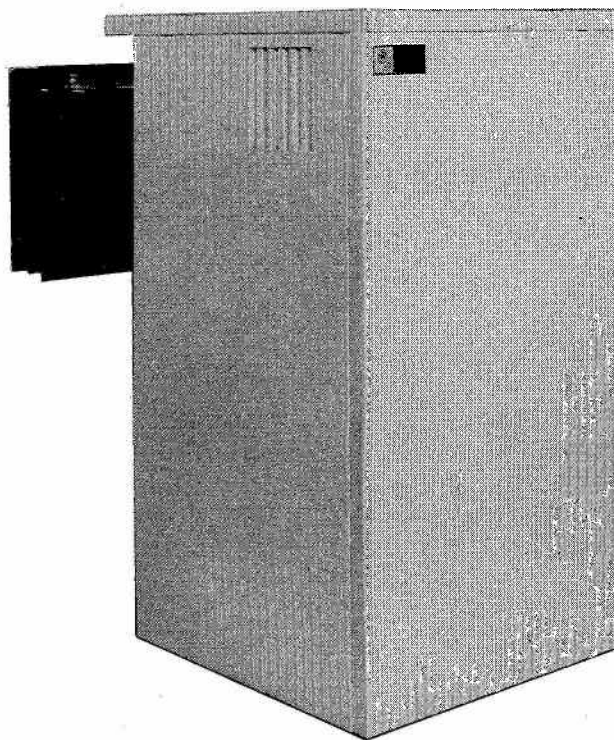


# GLOW-WORM 52B SUPER

40-52 k BTU

**BALANCED FLUE  
BOILER**

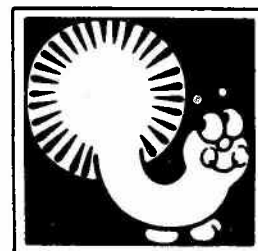


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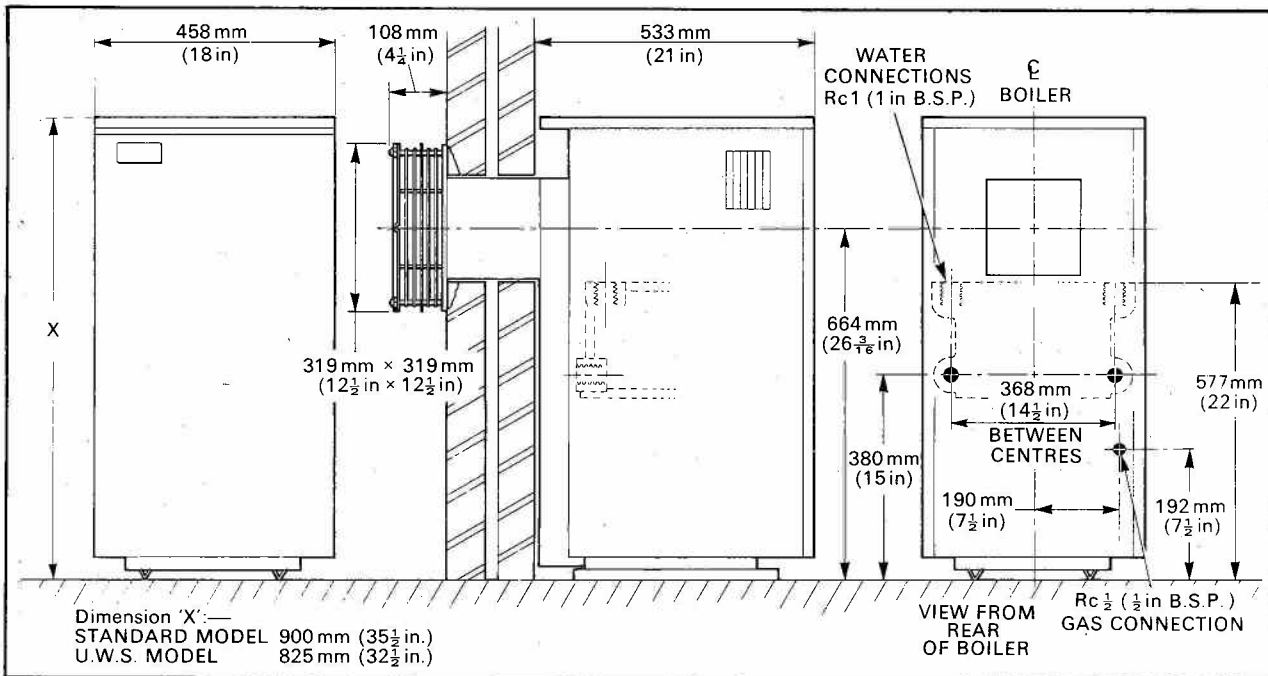
Also available for U.W.S. Installation.

## INSTALLATION AND SERVICE INSTRUCTIONS

# Glow-worm



THESE INSTRUCTIONS MUST NOT BE PASSED ON TO THE USER.



Approx. water content: 5.68 litres (1.25 gal.).  
Approx. weight of appliance: 88.2 kg (194 lbs).

#### NOTES.

- 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 in force at the time.
- Electrical supply 240V., 3A., 50Hz.
- This boiler shall only be connected to a cistern water supply, with a maximum head not exceeding 27 metres (ninety feet) and have an open vent in the system.

- THE INSTALLATION OF THIS APPLIANCE SHOULD BE CARRIED OUT BY A QUALIFIED INSTALLER. THE INSTALLATION SHOULD BE IN ACCORDANCE WITH THE GAS SAFETY REGULATIONS, BUILDING REGULATIONS, I.E.E. REGULATIONS B.S. CODES OF PRACTICE C.P.331:2 and 3, B.S.5376:2, B.S.5449:1, B.S.5440 PARTS 1 & 2 AND ANY RELEVANT REQUIREMENTS OF THE LOCAL GAS REGION AND LOCAL AUTHORITY.**

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

		Glow-worm 52B Super Input: 16.1 kW (55,000 Btu/h)/20.3 kW (69,500 Btu/h)				
		Pressure				
Gas Group	Injector	Output 11.7 kW (40,000 Btu/h)		Output 15.2 kW (52,000 Btu/h)		
		mbar	in. w.g.	mbar	in. w.g.	
1st Family (Manufactured gas)	G4	6.75 mm (K7217)	2.7	1.1	4.4	1.75
	G5	6.75 mm (K7217)	3.2	1.3	5.2	2.1
2nd Family (Natural gas)		3.4 mm (K7218)	10.7	4.3	17.4	7.0

#### 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 conditions. 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 300mm. (1 ft.) 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.

- Immediately beneath eaves or a balcony.
- At a re-entrant position on the face of the building.
- Adjacent to any projection on the face of the building.
- Within 300mm. (1 ft.) of ground level.
- Less than 600mm. (2 ft.) from any corner of the building.
- Within 600mm. (2 ft.) 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 <sup>2</sup> per kw input 2 in <sup>2</sup> per 5,000 Btu/h input	4.5cm <sup>2</sup> per kw input 1 in <sup>2</sup> per 5,000 Btu/h input

The figures quoted refer to the minimum acceptable **free area** when grilles 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 boiler must stand on a level floor, conforming with local authorities requirements and building regulations. The base temperature is within the requirements of BS5258. The boiler may be stood on a wooden floor but a metal base plate is required to protect plastic tiles and similar floor coverings.

