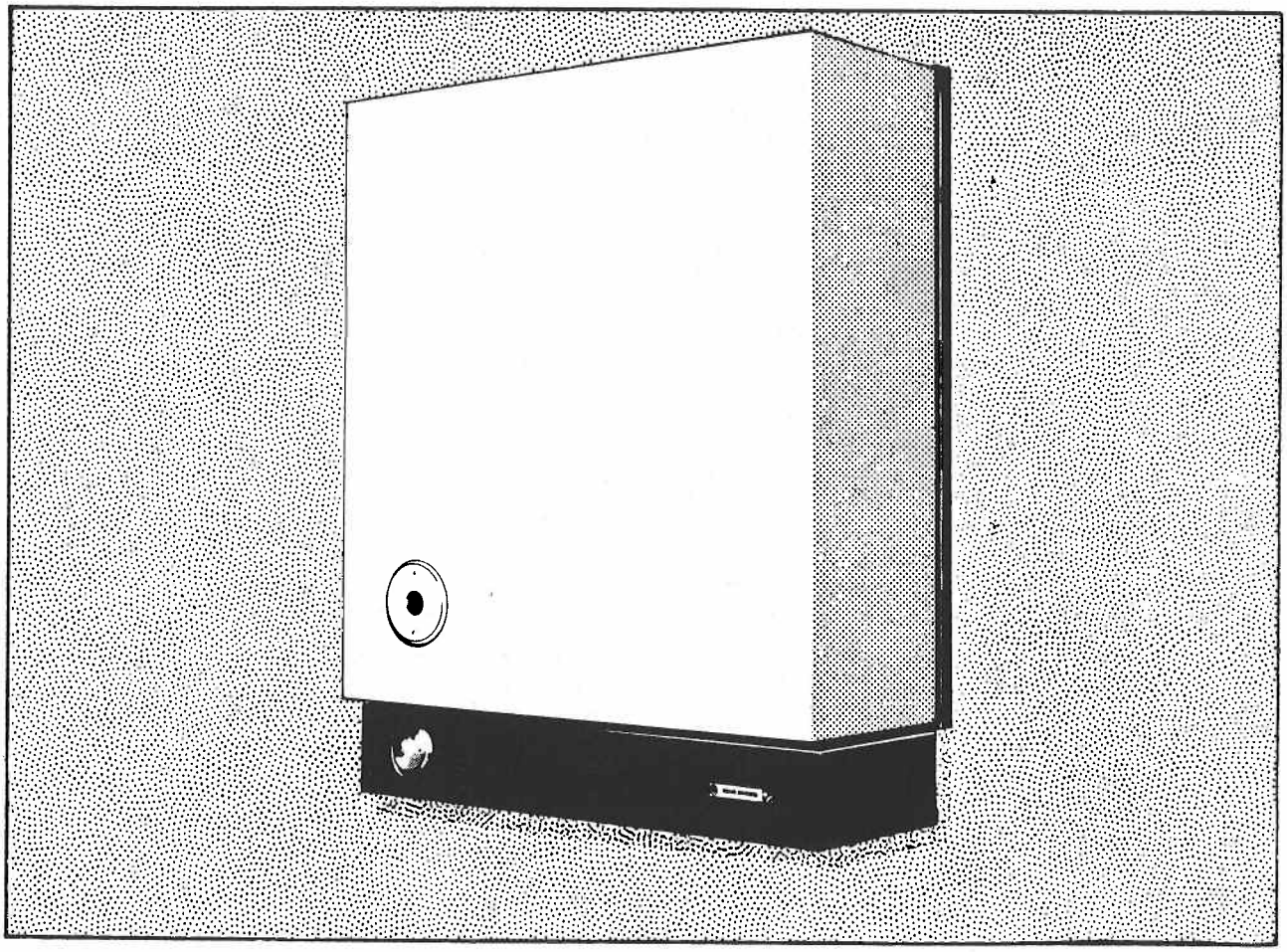
206177/9/83

Glow worm

SPACE SAVER 75B.F.

Balanced Flue Boiler

G.C. No. 41 315 32

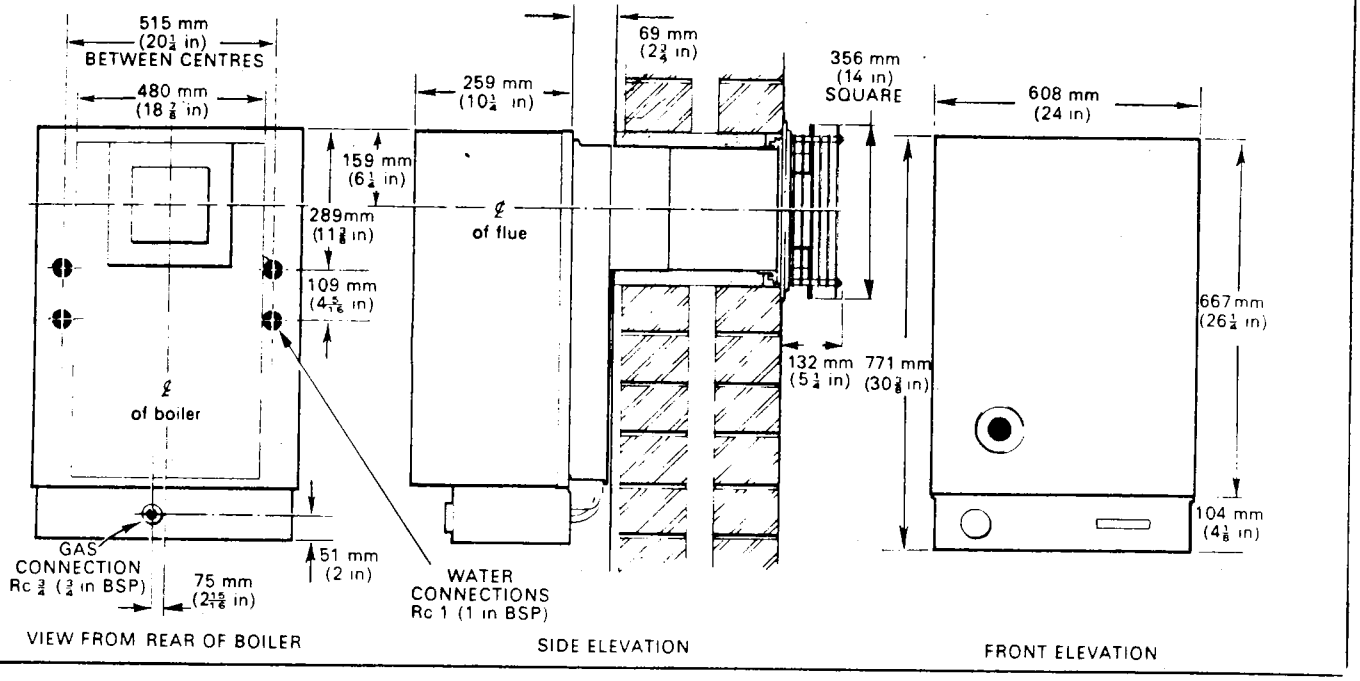


Installation and Servicing Instructions

(To be left with User, or at gas meter)

FOR USE ON FULLY PUMPED SYSTEMS ONLY

OVERALL DIMENSIONS



Nominal heat input: 24.03/29.75 kW (82,000/101,500 Btu/h)
heat output: 17.58/21.98 kW (60,000/75,000 Btu/h)

Gas Group	Injector Dia.		Setting Pressure 17.58 kW (60,000Btu/h)		Setting Pressure 21.98 kW (75,000 Btu/h)	
	m.m.	Part No.	in w.g.	m/bar	in w.g.	m/bar
1st Family TG 4	7.9	K5533	1.2	2.9	1.8	4.5
1st Family TG 5	8.3	K5534	1.2	2.9	1.8	4.5
2nd Family NG	4.1	K5535	4.2	10.5	6.7	16.8

When installing or servicing this appliance, care should be taken when handling the edges of sheet metal parts, to avoid any possibilty of injury.

APPROXIMATE WATER CONTENT
0.82 galls (3.73 litres).

APPROXIMATE TOTAL WEIGHT
76 kg (168 lbs).

NOTES

1 All electrical wiring must be carried out by a qualified electrician.
All external components shall be of the approved type and shall be wired in accordance with the I.E.E. Regulations.

2 Electrical supply:240V., 3A., 50Hz.

3 This boiler shall only be connected to a cistern water supply, with a head not exceeding 27 metres (ninety feet) and have an open vent in the system.

4 The appliance must be earthed and connections to the mains supply must be through a 3 amp fused double pole isolating switch or spur box, or an unswitched shuttered socket outlet and 3 amp fused 3-pin plug. Heat resistant cable of at least 3 amp (16/0.20) capacity must be used for all wiring to control box.

5. **THE INSTALLATION OF THIS BOILER MUST BE CARRIED OUT BY A QUALIFIED INSTALLER AND MUST BE IN ACCORDANCE WITH THE RELEVANT REQUIREMENTS OF THE GAS SAFETY REGULATIONS, LOCAL BUILDING REGULATIONS, I.E.E. REGU - LATIONS, THE LOCAL GAS REGION, THE LOCAL AUTHORITY, THE BYELAWS OF THE LOCAL WATER UNDERTAKING AND RELEVANT RECOMMENDATIONS OF BRITISH STANDARD CODES OF PRACTICE CP 331 PART 3 : 1974, BS 5376 PART 2 : 1976, BS 5440 PART 1 : 1978, BS 5440 PART 2 : 1976, BS 5449 PART 1 : 1977 AND BS 5546 : 1979.**

6 For all systems, the hot water cylinder should be indirect, (NOT SELF-PRIMING TYPE).

FLUE CONNECTION, TERMINAL SITING AND VENTILATION REQUIRED.

