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Glow-worm

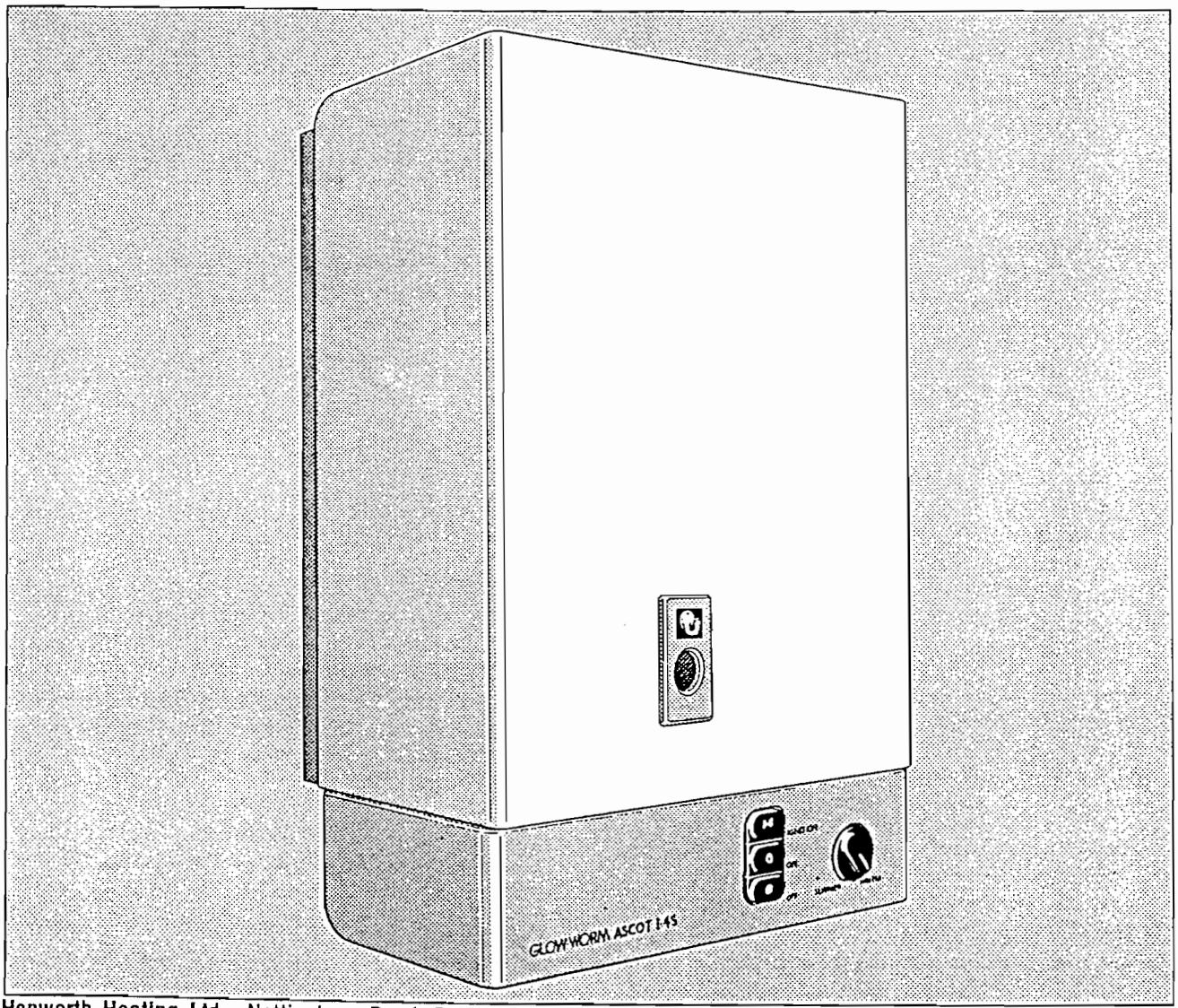
Installation & Servicing Instructions

To be left with the user

ASCOT 1.4S

Instantantaneous Multipoint
Balanced Flue Water Heater

G.C. Number 52 313 01



Hepworth Heating Ltd., Nottingham Road, Belper, Derbyshire. DE56 1JT Tel: Belper (0773) 824141 Fax (0773) 820569