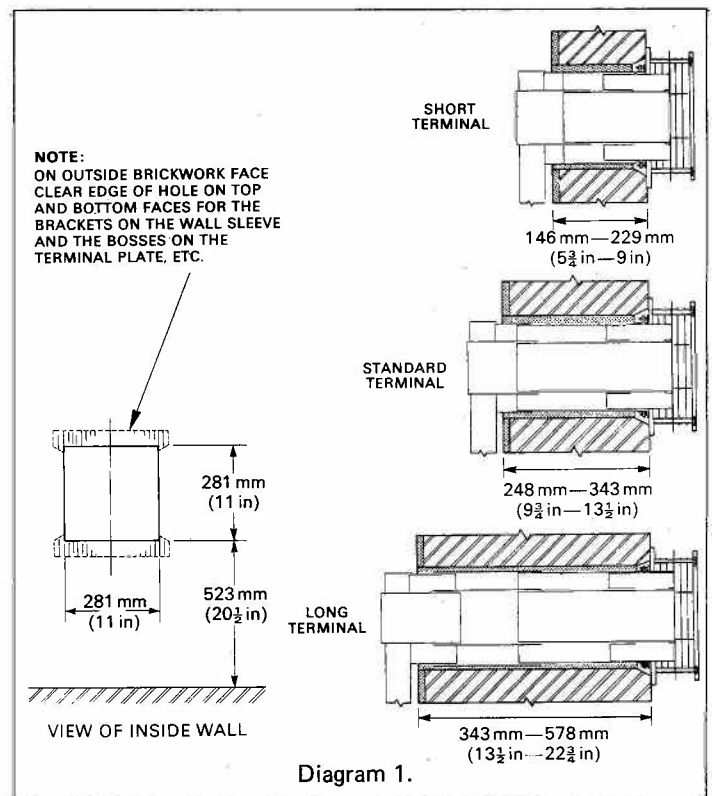
The boiler casings are packed separately to avoid transit damage, and are so designed to enable gas, water and flue connections to be made with the boiler on its prepared setting before final fitting of the casing panels. The upper casing brackets and a plastic bag of screws etc. are packed with the casings.

The following procedure should be adopted:

1. It may be advantageous to make all pipe fittings, plugs etc., into the boiler tappings before placing the boiler in position. See paragraph 8 Pipe Layout. Ensure that the pipe runs, when made later, will not foul the casing brackets or panels.
2. Check that the balanced flue duct supplied is suitable for the wall thickness through which it has to pass, see diagram 1.
3. Mark out and cut a hole through the wall where the boiler is to be installed, to the dimensions shown in diagram 1.

### THE UPPER CASING BRACKETS MUST BE FITTED BEFORE THE WATER CONNECTIONS ARE MADE INTO THE BOILER TAPPINGS.

4. Unscrew the wing nuts holding the flue cleaning door securing angle and remove the angle and door taking care not to damage the asbestos seal. Remove the hook bolts temporarily.  
The electrical control box, complete with its mounting bracket, is placed inside the flue collector during transit. The control box is wrapped in cardboard. Fit the control box bracket to the front face of the flue collector using the two M6 x 12 mm. lg. hex. hd. screws, already fitted in the front face of the flue collector, shakeproof washers and M6 hex. nuts. (See diagram 9).  
Take the upper casing brackets, which are packed with the casings and fit over the screws protruding from the flue collector. Secure with the M6 hex. nuts and plain washers provided. (See diagram 3.)  
Re-fit the hook bolts, flue cleaning door, securing angle, washers and wing nuts, tightening down evenly to ensure a good seal.



5. Place the boiler in position, the balanced flue duct protruding into the prepared hole in the wall. See diagram 2. Leave <sup>3</sup>/<sub>8</sub> inch space between the back vertical air duct and the wall face. Ensure that there is sufficient clearance between the side panels and adjacent furniture. See diagram 4. Make a good cement seal around the balanced flue terminal sleeve which will be partly inside the prepared hole in the wall.

6. Next, complete the balanced flue installation, see diagram 5. 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 6 mm. proud of 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 the corners of the brickwork opening to clear the four small bosses on the back of the terminal frame. (Diagram 1).

**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' on to the tie bolts, making sure that the face marked TOP is uppermost, see diagram 5.* Push into the flue until the plate comes against the 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' onto 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 M6 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 1.8m (6 ft.) from the ground. Guards are also available from Tower Flue Components Ltd., telephone Tonbridge 351555, quoting reference Type 'E', and from Quinnell, Barrett & Quinnell Ltd., 884 Old Kent Road, London S.E.15, quoting reference Type 'E'.

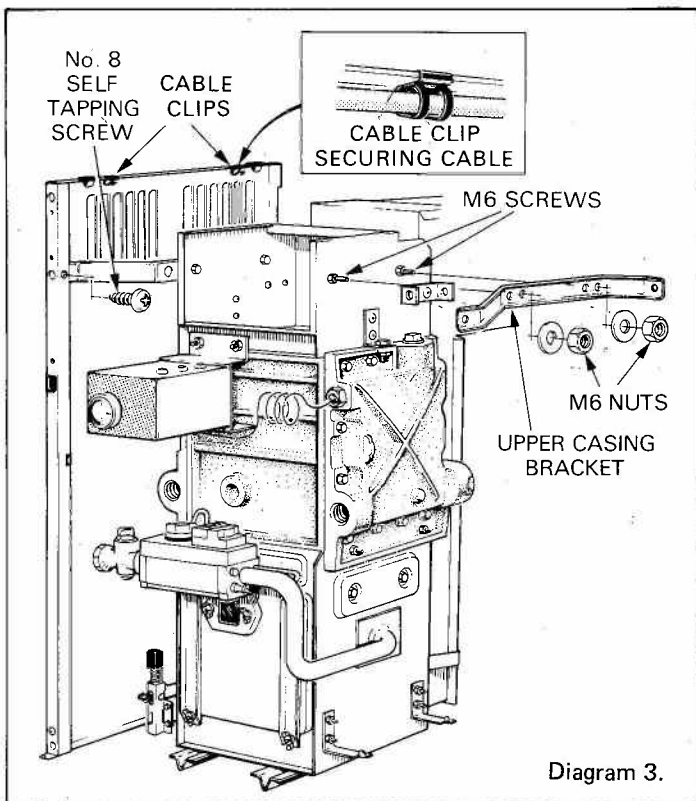
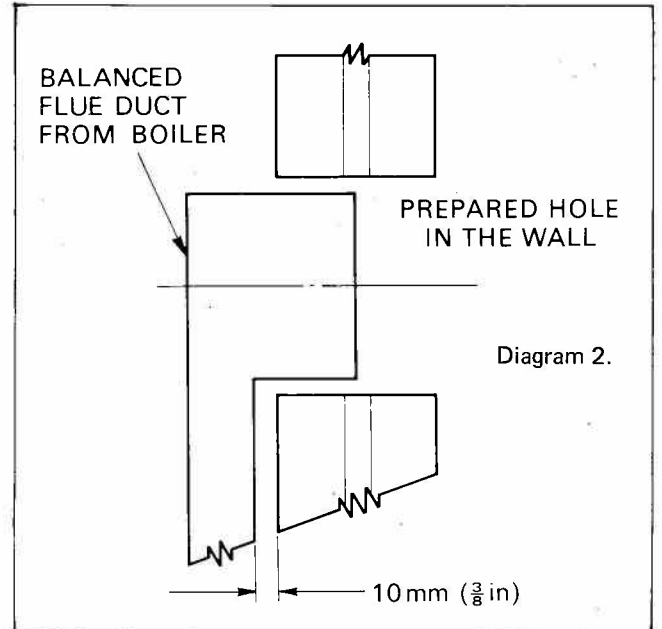


Diagram 3.