The boiler shall be installed so that the flue terminal discharges directly into the external air or specially designed flue duct provided it meets the following requirements.

Balanced flue terminals should not be fitted in any position which would allow combustion products to feed back into adjacent doors or windows.

Where the outlet is wholly or partly beneath any opening (that is to say, any part of a window capable of being opened or any ventilator, inlet to a ventilation system or similar opening), no part of the outlet shall be within 300 mm. (1ft.) measured vertically, of the bottom of the opening.

Where the outlet of the appliance is less than 2 metres above the level of any ground, balcony, flat roof or place to which any person has access and which adjoins the wall in which the outlet is situated, the outlet shall be protected by a guard of durable material.

In addition the following positions are unacceptable and should be avoided.

a. Immediately beneath eaves or a balcony.
b. At a re-entrant position on the face of the building.
c. Adjacent to any projection on the face of the building.
d. Within 300 mm. (1ft.) of ground level.
e. Less than 600 mm. (2ft.) from any corner of the building.
f. Within 600 mm. (2ft.) of any surface facing the terminal.

VENTILATION REQUIREMENTS

Central heating units or boilers installed in Compartments.

The compartment, whether modified or specially built, should meet the following requirements:

a. Have a half hour fire resistance from internal fire and the inside lining or finishing should be non-combustible or a class 1 finish.
The door must have at least the fire resistance of the compartment walls.

b. For good acoustic insulation, should preferably be built of brick or clinker block plastered on at least one side and supplied with a well-fitting door.

c. Be of sufficient size to permit access for inspection and servicing of the boiler and compartments. It should not be made larger than necessary in order to avoid the use of the compartment as a storage cupboard. The makers' recommendations regarding minimum requirements should always be obtained and observed.

d. Be fitted with a door of sufficient size to permit the boiler to be withdrawn from the compartment.

e. Be fitted with permanent openings for air for compartment ventilation as shown in the table.

Position of Opening	Air from Room	Air direct from outside
High and Low level	9.0cm^2 per kW input 2 in^2 per 5,000 Btu/h input	4.5cm^2 per kW input 1 in^2 per 5,000 Btu/h input

The figures quoted refer to the minimum acceptable **free area** when gilles are fitted to the openings. The high level and low level openings must communicate with the same room or space or must both be to outside air.

Where ventilation air to a compartment is taken from a room, then the room must be fitted with ventilation openings equivalent to those into the compartment.

INSTALLATION

The following procedure should be adopted:

1. Check that the balanced flue duct supplied is suitable for the wall thickness through which it has to pass, (see diagram 2). Standard supplied suits 261-330 mm. (10¼-13 in.) wall thickness. Shorter terminal sleeve, 140–216 mm. (5½–8½ in.) is available on request. ***The site selected must allow a minimum of 100 mm. (4 in.) on the left hand side and 152 mm. (6 in.) on the right hand side. Clearance for servicing at each side of the boiler casing.***

2. Mark out and cut a hole through the wall where the boiler is to be installed, to the dimensions shown in the diagram.

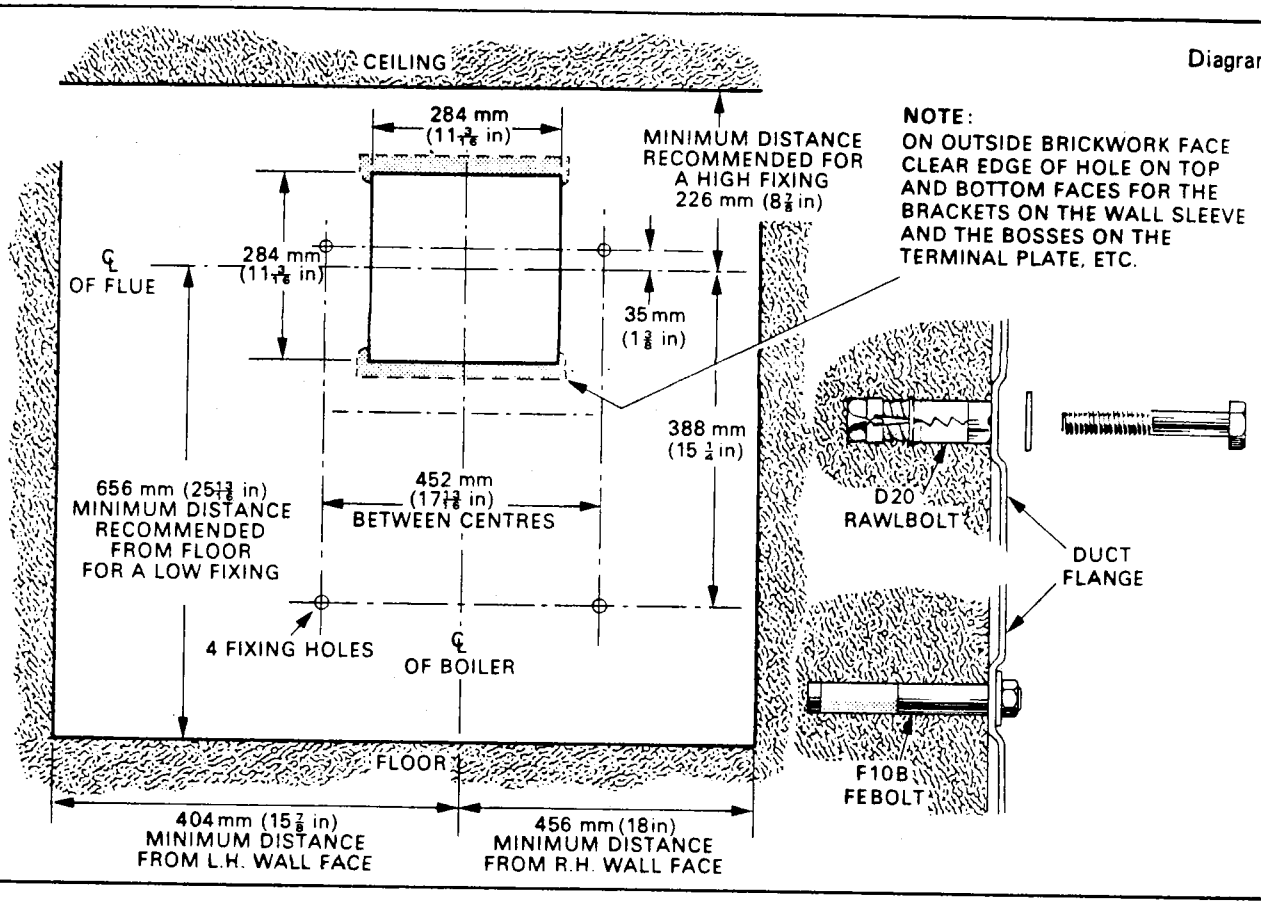
3. Remove the boiler from its carton and place it face down on the floor. Unscrew the primary air duct from the boiler.

a. Where Rawlbolts are being used, mark out the four holes for the bolts securing the primary air duct to the wall, see diagram 1. The primary air duct may be used as a template. Drill the holes for the D.20 Rawlbolts provided, with a $\frac{19}{32}$ in. diameter drill, the maximum diameter of the holes must not exceed $\frac{5}{8}$ in. Dismantle the Rawlbolts and place into the holes drilled in the wall. Position the duct into the hole in the wall, offer the washers and nuts onto the bolts and tighten.

b. When FEBOLTS are used, place the primary air duct in position, the balanced flue duct protruding into the prepared hole in the wall. Drill four holes of 10 mm. diameter in the wall, using the duct as a template and securing the duct to the wall by passing the four F.10.B Febolts provided through the holes in the duct into the wall without dismantling the bolt, until the washer is hard against the duct. Full expansion will be achieved by turning the bolt nut 4 to 5 times. See diagram 1. In the event of the bolt spinning in the hole, remove the bolt and pre-expand, then replace.

Make sure the duct is firm and secure. Make a good cement seal around the flue duct inside the hole in the wall. Diagram 2.

Diagram 1

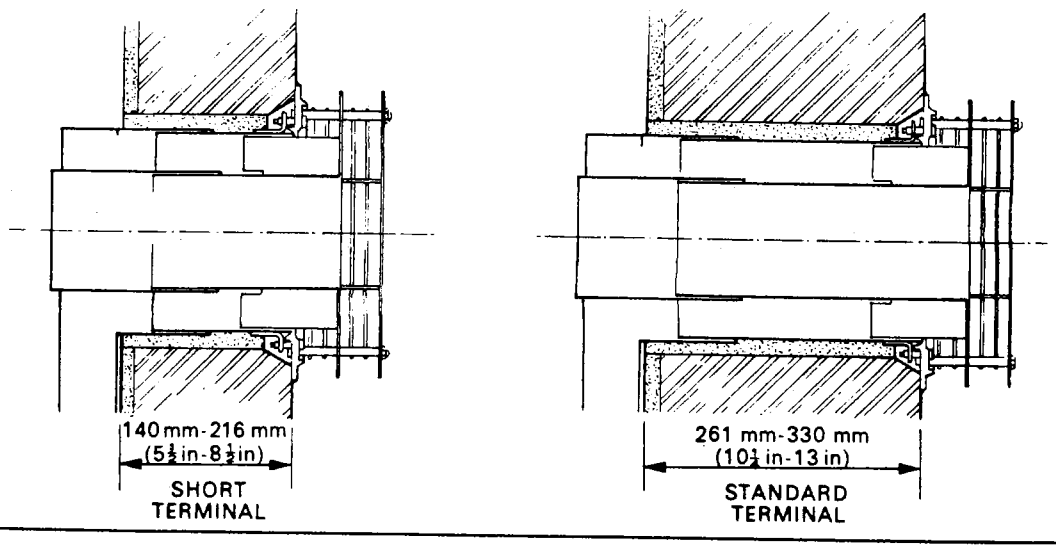


Next, complete the balanced flue installation, (see diagram 3). Place the outer wall sleeve 'A' into the prepared hole from the outside, so that it fits inside the sleeve already cemented in. It should be pushed in, until the outside end of the sleeve is flush with the outside wall. **It is important to see that the brackets fastened to this wall sleeve are on the top and bottom surfaces.**

Cement in position. Make good the seal between the wall sleeve 'A' and the primary air duct, using the compound provided. Clear cement from the front of the four brackets, so that the terminal frame 'B' complete with its tie bolts can be bolted into position.