Technical Services Department: Telephone: Belper (0773) 828100

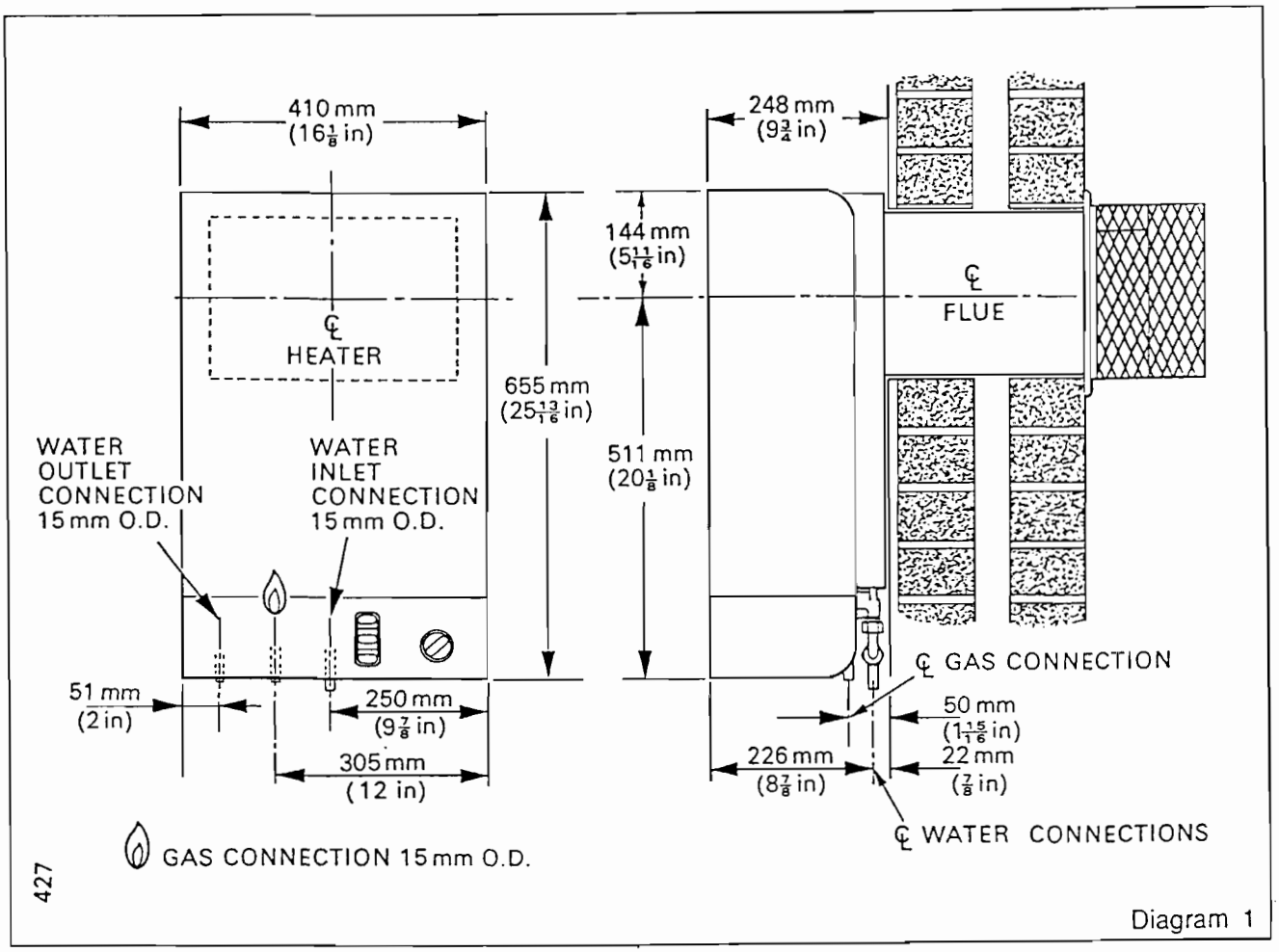


Diagram 1

1 General

The Glow-worm Ascot 1.4S has been designed for surface mounting and will supply hot water direct to a bath, basin, kitchen sink and, via a suitable mixing valve to a shower.

Important: This heater is for use on Natural Gas only and must not be used with any other gas.

1.1 Installation Requirements

The installation of this water heater must be in accordance with the relevant requirements of the current issue of the Gas Safety (Installation and Use) Regulations, The Building Regulations, Local Water Company Bye-laws and The Building Standards (Scotland) Regulations.

It is the Law that ALL gas appliances are installed in accordance with the above regulations. Failure to install the heater correctly could lead to prosecution. It is in your own interest and that of safety to ensure that the law is complied with.

The installation should also be in accordance with any relevant requirements of the Local Authority and the relevant requirements of the current issue of the following British Standard codes of practice, BS6891, BS5546, BS6700 and BS5440 Parts 1 and 2.

Additionally it is essential that this heater is assembled and installed strictly in accordance with these instructions.

1.2 Ratings

Nominal Input	30.27kW (103000Btu/h)
Nominal Output	22.7kW (77500Btu/h)
Maximum Water Pressure	13bar (188.5lbf/in²)
Injector	4.2
Burner Pressure	16.5mbar (6.6in wg)
Weight	23kg (51lb)

Nominal burner pressure is 16.5mbar (6.6in wg) at 20mbar (8in wg) inlet pressure. Due to variations in gas supply and heater tolerances the measured pressure may vary between 17.5mbar and 15.5mbar (7.0 and 6.2in wg).

1.3 Gas Supply

In addition to all other demands the meter must pass the following Natural Gas:

2.87m³/h of 38mJ/m³gas

(103ft³/h of 1000Btu/ft³)

The meter governor should ensure a constant outlet pressure of 20mbar (8in wg).

