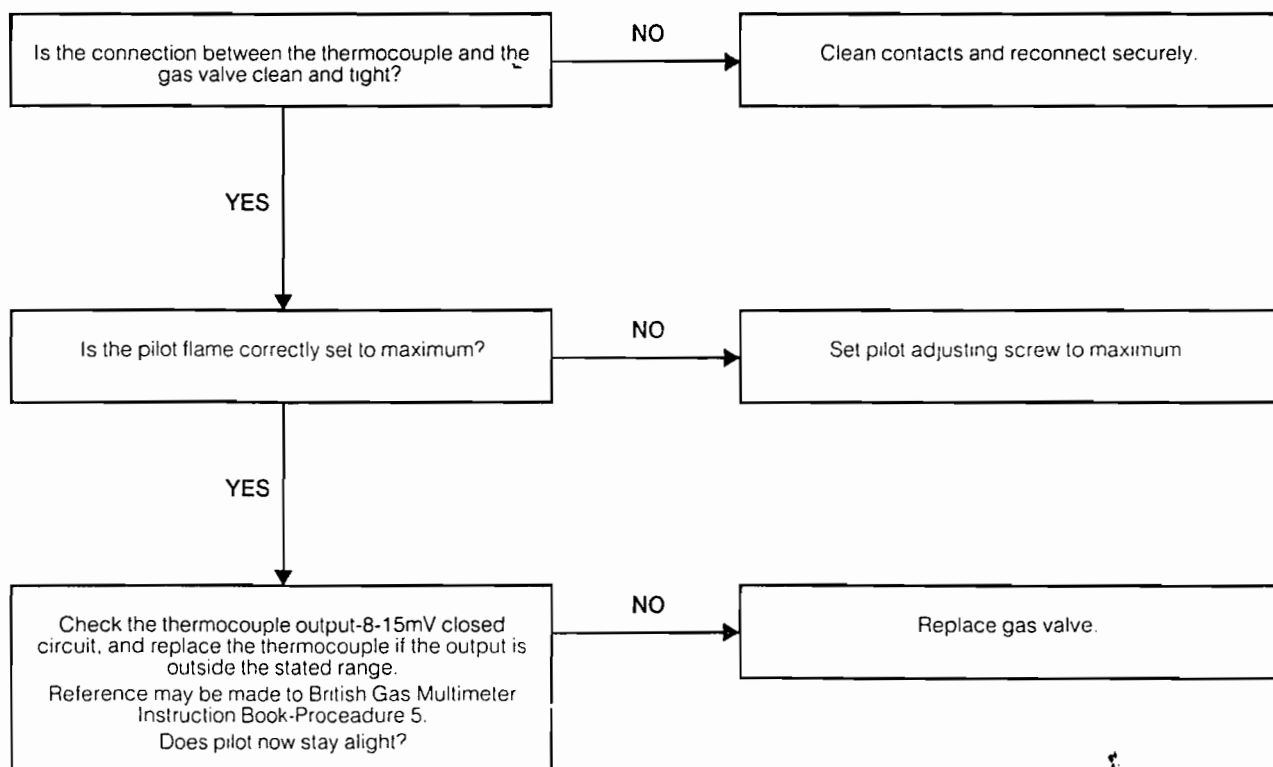
Before attempting any electrical fault finding, ALWAYS carry out the preliminary electrical system check as detailed on pages 6 - 9 of the instructions for the British Gas Multimeter

Detailed instructions on the replacement of fault components are contained in the Servicing section of the publication