When the cement is sufficiently firm bolt the terminal frame in position up to the wall and cement around the edges. To allow the terminal frame to fit flush to the wall it will be necessary to relieve top and bottom edges of the brickwork opening to clear the four small bosses on the back of the terminal frame, also the four brackets on the top and bottom of the wall sleeve 'A'. Diagram 1.

Diagram 2



NOTE: The frame is marked for 'TOP & BOTTOM'

Thread four tubular spacers 'C' onto the tie bolts, also position one of the wire guard frames 'D' over the spacers and up to the terminal plate. ***Thread the inner baffle and sleeve 'E' onto the tie bolts, making sure that the face marked TOP is uppermost, see diagram 3.*** Push into the flue until the plate comes against guard 'D'. Make good the seal between the inner wall sleeve and the inner baffle sleeve 'E' with the compound provided. Thread four more tubular spacers 'C' on to the tie bolts and over the spacers pass the other guard 'D'. Finally fit the terminal plate 'F' and secure the whole assembly with the ¼ in. BSW washers and chrome plated dome nuts.

If further guarding is required by local authorities a wire grille can be supplied as an optional extra. The fitting of this is recommended, particularly if the terminal is at low level, i.e. less than 1.8 m (6ft.) from the ground. Guards are also available from Tower Flue Components Ltd., telephone Tonbridge 351555, quoting reference 'D', blue and from Quinnell, Barrett & Quinnell Ltd., 884 Old Kent Road, London S.E.15, quoting reference type M3.

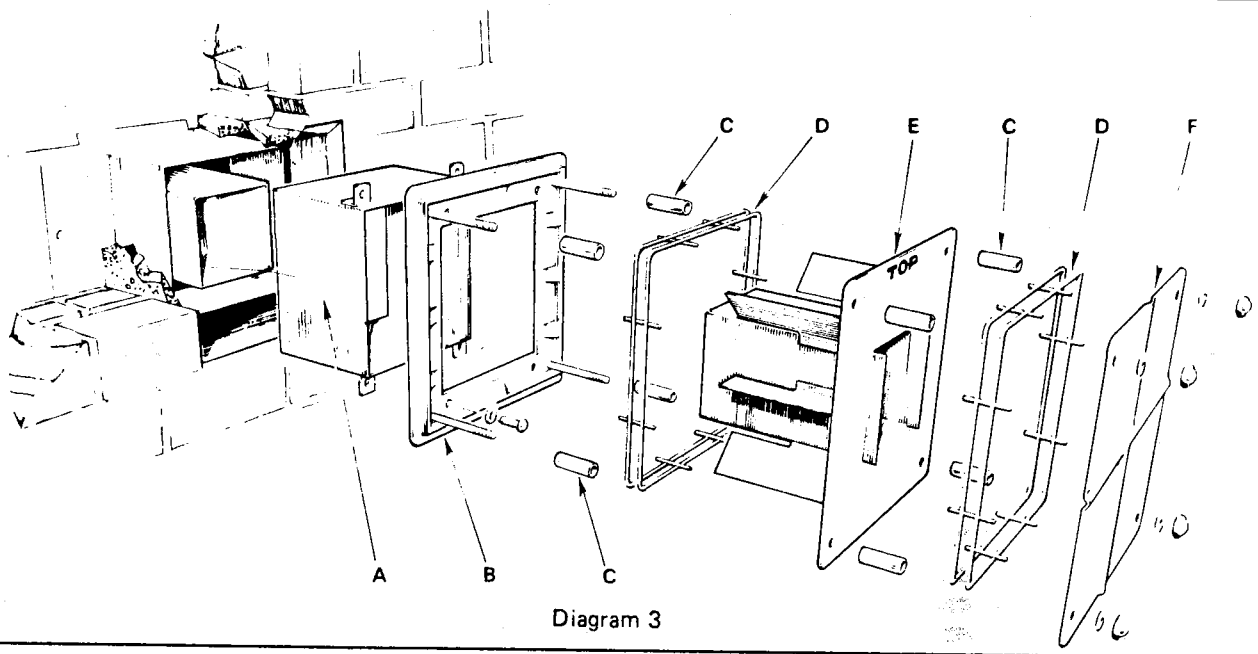


Diagram 3

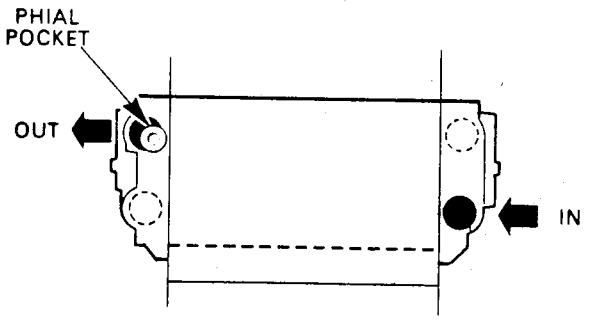
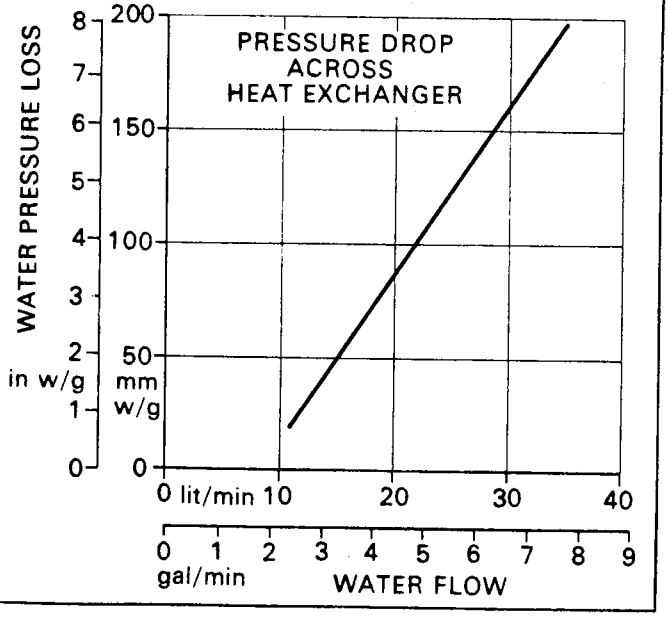


Diagram 4

VIEW FROM FRONT OF BOILER



Pumped heating and hot water

Where single flow and return is taken from the boiler, the thermostat phial pocket must be on the same side as the flow connection is made (see diagram 4). It is important that all connections are made as illustrated in diagram 4. The connections may be fitted on opposite side to that shown, but always in the same relative positions, including the thermostat phial pocket. Seal off the Rc½ (½ in. BSP) tapping on side not used for the phial pocket with the ½ in. BSP plug provided. Fit thermostat bulb and retain with clip.

Make sure there is clearance between the thermostat capillary and the ignition electrode and between the capillary and the front of the boiler.

If Scheme 5 is to be used for control the necessary fittings for cold feed in and for expansion from the boiler, and also the fittings for the use of a 22 mm. diameter bypass loop should now be made, as shown in diagram 14.

Remove the bottom rear protection plate which is protruding through the primary air inlet hole at the rear of the boiler.

Note which way up the plate is fitted and ensure that it is re-fitted correctly.

Screw 1 inch BSP elbows into the water connection tappings at the rear of the boiler, through the holes in the back panel. Ensure that good sound connections are made.

Lift the boiler and position so that the turnover at the top of the back panel engages on the lip on the top surface of the primary air duct. (See diagram 5). Fasten the back panel to the brackets on the primary air duct by means of the four screws and nuts provided, positions 'A' and 'B', diagram 5.

The water connections can now be made to the elbows fitted previously, and the gas connection to the ¾ in. BSP union gas cock at the bottom of the boiler, in the centre. The square end of the cock plug should face downward for high mounted boilers and upward for low mounted.

Where a safety valve is fitted it should be adjacent to the boiler on the flow pipe. It should not be possible to isolate the safety valve from the boiler by means of any intermediate cock.