1.4 Washing Machines and Showers

This heater is capable of use with washing machines and showers but it will involve additional plumbing requirements.

For full details please refer to the enclosed sheet or contact Hepworth Heating Ltd.

1.5 Sheet Metal Parts

When installing or servicing this heater, care should be taken when handling sheet metal parts to avoid any possibility of personal injury.

2.1 Siting

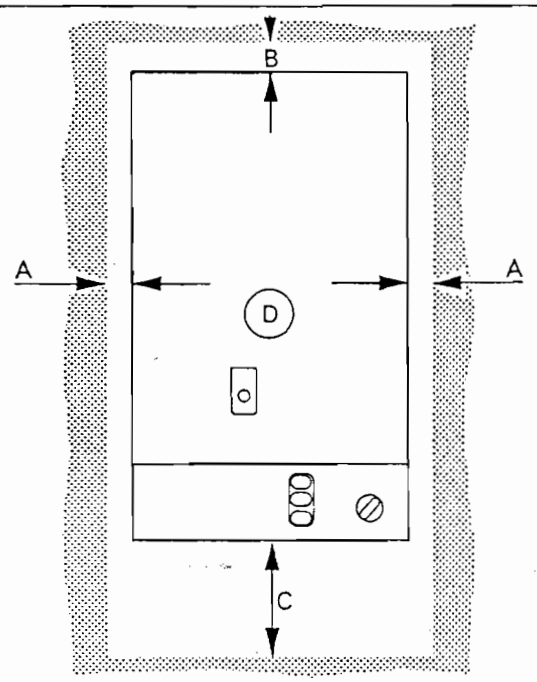
The heater should be sited such that the minimum internal clearances are provided as shown in diagram 2.

The balanced flue terminal must not be sited where there is a possibility of the products of combustion re-entering the heater or adjacent doors or windows. The minimum acceptable spacings from the terminal to obstructions and ventilation openings are specified in the Terminal Positioning Table.

Where the terminal is less than 2metres, (6ft6in), above the level of any ground, balcony, flat roof and the like, to which any person has access and which adjoins the wall in which the terminal is situated, a durable terminal guard must be fitted.

Guards are available from The Tower Flue Components Ltd., telephone Tonbridge 351555 quoting reference "C orange", or from Messrs Quinnell, Barrett and Quinnell Ltd., 884, Old Kent Road, London, SE15, quoting reference "Type P4".

If the terminal is fitted within 850mm (34in) of a plastic or painted gutter or 450mm (18in) of painted eaves, an aluminium shield of at least 750mm, (30in), long should be fitted to the underside of the gutter or painted eaves.



Recommended Minimum Clearances from Walls, Ceiling, Floor, Cupboard, Worktops etc.		mm	in
A	L.H. and R.H. side of casing	25	1
B	Top of casing	40	1½
C	Bottom of casing	155	6⅛
D	Front of heater (from a permanent surface)	610	24

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Diagram 2

2.3 Installation in Confined Spaces

The heater may be fitted into confined spaces, for example under work surfaces, cupboards and the like, provided that the minimum installation clearances are available. Cupboards and the like should be deep enough to enable the case front to be withdrawn.

High and low level air vents must be fitted in the cupboard or compartment, the ventilation area must be as shown in the Air Vent Table.

Note: Both high and low level vents must communicate with the same room, or internal space, or must both be on the same wall to outside air.

The heater may be mounted directly onto combustible walls or walls otherwise likely to be affected by heat without specific precautions, subject to local regulations.

AIR VENT AREA TABLE FOR COMPARTMENT INSTALLATIONS

POSITION OF AIR VENTS	AIR VENT AREAS			
	AIR FROM ROOM OR INTERNAL SPACE		AIR DIRECT FROM OUTSIDE	
	cm^2	in^2	cm^2	in^2
HIGH VENT	273	42	136	21
LOW VENT	273	42	136	21

2 Location

2.5 Timber Frame Buildings

If the heater is to be fitted into a building of timber frame construction, advice must be sought from the local gas undertaking or Hepworth Heating Ltd.

	TERMINAL POSITION MINIMUM SPACING	mm	(in)
1	FROM VERTICAL DRAIN PIPES AND SOIL PIPES	75	(3)
2	DIRECTLY BELOW AN OPENABLE WINDOW, AIR VENT, OR ANY OTHER VENTILATION OPENING	300	(12)
3	BELOW GUTTERING, DRAIN PIPES OR SOIL PIPES		
4	BELOW EAVES		
5	ABOVE ADJACENT GROUND OR BALCONY LEVEL		
6	BELOW A BALCONY	600	(24)
7	FROM INTERNAL OR EXTERNAL CORNERS		
8	FROM A SURFACE FACING A TERMINAL		
9	FROM A TERMINAL FACING A TERMINAL		