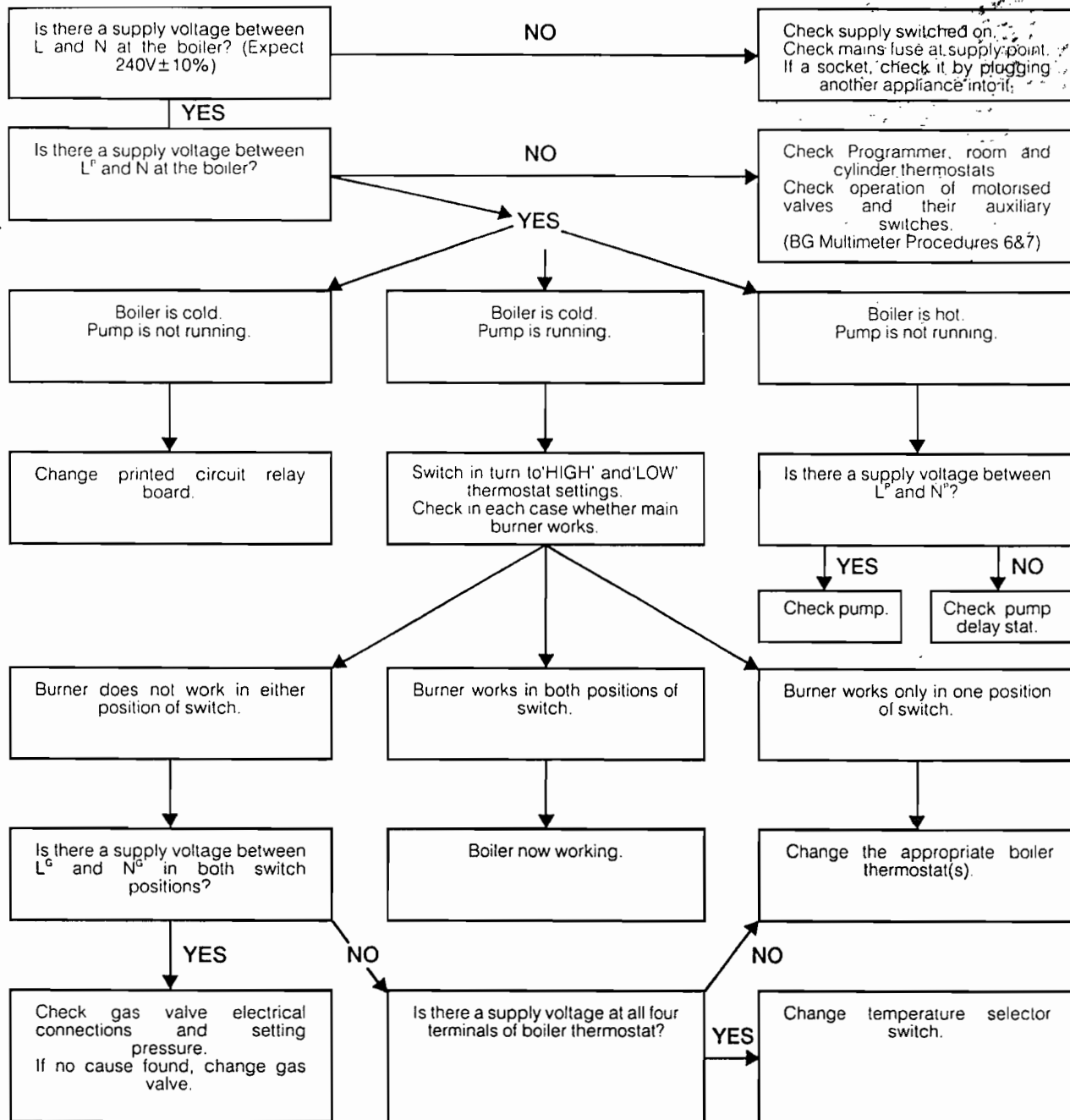
1. PILOT WILL NOT LIGHT



2. PILOT WILL NOT STAY LIT WHEN THE GAS VALVE BUTTON IS RELEASED.



3. PILOT LIT, BUT NO MAINS GAS



SHORT LIST OF PARTS

The following list comprises parts commonly required as replacements due to damage, expendability, or such that their failure, or absence, is likely to affect safety or performance.

The List is extracted from the G.C. List of Parts, which contains all available spare parts.

Copies of the G.C. List are held by Gas Regions, STELRAD Distributors and by Merchants.

IDEAL EXCEL RS. 30, 40, 50, & 60 GAS BOILERS

When ordering spares please quote:

1. Boiler Model
2. G.C. Appliance Number
3. Description
4. Maker's Part Number
5. Quantity

Key. No.	G.C. Part No.	Description	No. Off	Maker's Part No.
7	341 446	Slight glass assembly, sight glass, frame, 2 gaskets, 2 - M4 Hex nuts and 2 - M4 shakeproof washers	1	189738045
12		Main burner - AEROMATIC		
	392 901	AC19/123230 RS 30/40	1	199016064
	392 902	AC19/123229 RS 50/60	1	199036064
13		Main burner injector:		
	398 044	Bray Cat. 10 Size 850 RS 30	1	189336060
	398 051	Bray Cat. 10 Size 1200 RS 40	1	199026060
	398 057	Bray Cat. 10 Size 1500 RS 50	1	189356061
	398 058	Bray Cat. 10 Size 1600 RS 60	1	199046061
15	384 267	Pilot burner - HONEYWELL Q359A -1090	1	589010080
16	382 536	Pilot burner injector HONEYWELL 45003 508001 (0.38/0.36)	1	589040083
19	395 685	1/2 in. BSP HONEYWELL gas control V4700E 1007 240V with 2 - 'O' rings	1	586731900
21	397705	Spark generator - VENITRON 60080 with bracket	1	589830086
22	394 176	Ignition electrode - VENITRON 60955 with H.T. lead assembly 460mm lg.	1	589010089
23	390 131	Thermocouple - HONEYWELL Q309A -2721 300mm lg.	1	586811720
25A	341 784	Control box printed circuit board ,PACTROL	1	589110067
26	393 451	Thermostat selector switch -ARCOELECTRIC C470, double pole rocker switch, three position changeover	1	589030104
27	341 461	Neon indicator - READILEADS	2	589730067
28	384 689	Suppressor - ITT TS121A CAN TYPE -85mm leads	1	589040030
29	394 276	Thermostat - high setting , ELMWOOD 2455R - 821-5	1	589010051
30	392 932	Thermostat - low setting , ELMWOOD 2455R -821-3	1	589730057
31	392 905	Thermostat - pump delay - TEXAS instruments T20600D 52.L52T4T	1	589010053
33	341 786	Boiler casing assembly - white stove enamel (less brown facia) with removable bottom panel and lighting instructions	1	199014030
	341 787	RS 30/40	1	199034030
34	341 788	Brown facia panel	1	199010088
	341 789	RS 50/60	1	199030088
35	341 790	Controls casing bottom panel assembly with fixings & lighting instructions.	1	199010086
		RS 30/40	1	199036086
36	341 792	Controls casing door - smoked brown with name badge and lighting instructions	1	199010089
	341 793	RS 30/40	1	199030089
		RS 50/60	1	199030089