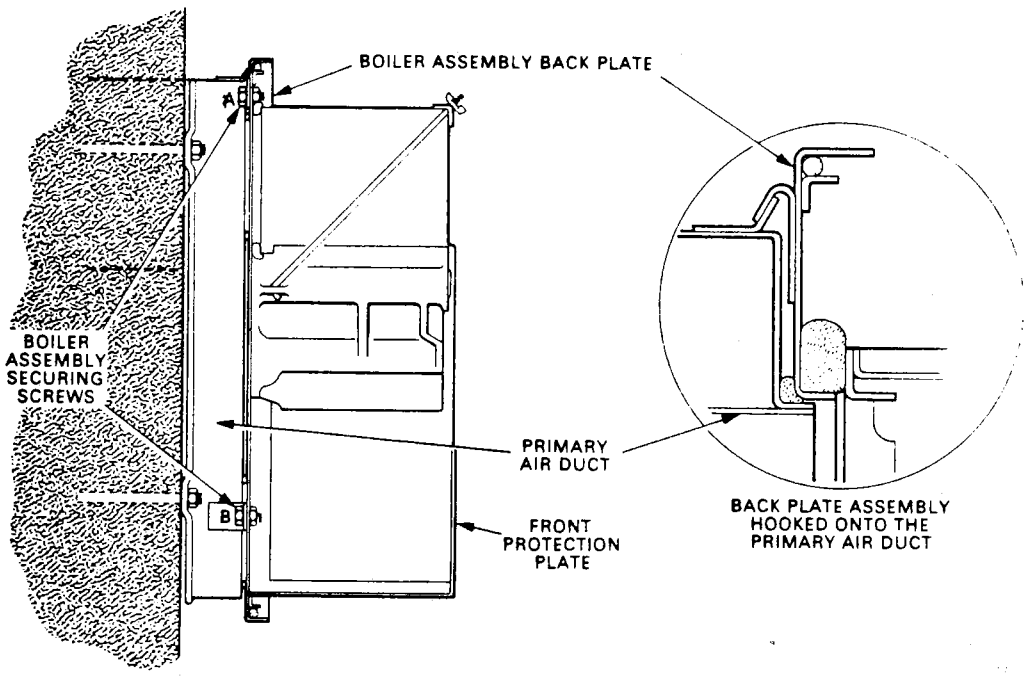


Diagram 5

When a combined central heating and domestic hot water load is served an indirect hot water system must be used with this unit.

A drain-off cock must be fitted to the lowest part of the system for complete drainage for subsequent servicing.

Remove the front protection plate by easing the top edge forward, then lifting slightly, the plate can then be withdrawn.

Fit the bottom rear protection plate previously removed by placing it through the primary air inlet at the rear of the combustion chamber and locating the two 'Z' strips over the tie bar as indicated in diagram 7. Ensure that the plate is fitted the right way up.

Remove the burner from its separate pack. Place the burner in position in the combustion chamber by first passing the left hand end of the burner into the chamber, passing it behind the pilot and bracket and locate the pin into its location hole. The right hand end locates onto the flange on the right hand side plate. Check that the electrode is correctly positioned. (See diagram 6). Refit the front protection plate.

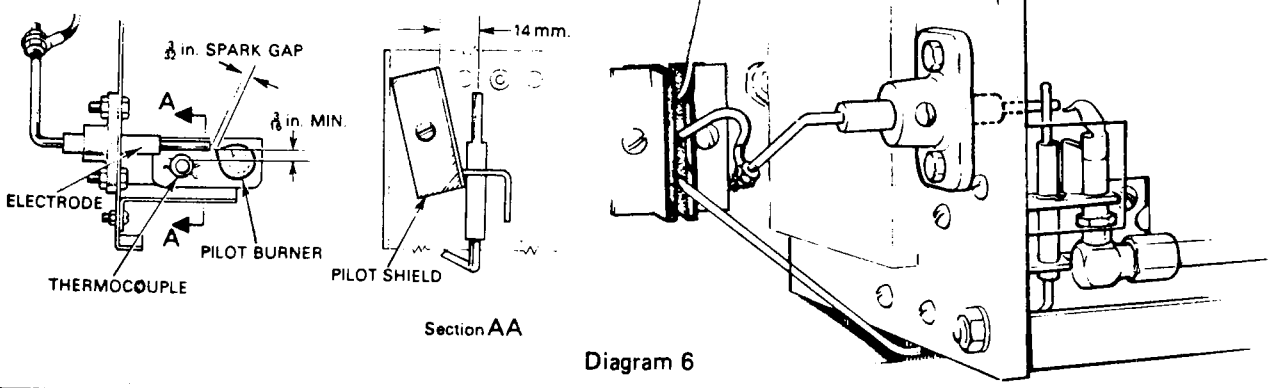


Diagram 6

CONTROLS

The service gas cock upstream of the gas valve, providing over-riding control of the gas supply to the boiler.

The gas valve performs four main duties. Those of a three-position cock; a thermomagnetic flame failure device; an electric operator; and a gas pressure governor.

The three-position gas cock allows pilot supply only, alternatively pilot and main burner supply and an 'OFF' position, incorporating 'Safety Lock', giving over-riding control of the gas supply to the boiler.

The thermomagnetic flame failure device provides for a complete shut-off of all gas to the appliance in the event of the lighting pilot flame becoming extinguished.

The electric operator allows for the main burner to be controlled by a signal from the electric clock and from the boiler thermostat. The terminals must be kept clean. This control operates on 24 volts.

The gas pressure governor regulates the gas supply pressure to the burner, ensuring constant rated output. Also provided on the gas control is a regulating screw to control the pilot flame size.

WIRING INSTRUCTIONS FOR CONTROL BOX M.5222

IT IS IMPORTANT THAT ALL CONTROLS, INCLUDING THE CIRCULATING PUMP, MUST BE WIRED INTO THE CONTROL BOX TERMINAL STRIP.

On all pumped circuits the circulating pump is controlled by the change-over thermostat in the control box. The purpose of this is to dissipate residual heat in the boiler. The function of the change-over thermostat would be prevented if any controls were included in the main supply or pump connections, or if the pump should be supplied from an external source.