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3 Installation

3.1 Preparing the Site

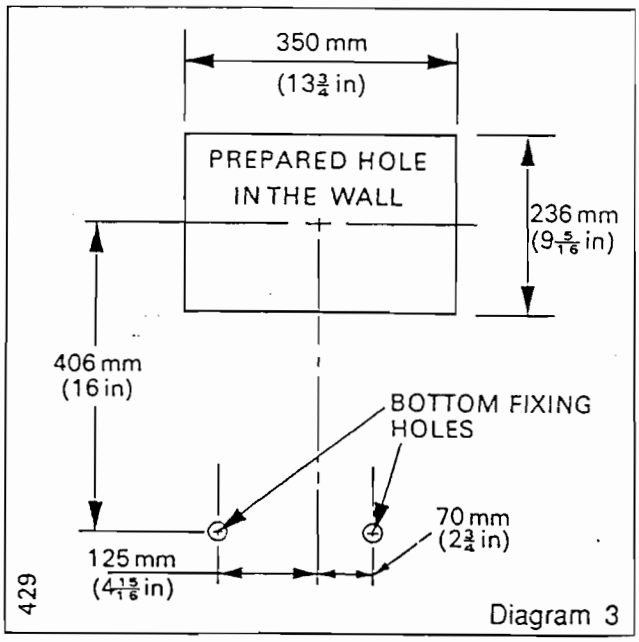
Position the template provided on the wall in the required heater position and mark location of the balanced flue hole. Ensure that the minimum clearances for installation are available, see diagram 2.

Cut the hole, 350mm wide x 236mm high in the wall to accept the liner, see diagram 3.

Make good any plasterwork necessary at this stage. When dry, select the liner with the turned flange at one end and push it into the cavity until the flange is flush to the wall.

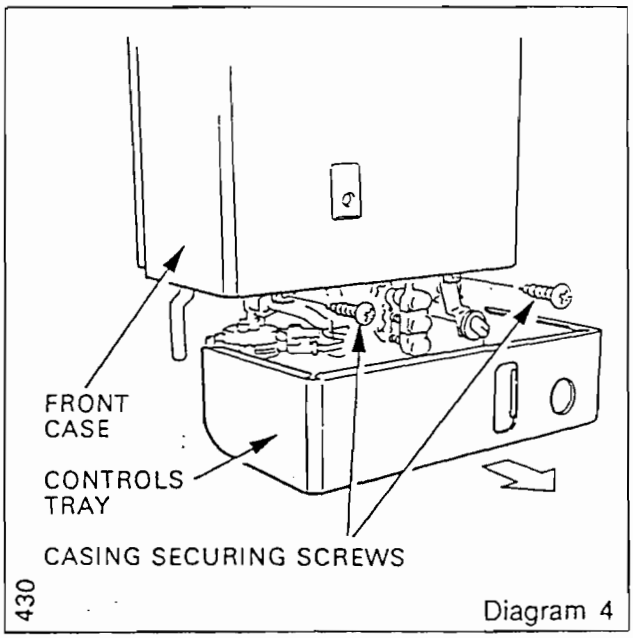
Reposition the template on the wall in line with the wall opening and mark positions for the two fixing screws at the base of the appliance.

Drill and plug the fixing holes suitable for No.10x50mm long woodscrews.



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Diagram 3



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Diagram 4

3.2 Preparing the Appliance

The controls tray should be removed by pulling it forward and disengaging. Refit as required after installation, see diagram 4.

Undo the two casing securing screws, diagram 4, which retain the front casing, ease the case forward at the bottom and push upward until clear of the fixing bar at the top of the appliance, the front casing can now be removed.

Remove the flue hood by releasing the hook and bolts from the water pipes on the heating body and undoing the two screws at the back of the flue hood. Care should be taken to avoid knocking or distorting the top of the heating body, see diagram 5.

Remove the backing strip from the self adhesive seal provided and fit it around the spigot on the back of the heater with the wide adhesive edge to the back of the case, see diagram 6.

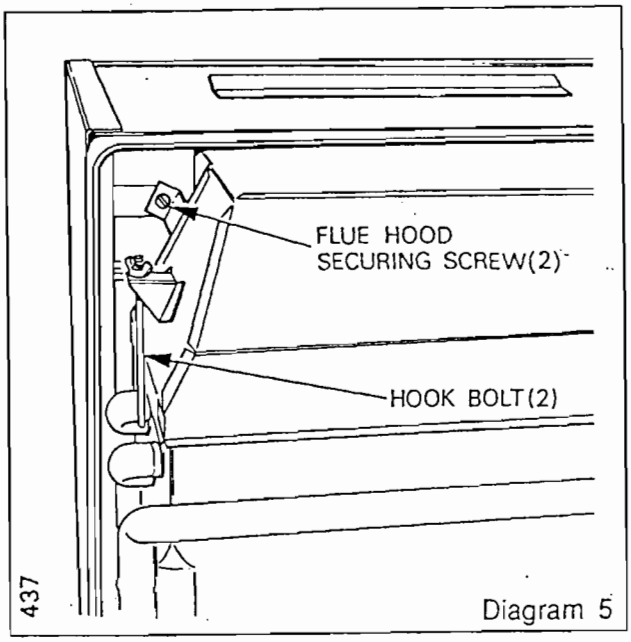


Diagram 5

3.3 Fitting the Appliance Flue Set

Note: The standard flue set covers wall thicknesses from 100mm to 380mm (4in to 15in). For wall thicknesses up to 533mm (21in) an optional flue set is available to order.

