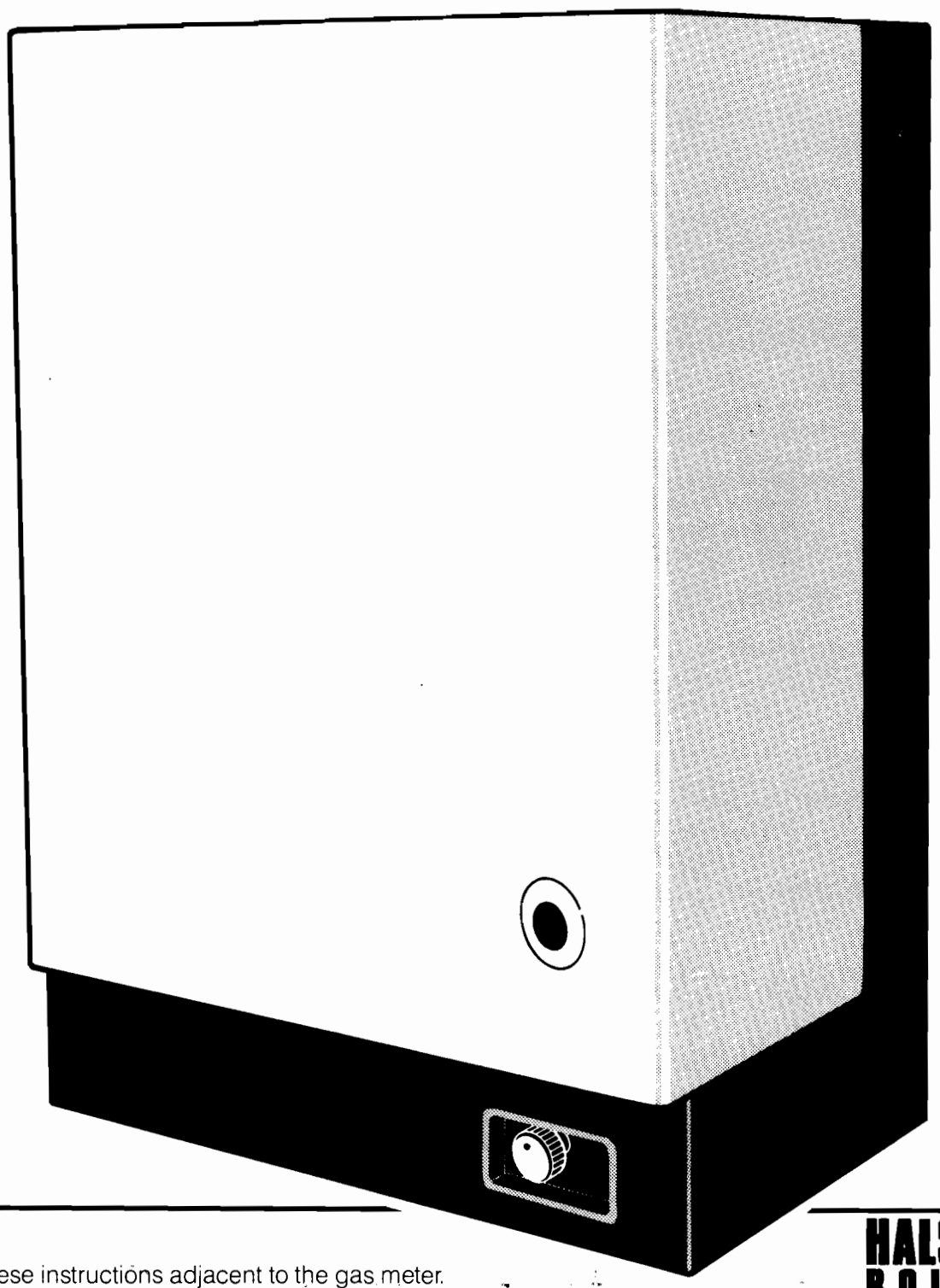
INSTALLATION AND SERVICING INSTRUCTIONS

BLENHEIM 15/30
Balanced Flue Boiler

G.C.APPLIANCE No. 41-333-20



Leave these instructions adjacent to the gas meter.

HALSTEAD BOILERS LIMITED

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1 INSTALLATION

1.1 TECHNICAL DATA

Gas Connection	Rc½ (Female)
Water Connections	22mm Copper (Female)
Electrical Supply	240V 50Hz Fused at 3A
Water Capacity	1.0L
Minimum Water Flow:	
15/30	11.5 litre/min (2.5 gal/min)
Minimum Static Head	100mm - Refer to Figure 4a
Maximum Static Head	30 Metres
Maximum Boiler/ Thermostat Setting	82°C (180°F)
Wall thickness:	
Standard Duct & Terminal	115mm-310mm (4½"-12¼")
1 Extension Duct Kit	310mm-460mm (12¼"-18¼")
2 Extension Duct Kits	460mm-610mm (18¼"-24")
Empty Weight of Boiler	22kg
Maximum Installation Lift Weight	18 kg

1.2 GENERAL NOTES

IMPORTANT: This Appliance is for use on NATURAL GAS only.

It is important that the boiler should be installed strictly in accordance with these instructions. The installer should pay particular attention to the following points.

(a) This boiler is suitable for fully pumped, open vented systems only. A sealed system kit is available as an optional extra.
(b) The capacity of the pump must be adequate for the system.
(c) An indirect cylinder, not of the self priming type **must** be used for the provision of hot water.
(d) The pump must always be wired to the boiler control box.
(e) Correct balancing of the system is important.
(f) The system must be vented before firing the boiler.
(g) The boiler is not suitable for external installation.

This boiler must be installed by a competent person and the installation must be in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, 1984, local building regulations including the Building Standards (Scotland) Regulations and by-laws of the Local Water Undertaking. The electrical wiring must be in accordance with current IEE regulations.

The method of connection to the mains electrical supply must facilitate complete isolation of the boiler. Preferably by the use of a fused 3-pin plug and shuttered socket outlet. Alternatively a fused double-pole switch, having a 3mm contact separation in both poles, and serving only the boiler may be used.

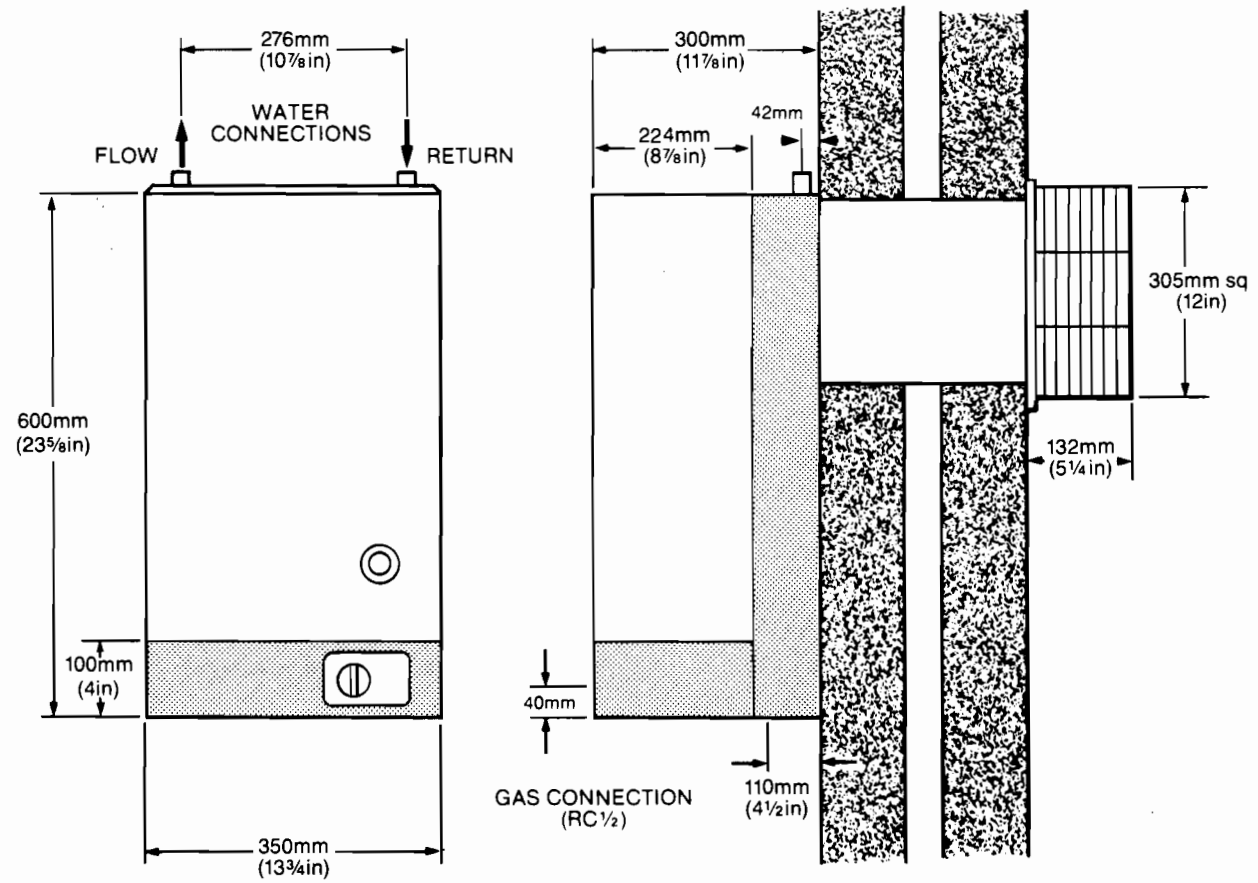
Detailed recommendations are in the following British Standards code of practice and British Gas publications BS6891:1988, BS6798:1987, BS5449:1:1979, BS5446:1979, BS5440:1:1978 and BS5440:2:1976. Guide to Gas installation in timber framed housing British Gas Publication DM2.

NOTE: The gas pipework to the boiler must be of adequate size and pipes should be no smaller than the boiler inlet connection. The installation must be tested for gas soundness as described in the above codes.

Range Rating

The 15/30 is a range rated appliance and may be adjusted to suit different systems. The maximum, mid and minimum outputs are given in the following table. The boiler input should be adjusted to the system requirements as it is preset at the factory to its mid range rating.

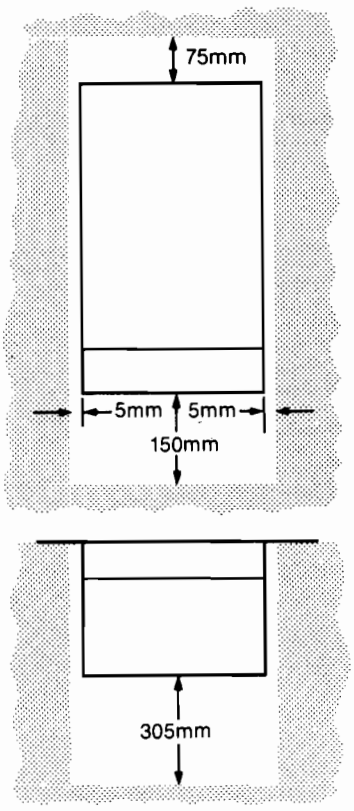
OVERALL APPLIANCE DIMENSIONS



1

Range	Rating	Minimum	Medium	Maximum
Nominal Heat Input	Kw	5.67	8.35	10.99
	Btu/h	19350	28480	37500
Nominal Heat Output	Kw	4.40	6.59	8.79
	Btu/h	15000	22500	30000
Burner Setting Pressure	m.bar	3.0	6.4	10.9
	in.w.g.	1.2	2.6	4.4
Injector Size: 2.7mm		Gas rate at max input = 1.02m³/h		

MINIMUM BUILT-IN DISTANCES FROM WALLS, FLOORS, CEILINGS, WORKTOPS, CUPBOARDS AND ANY PERMANENT OBJECTS.



2

1.3 CLEARANCES REQUIRED

The boiler should be positioned giving the minimum clearances shown in Figure 2. If the boiler is to be positioned in an unusual location, attention should be paid to BS 6798:1987 which gives guidance, and British Gas Publication: Guide to Gas Installation in timber framed housing. Reference DM2. The boiler can be installed onto a combustible wall.

1.4 VENTILATION REQUIREMENTS

If the boiler is to be installed in a compartment in a cupboard the requirements below must be adhered to:

1. The inside lining should be non-combustible and the door must have a fire resistance at least the equivalent of the compartment walls.
2. The compartment must be large enough to allow the boiler to be inspected and serviced, however, it should not be made too large to discourage the possibility of it being used for storage. The door should be made large enough to allow the boiler and any ancilliary equipment to be removed from the compartment.
3. Permanent openings at high and low level must be provided in the compartment to allow adequate air for ventilation (see table).
4. Fire Precaution. The air inlet, and flue outlet duct and the terminal of this boiler must not be closer than 25mm (1in) to combustible material. Detailed recommendations on Protection of Combustible Materials are given in BS5440:1:1978 Sub clause 20:1.