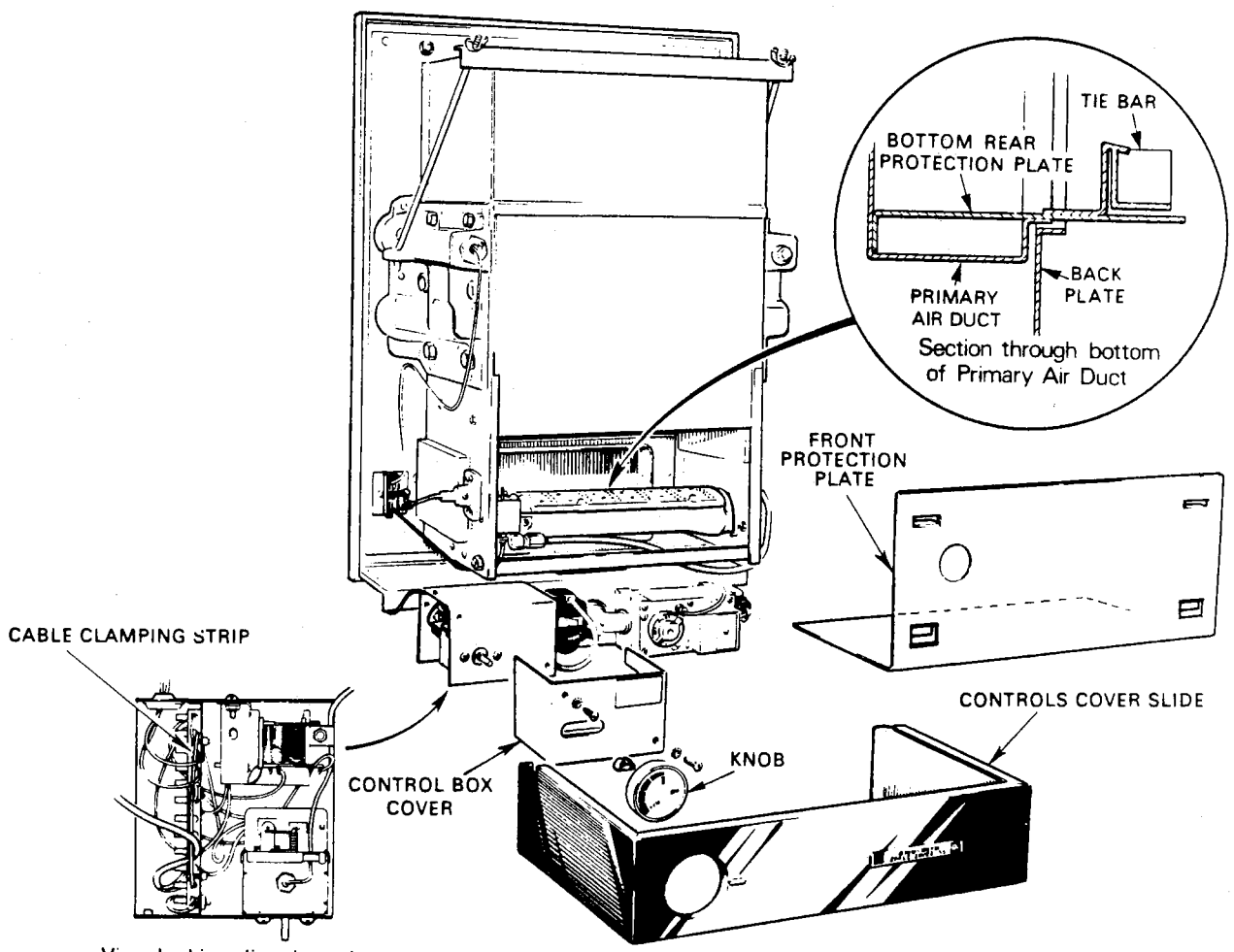


Diagram 7

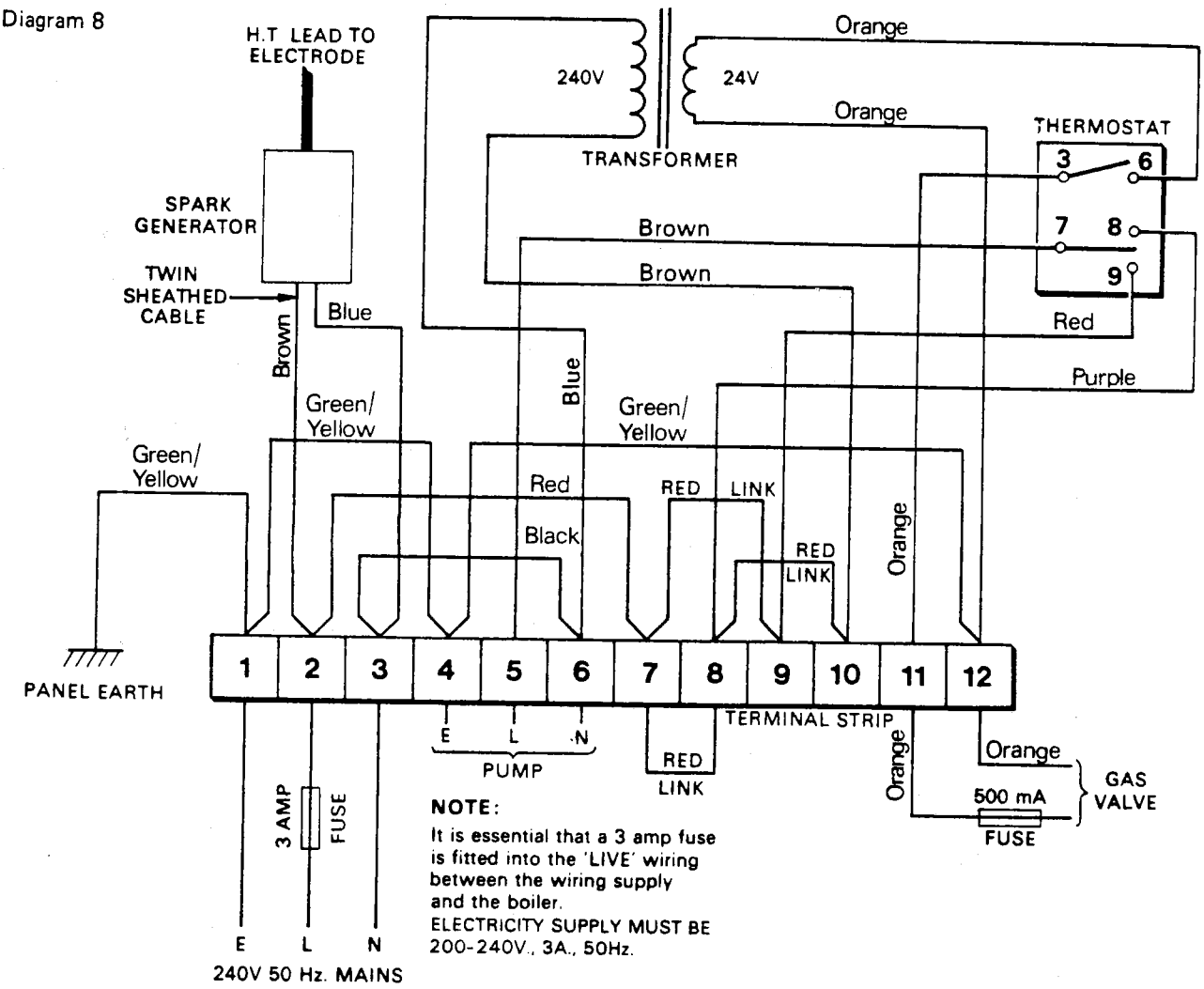
1. Remove the thermostat control knob by pulling from its spindle. (See diagram 7).
2. Remove the two Pozidriv pan. hd. screws and shake-proof washers from the cover. This releases the control box cover and the cover may now be removed.
3. Remove the control box from the back plate by unscrewing the two slotted hex. hd. screws, hex. nuts and shakeproof washers. Withdraw for a short distance, taking care not to put a strain on the thermostat capillary or wiring.
4. Bring the mains cable to the control box through one of the clearance holes in the back plate and into the control box through the appropriate grommet. Slacken off the screws securing the cable clamp and pass the mains cable under the clamp strip and connect neutral to terminal number 3, line to terminal number 2 and earth to terminal number 1. (See diagram 8).

   NOTE: The outer insulation sheathing on the mains and pump leads should be stripped back for sufficient length to enable the individually insulated conductors to be clamped under the clamp strip.
5. After completing all wiring (see diagrams 8 to 13). re-tighten the cable clamp strip, making sure that there is no tension on the wires at the terminal strip.

   Under no circumstance should a fuse of greater value than 500mA (BSS.2950) be fitted in the line from the control box to the gas valve. Up-rating of this fuse could cause damage to the transformer.
6. Replace the control box on to the back plate, using the slotted hex. hd. screws, hex. nuts and shakeproof washers. Replace the control box cover by securing it with two screws and washers. Then replace the thermostat knob. Make sure the mains cable from the spark generator passes through the 'U' shaped cut out in the cover.

THE BOILER OUTER CASING SHOULD NOW BE FITTED. PASS THE CASING OVER THE BOILER BODY SO THAT THE REAR EDGES MAKE AN AIR TIGHT SEAL IN THE SEALING GROOVE ON THE BACK PLATE. SECURE FIRMLY WITH THE FOUR WING NUTS AND WASHERS PROVIDED.

Diagram 8



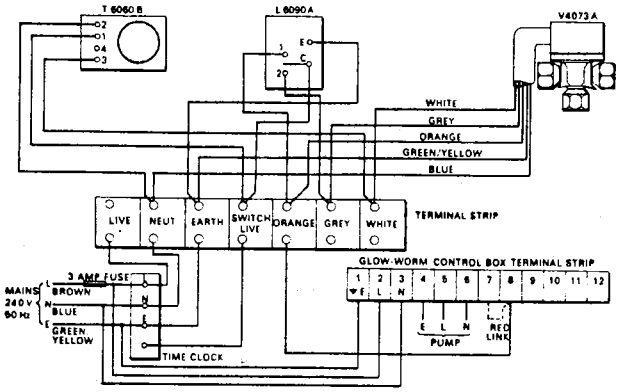
WIRING DIAGRAM FOR CONTROL BOX M5222

SCHEME 1 (Diagram 9).

Wiring diagram for fitting the Honeywell Sundial Plan Y.

Remove the red link between terminals 7 and 8 only, and wire the external controls and mains as shown.

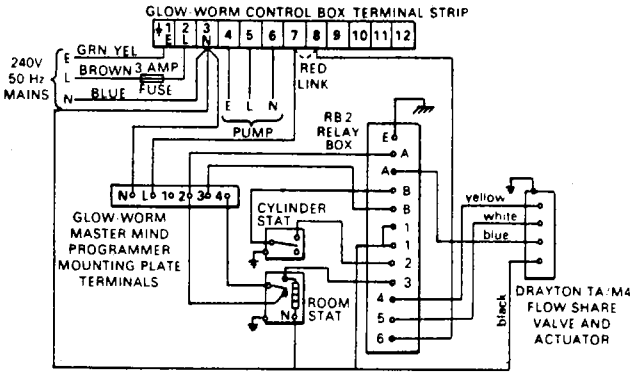
NOTE.– The piping arrangement and the installation of the controls should be in accordance with the Honeywell instructions.



SCHEME 2 (Diagram 10).

Domestic hot water and central heating, both pumped, using a Drayton FLOW-Share valve.

Remove the red link between terminals number 7 and 8 only. Wire the external controls and mains as shown.



SCHEME 3 (Diagram 11).

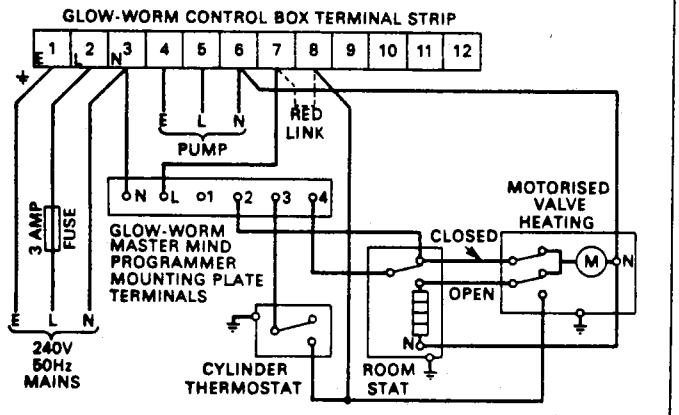
Domestic hot water and central heating, both pumped, using a motorised valve on the heating circuit only.

A slow-closing motorised valve must be used for this scheme.

Remove the red link between terminals number 7 and 8 only. Wire the external controls and mains as shown.

To ensure that the central heating motorised valve closes at the end of the central heating period the programmer must have change-over contacts.

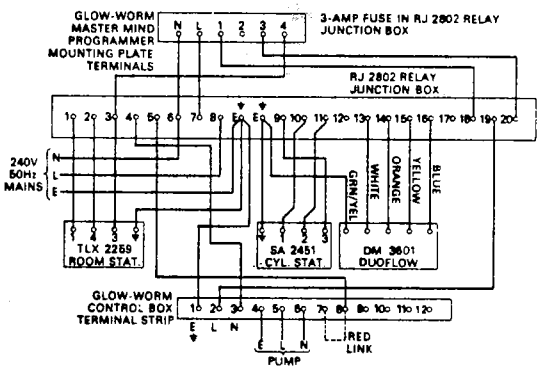
The Glow-worm Master Mind Programmer has this change-over facility.