At this stage, account must be taken of the wall thickness. If less than 230mm (9in) the duct and liners will have to be cut to suit. The parts affected are the terminal assembly "A", diagram 6, the outlet duct "F" and the wall liner sleeve "G". The standard flue set can be cut to accommodate walls down to 100mm (4in). Measure the wall thickness and subtract from 230mm (9in) to give the amount to be removed from the mating ends of components A,F and G.

Mark out and carefully cut the required parts, for wall thicknesses of 230mm (9in) to 380mm (15in) the standard flue set requires no modification.

Fix the three slotted straps "D" to the terminal wall liner "A" by inserting them over the lugs on the terminal. Bend bottom lug flat then bend three remaining lugs so that straps are held firmly in position.

WARNING: TAKE EXTREME CARE TO AVOID LACERATING YOUR HANDS WHEN BENDING THE LUGS.

Note: For wall thicknesses greater than 230mm (9in) the slotted straps need be fitted only to the lugs nearest the heater end of the terminal assembly. The lugs further into the terminal assembly are for use only when the flue parts have been cut to suit a wall less than 230mm (9in) thick.

Fit the wall plate "B" over the terminal assembly ensuring that the plain side faces outward.

Fit the terminal assembly into the wall from the outside ensuring that the slotted strap on the long side is uppermost.

Mount the appliance on the wall by fitting the top slotted strap to the top lug on the appliance case. This is achieved by pulling the top strap tight and tilting the appliance slightly from the bottom, permanently secure the strap to the lug by bending the lug forward.

Fit No10x50mm woodscrews to the bottom of the appliance and tighten.

Fit the two remaining slotted straps over the lugs on the appliance case and secure permanently and cut surplus length off all the straps.

Tape the wall liners together from inside.

Slide the stainless steel duct "F" into the mating section as far as possible.

Tape ducts together.

Replace the flue hood and secure using two rear fixing screws and hook bolts over body water pipes.

CARE MUST BE TAKEN NOT TO DAMAGE THE HEATING BODY.

Note: The flue set can be installed from inside the building as follows:

a) Proceed to 3.3 above

b) If necessary cut the ducts, see paragraph 2 of 3.3.

c) Attach the slotted straps "D" see paragraph 4 of 3.3.

d) Firmly attach a length of stout string or rope to the hole provided in the bottom centre fin on the terminal.

e) Remove the wall liner.

f) Feed terminal assembly through the wall to the outside.

g) Feed the string through the wall plate "B" ensuring that the plate is the correct way round, and then guide the plate through the wall and over the terminal.

h) Feed the string through the wall liner and refit the liner to the wall.

i) Locate terminal into hole and pull assembly back into hole and retain with the string.

j) Pass string through appliance and mount, refer to above, and then remove the string.

k) Now continue as above.

3.4 Water Connections

The water service must be in accordance with the current issue of BS6700.

The heater's water connections are by 15mm o.d copper tails. The outlet tail is fitted in manufacture but the inlet tail and water service cock are supplied loose. These should be fitted as shown in diagram 7, give due attention to the orientation of the service cock.

The cold water connection can be either from the mains or a cistern.