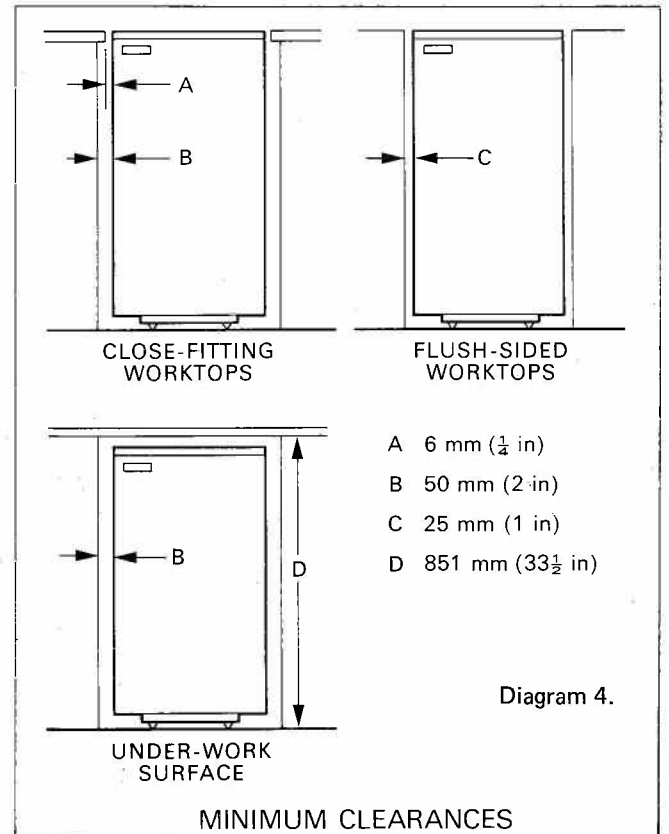
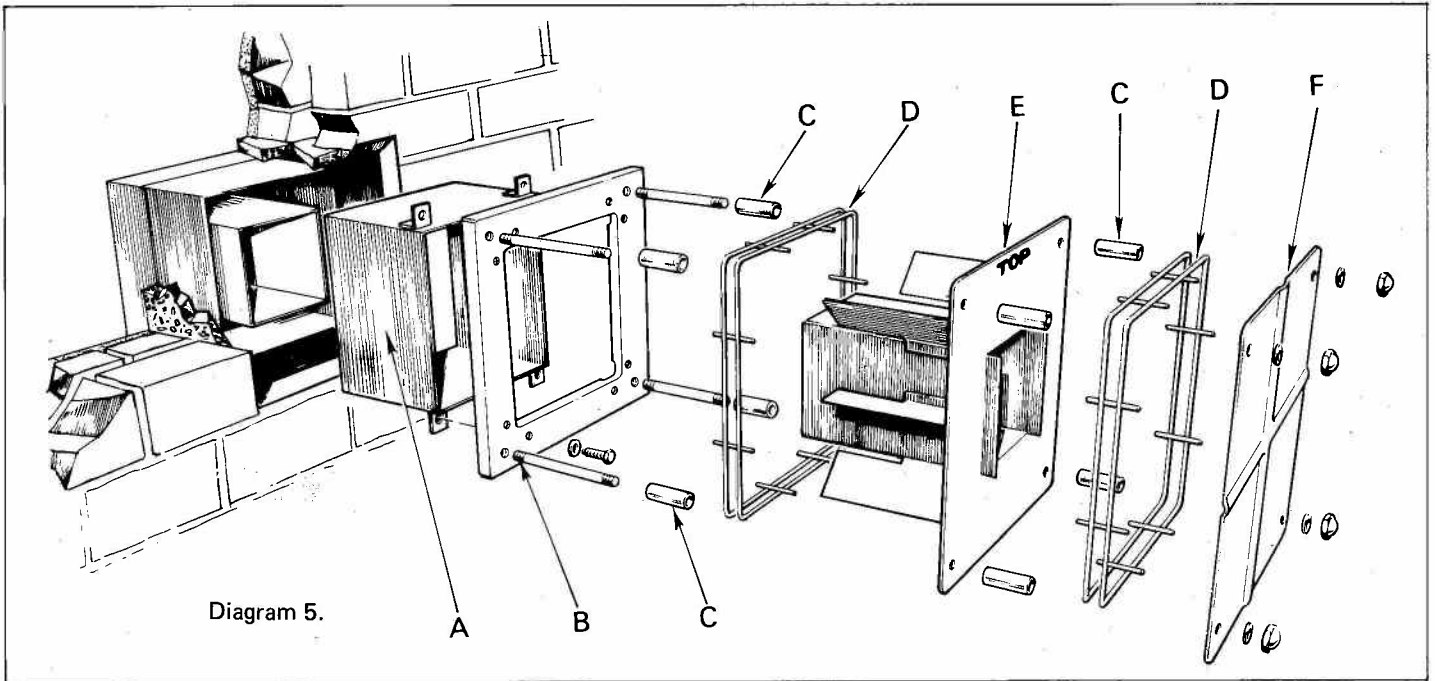


Diagram 4.

MINIMUM CLEARANCES

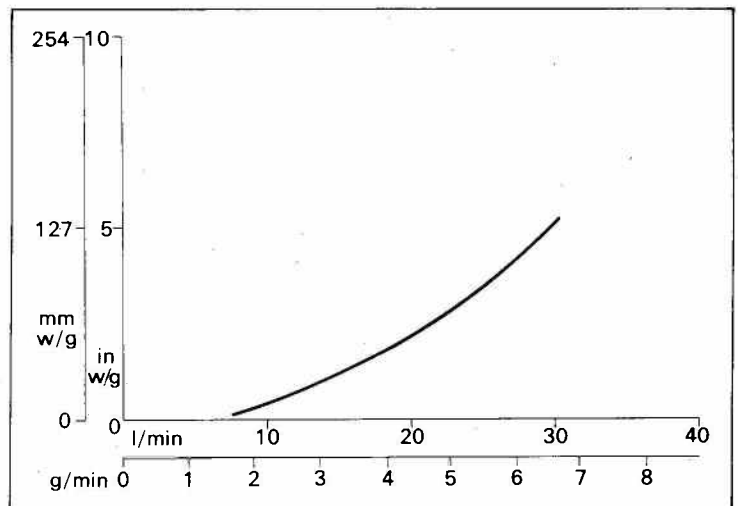


7. Make the gas and water connections, taking all pipes backwards making sure that when the side casing panels are fitted that there is no interference because there are no pipe holes in the side casings. Also ensure that no pipework obstructs removal of the flue cleaning door.