SCHEME 4 (Diagram 12).

Wiring diagram for fitting the Satchwell Duoflow System, using the sixteen position programmer.

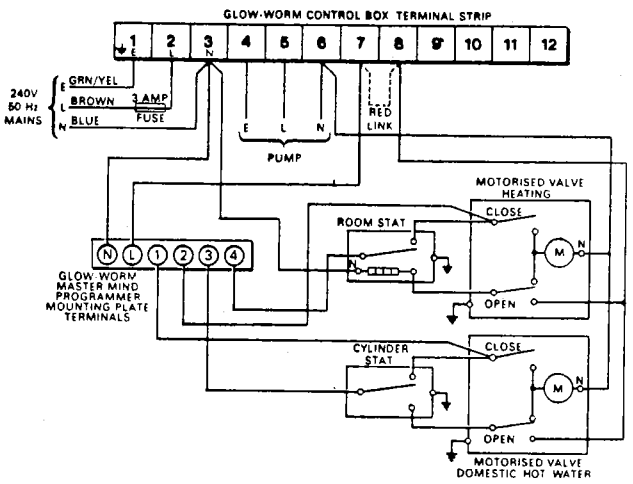
Remove the red link between terminal number 7 and 8 only, and wire the external controls and mains as shown.



SCHEME 5 (Diagram 13).

Independent control of domestic hot water and central heating, both pumped, using two motorised valves.

Slow closing motorised valves must be used for this scheme.



Remove the red link between terminals number 7 and 8 only. Wire the external controls and mains as shown.

To ensure that the motorised valves close at the end of the respective periods the programmer must have change-over contacts.

The Glow-worm Master Mind Programmer has this change-over facility.

It is also important that a 22mm. diameter valved by-pass be fitted into the pipe work, as shown in diagram 14 and that the pipe work to the cylinder should not be less than 22mm. diameter copper.

To adjust the by-pass, the valve should be initially set to fully open and then progressively closed to produce the correct design temperature differential between the flow and return pipes at points A and B. The temperature differential is reduced as the valve is closed. The valve should never be fully closed.

This by-pass setting is done with both motorised valves open, and the whole system up to temperature.

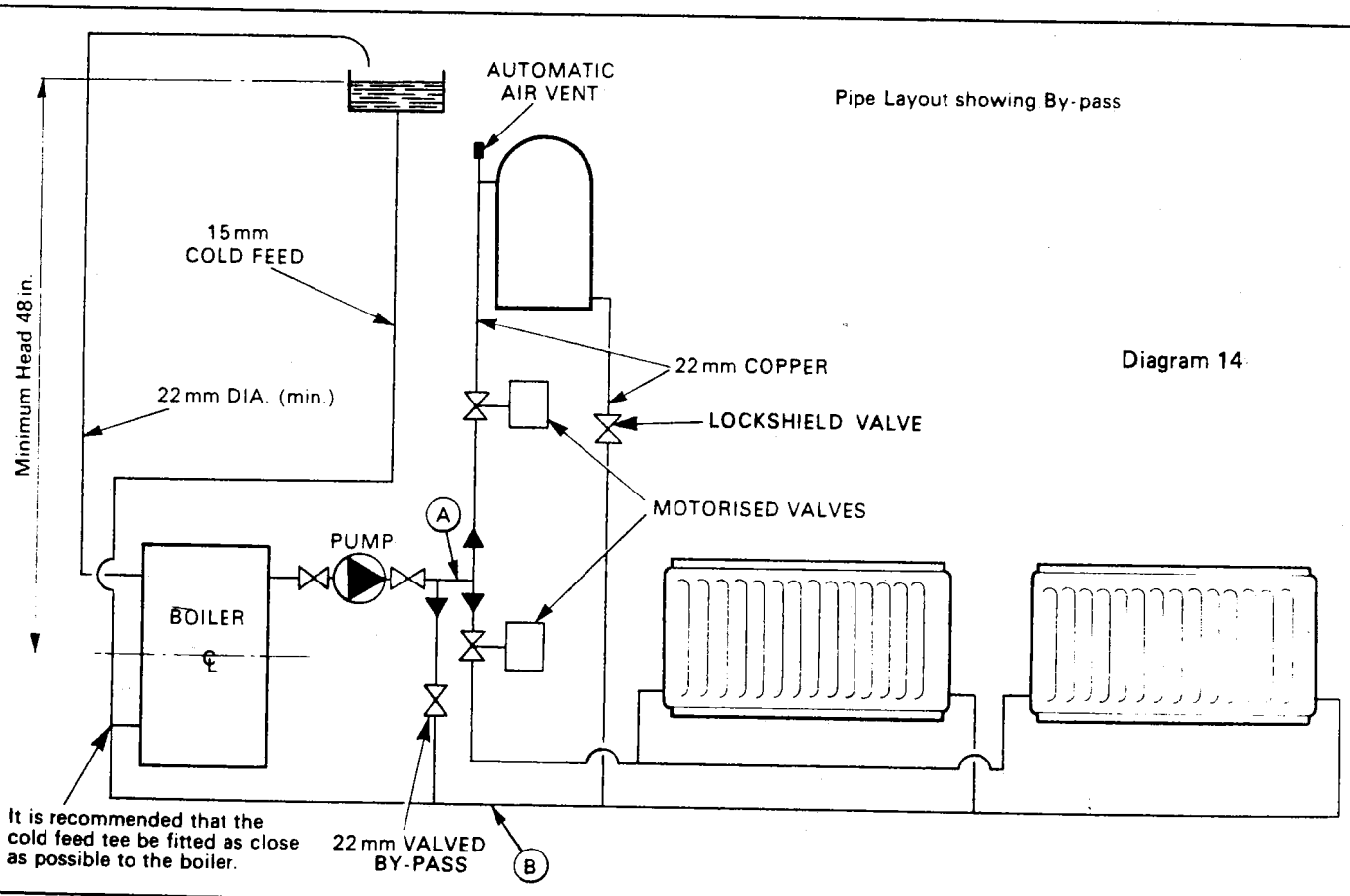


Diagram 14

INITIAL LIGHTING AND ADJUSTMENT

CAUTION: The following procedure should be carried out by a qualified gas service engineer. The pipes and fittings to the gas control and burner and to some extent the gas pipe to the appliance will contain an appreciable amount of air. It is, therefore, necessary to purge the air from the pipes before the appliance can operate normally.

Identify the boiler controls with relevant details on diagram 15.

Key

A.	Gas valve control knob	J.	Thermocouple union
B.	Thermostat control knob	K.	Pilot adjustment
C.	Service gas tap	L.	Flue collector
D.	Pilot burner	M.	Main burner
E.	Pressure test nipple	N.	Thermostat phial & pocket
F.	Governor adjustment	O.	Front insulation tray
G.	Spark igniter button	P.	500mA fuse in holder
H.	Electrode	Q.	Electrical control box

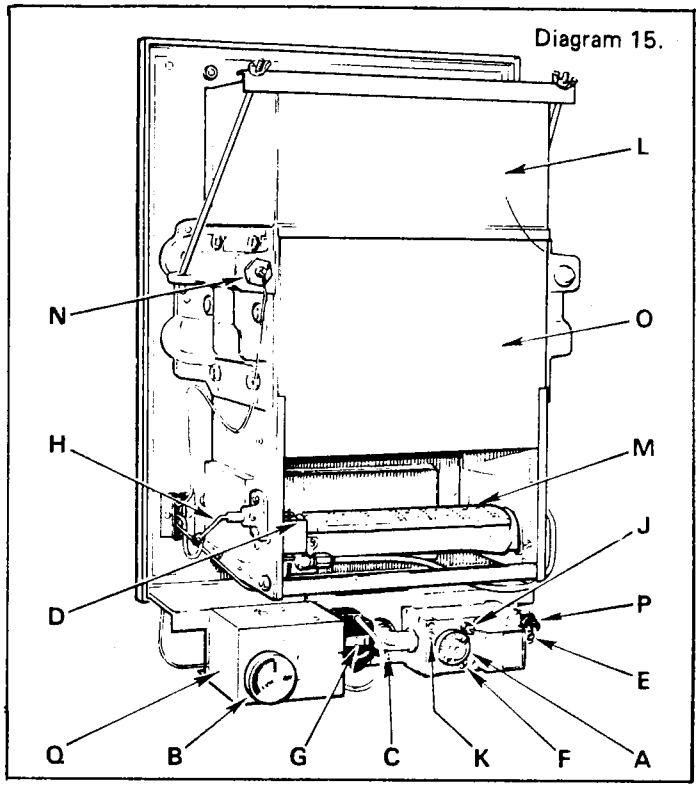
INITIAL LIGHTING PROCEDURE

1. Check that the service tap 'C' is closed, that is, the indicator line is across the line of the pipe. See that the gas valve is in the 'OFF' position ('OFF' opposite red arrow).
2. Switch on mains electricity supply.
3. See that the clock control (when fitted) is in an 'ON' period.
4. Set the thermostat knob 'B' to the 'OFF' position.
5. Remove the gas pressure test nipple screw 'E' and connect a water gauge to measure the gas pressure.
6. Open service tap 'C' and set the gas valve control knob 'A' until 'PILOT' setting is opposite the red arrow.
7. Depress gas valve control knob 'A' fully, also depress the spark igniter button 'G' and release. A single spark should ignite the pilot burner. At this stage, air may be present in the gas pipes and this operation may need to be repeated until all the air has been expelled. When the pilot burner lights keep control knob 'A' fully pushed in for approx. 20 seconds to heat the thermocouple. If the pilot burner fails to light or stay alight wait THREE MINUTES then repeat exactly the above sequence.