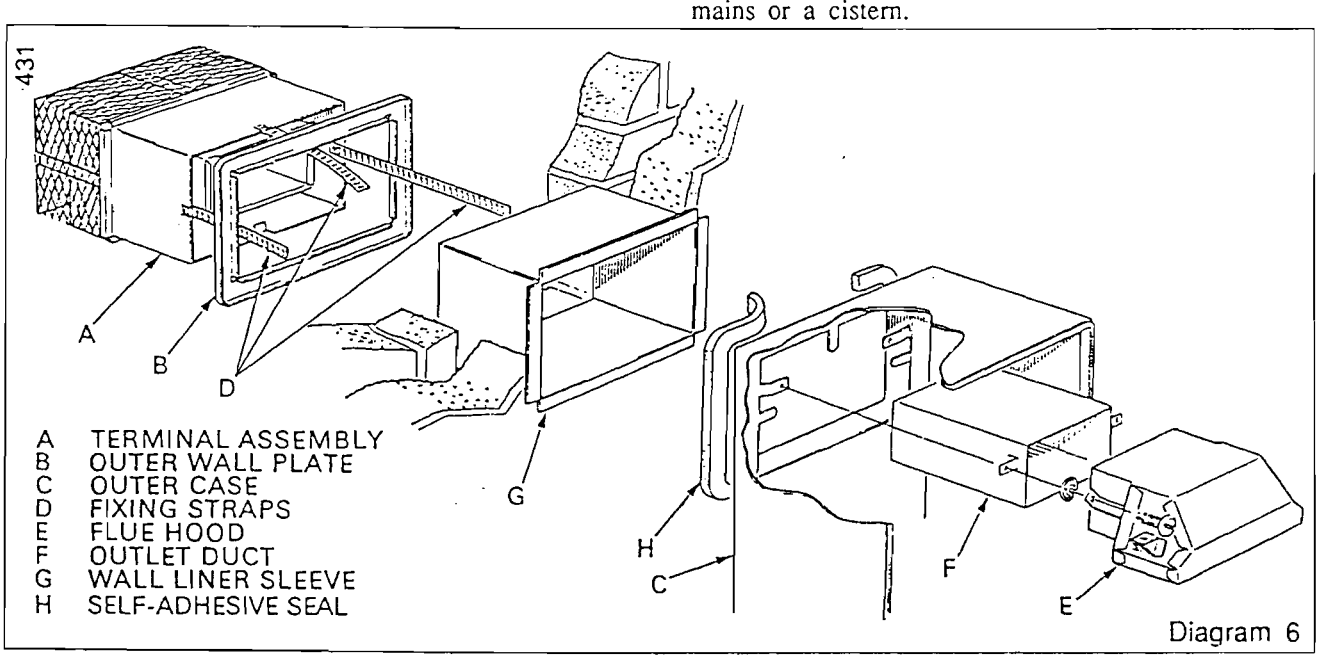


Diagram 6

The minimum water pressure required to fully open the gas valve is 2.29m (7.5ft).

However, where the water pressure is limited, for example on a cistern supply, then for practical purposes a head of 3.29m (10ft10in) is required with normal piping to give a water flow rate of 7.1litres/m (1.6gal/min) and a temperature rise of 44oC (80oF).

The head of water is measured vertically between the level of the water in the cistern and the level of the highest hot water draw off tap. For direct mains connections, (subject to local water company regulations), the size may be 15mm copper tube to BS2871 where sufficient pressure is available. If the heater is fitted to a mains supply which is subject to variable high pressures, it is recommended that a water governor is fitted to the heater inlet pipe. A suitable governor is the Dereve 07052/04, available from Dereve (Flow Controls) Ltd., Park Lane, Handsworth, Birmingham,. B21 8LE telephone 021 553 7021. If a water pressure limiter is required this may be connected into the water pipework adjacent to the heater or may be fitted on the heater, after removal of the venturi cap, see diagram 10.

If the inlet tail is to be soldered into the supply system it is recommended that the water service cock be removed whilst making the joint. This is to eliminate the risk of damaging the seal in the service cock.

Flush out all foreign matter from the supply pipe BEFORE connecting to the heater.

Connect the hot water system to the water outlet tail, see diagram 11. Check that there are no water leaks after connection.

Ensure that all the air is expelled from the water system by turning on ALL hot water draw off taps and then turning them off in sequence, starting with the draw off tap at the lowest level.

Refit the outer case.

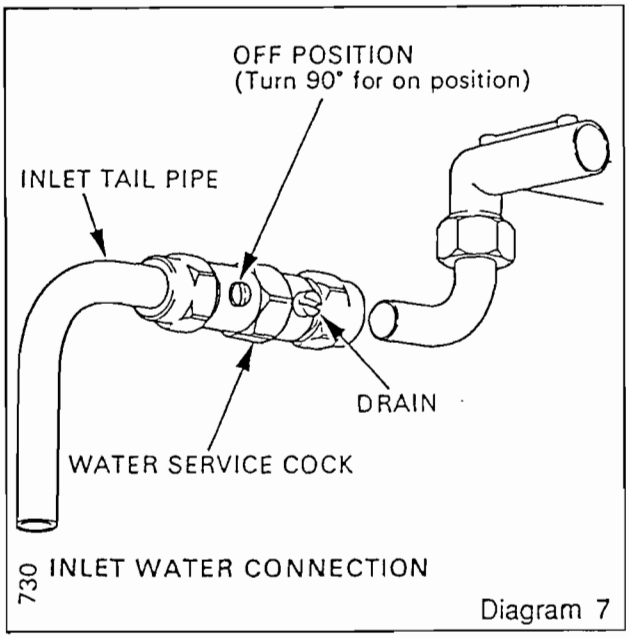


Diagram 7

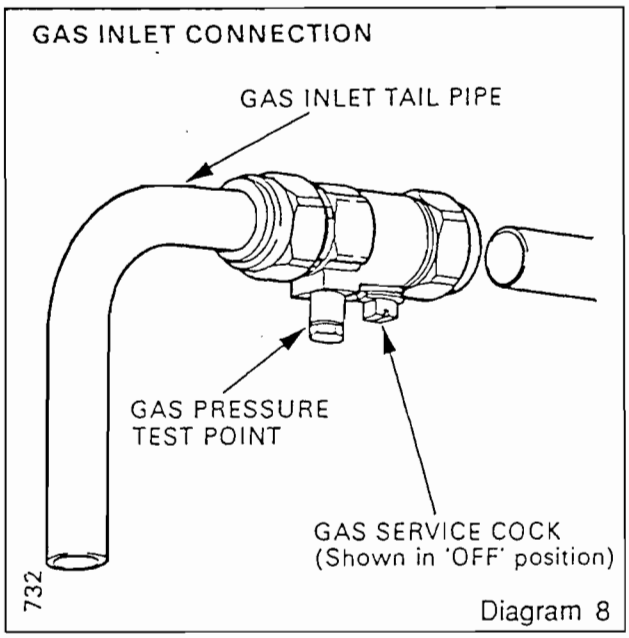


Diagram 8

3.5 Gas Connections

The gas supply connection is made by the 15mm o.d copper tail pipe. This is supplied loose with the gas service cock. They should be assembled as shown in diagram 9.