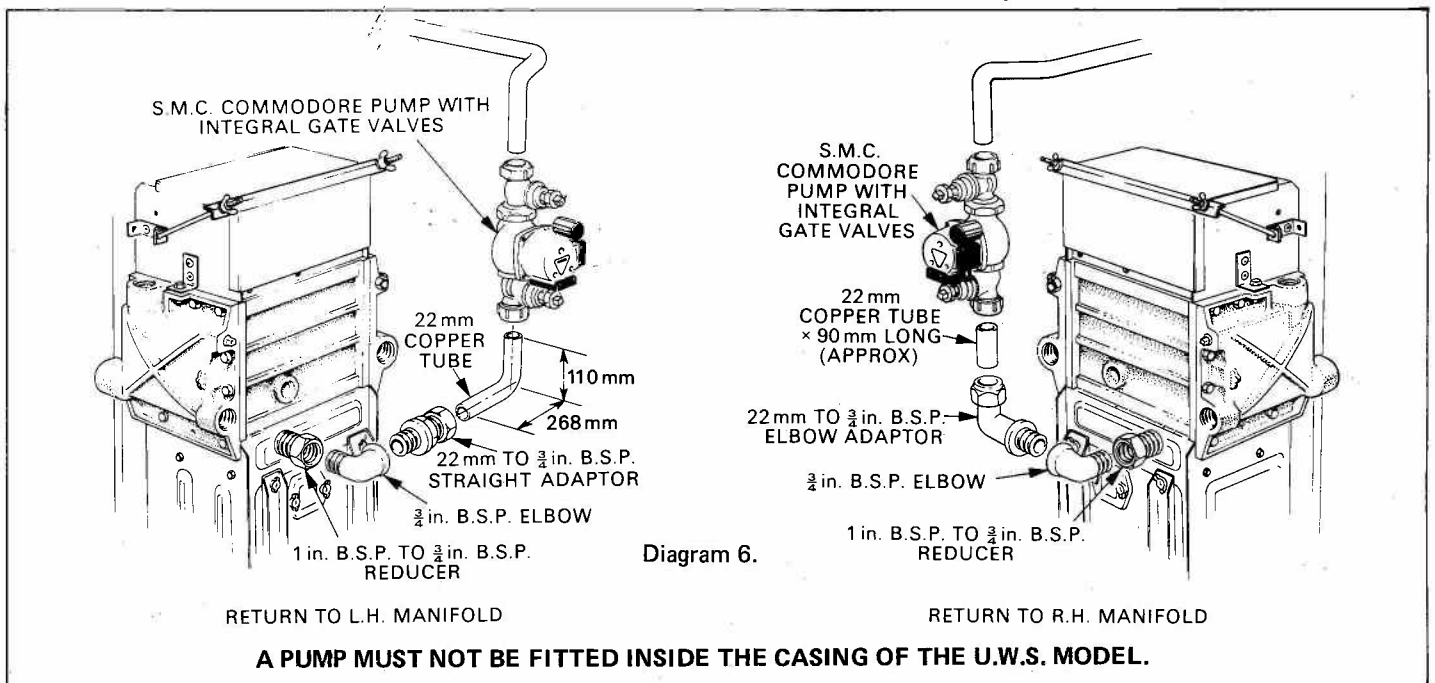
**8. Pipe Layout**

If the pump is required to be fitted within the boiler casings the components can be fitted as shown in diagram 6, to either of the bottom front water connections. This will always be the return. Ensure that the pump and ancillary pipework will clear the electrical control box when fitted.

A pump must not be fitted inside the casing of a U.W.S. model. This would not allow access to the cleaning door.



Pressure drop across heat exchanger



### Gravity domestic hot water

Two 1 inch M/F elbows (tapered threads) must be fitted in the domestic return, as shown in diagram 6. Connections must be made as follows:

- Domestic return to bottom L.H. rear
- Domestic flow to top L.H. rear
- Pumped heating return to bottom L.H. front
- Heating flow to top R.H. rear
- Thermostat phial pocket in top R.H. front

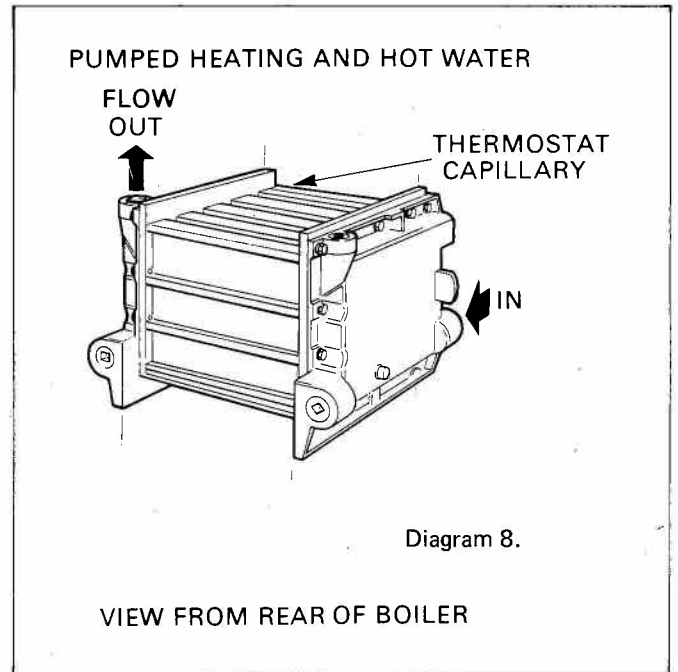
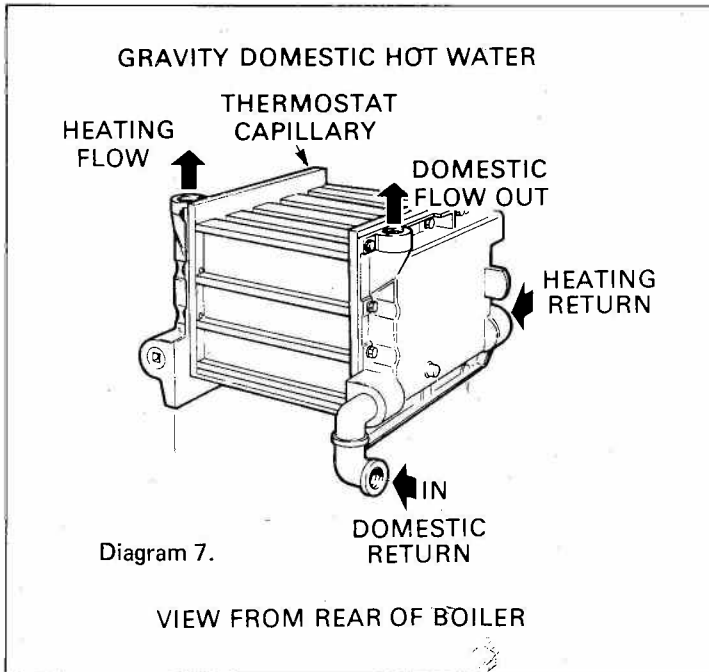
**CONNECTIONS MAY BE FITTED ON OPPOSITE SIDES, BUT ALWAYS IN THE SAME RELATIVE POSITIONS, I.E.: ALL THREE MUST BE MOVED FROM THE L.H. SIDE, ALSO THE PHIAL POCKET. SEE DIAGRAM 7.**