MINIMUM EFFECTIVE AREA REQUIREMENTS FOR COMPARTMENT AIR VENTS			
Air from another room		Air direct from outside	
High level	Low level	High level	Low level
99cm² (15in²)	99cm² (15in²)	50cm² (8in²)	50cm² (8in²)

1.5 SITING THE TERMINAL

For safety and performance reasons it is IMPORTANT that the balanced flue terminal position complies with the following requirements.

TERMINAL POSITION	MINIMUM DISTANCE
— Directly below an openable window or other opening e.g. air brick.	300mm
— Below gutters, soil pipes or drain pipes.	300mm
— Below eaves.	300mm
— Below balconies or car port roof.	600mm
— From vertical drain pipes and soil pipes.	75mm
— From internal or external corners.	600mm
— Above ground, roof or balcony level.	300mm
— From a surface facing a terminal.	600mm
— From a terminal facing a terminal.	600mm
— From an opening in the car port (e.g. door, window) into dwelling.	1,200mm
— Vertically from a terminal on the same wall.	1,500mm
— Horizontally from a terminal on the same wall.	300mm

GENERAL NOTES

1. The terminal must be positioned such that the combustion products can disperse freely at all times.
2. In certain weather conditions a terminal may steam and positions where this could cause a nuisance should be avoided.
3. If the terminal discharges onto a passageway or pathway or over an adjoining property check that combustion proudcts will not cause a nuisance and check that the terminal will not obstruct the passageway. In some areas local bye-laws ask for a minimum height for projections from a wall above a public footpath. Check any local bye-laws!
4. If the terminal is fitted within 600mm of a plastic gutter or within 450mm of painted eaves or a painted gutter an aluminium shield at least 1.5m long should be fitted to the underside of the gutter or painted surface.
5. If the flue terminal is installed so that it is 2m (6ft) or less from any ground, balcony or flat roof or place to which any person has access and which adjoins the walls in which the outlet is situated, a terminal guard must be fitted to the outside wall.

   The terminal guard, Part No. TGD161607 available direct from Halstead Heating Ltd., or its manufacturers, Tower Flue Components Ltd., Vale Rise, Tonbridge, Kent.

   The terminal guard should be fixed to the wall with 4 off 1 inch × No. 10 screws. Ensure that the guard is placed symmetrically over the terminal with an equal gap on all sides.
6. Installatins involving the terminal being positioned under a car port roof should be avoided except where there are three open walls. If the car port has any walls, consult your local gas region for advice before proceeding further.
7. Fire precautions, refer to section 1.4 note 4.

1.6 WATER SYSTEMS

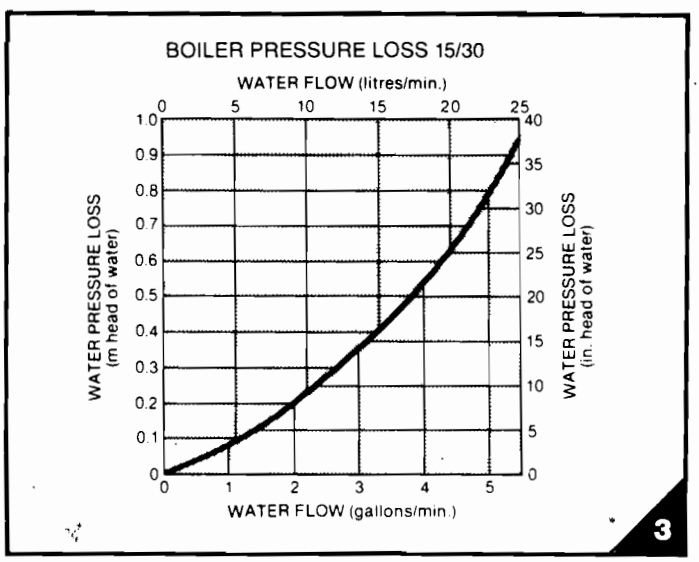
The maximum water pressure to which the appliance can be subjected is a head of 30 metres.

IMPORTANT NOTE: The system used for this boiler should have its pump fitted in the flow pipe from the boiler, and isolating valves fitted as close to the pump as possible. It is recommended that the pump should be capable of producing at least an 8ft (2.5m) head when passing a flow rate through the boiler of 11.5 litre/min (2.5 gal/min) giving a temperature rise of approximately 11°C (20°F).

The maximum flow termperature of the appliance is 82°C (180°F). See graph (Figure 3) for pressure loss of appliance.

When the system is commissioned, the differential of 11°C should be checked at points A and B (Figure 5) and the design requirements met by suitable adjustment of the pump regulator and radiator valves, with the by-pass shut. Ensure that the cylinder heating rate is satisfactory and check for absence of "kettling", if required adjust and set the lockshield valve on the domestic hot water return.

Where the system is of high resistance i.e. microbore and/or Thermostatic Radiator valves then a high head pump such as the Grundfos UPS 15/60 should be installed.



3

It is important that a 15mm valve by-pass be fitted into the pipework as shown in Figure 5 and that the pipework to the cylinder should not be less than 22mm copper.

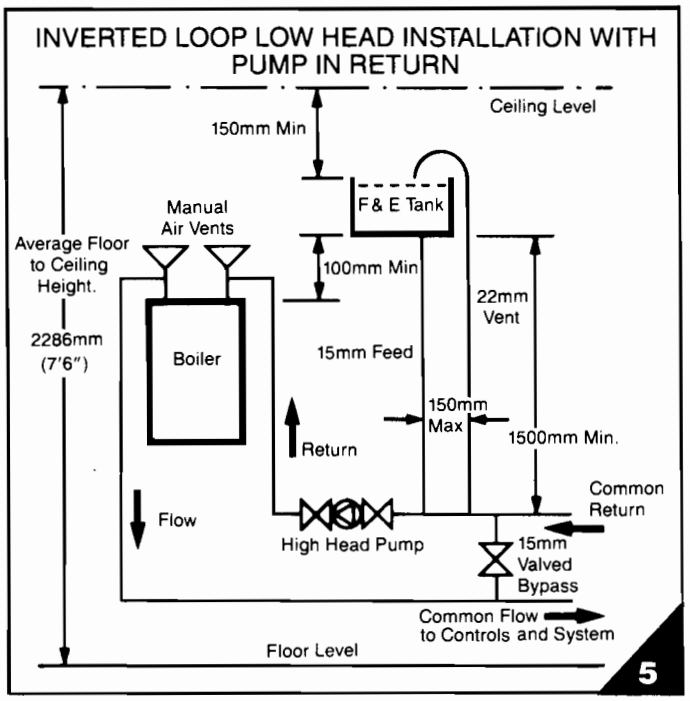
The by-pass setting is done with both motorised valves shut with the system starting from cold. The by-pass valve should be initially set to the open position and progressively closed to produce the correct design temperature differential between the flow and return at the boiler.

A safety valve need not be used unless local regulations require them to be fitted.

The hot water cylinder must be of the fully indirect (double feed) type. Self priming (single feed) cylinders MUST NOT BE USED.

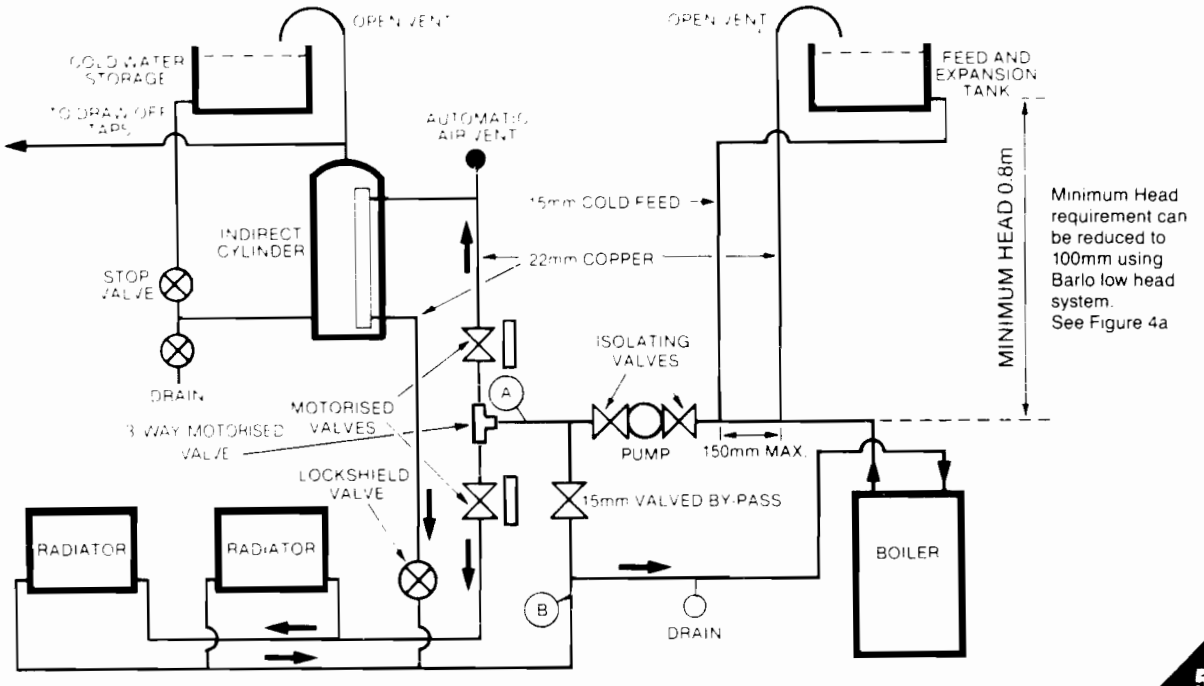
Water Connections
The boiler supplied with 22mm copper compression fittings to accept tubing to BS 2871.

Drain-off cocks
These must be fitted at the lowest points in the system.



1. The pump used **Must** be a high model such as the Grundfos UPS 15/60, as pump Head Pressure is used to replace natural static head.
2. Draincocks should be installed at lowest point.
3. No horizontal pipework is permitted in open vent.
4. F & E tank should have a lid to prevent evaporation loss.

PIPE LAYOUT USING BY PASS AND CLOSE COUPLED FEED AND VENT



5

1.7 VENTED WATER SYSTEMS

An open vent pipe of 22mm diameter must be fitted in the flow line from the boiler and terminated above the cold feed, discharging into the expansion cistern.

Horizontal runs should be avoided if possible.

The expansion cistern should not have a smaller capacity than 22 litres (5 gallons). The cold feed should be of 15mm minimum diameter.

The cistern must not be higher than 30m (100ft) above the boiler. For minimum head requirements see Figs. 4 & 5
The by-pass should be of 15mm diameter.

1.8 SEALED WATER SYSTEMS

As supplied, the boiler is not suitable for use on sealed systems. However an optional sealed system kit is available from your local stockist (or direct from Barlo Products Ltd., Crompton Way, Crawley, Sussex).

Where the boiler is to be installed on a sealed system using the kit, separate installation instructions relevant to sealed systems are contained within the kit.

2 INSTALLING THE APPLIANCE

2.1 UNPACKING THE BOILER

1. Remove the wall template and the wall mounting bracket from the carton.

   It is advisable to leave the boiler in the carton and proceed to 2.2, "Fixing the wall mounting bracket", before unpacking further.

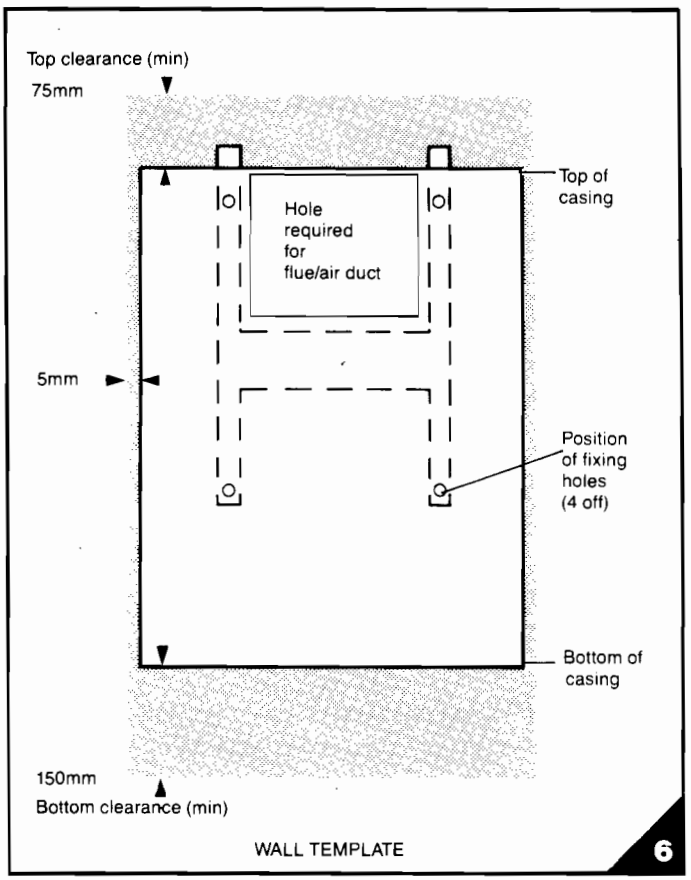
2.2 FIXING THE WALL MOUNTING BRACKET

A wall template is provided to enable easy location of the boiler. Fig. 6.