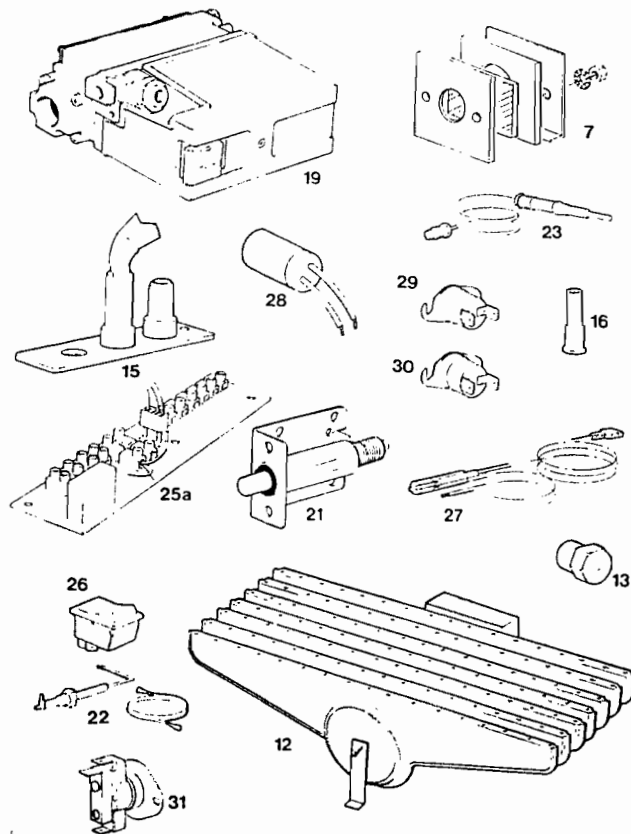


Fig. 23

SMALL PARTS

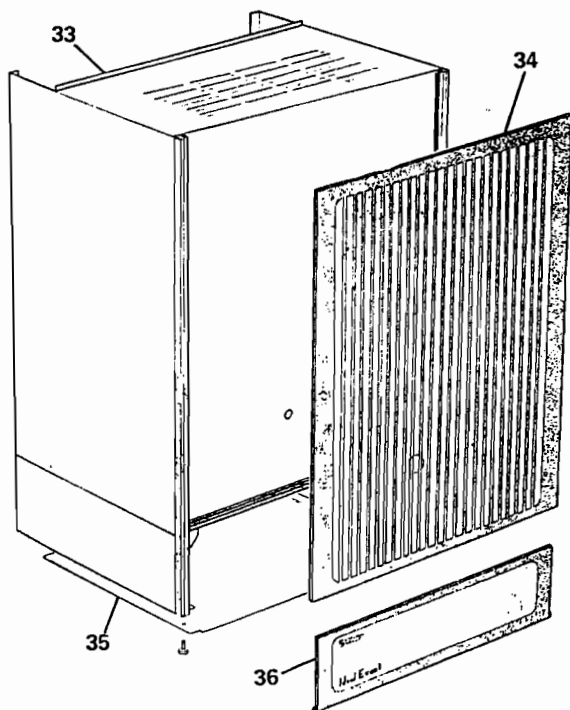


Fig. 24

BOILER CASING - EXPLODED VIEW



THIS SYMBOL IS YOUR
ASSURANCE OF QUALITY

These appliances are designed for use with Natural Gas only and have been tested and conform with the provisions of BS. 6332 and BS. 5258. Products bearing this kitemark are made to a safety and performance standard under a stringent scheme of supervision and control monitored by the British Standards Institute.

STELRAD GROUP pursues a policy of continuing improvement in design and performance of its products. The right is therefore, reserved to vary specification without notice.

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