### Pumped heating & hot water

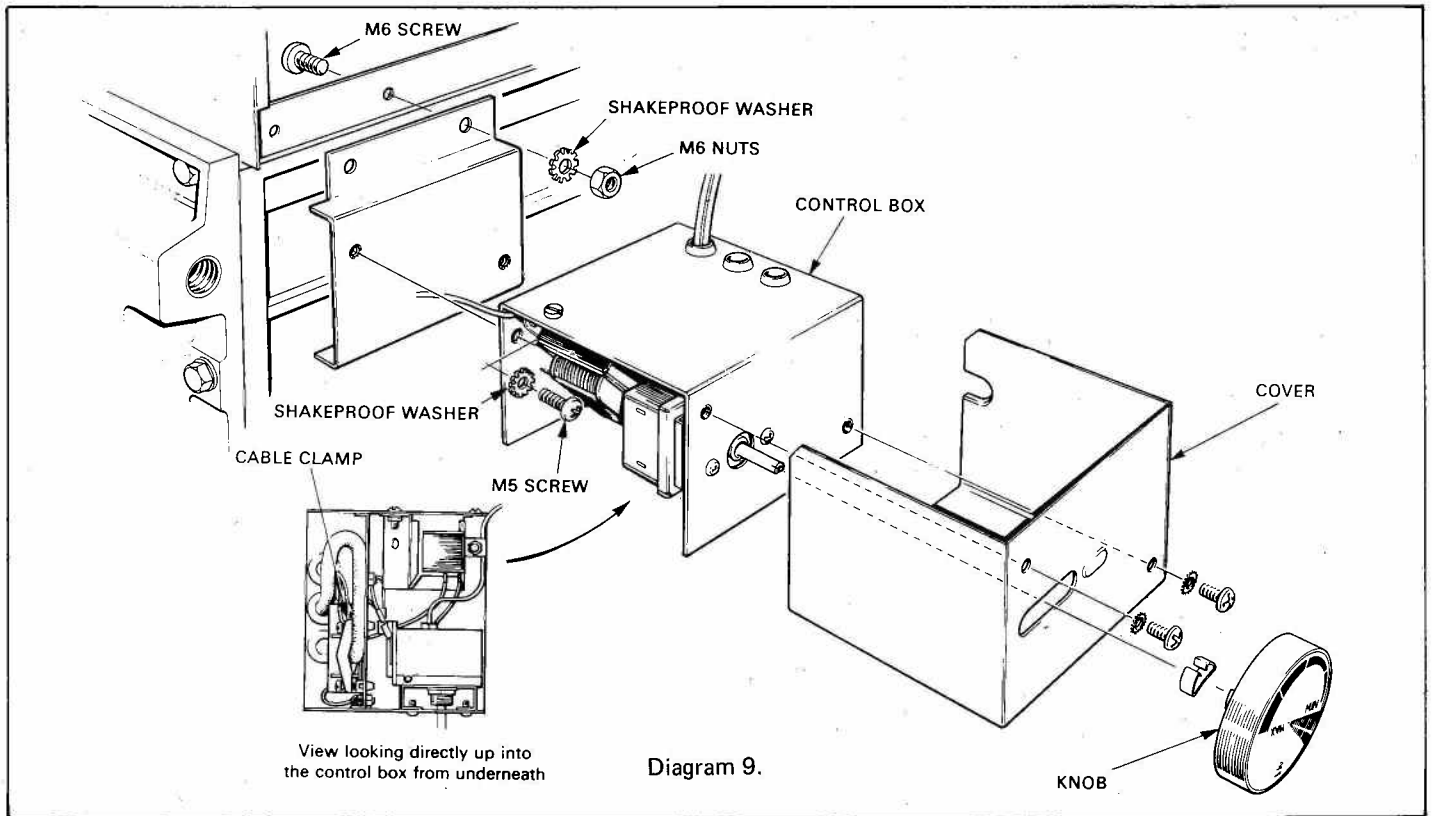
Where a single flow and return is taken from the boiler, connect as follows:

- Pumped return to bottom L.H. front
- Flow to rear R.H. top
- Thermostat phial pocket in top R.H. front

The flow and return connections may be fitted in opposite sides if necessary (both must be changed) in which case the thermostat phial pocket must also be changed over. See diagram 8.

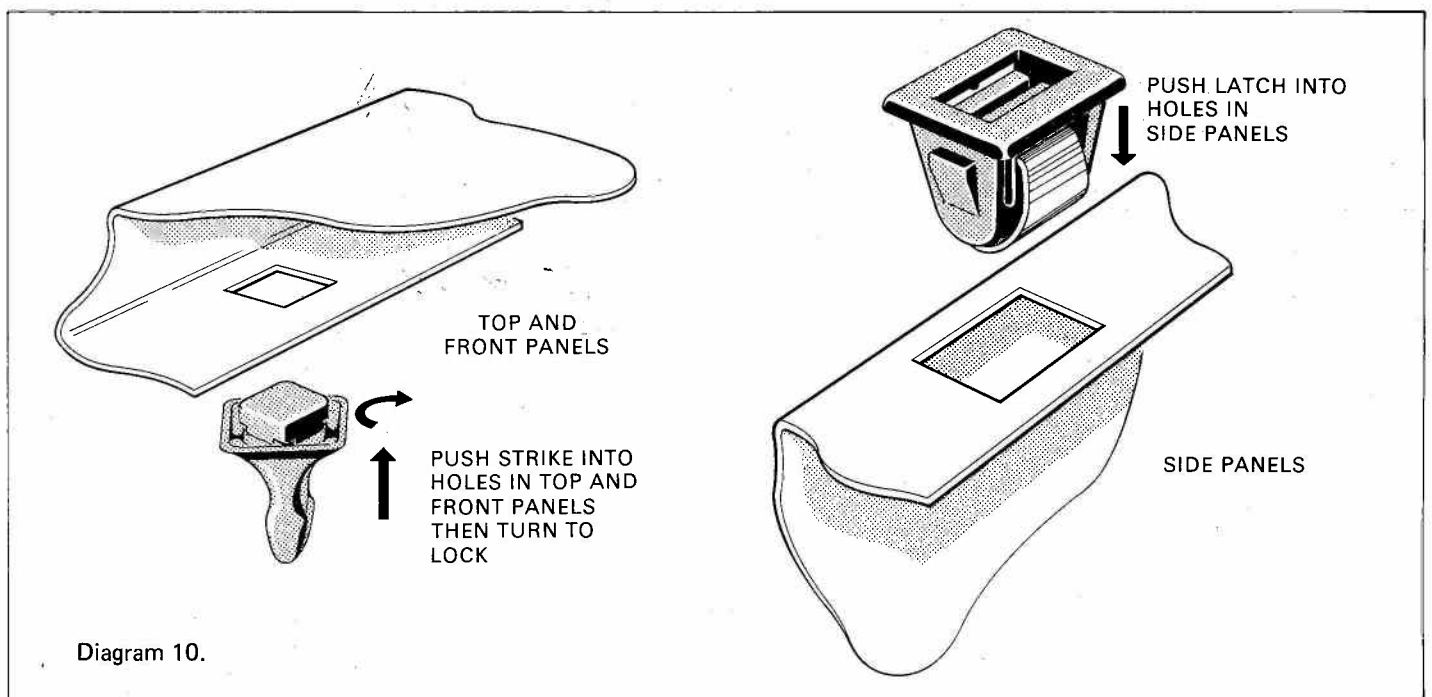


9. Lower the L.H. side panel on to the upturned lugs in the lower casing brackets. The locating dowel in the panel rear return flange fits into the hole in the rear end of the upper casing bracket and the front end of the upper bracket fits behind the panel front return flange, where it is secured with one of the No.8 x  $\frac{3}{8}$  inch pan hd. self-tapping screws provided, See diagram 3. Fit the other side panel similarly.
10. Complete the wiring to the control box.
  - (a) Remove the boiler thermostat control knob by pulling from its spindle. (see diagram 9).
  - (b) Remove the two Pozidriv pan hd. screws and shakeproof washers securing the cover to the control box and remove the cover.
  - (c) Bring the mains cable into the control box through one of the grommets in its top surface. Slacken off the screws holding the mains cable clamp, pass the mains cable through the clamp and connect the three wires to the appropriate terminals in the terminal strip. See diagram 11. Tighten the screws holding the mains cable clamp. Fix the mains cable and its securing clips to the top of the L.H. side panel. See diagram 3.  
Fit the other two securing clips to the front return of the L.H. side panel, for the gas valve lead.
  - (d) Complete the remainder of the wiring, leading all cables in through the grommets. See diagrams 11 to 17. Replace the control box cover and screws then push the boiler thermostat control knob on to its spindle.