It is essential that the boiler is installed with adequate clearance to allow access for servicing.

The minimum acceptable clearances are

At each side of the boiler	5mm (¼in)
At the top of the boiler	75mm (3in)
At the bottom of the boiler	150mm (6in)
In front of the boiler	305mm (12in)



WALL TEMPLATE 6

Secure the wall template in the desired position and mark the positions of the four fixings and the flue/air duct.

Note that the minimum clearances are included on the wall template.

The template can now be removed.

Drill the four holes with an 7mm masonry drill and insert the four plastic plugs provided.

Cut the hole in the wall for the flue/air duct.

Secure the wall mounting bracket in position using the 4 screws provided. Ensure that it is the correct way up (Marked on the wall template) i.e.: the cross member does not restrict the flue opening!

2.3 FIXING THE BOILER

In order to fit the boiler onto the wall mounting bracket it is necessary to remove the case because the two lower fixings are situated within the sealed casing. Proceed as follows.

Remove the carton from the boiler and carefully discard the polythene bag covering the casing.

With the boiler still laid on its back remove the controls plinth by pulling forwards (ie upwards away from the back).

Unscrew the four case securing screws (Fig. 15) and carefully lift off the casing. Remove to a safe place to prevent accidental scratching.

If the boiler is to be installed in a position where access to the left hand side is restricted it is necessary to fit a stub pipe connection to the gas connection before lifting the appliance into position. Refer to section 2.5.

The boiler can now be lifted into position and located on the four studs protruding from the wall mounting bracket. At the top, the boiler is retained with two M6 hexagonal nuts and washers. The lower fixings are accessed through the primary air duct behind the burner and are secured by two M6 wing nuts and washers. The washers are important because they effect part of the sealed chamber.

The electrical connections (Section 2.7) should be completed before refitting the casing because access is required to the top of the control box to enable it to swivel for front access. This is not necessary in installations with unrestricted access from the right hand side.

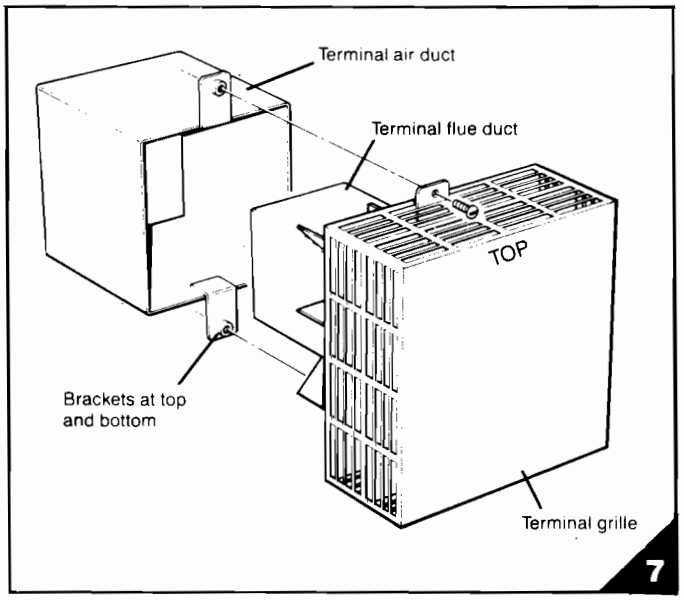
Note: When refitting the casing, ensure that the thermostat capilliary is correctly located and is not trapped between the case and backplate seal.

2.4 FLUE & TERMINAL INSTALLATION

Unpack the flue terminal and ensure it is suitable for the required wall thickness. See section 1.1. If the wall thickness is less than 225mm (8¾in) it will be necessary to cut both ducts. The length of the air duct should be cut 10mm less than the wall thickness. Whatever length is cut off the air duct must also be cut off the flue duct. NOTE: Separate the air duct from the assembly as described below before cutting.

If any extension duct is required, refer to the extension duct kit instructions.

Separate the terminal/flue duct assembly from the air duct by removing the 2 screws



Working from outside the building, push the air duct into the boiler air duct ensuring that it is the correct way up (marked 'TOP') until the top and bottom brackets are flush with the wall.

Mark the position of the wall fixing holes in the brackets, remove air duct and drill 2 holes 7mm to accept the plugs provided in the hardware pack. Fit the plugs, replace the air duct and screw to the wall using the two screws also in the hardware pack.

Make good all brickwork.

Seal the air duct joint using the black mastic in the hardware pack by pressing into the joint from inside the air duct.

Fit the terminal/flue duct assembly and replace the two screws securing it to the top and bottom brackets. Again it is important to ensure it is the correct way up, marked 'TOP'.

Remove the flue collector hood as described in section 6.1.4 and seal the flue duct joint (using the mastic provided) from inside the building.

2.5 CONNECTING TO THE GAS SUPPLY

NOTE: In installations where access to the left hand side is restricted it is necessary to prepare the gas connection before lifting the appliance onto the wall. Refer to section 2.3 "Fixing the Boiler".

The gas inlet is situated at the left hand rear of the boiler (see Figure 15 and is Rc½ (½" BSP). The meter and installation pipe should be of sufficient size to carry the maximum boiler input plus the demand of any other installed appliance. BS 6891:1988.

The gas required for the boiler is 1.02m^3/h (36.0ft^3/in)

The governor at the meter must give a constant outlet pressure of 20m bar (8in w.g.).

The complete installation must be tested for gas soundness including all pipes and meter. The supply line should be purged.

WARNING: Before purging, all windows should be open and all naked lights extinguished and cigarettes and pipes must also be extinguished.

2.6 WATER CONNECTIONS

The boiler is supplied with 22mm female compression joints to accept tubing to BS 2871.

When viewed from the front, the flow is on the L.H.S. and the return is on the R.H.S. Refer to section 1.6 to 1.8 for installation details.

2.7 WIRING INSTRUCTIONS

THIS APPLIANCE MUST BE EARTHED

All external controls and wiring must be of sufficient current carrying capacity and suitable for mains voltage. All wiring must be at least 0.75mm^2 (24×0.2mm to BS 6500 Table 16) pvc insulated 3 core.

The main supply required in 240V~50Hz fused at 3A.

The method of connection to the mains electrical supply must facilitate complete isolation of the boiler. Preferably by the use of a fused 3-pin plug and shuttered socket outlet. Alternatively a fused double-pole switch, having a 3mm contact spearation in both poles, and serving only the boiler may be used.

IT IS IMPORTANT THAT -

(a) All connections are made to the terminal strip in the control box (Figure 9).

(b) The incoming mains lead is connected to terminals marked ⏚ NL.

(c) The pump lead is connected to terminals marked NP, LP, EP.

(d) External controls are connected via terminals marked 1 and 2.

To prevent overheating in the boiler, the pump is controlled by the over-run thermostat housed in the control box. This operation will allow the residual heat to be dissipated into the system. It is essential therefore, that the pump is connected to the correct terminals. NP, LP, EP.

In installations where access to the RHS is unrestricted, it is possible to open and wire the control box from the side.

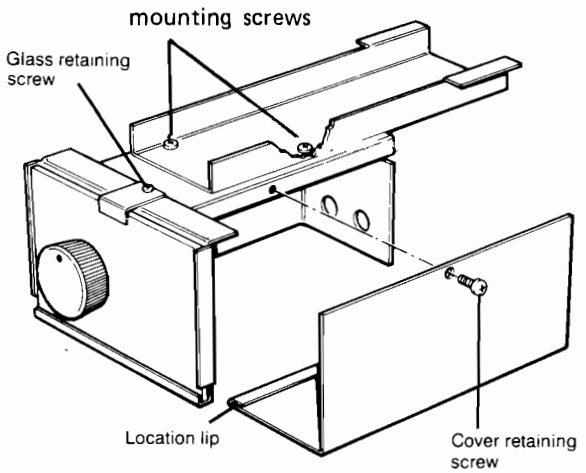
In all other cases, remove the two control box mounting screws & carefully lower the control box away from the support bracket (Fig. 8). Note:
It is necessary to remove the casing before this can be done.

Unscrew the control box cover retaining screw and lower the cover away from the box.

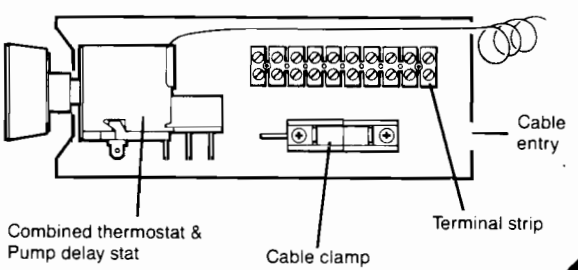
Bring the pump and mains cables into the box through the grommets in the rear panel. Leave a minimum of 200mm (8in) of excess wire behind the control box when in the normal position to allow it to swivel freely for servicing. Bring the external controls wire into the box through the locking bush in the rear panel, again leaving 200mm (8in) of excess wire. Strip the cables and complete the wiring. Refer to Figs. 9,10, 11, and 12.

(1) NOTES: When stripping the mains lead, the Green/Yellow wire (⏚) should be left 15mm longer than the Blue and Brown wires (L) and (N).

DETAILS OF CONTROL BOX MOUNTINGS



SIDE ELEVATION SHOWING POSITION OF CONNECTIONS



8

(2) The mains and pump lead must pass through the cable clamp. Ensure that the cable clamp is tightened after completing the wiring.

(3) Ensure that the locking bush securing the external controls wire is tightened.

(4) Check that the wires are not strained or under tension.

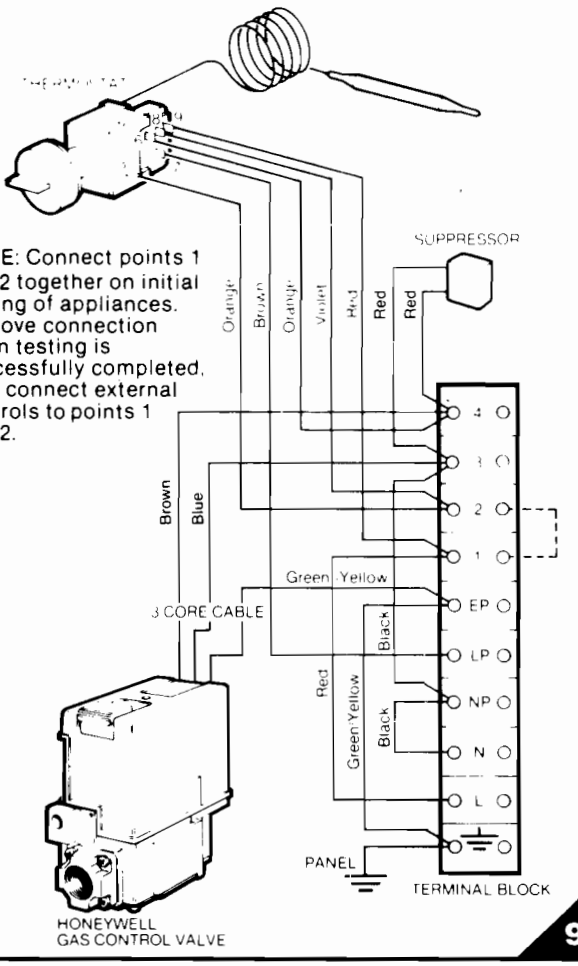
If the control box has been removed to allow front access it should be returned to its original position and the locking screw replaced.

The spark generator support bracket should be refitted. Note: Ensure that the spark generator lead is correctly routed.

Ensure that the thermostat capillary and excess wire are neatly routed and do not touch other components

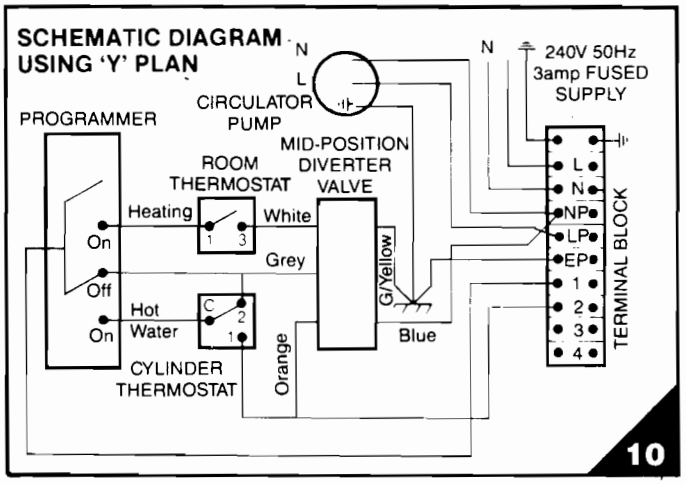
WARNING: Switch off and disconnect from the electricity supply before removing any parts for cleaning or servicing.