When making the connection it is important that:

a) The gas inlet pipe must pass above the thermocouple and union nut.

b) The service cock be removed during the soldering process if the inlet tail is soldered into the supply system. This is to eliminate the risk of damaging the service cock seal.

c) The pipes are blown through before connection to prevent foreign matter entering the heater.

The size of a straight unrestricted gas supply from the meter to the heater should be as follows:

Distance from meter	Gas supply outlet to heater outside diameter
0-3m (0-10ft)	15mm
3-20m (10-65ft)	22mm
20m (65ft)and above	Consult the local gas company

These sizes are for the heater only and do not take account of any other gas appliances which may be connected to the same gas service pipework.

4 Commisioning

4.1 Preliminary Checks

Remove front case and controls tray. Turn the gas "Off", turn water on and check for water leakage around the heater.

Refit the outer case and secure.

Turn the gas service cock "On". It is on when the screw driver slot is in line with the cock. It is off when the screwdriver slot is across the axis of the cock, see diagram 8.

Turn the water supply on in a similar manner to the gas supply, see diagram 7 and check that the water throttle is not fully closed, see diagram 10.

Open all hot water draw off taps individually and wait until the water flows freely. Close each draw off tap in turn.

4.2 To Light the Pilot

Turn the gas supply on. Fully depress the "gas on" button and operate the spark ignition button until the pilot is lit, see diagram 9.

The pilot, which is situated to the left hand side of the heater may be seen through the pilot viewing window, see diagram 9.

Keep the "gas on" button pressed in for 10 seconds then release. If the pilot goes out purge the system and repeat the operation.

4.3 Adjustment of Water Temperature

Open the HOT water draw-off tap furthest from the heater. Ensure that the "Summer/Winter" control is in the "Winter" position, see diagram 9. Adjust the water throttle to give the required water rate, see diagram 10 (turn anti-clockwise to open).

A water rate of 6.7litre/min (1.5gal/min) which is 9 seconds to fill a 1 litre container, (5 seconds to fill a 1 pint container), will give a temperature rise of about 50°C, (90°F).

At water rates below 6.7 litre/min (1.5 gal/min) the water rate will proportion the gas rate to a controlled temperature rise selected by the "Summer/Winter" control.

Alternatively it may be desirable to set the water to a higher flow rate which will result in lower water temperatures depending upon the flow set at the tap. This allows water to be drawn off from the bath tap at a suitable temperature for bathing. If higher temperatures are required at the other outlets the temperature can be controlled by gradually closing the outlet tap until a temperature rise of about 50°C (90°F) is achieved. Any further reduction in the water rate will result in the temperature being controlled by the heater.