11. The panel fasteners are supplied loose, four door latches and six strikes. Insert two latches into the rectangular holes in each side panel, one in the front hole in the top edge and one in the upper portion of the front edge. Four of the strikes are inserted into the rectangular holes in the top panel edges and two into the upper portion of the edges of the front panel. The strikes are inserted by pressing into the holes and turning to lock into position parallel with the edges. See diagram 10.

12. Slide the top panel on to the top of the side panels so that the two rear strikes engage in the rear pair of rectangular holes in the side panels. Press the top panel down at the front so that the two front strikes engage in the latches in the side panels. Next, locate two holes in the bottom edge of the front panel over two pegs projecting forward from the bottom of the side panels and push the top of the front panel backward so that the strikes engage in the latches in the front edges of the side panels.



## INSTALLATION REMINDERS

### SAFETY VALVE

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.

### DRAIN-OFF COCK

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

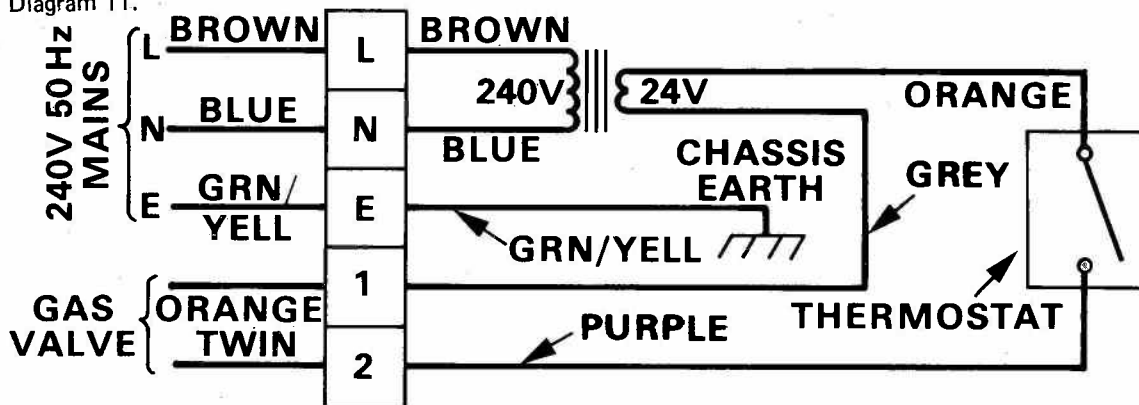
### HOT WATER SERVICES

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

## WIRING INSTRUCTIONS FOR CONTROL BOX

THE INSTALLER IS REQUESTED TO ADVISE THE USER OF THE CONTROLS SCHEME USED WITH THIS APPLIANCE AND TO GIVE GUIDANCE ON THE OPERATION OF THE CONTROLS.

Diagram 11.

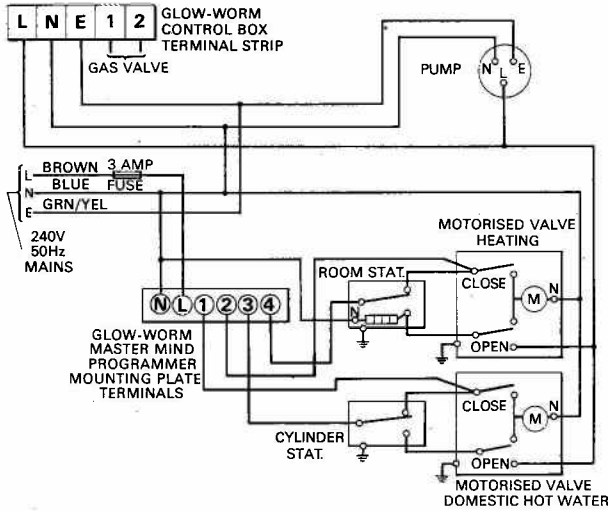


**NOTE:—**  
ELECTRICITY SUPPLY MUST BE  
240 V, 3A, 50 Hz.  
IT IS ESSENTIAL THAT A 3-AMP FUSE  
IS FITTED INTO THE "LIVE" WIRING  
BETWEEN THE SUPPLY AND THE  
BOILER

**WIRING DIAGRAM FOR CONTROL BOX**

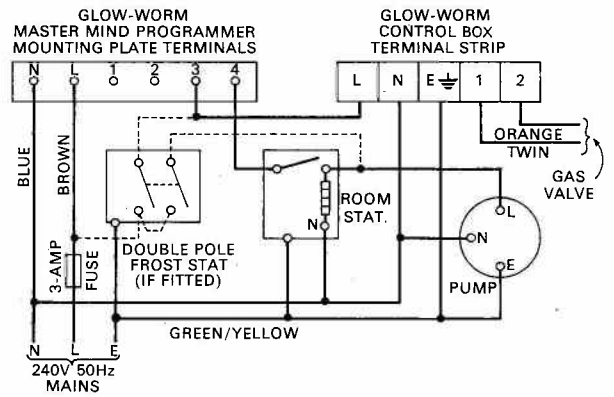
**SCHEME 1** (Diagram 12.)

*Independent control of domestic hot water and central heating, both pumped, using two motorised valves (sixteen position programmer).*



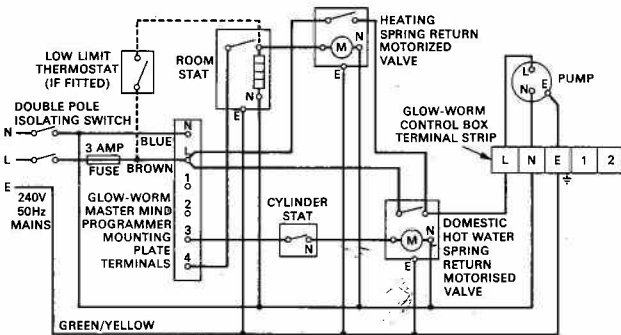
**SCHEME 2** (Diagram 13.)

*Gravity hot water, pumped central heating (ten position programmer).*



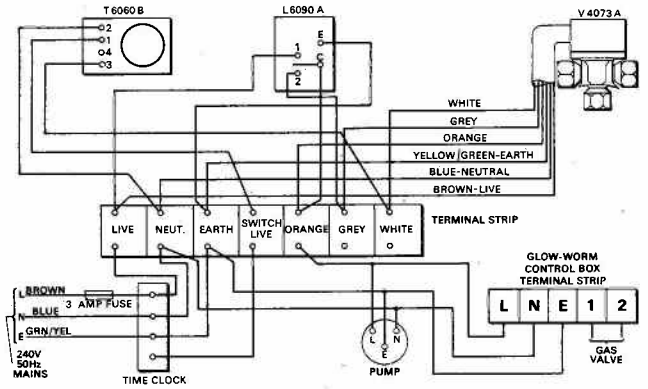
**SCHEME 3** (Diagram 14.)

*Independent control of domestic hot water and central heating, both pumped, using two spring return motorised valves (sixteen position programmer).*



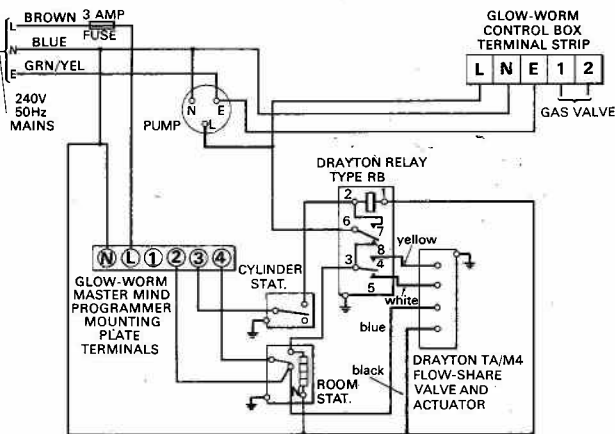
**SCHEME 4** (Diagram 15.)