BLENHEIM INTERNAL WIRING DIAGRAM



9

SCHEMATIC DIAGRAM USING 'Y' PLAN



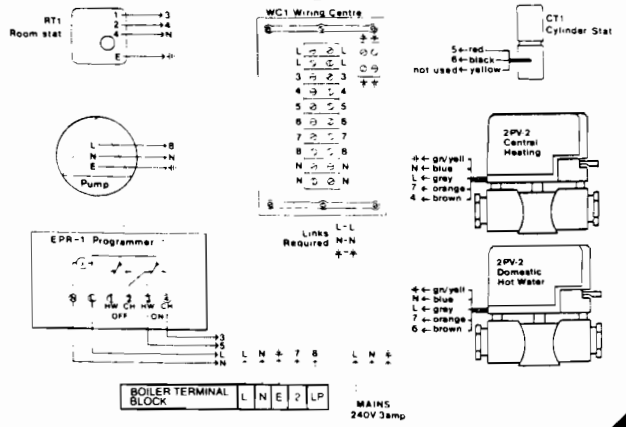
10

A

PUMPED CENTRAL HEATING AND DOMESTIC HOT WATER WITH DIVERTER VALVE AND BY-PASS CONNECTION

Connect external controls and mains lead as shown

2-WAY SYSTEM



BLENHEIM
EXTERNAL CONTROL WIRING DIAGRAM

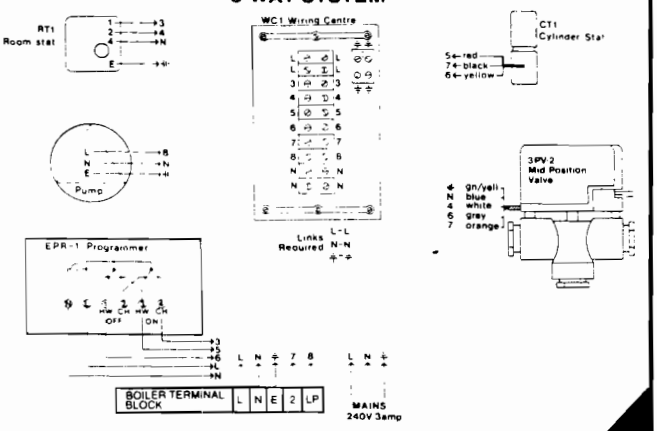
11

B

PUMPED CENTRAL HEATING AND DOMESTIC HOT WATER WITH TWO MOTORISED VALVES AND BY-PASS CONNECTION.

Connect the external controls and mains lead as shown

3-WAY SYSTEM



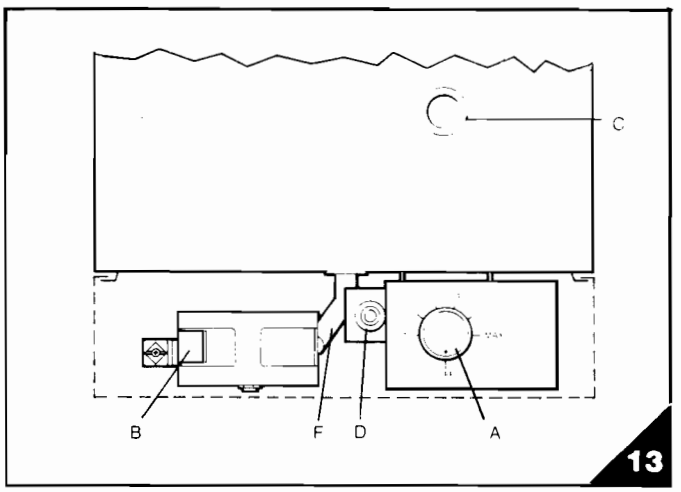
BLENHEIM
EXTERNAL CONTROL WIRING DIAGRAM

12

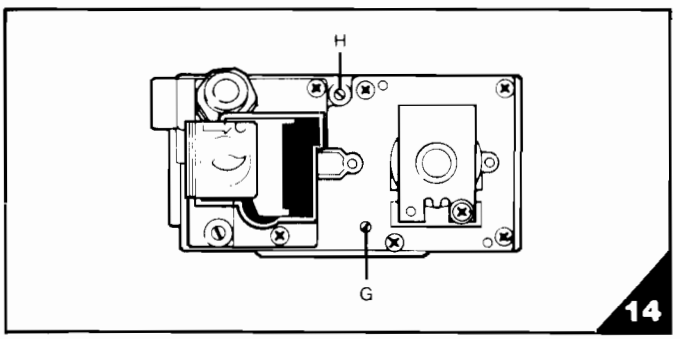
3 COMMISSIONING & TESTING

CHECKS TO ENSURE ELECTRICAL SAFETY SHOULD BE CARRIED OUT BY A COMPETENT PERSON. **DO NOT USE THE BOILER WITHOUT THE OUTER CASE FITTED CORRECTLY EXCEPT TO CHECK PILOT GAS LINE SOUNDNESS.**

1. Do not fit the casing at this stage.
2. Fill and flush the system with all valves open. Refill the system and check for water leakage. Vent the system including radiators and make sure the pump isolating valves are fully open, also the by-pass and motorised valves (if fitted).
3. Turn on gas (service cock slot horizontal) and check for gas soundness around boiler components using leak detection fluid. DO NOT USE A NAKED FLAME.
4. Remove the pressure test screw and fit pressure test gauge ('F' Fig. 13).
5. Ensure that all secondary controls (timer, room thermostat and cylinder thermostat where fitted) are turned to maximum.
6. Turn on the electrical supply and check the pump is working and is circulating water through the system.
7. Turn the boiler thermostat knob to off position '0'.
8. Fully depress Gas Control Button 'B' and hold in this position. Press and release ignition button 'D' a few times and check that the pilot has lit through veiwing window 'C'. If alight hold the button 'B' for 10–20 seconds then release.
9. If the pilot flame does not remain lit, a period of 3 minutes should be allowed to elapse before another attempt to light the pilot flame is made. Should the pilot fail to remain alight, refer to fault finding chart 5.5.
10. When the pilot burner is stable, check for gas soundness at the pilot connections.
11. Observe the pilot burner, ensuring that the flame envelopes 10–13mm (⅜in.) of thermocouple tip. If necessary adjust the flame length as follows:
    Remove the plastic gas valve cover by removing the central retaining screw and pulling forwards. Turn the self sealing pilot adjustment screw 'H' (Fig. 14) anticlockwise to increase pilot flame length and clockwise to reduce the pilot flame length.
12. Select the required heat input from the data badge situated on the Flue collector hood, and set the arrow to indicate whether min, mid, or max rate has been chosen.
13. Replace the casing. The casing must be correctly fitted, making a good seal along all sides.
    Note: When refitting the casing ensure that the thermostat capillary is correctly located and is not trapped between the casing and backplate seal.
14. Turn the thermostat knob to the maximum setting. Check that the main burner lights smoothly from the pilot burner. Allow the burner to run for at least 10 minutes.
15. If necessary adjust the gas valve pressure adjusting screw G (Fig.14) to give the correct burner pressure as determined from the data badge. (This information is repeated on the lighting instruction plate and also in section 1 of these instructions). The pressure adjusting screw G (Fig. 14) is turned anticlockwise to increase and clockwise to decrease the burner pressure. Replace the gas valve cover. Ensure that the cable is correctly located.
16. Turn the thermostat knob anti-clockwise to the "OFF" position.
17. Remove pressure gauge, and securely replace test nipple screw "F" (Fig. 13). Test for gas soundness.
18. Check that the operation of all external controls is satisfactory.
19. Check that the multifunctional control is operating satisfactorily, particularly the flame protection system. Also check the operation of the thermostat.



13



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20. If an electrical fault is apparent after installation of the boiler, preliminary electrical system checks should be performed (see Section 5).
    For any other problems, refer to the fault finding charts.
21. Adjust the system as previously described in Section 1.6.
22. The boiler and system should now be allowed to reach its maximum working temperature and examined for water leaks.
23. Turn off the system and rapidly drain whilst still hot.
24. Refill, and vent ensuring all air is cleared from the system.
25. Turn the boiler thermostat and all external controls to their required settings.
26. Replace the controls plinth.

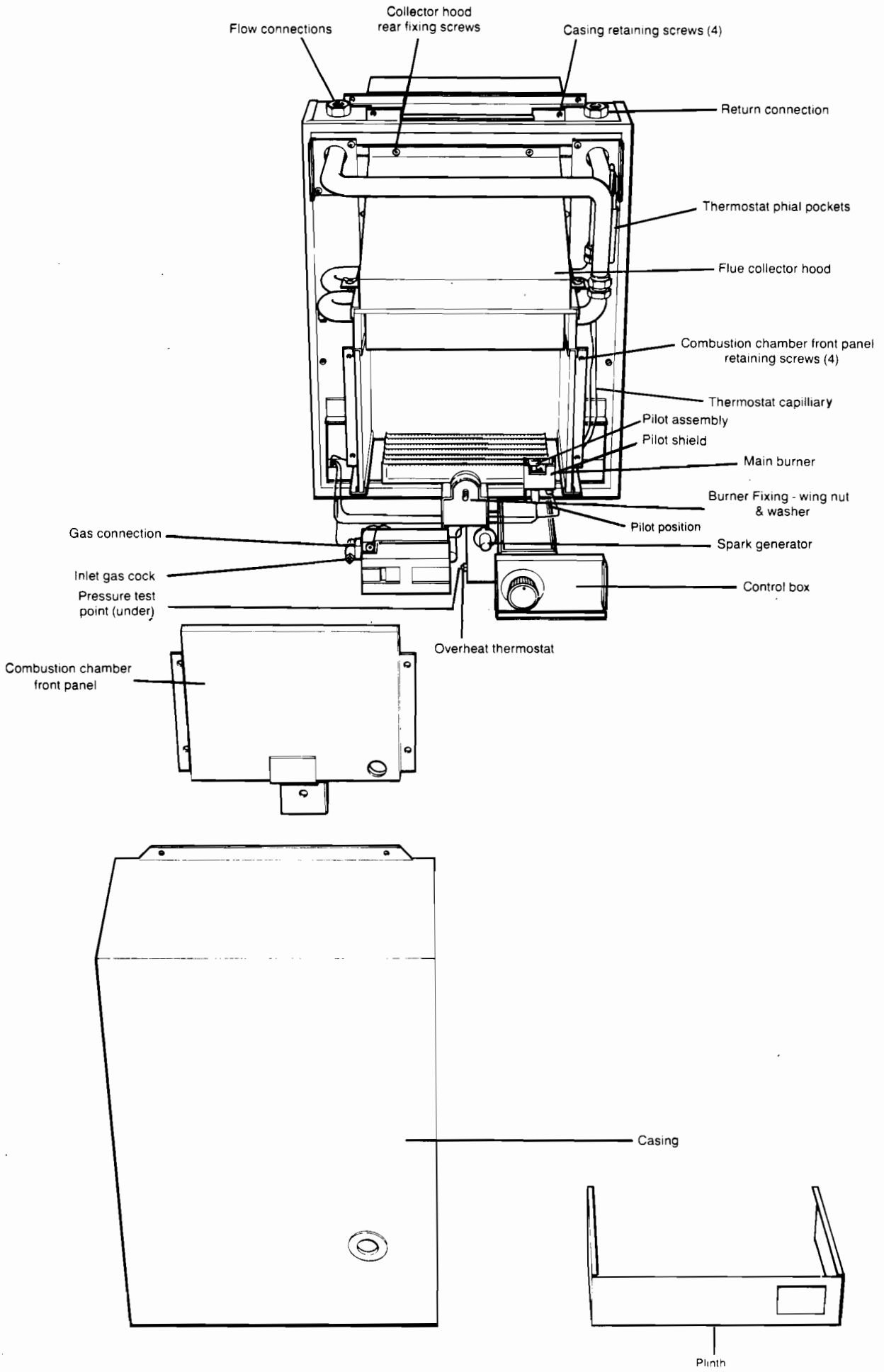
3.1 USERS INSTRUCTIONS

Hand the User Instructions to the user or purchaser for retention and instruct in the efficient and safe operation of the boiler and heating/hot water system.

Advise the user or purchaser of the precautions necessary to prevent damage to the heating/hot water system and to the building in the event of the system remaining inoperative during frost conditions.

Explain to the user the function of the overheat thermostat. Show the user how to manually reset the overheat thermostat should a lockout occur.

Finally advise the user or purchaser that for continued efficient and safe operation of the boiler it is important that the appliance is serviced annually by the local gas board or a competent installer.


Flow connections
Collector hood rear fixing screws
Casing retaining screws (4)
Return connection
Thermostat phial pockets
Flue collector hood
Combustion chamber front panel retaining screws (4)
Thermostat capilliary
Pilot assembly
Pilot shield
Main burner
Burner Fixing - wing nut & washer
Pilot position
Spark generator
Control box
Gas connection
Inlet gas cock
Pressure test point (under)
Overheat thermostat
Combustion chamber front panel
Casing
Plinth

15

4 SERVICE INSTRUCTIONS

THE APPLIANCE SHOULD BE SERVICED ANNUALLY AS FOLLOWS. Before attempting any service to the boiler, ISOLATE FROM THE ELECTRICAL SUPPLY AND TURN OFF THE GAS SUPPLY AT THE MAIN SERVICE COCK.