   The pilot gas rate can be adjusted if necessary as follows

   Remove pilot adjustment cover screw 'K' from gas control and adjust the grub screw beneath it until the pilot burner flame envelops 10–13 mm. ($\frac{3}{8}$ – ½ in.) of the thermocouple tip and ignites the main burner smoothly.
   Replace cover screw.
8. If gas control is turned 'OFF' (knob 'A') a safety lock prevents knob 'A' from being turned on again until the thermocouple has cooled to prevent attempted re-light in an unsafe condition. No attempt should be made to force knob 'A' back to pilot position until the three minutes have elapsed.
9. When the pilot is stable and set, turn the thermostat knob 'B' to maximum setting (approx. 82°C, 180°F) and then turn the gas valve control knob 'A' to the 'ON' position. The main burner should light smoothly and the primary cones should be well defined when the pressure setting has been adjusted at the governor to the correct gas pressure (see page 2).
10. To set the main burner gas pressure, remove cover screw 'F' from the gas control valve, adjust internal grub screw to the required pressure, replace cover screw.

Diagram 15.



11. Turn the gas valve control knob 'A' to the 'OFF' position, remove pressure gauge and re-fit pressure test nipple screw 'E'.

TO EXTINGUISH

The burner may be extinguished and re-established in any of the following ways:

1. By turning the programmer selector (where fitted) to 'OFF' or thermostat knob 'B' to the 'OFF' position. This shuts 'OFF' the main burner only, leaving the electric clock (when fitted) running, but not controlling, and the pilot alight. Re-light by turning the thermostat knob 'B' to the required temperature, or programmer to required programme.
2. By turning the gas control knob 'A' to the 'PILOT' position. This shuts off the main burner only. Thermostat knob 'B' should be turned to the 'OFF' position; electric clock (when fitted) running, but not controlling; pilot burner alight. Re-light by turning gas control knob 'A' to the 'ON' position, reset thermostat knob 'B' to the required temperature.
3. By turning gas valve control knob 'A' to the 'OFF' position. This results in complete shut-down of both main and pilot burners. Thermostat knob 'B' should be turned to the 'OFF' position to de-energise the gas control electric operator leaving the electric clock (when fitted) running but not controlling.

   Follow the Users' Lighting Instructions to re-light. When valve is in the 'OFF' position (knob 'A') a safety lock will prevent the cock from being re-opened if an attempt is made to re-light the boiler in an unsafe condition.

   No attempt should be made to force knob 'A' back to pilot position until three minutes have elapsed.
4. By turning the service cock 'C' to the 'OFF' position. This results in complete shut-down of both main and pilot burners. Thermostat knob 'B' should be turned to the 'OFF' position to de-energise the gas control electric operator, leaving the electric clock (when fitted) running, but not controlling. Follow Users' Lighting Instructions to re-light.

5. By switching off the electricity supply. This cuts out all electrical controls and the main burner, leaving the pilot burner alight. Re-light by re-connecting to the electricity supply.

   Re-set electric clock (when fitted) to correct time.

CONTROL CHECK-OUT

After initial lighting and adjustments have been carried out the following check-out procedure may be used to ensure the correct operation of the controls.

OPERATION OF AN ELECTRIC CLOCK. (WHEN FITTED)

1. With the main burner alight, move the clock dial in a forward direction to an 'OFF' position. This will result in the main burner shutting off.
2. Move the clock dial in a forward direction to the next 'ON' position, this should result in the main burner lighting again.

OPERATION OF THERMOSTAT

1. With the main burner alight, turn the thermostat knob to the 'OFF' position. Result – the main burner should shut off.
2. Turn thermostat knob to the original setting. Result – the main burner should re-light.

OPERATION OF FLAME FAILURE DEVICE

With the main burner alight, turn the gas control knob 'A' to the 'OFF' position. Knob 'A' will then be locked in this position by a safety device fitted to the valve. After one minute the flame failure device should have closed. (A click from the control valve will indicate its operation). After the flame failure device has closed it will be possible to re-set knob 'A' back to pilot position.

Re-light the boiler following the sequence of the Users' Lighting Instructions.

CONTROLS COVER FITTING

Fit the control cover slide over the control box under the front outer casing. The top return flange must engage in the channel provided at the rear. Push the panel back as far as it will go, engaging the front edge with the bracket on the under side of the front outer casing.

SERVICING

Servicing must be carried out by a qualified gas service engineer and where appropriate a qualified electrician. Before commencing servicing, turn off the gas supply at the main service cock and switch off the electricity supply.

Boiler Flueways

Regular cleaning of the boiler flue passages is necessary for efficient operation, also inspection and examination of the burner and controls is essential.

1. Remove the control cover slide by pulling forward and disengaging it from the bracket under the front outer casing and the two channels at the rear. Unscrew the four wing nuts behind the boiler back panel and remove complete with the four plain washers. This will enable the outer casing to be removed.
2. Remove the front protection plate, diagram 7, by lifting slightly and then withdrawing.
3. Remove the burner by lifting carefully so that the location pin at the L.H. end clears its seating and the burner casting at the R.H. end clears the flange on the R.H. side plate. Turn the burner so that the R.H. end can be withdrawn first from the combustion chamber. Take care not to damage the pilot burner or electrode when removing.
4. Place a sheet of paper below the combustion chamber and over the controls to catch the flue debris.
5. Remove the flue collector by unscrewing the two wing nuts which retain the securing angle. The angle can then be lifted from the tie rods and the flue collector removed.
6. Remove the front and rear insulation trays by lifting upwards, taking care not to damage the fibre insulation inside them.
7. The boiler flueways and fins should now be cleaned thoroughly with a suitable stiff brush.

IMPORTANT

When replacing the insulation trays, ensure that the fibre insulation faces inwards towards the boiler body, also ensure that the seal at the rear of the flue collector is in position and intact and makes a good seal.

8. Burner

   Unscrew the six hex. nuts from the screws which clamp the burner top to the burner body and remove the screws. Take off the burner top by carefully tapping the end overhang of the top to break the fire cement seal at one end and then lever upwards to clear the sealing grooves along each side of the burner. Remove any accumulated lint and dust from the underside of the burner top ***using a vacuum cleaner. A brush must not be used, as this is likely to brush the dust and lint into the holes of the gauze.*** Renew the $\frac{1}{8}$ in. dia. packing in the sealing groove in the burner body and apply a smear of the fire cement on each end to ensure a good seal, before replacing the burner top and clamping down with the four retaining bolts and nuts. When tightening, pull down evenly, so that the top makes a good gas-tight seal.

9. Injector

   While the burner is removed, the injector can be seen at the R.H. side of the combustion chamber. The injector can be unscrewed by means of a spanner and replaced as necessary. When replacing, use jointing compound on the thread to ensure gas soundness.

NOTES TO THE SERVICE ENGINEER ON THE REPLACEMENT OF PARTS

Before removing or replacing any parts, make sure that the gas supply is turned off and the electricity supply is switched off.

1. Gas Valve (high level fixing).

   Make sure that the gas cock 'C' is in the 'OFF' position.
   Disconnect the pilot gas supply at the gas valve.
   Disconnect the thermocouple union 'J' at the gas valve.
   Disconnect the orange electrical leads at the gas valve.
   Unscrew the sleeve nut connection at the gas valve outlet elbow and disconnect.
   Support the gas valve and unscrew the union nut at the gas cock 'C'.
   Remove the valve by pulling forward.

Gas Valve (low level fixing).

Unscrew the four wing nuts behind the boiler back panel, and remove complete with four plain washers. This will enable the outer casing to be removed.

Remove the front protection plate, diagram 7, by lifting slightly and then withdrawing.

Remove the burner by lifting carefully so that the location pin at the L.H. end clears its seating and the burner casting at the R.H. end clears the flange on the R.H. side plate. Turn the burner so that the R.H. end can be withdrawn first from the combustion chamber. Take care not to damage the pilot burner or electrode when removing.

Make sure the gas cock 'C' is in the 'OFF' position.

Disconnect the pilot gas supply pipe at the gas valve and also at the pilot union end.

Release the gland plate on the boiler back panel and ease the pilot supply pipe away from the valve.

Disconnect the thermocouple union 'J' at the gas valve.

Disconnect the orange electrical leads to the valve.

Unscrew the sleeve nut connection at the gas valve outlet elbow and disconnect.
Support the gas valve and unscrew the union nut at the gas cock 'C'.

Access to the union nut is through the slot above it.

Remove the gas valve by pulling forward.

In both the above instances, when fitting the elbows into the replacement gas valve, use a little jointing compound on the threads to ensure a gas-tight seal.

Re-assemble in the reverse order to that described, do not tighten thermocouple union 'J' more than one quarter turn beyond finger tight.

It will be found necessary to purge the system of air after this operation and re-lighting should be done in accordance with the initial lighting procedure detailed on page 11.

2. **Injector**

For the replacement of the injector, refer to Note (9) under 'Servicing'.

3. **Burner Top Assembly**

Refer to Note (8) under 'Servicing', after removing the burner as under Notes (1), (2) and (3).

4. **Pilot Burner**

Remove the main burner as in Notes (1), (2) and (3) under 'Servicing'.