*Wiring diagram for fitting the Honeywell Sundial Plan Y. NOTE.—The piping arrangement and the installation of the controls should be in accordance with the Honeywell instructions.*



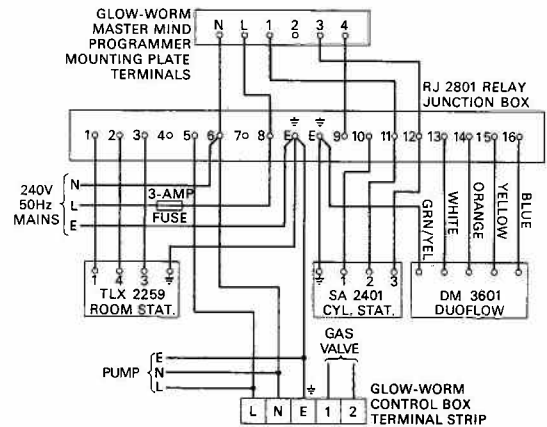
**SCHEME 5** (Diagram 16.)

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



**SCHEME 6** (Diagram 17.)

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



## CONTROLS

*The service gas tap* upstream of the gas valve providing overriding control of the gas supply to the boiler.

*The gas valve* performs four duties. Those of a three position gas 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 overriding 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 an electric clock and from the boiler thermostat. 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.

## 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 18.

### 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 generator button 'S' 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 secs. 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 ( $\frac{3}{8}$ - $\frac{1}{2}$  in) of the thermocouple tip and ignites the main burner smoothly.  
Turn anticlockwise to increase pilot flame. Replace cover screw.
8. If gas valve is turned 'OFF' (knob 'A'), no attempt should be made to force knob 'A' back to pilot position until the three minutes has elapsed.
9. Make sure that the burner pilot is alight and stable, and then turn gas valve knob 'A' to 'ON' and set thermostat knob 'B' between 'MIN' and 'MAX' opposite the marker on the control box. Set clock or programmer to an 'ON' position. The main burner will light at once.

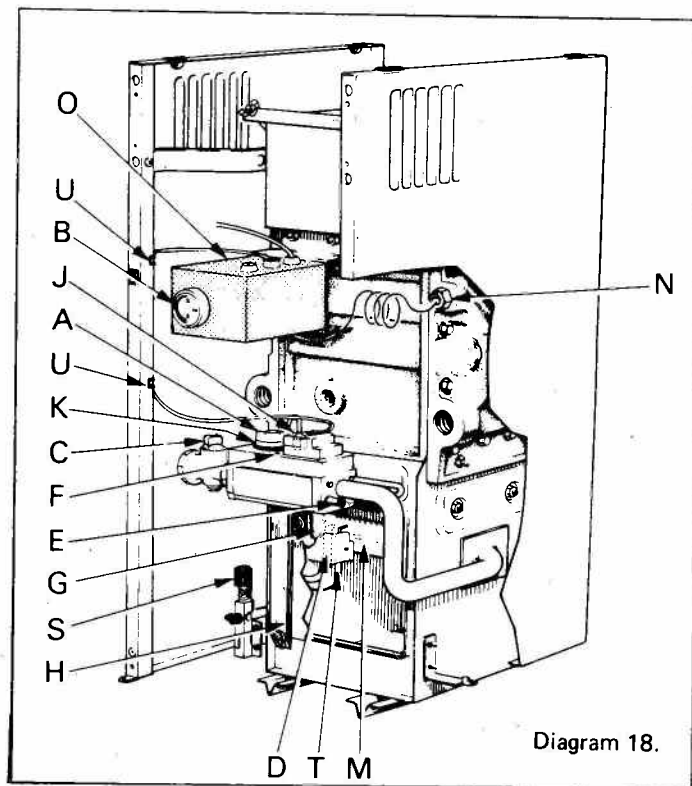


Diagram 18.

### Key

- A. Gas valve control knob.
- B. Thermostat control knob.
- C. Service gas tap.
- D. Pilot burner.
- E. Pressure test nipple.
- F. Governor adjustment.
- G. Sight window.
- H. Burner front plate.
- J. Thermocouple union.
- K. Pilot adjustment.
- L. Flue cleaning door.
- M. Main burner.
- N. Thermostat phial and pocket.
- O. Electrical control box.
- S. Spark generator button.
- T. Electrode.
- U. Clip for gas valve lead.

10. Set gas pressure with water gauge. (See page 2 for setting pressure).  
To do this: Remove pressure regulator adjustment cover screw 'F', adjust internal grub screw to the required pressure. Turn clockwise to increase pressure. Replace cover screw.
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, re-set 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-energize the gas control electric operator leaving the electric clock (when fitted) running but not controlling.  
Follow the Users' Lighting Instructions to re-light.  
No attempt should be made to force knob 'A' back to pilot position until three minutes have elapsed.
4. By turning the service tap '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-energize 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.

**NOTE:** There could be a slight delay before the burner is extinguished or re-lit depending on the system of installation, e.g. if motorised valves with auxiliary switches are incorporated.

### 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. 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. Relight the boiler following the sequence of the Users' Lighting Instructions.

## MAINTENANCE

Servicing must be carried out by a qualified gas service engineer and where appropriate, a qualified electrician.

### SERVICING IN GENERAL

#### GAS CONTROL VALVE

The servicing of this control should only be undertaken by an engineer conversant in every respect with the equipment. Thermocouple union 'J' (see diagram 18), should be tightened only quarter turn beyond finger tight to give good electrical continuity. Do not tighten further or damage may result.

#### BOILER FLUEWAYS

Regular cleaning of the boiler flue passages is necessary for efficient operation. Thorough cleaning should take place annually, preferably at the end of the heating season.

#### To clean Boiler Flueways

1. Remove the outer casing front panel and the outer casing top panel.
2. Switch off electricity supply. Turn service cock 'C' to the 'OFF' position, (see diagram 18).
3. Remove the four metal wing nuts from the front of the burner chamber, remove the front plate 'H', taking care not to damage the asbestos gasket.
4. Unscrew the wing nut securing the burner underneath the pilot burner bracket, lift so that the stud clears the bracket and withdraw the burner.  
Care **MUST** be taken not to damage the pilot burner or the electrode.  
**The pilot burner and electrode must be covered prior to cleaning**, a sheet of paper placed horizontally in the combustion chamber will help in collecting the dust.
5. Unscrew the two wing nuts holding the flue cleaning door securing angle and remove the door 'L'. Take care not to damage the asbestos seal on the inside. Lift out the three flueway baffles.
6. The boiler flueways and fins should now be cleaned thoroughly with a suitable stiff brush.