After completing any service operation or replacement of gas carrying components, always test for gas soundness.

4.1 HEAT EXCHANGER

Inspect the heat exchanger and clean the finned tubing if necessary. To gain access —

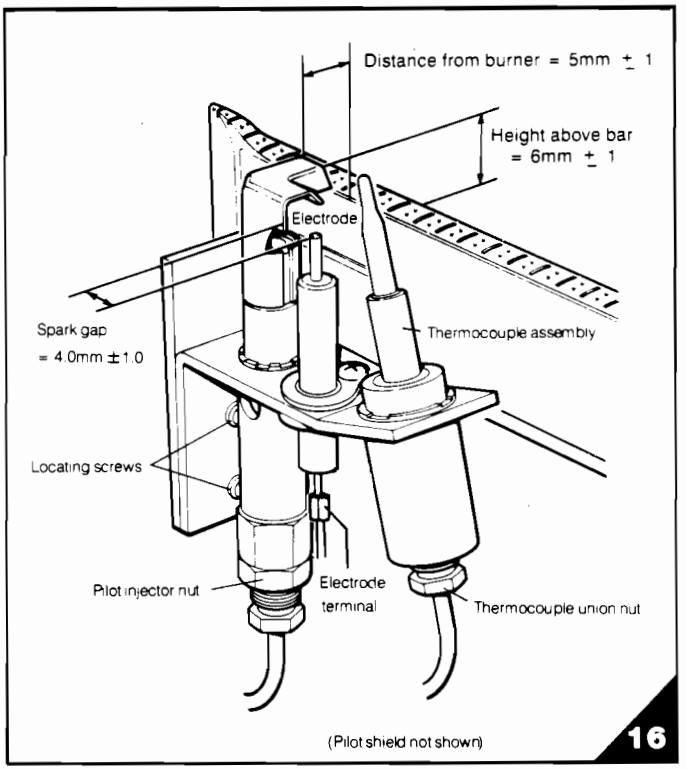
1. Remove the controls plinth by gently pulling forwards. (Fig. 7.)
2. Remove the casing by unscrewing the four retaining screws located in each corner and carefully lifting clear of the appliance. (Fig. 7.)
3. Remove the four screws securing the flue collector hood to the rear panel and the two wing nuts securing the hood to the combustion chamber. Remove the hood, taking care not to damage the glass fibre rope seal on either face. (Fig. 15.)
4. Pull off the lead from the electrode.
5. Disconnect the pilot pipe from the pilot assembly using two spanners, one to support the pilot injector base nut and the other one to undo the union connection. Unscrew and withdraw the thermocouple. (Fig. 16.)
6. Remove the combustion chamber front panel by unscrewing the M5 wing nut securing the burner, followed by the four pozi-head front panel retaining screws.
7. Do not lose the shakeproof washer from underneath the wing nut. (Fig. 15.)
8. Remove the burner complete with the pilot assembly by easing it forwards away from the injector.
9. Place a suitable sheet of paper between the controls and the combustion chamber to collect flue debris during the cleaning operation. Also protect the pilot pipe and thermocouple.
10. Thoroughly clean the heat exchanger fins with a suitable brush. Remove any debris.

4.2 MAIN BURNER (Figure 15)

11. Examine the main burner for any signs of deterioration or damage. Relace if necessary.
12. Clean the main burner body and ports with a soft brush. Ensure that the ports are clear.

4.3 PILOT ASSEMBLY (Figure 16)

13. Remove the two screws securing the pilot bracket to the burner bracket and the pilot shield. (Unscrew the top one first.)
14. Inspect the electrode for damage. Replace if necessary.
15. Clean the pilot burner and bracket. Ensure that it is free of debris.
16. Unscrew and remove the pilot injector (Fig. 16). Inspect for damage or debris.
17. Inspect the thermocouple. Replace if necessary.



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4.4 MAIN INJECTOR

18. Ensure the main injector is clear of any debris etc. If necessary, remove the injector as follows:
19. Unscrew the injector at the rear of the combustion chamber. When replacing ensure sealing compound is used on the injector and test for gas soundness.

4.5 RE-ASSEMBLY

Re-assemble all parts removed during Routine Servicing in reverse order, ensuring:

1. The electrode gap is as shown in Figure 16.
2. The main burner sits correctly on the main injector.
3. Care is taken not to damage any of the insulation boards or sealing gaskets.
4. A good seal between the flue collector hood and the back panel. This is achieved by tightening screws gradually and alternately to ensure that both sealing planes are pulled together.
5. Refer to the data plate situated on the flue collector hood. Note whether the boiler has been set at Max, Mid, or Min burner pressure.

4.6 RE-COMMISSIONING

Follow the procedure described in section 3 'Commissioning and Testing' to ensure the correct performance of the appliance, and ensure that the burner pressure is set according to the desired heat output as marked on the data plate, i.e. max, mid, or min.

AFTER SERVICING

Test all gas points for soundness using a suitable soap solution. Ensure that the casing is correctly fitted thus ensuring a good seal. Check that all external controls are set as required.

5 FAULT FINDING

IMPORTANT NOTICE

If an electrical fault occurs on the appliance the preliminary electrical system checks contained in the British Gas Multimeter Instruction Booklet must be carried out firs.

When any service or replacement of electrical components which has required the breaking and re-making of electrical connections has taken place, the following tests must be repeated:

1. Earth Continuity.
2. Polarity.
3. Resistance to Earth.

5.1 EARTH CONTINUITY CHECK

Appliances must be electrically disconnected, meter set on Ω (ohms) × 1 scale and adjust zero if necessary.

Test leads from any appliance earth point (e.g. inside control box) see wiring diagrams (Fig. 9) to earth pin on plug. Resistance should be less than 1Ω (ohm). If the resistance is greater than 1Ω (ohm) check all earth wires for continuity and all contacts are clean and tight.

If the resistance to earth is still greater than 1Ω (ohm) then this should be reported to your supervisor.

5.2 SHORT CIRCUIT CHECK

Switches turned FULL ON — meter set on Ω (ohm) × 1 scale. Test leads from L to N on appliance terminal block, if meter reads 0 then there is a short circuit. Meter set on Ω (ohms) × 100 scale.

Repeat test with leads from L to E. If meter reads less than infinity (∞) there is a fault.

NOTE: Should it be found that the fuse has failed but no fault is indicated, a detailed continuity check (i.e. by disconnecting and checking each component) is required to trace the faulty component. It is possible that a fault could occur as a result of local burning/arcing but no fault could be found under test. However, a detailed visual inspection should reveal evidence of burning around the fault.

5.3 POLARITY CHECK

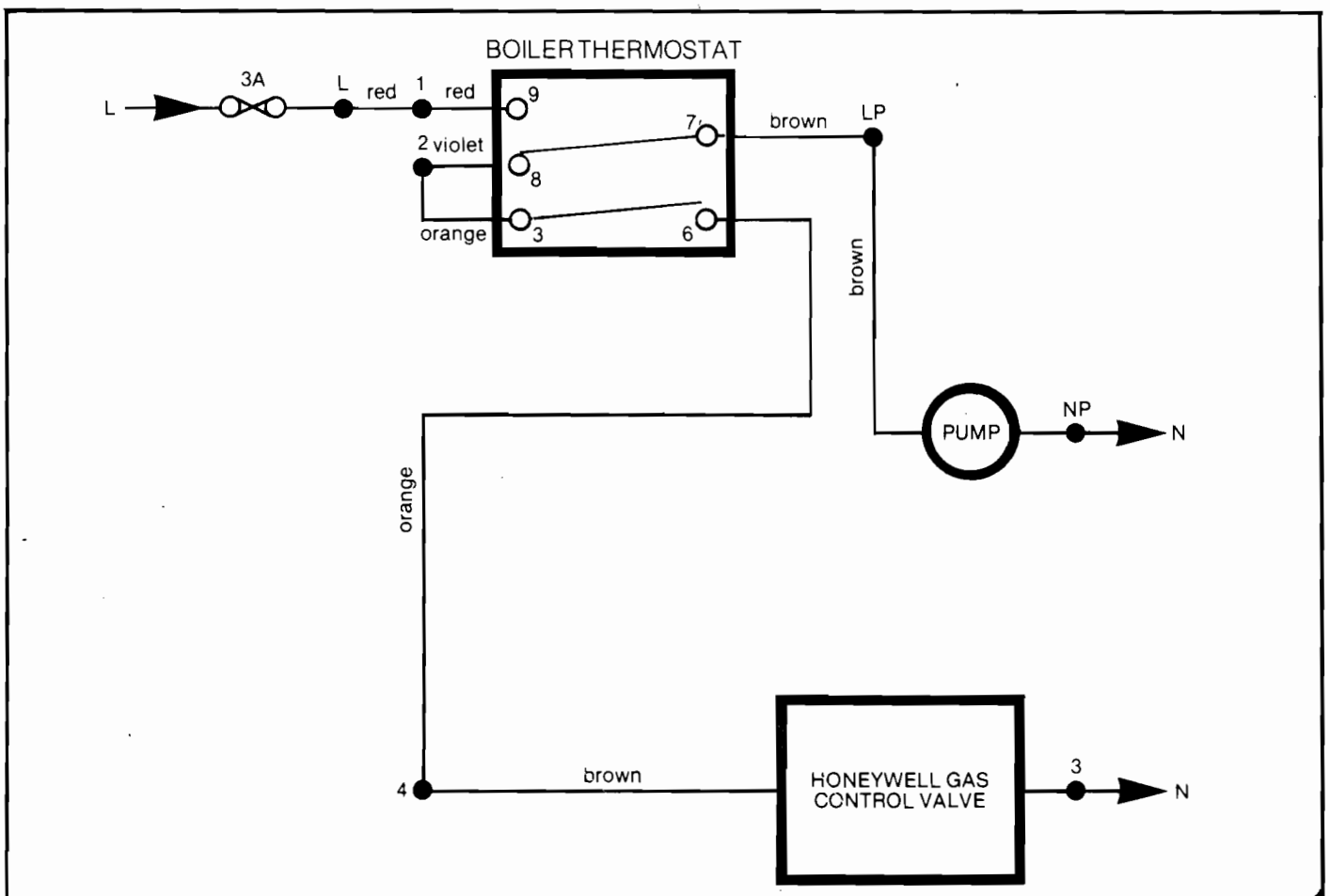
Appliance reconnected to mains supply and meter set on 300V ac scale. Test at appliance terminal block.

(a) Test leads from L to N meter reads approx. 240V ac.
(b) Test leads from L to E (⏚) meter reads approx. 240V ac.
(c) Test leads from N to E (⏚) meter reads from 0 to 15V ac.

5.4 RESISTANCE TO EARTH CHECK

Appliance must be disconnected from main supply and meter on Ω (ohms) × 100 scale. All switches including thermostat on - test leads from L to E - if meter reads other than infinity (∞) there is a fault which should be isolated. A detailed continuity check is required to trace the faulty component.

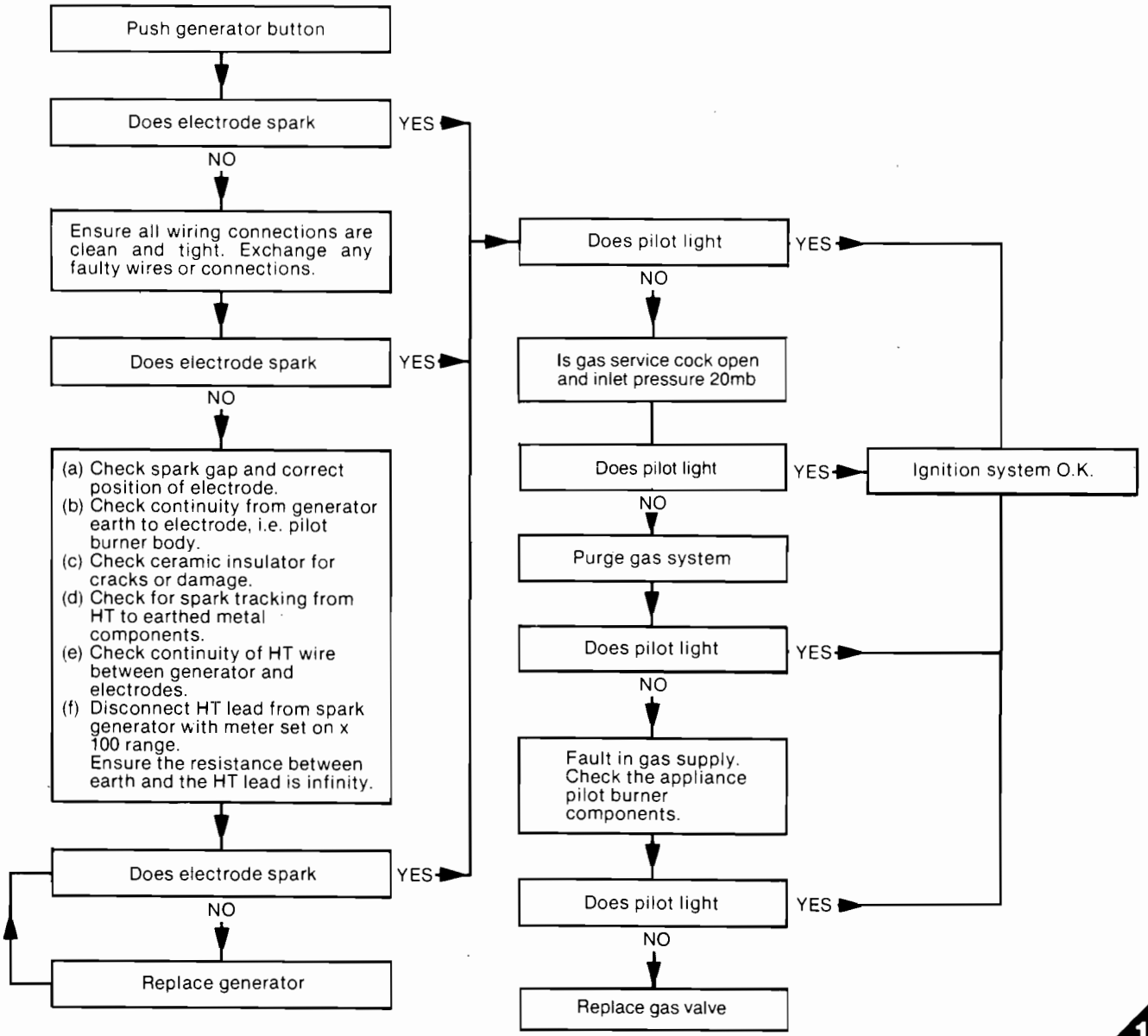
IMPORTANT: These series of checks are the first electrical checks to be carried out during a fault finding procedure. On completion of the service/fault finding task which has required the breaking and remaking of electrical connections then the checks 5.1 Earth Continuity, 5.3 Polarity and 5.4 Resistance to Earth must be repeated.