Remove the pilot shield from the front of the pilot burner by unscrewing the rd. hd. screw and nut from the side panel. Diagram 6.

Disconnect the pilot feed pipe at the union on the swivel elbow at the base of the pilot burner.

Remove the hex. nuts from the two round head screws holding the pilot burner to the bracket and remove the screws. Pull out the clip holding the thermocouple into the pilot burner and pull the thermocouple downwards out of the pilot burner. The pilot burner can now be removed. Replace in the reverse manner.

5. **Thermocouple**

Remove the pilot shield from the front of the pilot burner by unscrewing the rd. hd. screw and nut from the side panel. Next pull off the thermocouple clip and pull the thermocouple downwards. Diagram 6. Disconnect from the gas valve by unscrewing union 'J' and remove the two sealing plates on the boiler back plate, (see diagram 6). The thermocouple can now be withdrawn.

When replacing, union 'J' must not be tightened more than one quarter turn beyond finger tight. It is also important that the sealing plates on diagram 6 are re-made.

6. **Spark Electrode**

The spark electrode is clamped into a cast bracket screwed to the outside of the L.H. side of the combustion chamber. To remove, unscrew the nut clamping the H.T. lead to the outer end of the electrode, and remove the washers and lead. Next, unscrew the rd. hd. brass clamping screw in the cast bracket and the electrode may be withdrawn.

Replace by reversing the above procedure and ensure that the electrode is correctly positioned. Do not overtighten. (See diagram 6).

7. **Electrical Control Box**

To remove the control box, first remove the controls cover, thermostat control knob and control box cover, as described in paragraphs (1), (2) and (3) under 'Wiring Instructions'. Disconnect all external leads at the terminal strip, slackening off the cable clamp screws to enable the wiring to be withdrawn.

Remove the thermostat phial and capillary tube from the phial pocket 'N' in the water manifold via the sealing plates in diagram 6.

Remove the two screws, hex. nuts and shakeproof washers securing the control box to the control panel, the control box may now be withdrawn.

Replace in reverse order. For details of the wiring see diagrams 8 to 13.

8. **Thermostat**

Remove the control box as in (7) above. Remove the five amp tags from the connections at the rear of the thermostat.

Slacken the screw securing the capillary clip in the control box and release the thermostat capillary.

Remove the two screws securing the thermostat to the control box. Remove the thermostat bulb from the phial pocket and remove the two sealing plates on the boiler back plate, diagram 6. The thermostat may now be removed.

Reverse the above procedure to re-fit the thermostat, making sure that the amp tag connections on the thermostat are pointing upwards. Be sure the connections are as shown in diagram 8.

9. **Transformer**

Remove the control box as in (7) above.

Disconnect the four wire connections to the transformer.

Remove the two screws, nuts, plain and shakeproof washers securing the transformer to the control box. The transformer can now be removed.

To replace, fasten to the control box with the two screws and nuts, making sure that the shakeproof washers are placed between the plain washers and the nuts. The mains terminals must be on the inside looking from the front. Connect the red and black mains leads to the mains terminals and the orange leads to the low voltage terminals on the opposite side.

10. Gas Valve Fuse

This is located in the orange wire from the control box to the gas valve. This enables the fuse to be changed without any dismantling of the controls. The fuse holder is accessible when the controls cover is removed. To change the fuse, release the bayonet fitting of the fuseholder and carefully part the two halves. Remove the fuse link. Replace fuse (500mA x 1¼ inch long x ¼ inch diameter) and re-assemble fuse holder.

Under no circumstance should a fuse of greater value than 500mA (BS.2950) be fitted in the line from the control box to the gas valve. Up-rating of the fuse could cause damage to the transformer.

11. Spark Ignition Switch Box

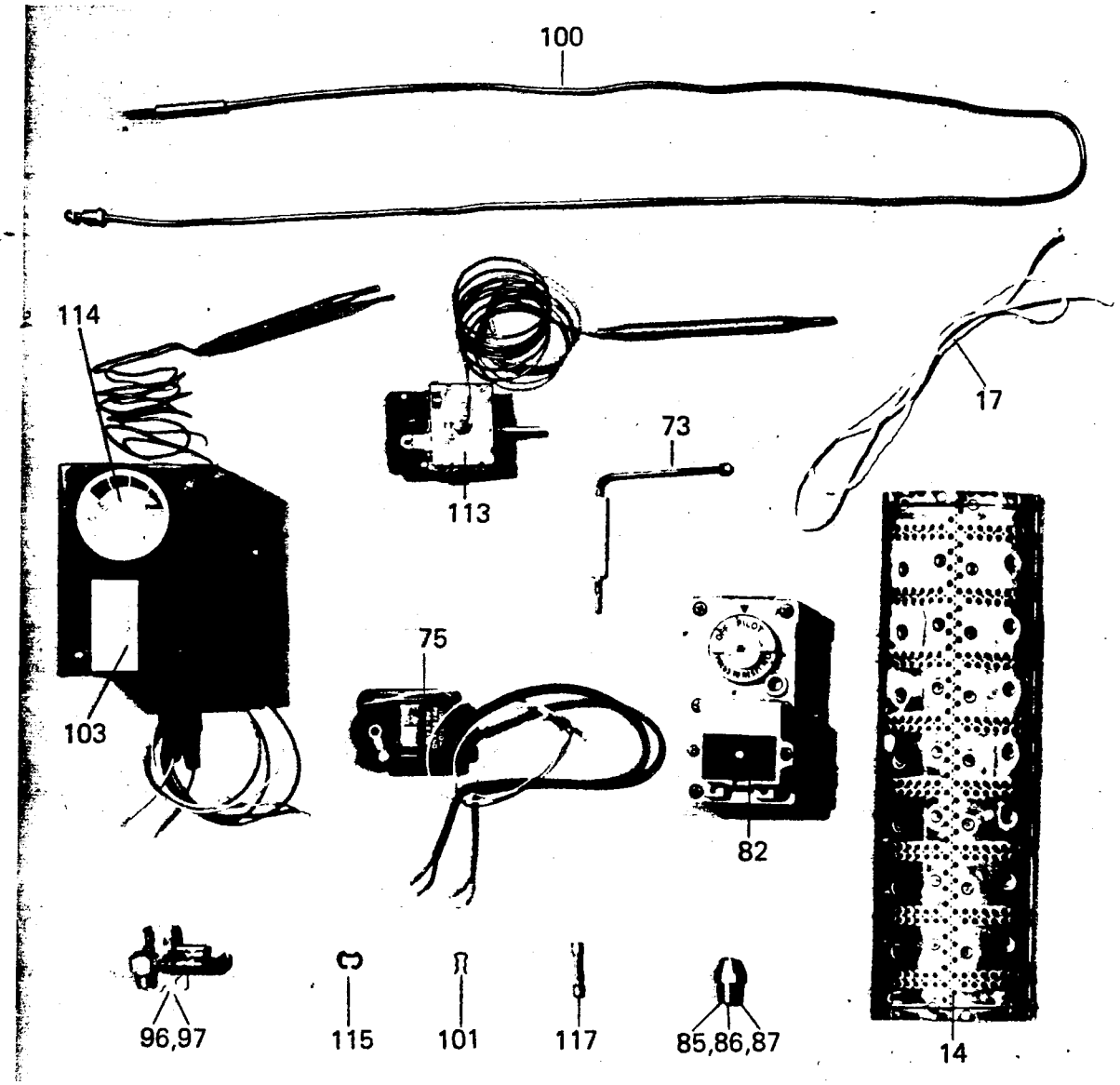
Remove the outer casing, the controls cover and the control box cover as described previously.
Remove the two core mains cable feed to the spark box from the terminal strip in the control box.
Disconnect the H.T. lead at the electrode end and remove the two sealing plates on the boiler back plate, see diagram 6. Unscrew the round head screw and hex. nut securing the spark box to the mounting bracket.
The spark box may now be removed, feeding the H.T. lead through the back panel and mounting bracket.
Replace in reverse order, wiring connections for the mains lead are shown in diagram 8. Make sure good seal is made through the boiler back plate.

LIST OF REPLACEMENT PARTS

Key No.	G.C. Part No.	Description	Makers Part No.
14	351 453	Burner top	K5508
17		Asbestos string, ⅛ in. dia. x 950mm. lg.	K3720
73	388 406	Spark electrode	K5229
75	388 404	Spark generator, Wipac C8197	K5429
82	392 612	¾in. BSP gas valve, Maclaren UK48 RFB03	K6207
85	351 476	Injector, Town gas group 4	K5533
86	351 486	Injector, Town gas group 5	K5534
87	351 447	Injector, Natural gas	K5535
96	391 301	Single pilot burner, Town gas, Maclaren 26T0142 TJ028	K3397
97	391 571	Single pilot burner, Natural gas, Maclaren 26T0142 TJ016	K3396
100	390 930	Thermocouple, Maclaren 2500M – 48	K5509
101	390 983	Clip – thermocouple	K3580
103	396 545	Electrical control box	M5222
113	382 176	Thermostat, Ranco C77–100	K5426
114	351 444	Control knob – thermostat	M5423
115	396 216	Clip – control knob	K4158
117	351 230	Fuse, 500mA, BS2950A	K4644

If replacement parts are required, apply to your local supplier. Please quote the name of the appliance, Space-saver 75 B.F., and preferably its serial number, which can be found on the data badge positioned in the bottom of the control cover.

Because of our constant endeavour for improvement, details may vary slightly from those shown inthis booklet.



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