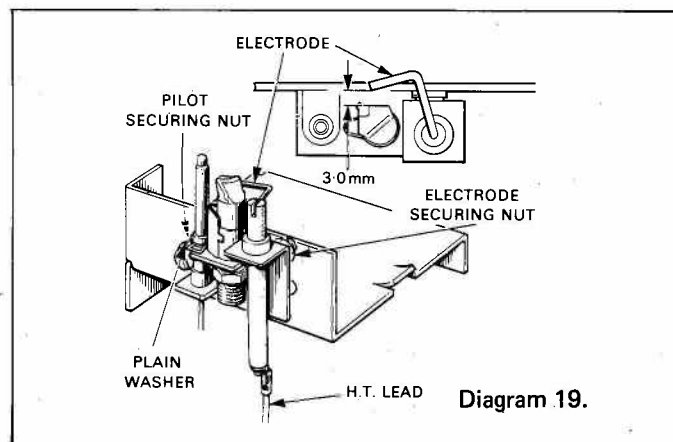
#### BURNER

With the burner removed as above, it may be cleaned as follows:

1. Remove the split pin from the bottom corner of the injector end of the burner.
2. The injector end plate is secured to the body by a bayonet type fastening. Turn the end plate in an anticlockwise direction to release, it may then be withdrawn complete with venturi tube.
3. Clean all dust and lint from inside the burner with a vacuum cleaner. Also use the vacuum cleaner to remove any dust etc. from the outside of the burner top.
4. When replacing the burner, do not over-tighten the wing nut, this should be finger tight only.

#### 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

Make sure the gas tap 'C' is in the 'OFF' position. Disconnect the  $\frac{1}{4}$  inch diameter pilot supply pipe union and ease out connection. Disconnect thermocouple union 'J'. Remove the electrical connections on the gas valve. Disconnect the union 'C' at the service tap. The gas valve can now be unscrewed from the gas manifold pipe, the manifold pipe **MUST** be supported while this is done. When re-assembling ensure that all joints are re-made gas tight, and that thermocouple union 'J' is not tightened more than one quarter turn beyond finger tight. It will be found necessary to purge the system of air after this operation, and re-light should be done in accordance with the initial light-up procedure detailed on page 10.

#### 2. INJECTOR

For the removal of the injectors, refer to Maintenance Instructions.

#### 3. BURNER

Refer to Maintenance Instructions.

#### 4. PILOT BURNER

Remove front plate 'H'. Remove the main burner as described under "Maintenance - Boiler Flueways". Unscrew the hexagon screws and nuts securing the pilot shield to the pilot burner bracket and remove the shield. Remove the clip securing the thermocouple into the pilot burner and withdraw the thermocouple downwards clear of the pilot burner. Remove the electrode complete with mounting bracket by unscrewing the M5 hexagon nut behind the pilot bracket which retains it. See diagram 19. Disconnect the pilot supply tube at the union at the bottom of the pilot burner. Slacken off the M5 cheese head screw, securing the pilot burner to the bracket and the pilot burner may be withdrawn. Take care that no dust etc. enters the pilot supply tube while it is disconnected.

Fit the new pilot burner to the bracket, making sure that the plain washer on the cheese head screw is over the half hole in the pilot burner body. Tighten the screw.

Re-fit the electrode to the pilot burner bracket, slight manipulation may be necessary to position the electrode wire behind the pilot burner, and secure it with the M5 hexagon nut. Re-connect the pilot gas supply tube to the pilot burner, **taking care not to damage the electrode**. Check the setting of the electrode, see diagram 19. Re-fit the thermocouple to the pilot burner and secure with the clip. Re-fit the pilot shield, also the main burner, securing the latter with the wing nut. Do not overtighten the wing nut, it should be finger tight only.

**5. ELECTRODE**

Remove as under PILOT BURNER above. Unless the lead is also to be replaced, this can be disengaged from the electrode by pulling off the tag at the bottom of the electrode. When replacing, check the setting, see diagram 19.

**6. SPARK GENERATOR**

Pull the ignition lead tag from the connection on the body of the spark generator. Unscrew the two screws and nuts which secure the generator to the bracket.

**7. THERMOCOUPLE**

Remove the thermocouple from the pilot burner as described in (4) above. Unscrew the capillary tube at union 'J' on the gas valve and withdraw from the hole in the L.H. side of the combustion chamber. Re-assemble in reverse manner, taking care not to over-tighten at union 'J'.

**8. ELECTRICAL CONTROL BOX**

Remove the thermostat control knob and control box cover as described under "Installation", paragraph 10. Disconnect all external leads at the terminal strip, slackening off the screw securing the mains cable clip to enable the mains cable to be withdrawn. Remove the thermostat phial from the phial pocket 'N' in the water manifold.

The control box is secured to the bracket on the flue collector by two M5 Pozidriv screws and hex. nuts, remove these and the control box may be withdrawn. See diagram 9. Replace in reverse order. For details of the wiring see relevant wiring diagrams under "Installation". Ensure that the thermostat phial retainer is replaced.

**9. THERMOSTAT**

Remove the control box as in (8) above. Remove the 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 hexagon nut and washer on the mounting bush on the front face of the control box and the thermostat may be withdrawn. Replace in reverse order.

**10. TRANSFORMER**

Remove the control box as in (8) above. Remove 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. Re-fit the blue and brown mains leads to the mains terminals and the orange and grey leads to the low voltage terminals on the opposite side.

**FAULT FINDING CHART**

Faults	Cause	Action
Pilot: Failure to light	No spark  No gas	<ol style="list-style-type: none"> <li>1. Turn off main gas at service tap. Wait three minutes. Remove front burner chamber cover. Press switch on spark generator several times. If no spark, check electrode gap and all electrical connections between spark generator and electrode.</li> <li>2. Check pilot burner piping and injector.</li> <li>3. Adjust pilot flame regulating screw.</li> </ol>
Pilot: Failure to remain alight	Thermocouple	<ol style="list-style-type: none"> <li>1. Check thermocouple connection to gas valve. This is an electrical connection and must be kept clean and dry, tighten only quarter turn beyond finger tight.</li> <li>2. Check pilot flame size, make sure that it wraps around the thermocouple, adjust pilot flame regulating screw if necessary.</li> </ol>
Main burner: Failure to light	Electrical  Clock switch  Gas valve	<ol style="list-style-type: none"> <li>1. Check that clock, programmer or any other ancillary control is set 'ON'.</li> <li>2. Check thermostat calling for heat.</li> <li>3. Check main fuse at wall supply.</li> <li>4. If programmer fitted set to continuous. This will bypass clock and burner should light.</li> <li>5. Observe movement of clock dial to ascertain possible failure of clock motor.</li> <li>6. Connect low voltage (24 volt) test lamp in series with gas valve. If no light obtained it shows failure of gas valve or wiring. Remove test lamp, reconnect wiring to gas valve.</li> <li>7. Check any ancillary control fitted, e.g. room thermostat for possible switching faults.</li> </ol>

## LIST OF REPLACEMENT PARTS

Item No.	G.C. Part No.	Description	Maker's Part No.
59	351 661	Sight glass	K5226
67	387 969	Spark electrode, Kigass D5272	K7342
68	387 907	Spark generator, Kigass D5037	K6587
71	392 767	½ in. BSP gas valve, Maclaren UK48/RBB 05	K9049
72	351 842	Injector, Town gas groups 4 & 5	K7217
74	351 790	Injector, Natural gas	K7218
81	397 639	Burner, Aeromatic 7/51948	K7199
82	391 429	Pilot burner, Town gas, Maclaren 26TO142 TL028	K7213
83	391 430	Pilot burner, Natural gas, Maclaren 26TO142 TL016	K7214
86	390 894	Thermocouple, Maclaren 2500M-36	K2674
87	390 983	Clip for thermocouple	K3580
89	355 125	Electrical control box	M9050
90	382 271	Boiler thermostat, Ranco G1-11675	K7090
91	351 844	Control knob - thermostat	M7192
92	396 216	Clip - control knob	K4158

If replacement parts are required, apply to your local supplier. Please quote the name of the appliance, Glow-worm 52B Super, and preferably its serial number which can be found on the data badge positioned on the front face of the flue cleaning door.

Because of our constant endeavour for improvement, details may vary slightly from those quoted on this booklet.