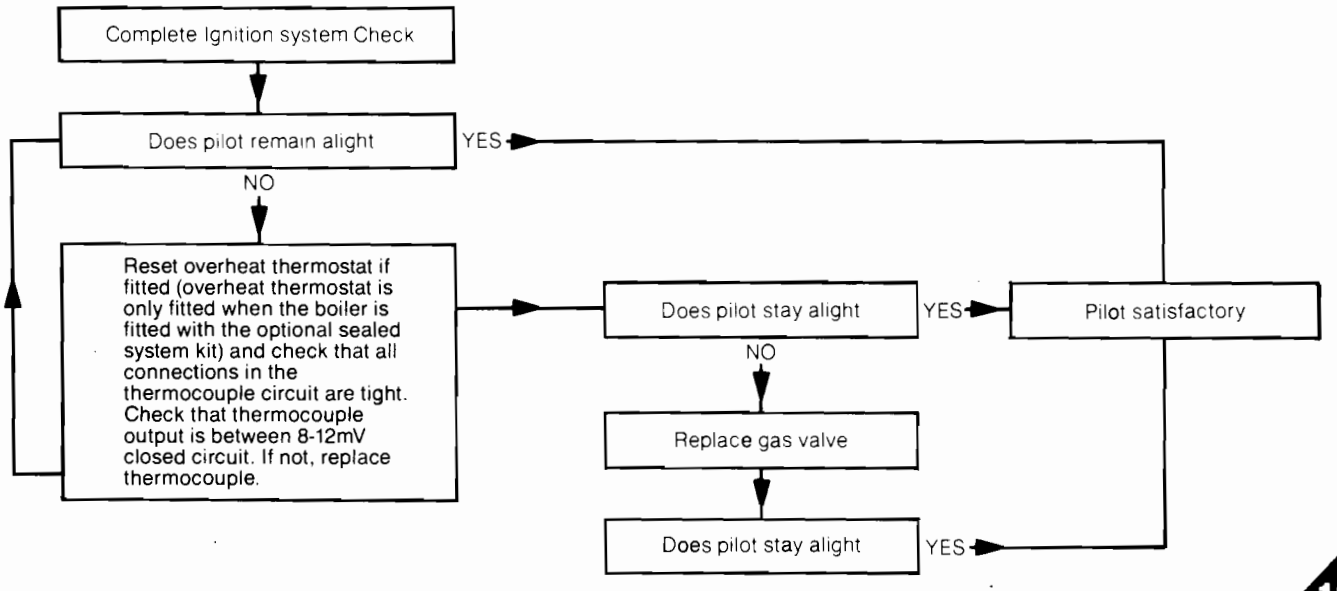
FUNCTIONAL FLOW DIAGRAM

17

5.5 IGNITION SYSTEM FAULT FINDING CHART

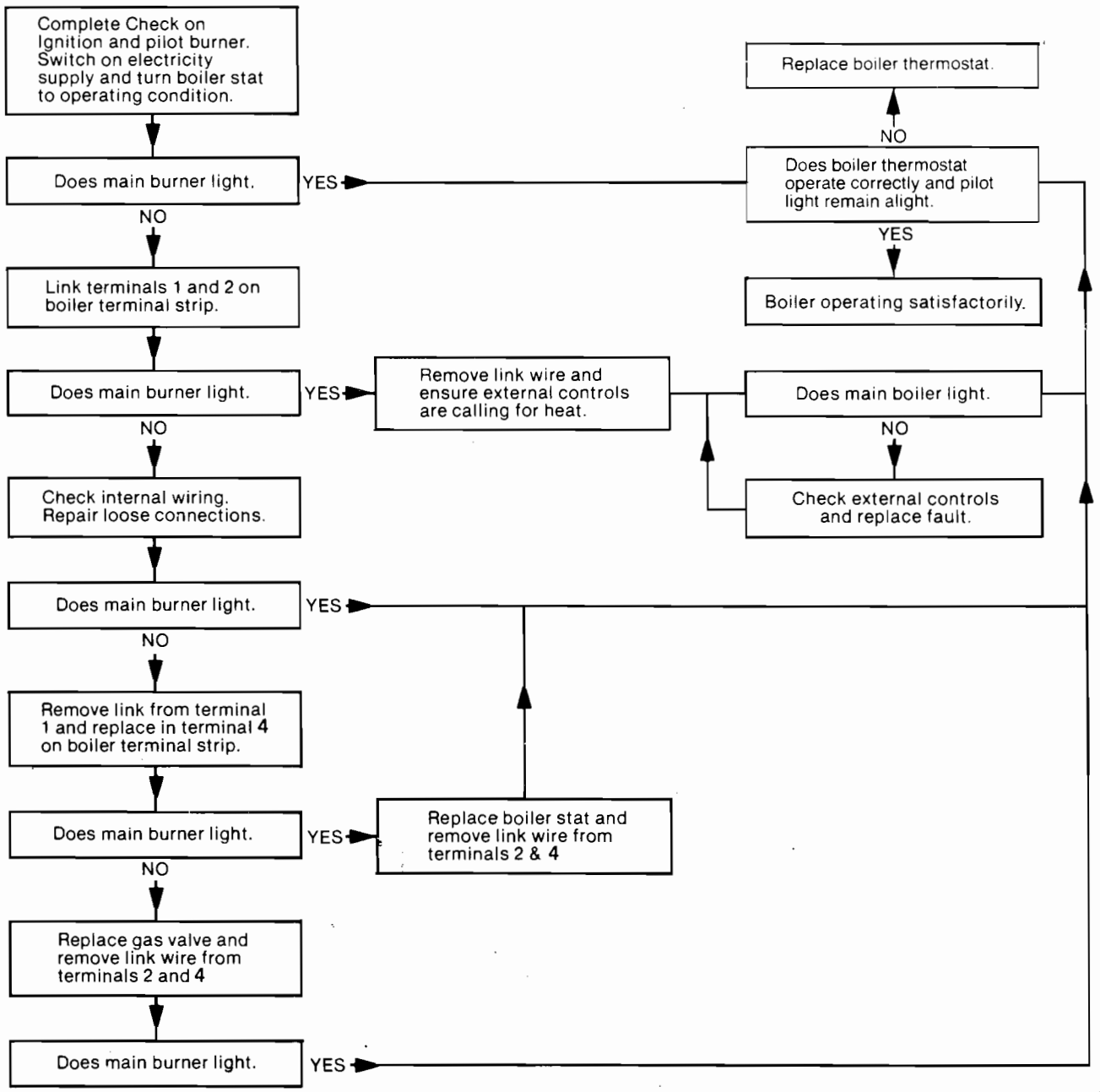


5.6 PILOT BURNER FAULT FINDING CHART



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5.7 MAIN BURNER FAULT FINDING CHART



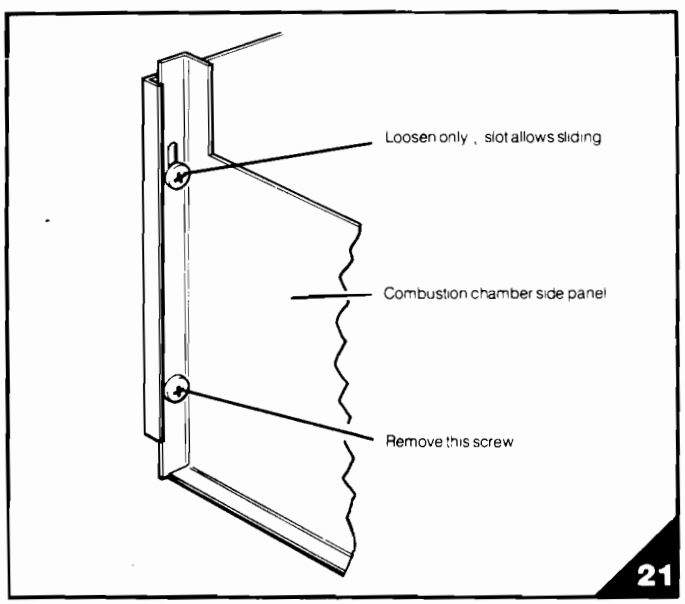
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6 REPLACEMENT OF PARTS

Replacement of parts must be carried out by a competent person. Always disconnect from the electrical supply and turn off gas supply at service cock.

6.1 HEAT EXCHANGER

1. Remove the controls plinth by gently pulling forwards. (Fig.7).
2. Remove the casing by unscrewing the four retaining screws located in each corner and carefully lifting clear of the appliance. (Fig.22)
3. Remove the four screws securing the flue collector hood to the rear panel and the two wing nuts securing the hood to the combustion chamber. Remove the hood, taking care not to damage the glass fibre rope seal on either face.
4. Pull off the lead from the electrode.
5. Disconnect the pilot pipe from the pilot assembly using two spanners, one to support the pilot injector base nut and the other one to undo the union connection. Unscrew and withdraw the thermocouple. (Fig.16)
6. Remove the combustion chamber front panel by unscrewing the M5 wing nut securing the burner followed by the four pozi head front panel retaining screws. Do not lose the shakeproof washer from underneath the wing nut.
7. Remove the burner complete with the pilot assembly by easing it forwards away from the injector. It is necessary to remove the burner to prevent the possiblity of damage whilst supported only on the injector.
8. Drain the system at a point lower than the boiler.
9. Before the heat exchanger can be disengaged, it is necessary to lower the combustion chamber side panels. This is done by removing the lower two combustion chamber side panel locating screws and loosening the top two screws. The combustion chamber sides and rear panel will now slide downwards. (Refer Fig.21).



10. Place a suitable receptacle underneath the heat exchanger connections to collect the remaining water contained within the unit.
11. Support the underside of the heat exchanger and unscrew the heat exchanger connections and carefully remove the heat exchanger by lowering it until the compression fittings are free and then withdrawing forwards.
12. Replace the heat exchanger and reassemble in reverse order ensuring that all joints and sealing materials are correctly located and sealed. A good seal between the flue collector hood, back panel, and heat exchanger is achieved by gradually and alternately tightening the four rear screws and two vertical screws to ensure that both sealing planes are pulled together. The water connections should be tested prior to fitting the casing. Refer to Section 3 for notes on filling the system (either open vented or sealed systems).

6.2 COMBUSTION CHAMBER INSULATION

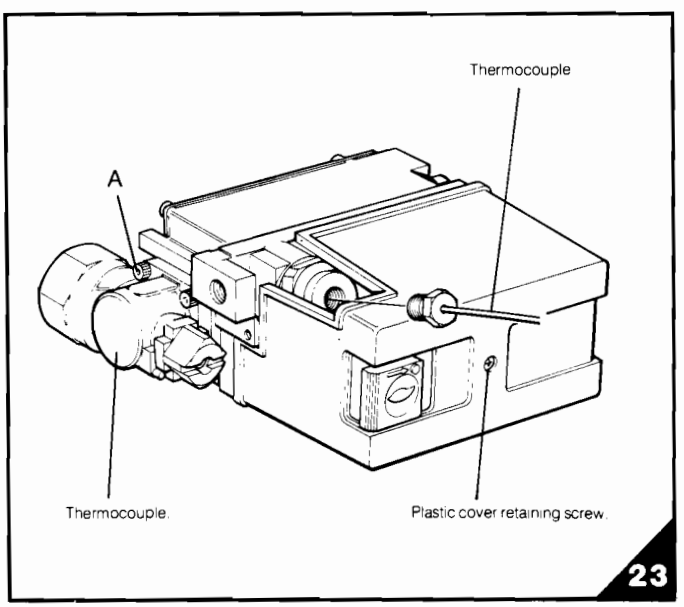
1. Remove the heat exchanger as described in section 6.1, steps 1-11.
2. Remove the top screws retaining the combustion chamber side panels. Both side panels and the rear panel may now be removed to allow easy replacement of the insulation boards.
3. Replace the insulation boards (front and rear panels are a push fit, both side panels slide in from either end). The insulation should be fitted with the smoothest side on view.

   Note that the side insulation panels are wider than the combustion chamber side panels and should protrude approximately 5mm at the front. This overlaps into the combustion chamber front panel. Ensure that the cut out in the R.H.S. panel is correctly positioned at the front R.H.S. bottom corner.
4. Reassemble in reverse order. Refer to step 12 section 61.

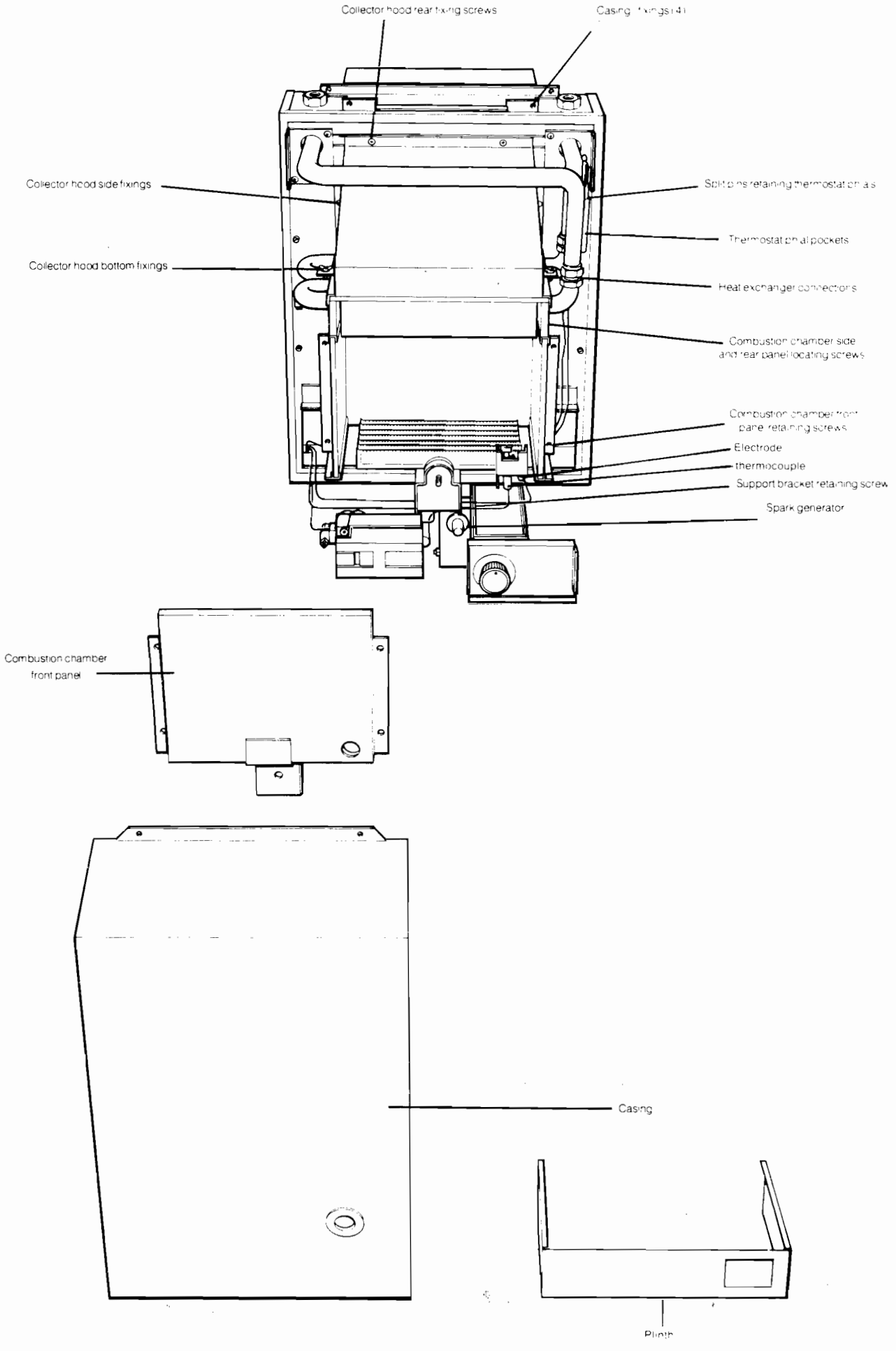
6.3 MULTI FUNCTIONAL CONTROL

To change complete control:

1. Remove grey electrical cover, secured by single screw, and disconnect three wires from their terminals. L (Brown); N (Blue); E (Green/Yellow diagonal stripes).
   Do not lose the earth retaining washers.
2. Disconnect the pilot gas supply at the R.H.S. of the control.
3. Unscrew the thermocouple nut from the front of the multifunctional control and pull it clear of the control.



4. Disconnect the gas inlet cock by unscrewing the four 3mm hexagon keyed screws. ('A' Fig.23)
5. Remove the spark generator support bracket by unscrewing the retaining screw situated above the bracket on the side of


Collector hood rear fixing screws
Casing fixings (4)
Collector hood side fixings
Split pins retaining thermostat phials
Thermostat phial pockets
Collector hood bottom fixings
Heat exchanger connections
Combustion chamber side and rear panel locating screws
Combustion chamber front pane retaining screws
Electrode
thermocouple
Support bracket retaining screw
Spark generator
Combustion chamber front panel
Casing
Plinth

the control box. Carefully lower the bracket to gain access to the four hexagon keyed screws securing the gas valve to the burner manifold.

6. Unscrew the four hexagon keyed screws identified above and remove the gas valve.
7. Reassemble in reverse order. Replace the 'O' ring seals when fitting the new valve.

NOTE: If solenoid operator V404 220/240V 50Hz becomes defective then this can be replaced without disconnection of the whole valve.

Also if basic body/pilot stat becomes defective then disconnect as per 3.1.1 to 3.1.6, remove solenoid operator, and fit onto new standard body.

In both cases follow Honeywell instructions relating to exchanging valve components.

6.4 THERMOCOUPLE

1. Remove the plinth and casing as described in section 6.1, steps 1 & 2.
2. Unscrew the nut holding the thermocouple in the pilot burner and remove the thermocouple downwards out of the bracket (Fig.16).
3. Pull the electrode lead off the electrode terminal and unwrap the lead around the thermocouple and pilot pipe to ensure the thermocouple cable is free.
4. Remove the grey cover from the gas valve secured by a single central screw.
5. Disconnect the thermocouple union from the front of the multifunctional control (Fig.23)
6. Unscrew and remove the two wing nuts securing the sealing plate in the back panel through which the thermocouple passes.
7. Withdraw the thermocouple. Replace in reverse order, bending gently to the shape of the old thermocouple.
8. Ensure the sealing plate is re-made correctly.

   Check the output from the thermocouple is between 16-24 millivolts open circuit or between 8-12 millivolts closed circuit.

6.5 SPARK ELECTRODE

1. Remove the plinth and casing as described in section 6.1, steps 1 & 2.
2. Pull off the igniter lead from the spark electrode (Fig.16).
3. Disconnect the pilot pipe from the pilot assembly using two spanners, one to support the pilot injector base nut and the other one to undo the union connection.
4. Unscrew the thermocouple from the pilot bracket.
5. Unscrew and remove the small pozi-head screw situated in the flange on the underside of the electrode.
6. Remove the electrode by gently pulling downwards.
7. Reassemble in reverse order, ensure that the pilot shield is fitted and that the spark gap is as detailed in Fig. 16.

6.6 MAIN BURNER

1. Remove the plinth and casing as described in section 6.1, steps 1 & 2.
2. Disconnect the pilot pipe from the pilot assembly using two spanners, one to support the pilot injector base nut and the other one to undo the union connection. Unscrew the thermocouple, and pull off the electrode lead from the electrode terminal (Fig.16).
3. Remove the combustion chamber front panel by unscrewing the M5 wing nut securing the burner followed by the four pozi-head front panel retaining screws. Do not lose the shakeproof washer from underneath the wing nut.
4. Remove the main burner by withdrawing forwards (Complete with pilot burner).
5. Remove the two screws securing the pilot burner bracket and shield to the main burner. (Unscrew the top screw first.)
6. Transfer the pilot burner assembly onto the new burner, ensuring the pilot shield is correctly located.
7. Reassemble in reverse order, ensuring that the new burner is situated correctly, i.e. pushed fully onto the injector and is horizontal and that the pilot assembly to burner relationship is as dimensioned in Fig. 16.

6.7 PILOT BURNER

1. Remove the pilot burner as described in section 6.5, steps 1 to 5.
2. Unscrew the pilot injector from the pilot burner (Fig. 16) and transfer to the new pilot burner.
3. Reassemble in reverse order, ensuring that the allignment of the pilot assembly to the main burner is correct (Fig. 16) and that the main burner is situated correctly, i.e. pushed fully onto the injector and is horizontal.

6.8 MAIN BURNER INJECTOR

1. Remove the main burner as described in section 6.6, steps 1 to 4.
2. Unscrew the main burner injector and screw in its replacement, ensuring that it is of the correct size (marked on the side) and that a suitable gas jointing compound (complying with BS 5292 1980) is used.
3. Reassemble in reverse order ensuring that the main burner is correctly refitted, i.e. pushed fully onto the injector and is horizontal.

6.9 SPARK GENERATOR

1. Remove the plinth and casing as described in section 6.1, steps 1 & 2.
2. Remove the spark generator support bracket by unscrewing the retaining screw situated above the bracket on the side of the control box.

   Carefully lower the bracket below the level of the gas valve.
3. Pull off the HT lead from the spark generator.
4. Unscrew the plastic nut securing the spark generator to its mounting bracket and remove the unit.
5. Replace in reverse order.
6. Check for correct operation of the ignition system.

6.10 BOILER THERMOSTAT

1. Remove the controls plinth and casing as described in section 6.1, steps 1 & 2.
2. Remove the thermostat knob by pulling from its spindle.
3. Remove the central top screw securing the clip which supports the glass front and remove the glass front.
4. Remove the two screws either side of the thermostat spindle. This will release the thermostat.
5. Remove the spark generator support bracket retaining screw and lower the bracket complete with generator.

   Unscrew the top rear control box screw (Fig.8) and swivel the control box so that it is accessible from the front.

   This is not necessary where unrestricted access is available at the RHS of the appliance.
6. Unscrew the control box cover screw and remove the cover by rotating downwards.
7. Remove the split pin in the top of the phial pocket and withdraw the phial vertically upwards.
   (The white substance is heat transfer paste and is necessary to ensure satisfactory operation of the thermostat. It must therefore be replaced when fitting in new thermostat).

7. Remove the thermostat and fit its replacement ensuring the connections are correctly fitted. This is most easily achieved by transferring the wires one at a time. Fig. 9 shows the wiring diagram.
8. Pass the phial and capillary through the sealing plate after first unscrewing the two wing nuts securing the sealing plate to the bottom panel.
9. Reassemble in reverse order. Seal the phial into the pocket using appropriate heat transfer paste and ensure that the split pin is refitted. Check that the capillary is correctly routed and that the sealing plate is correctly secured to prevent leakage.

7.0 GUARANTEE AND PARTS WARRANTY

Halstead Boilers are fully guaranteed for a period of twelve Months from date of Installation
The guarantee and warranty conditions are as follows-

GUARANTEE OF CONTRACT

1. The Company shall mean Halstead Boilers Ltd.
2. The one year manufacturer's guarantee covers free spare parts and labour provided that the work is undertaken by the origional installer or an approved Service Agent.
3. The guarantee covers breakdowns caused by fair wear and tear. Failure of parts caused by any other means, e.g. incorrect installation, neglect, accident or failure to operate the boiler in accordance with the User Instructions are excluded.
4. We strongly recommend that you complete and return the guarantee registration card but would advise you that failure to do so does not affect your statutory rights.
5. This contract is not Transferable unless sanctioned by the Company.
6. The Company will endeavor to provide prompt service under this Contract, but cannot be held responsible for any consequence of delay however caused.

DO NOT NEGLECT YOUR GAS BOILER. HAVE IT SERVICED ANNUALLY BY YOUR INSTALLER OR GAS REGION. MAKE A NOTE HERE OF YOUR INSTALLERS NAME AND ADDRESS.

OUT OF WARRANTY SPARES

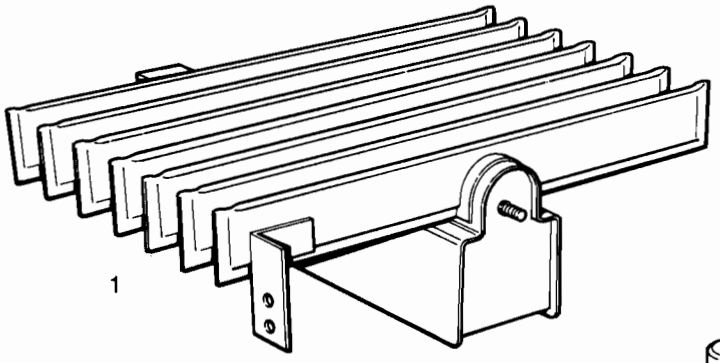
A complete range of spares can be supplied quickly and efficiently from our spares stocklists.

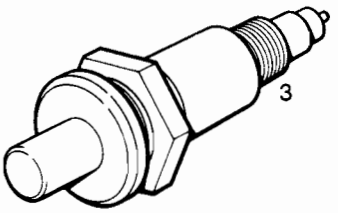
spares & parts online IBASIS.CO.UK®

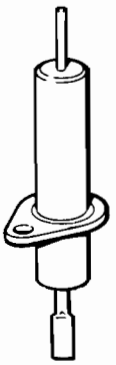
Blenheim 15/30 G.C. Appliance No. 41 333 20

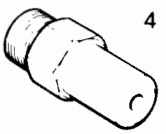
Item No.	Part No.	Description	GC Part No.
1	700512	Main Burner	
2	850519	Spark Electrode	
3	500535	Spark Generator	393 596
4	701018	Injector 2.7mm	
5	500537	Thermocouple	
6	550507	Boiler Thermostat	
7	500501	½ B.S.P. Gas Valve TYPE V4700E	392 581
8	500536	Single Pilot Burner — Natural Gas	
9	300526	Control Knob (thermostat)	

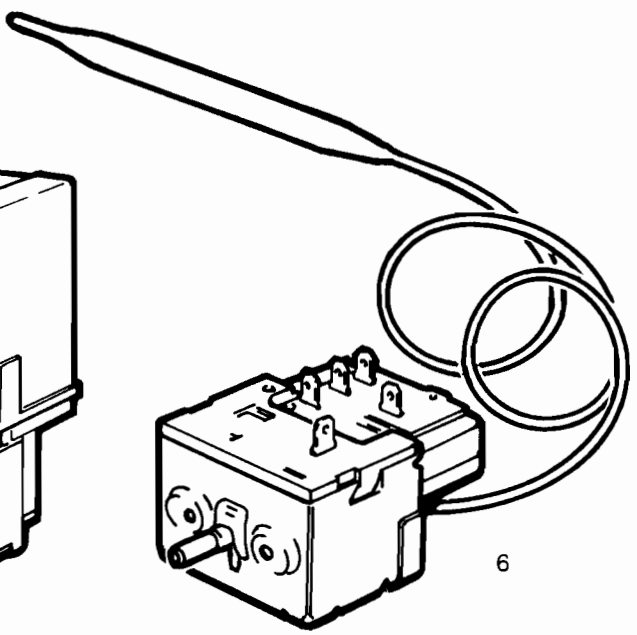
7 REPLACEMENT PARTS LIST

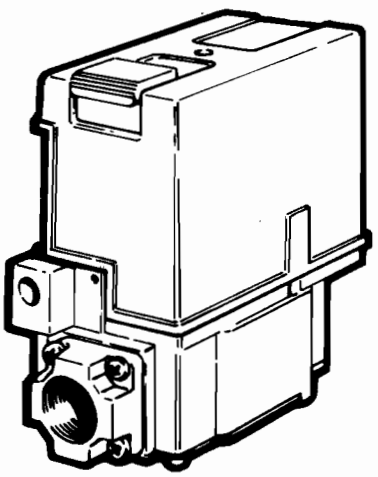


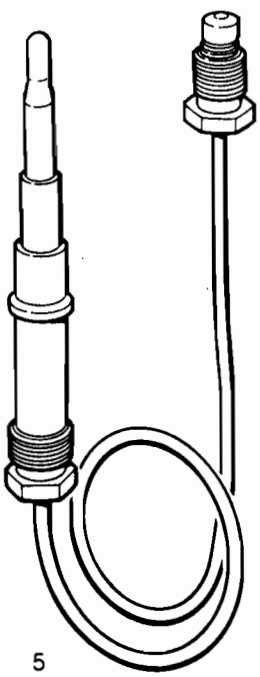


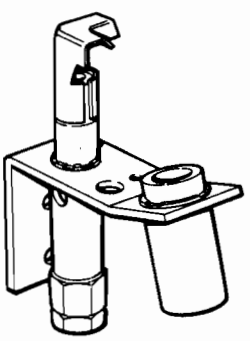


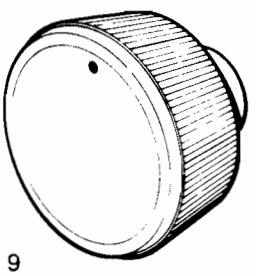












HALSTEAD BOILERS LIMITED
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HALSTEAD, ESSEX CO9 2EX
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USER INSTRUCTIONS

BLENHEIM 15/30 CENTRAL HEATING BOILER

Gas Safety (Installation and Use) Regulations 1984

In your own interests, and that of safety, it is the law that all gas appliances are installed by competent persons in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution.

IMPORTANT: These instructions must be followed carefully to ensure the safe and economical use of your boiler.

THIS APPLIANCE IS FOR USE ON NATURAL GAS ONLY.

ELECTRICAL SUPPLY

Connection should be made to a 240v 50Hz ∿ supply. The appliance must be protected by a 3amp fuse if a 13amp (BS 1363) plug is used or if any other type of plug is used by a 5amp fuse in the circuit.

WARNING: THIS APPLIANCE MUST BE EARTHED.

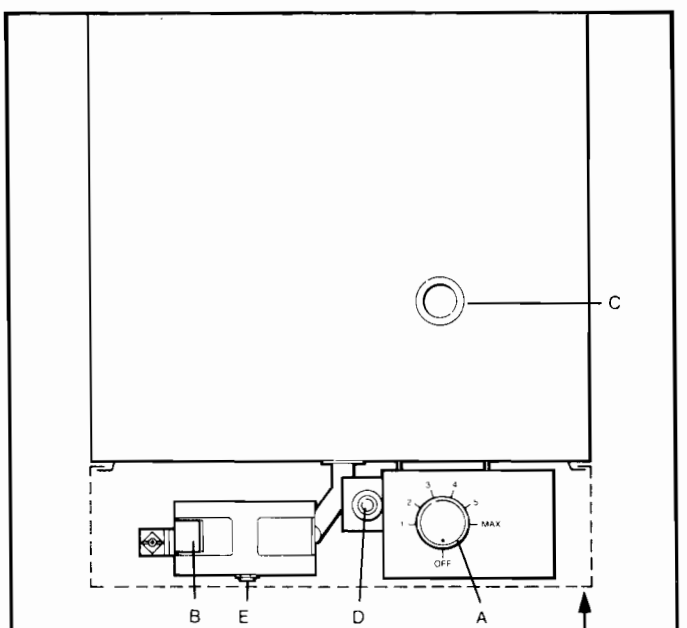
To Connect a Plug

As the colour of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol ⏚ or coloured green or green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.



E Overheat thermostat reset button (if fitted) is behind the gas valve positioned centrally pointing downwards. Remove plinth to view.

Position of controls plinth. Remove by sliding forwards. Replace by sliding along the guides fixed to the underside of the jacket.

1

THE BOILER MUST NOT BE USED WITHOUT THE OUTER CASING SECURELY FIXED AND SEALED TO THE BACK PANEL.

The following points must be observed.

(a) Minimum clearance to combustible materials and for servicing. See Figure 2.

(b) If the appliance is installed in a compartment do not obstruct any purpose provided ventilation opening, and do not use for storage purposes.

(c) If a gas leak or fault is suspected, turn off the appliance and consult your local Gas Region/Service Engineer. *The appliance must not be used until the leak or fault has been corrected by a competent person.

LIGHTING PROCEDURE

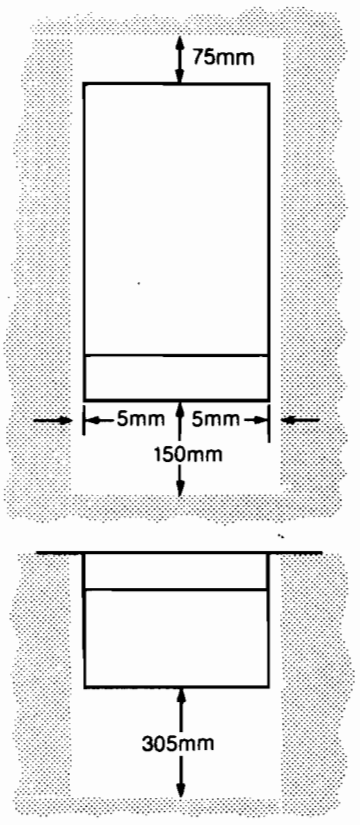
1. Ensure gas supply is turned "ON".
2. Set the programmer (if fitted) so that it is in an "ON" period and the room thermostat (if fitted) to the "maximum" setting before following the lighting procedure.
3. Remove controls plinth by pulling forward. See Fig. 1.
4. The positions of the boiler controls are shown in Fig. 1.
5. Check that the boiler thermostat "**A**" is set at "OFF".
6. Switch on boiler electricity supply.
7. Fully depress Gas Control Button "**B**" and hold in this position. Press and release ignition button "**D**" a few times and check that the pilot has lit through the window "**C**". If alight hold the button "**B**" for 10–20 seconds then release.

   If the pilot flame does not remain lit, or if it goes out on any other occasions, a period of 3 minutes should be allowed to elapse before another attempt to light the pilot flame is made.
8. Once the pilot is alight and stable turn thermostat knob "**A**" clockwise to the required temperature setting and the main burner will light. For normal central heating use MAX setting. Table A gives a guide to the thermostat settings.
9. Set the programmer (if fitted) to the desired programme and the room thermostat (if fitted) to the required temperature.
10. To relight the boiler at any time follow the sequence as listed above.
11. Replace the controls plinth.

Table A

THERMOSTAT SETTING	APPROXIMATE WATER TEMPERATURE
0	OFF
1	COOL
2	COOL/WARM
3	WARM
4	WARM/HOT
5	HOT
MAX	VERY HOT

MINIMUM BUILT-IN DISTANCES FROM WALLS, FLOORS, CEILINGS, WORKTOPS, CUPBOARDS AND ANY PERMANENT OBJECTS.



2

TO TURN OFF THE BOILER

To turn off for short periods, turn the boiler thermostat knob "**A**" to "OFF", the pilot will stay alight. To relight the main boiler turn thermostat "**A**" to required setting. To turn off for long periods push the Gas Control Button "**B**" in the direction of the arrow (i.e. towards the right). The button will automatically reposition ready for light up. Switch off electricity supply to the boiler. To relight the boiler follow the lighting instructions from operation 1.

ELECTRICAL FAILURE

In the event of failure of the electrical supply the boiler will go out. Normal operation of the boiler will continue when the supply is turned back on.

PILOT FAILURE

In the event of pilot failure wait 3 minutes and follow the lighting procedure overleaf. If the pilot continually needs relighting, consult your installer or service engineer.

FROST PRECAUTIONS

If the boiler is to be turned off in severe conditions (FROST), it is recommended that the whole heating system be drained. If in doubt ask your local service engineer.

If a frost thermostat is fitted, **Do not drain the system** and leave the boiler on with the boiler thermostat set above minimum. Turn off at time control switches only.

SERVICING AND MAINTENANCE

Maintenance of your boiler should be carried out by your local Gas Region or a qualified servicing company. It is strongly recommended that you take out a regular servicing and maintenance scheme with one of the above.

The boiler should be serviced once a year when all flueways should be cleaned. Contact your local Gas Showrooms or installer for any information in this matter.

The case and control box cover must not be cleaned with any form of Abrasive. A damp soft cloth should be used.

ADDITIONAL INSTRUCTIONS FOR BOILERS FITTED WITH THE OPTIONAL SEALED SYSTEM KIT

All paragraphs below apply to sealed systems.

The sealed system kit is easily identified by the existence of an overheat thermostat mounted on a bracket behind the gas valve (remove the plinth to view it).

In the centre of the overheat thermostat securing nut is a brown plastic reset button situated centrally behind the gas valve, pointing downwards.

LIGHTING PROCEDURE

If the pilot fails to remain alight during step 7 overleaf, press the overheat thermostat reset button once, wait 3 minutes and try again.

PILOT FAILURE

If at any time during the operation of the appliance, the pilot flame should go out, allow the boiler to cool, remove the controls plinth, press the overheat thermostat reset button (E, Fig. 1) and follow the lighting procedure described overleaf.

If the boiler then operates but persistently shuts down and requires relighting, consult either your installer or local service engineer.

FROST PRECAUTIONS

A sealed system must only be drained and refilled by a competent person, e.g. local service engineer.

G.C. APPLIANCE No. 41-333-20

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