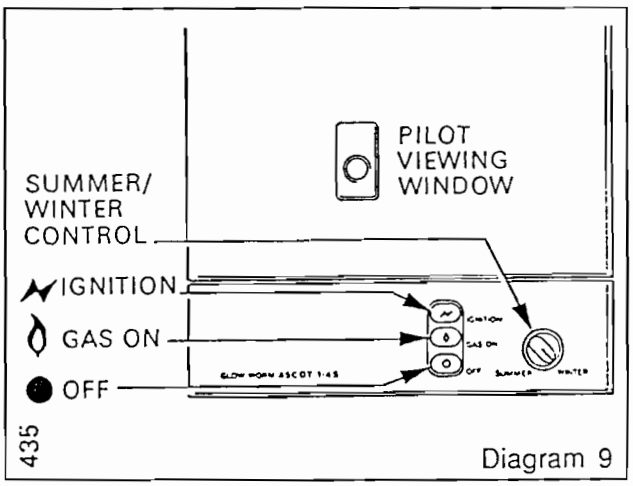


Diagram 9

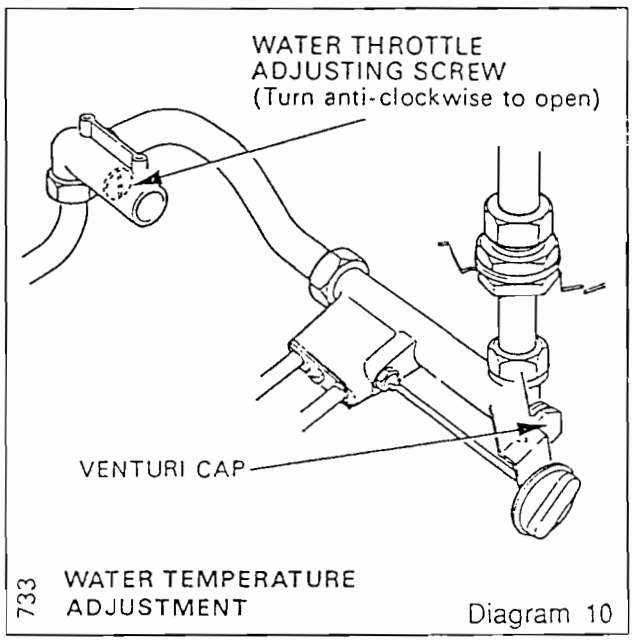


Diagram 10

4.4 Summer/Winter Control

The Summer/Winter control is intended to reduce the effect of seasonal variation in water supply temperature. In the "Winter" position the heater delivers a controlled temperature rise of about 50°C (90°F) and in the "Summer" position a controlled temperature rise of about 44°C (80°F).

It should be noted that water flow rates above 6.7 litre/min (1.5 gal/min) are outside the range of the controlled temperature facility and thus render the "Summer/Winter" control ineffective.

In use, the control should be set at the "Winter" position in the winter and spring months and set at the "Summer" position in the summer and autumn months.

Note: It is important that during the summer months the control is turned to "Summer" position as outlet temperatures in excess of 60°C (140°F) may result in scale formation and reduced efficiency of the heater.

4.5 Slow Ignition Device

When the pilot is lit and the water throttle adjusted to the desired flow rate it may be necessary to adjust the slow ignition device.

This is done by adjusting the screw on the diaphragm housing, see diagram 11. Turn IN to delay OUT to advance the ignition.

Check that after adjustment the ignition is smooth but without undue delay.

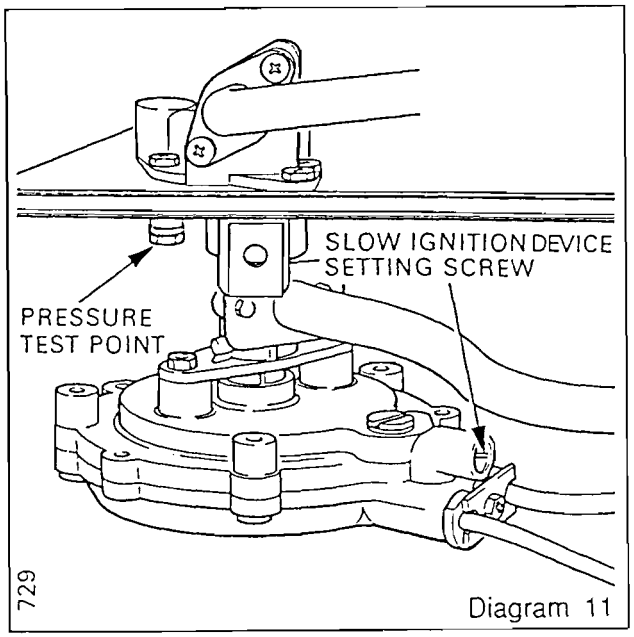


Diagram 11

4.6 Checking the Burner Pressure

When ignition adjustments have been completed attach a pressure gauge to the pressure test point after removing the screw and sealing ring, see diagram 11.

Light the pilot and fully open the HOT draw-off tap furthest from the heater. Check the burner pressure against the values given in Section 1.3.

4.7 Checking Summer/Winter Control

The Summer/Winter control may be checked for correct operation as follows.

Set the control in the "Winter" position. Increase water flow until maximum burner pressure is obtained, 16.5mbar (6.6in wg) nominal.

Gradually reduce water flow until burner pressure just begins to fall, that is the pressure is between maximum and 15.8mbar (6.3in wg).

Without altering the water flow, turn control to "Summer" position. The burner pressure should drop by about 2.5mbar (1in wg) when the switch is functioning correctly and the gas inlet pressure is correct.

Resetting the control to the "Winter" position will not return pressure to the original value. To repeat the test set up as in Section 4.6.

Turn off the HOT water tap. Remove pressure gauge, replace sealing ring and screw.

Refit controls tray.

4.8 Instruct the User

Important. Instruct the user in the correct and safe operation of the heater.

Hand the Instructions for Use to the user for their retention.

Leave the Installation Instructions with the user for use during future service calls.

The heater should be serviced regularly by a competent person to ensure long life and efficient use. For normal domestic installations servicing at annual intervals is recommended.

Before commencing a service, turn off the gas and water supplies at the service cocks, see diagrams 7 and 8 and drain the water from the appliance if necessary by removal of the drain screw in the water service cock, see diagram 7 and opening one of the hot water taps.

On completion of the service the drain screw must be replaced and the appliance checked for gas and water soundness.

5.1 Burner

Remove the burner as described in Section 6.2. After removal the burner should be inspected for damage and any deposits removed with a soft brush or a vacuum cleaner.

5.2 Pilot Assembly

Remove the pilot assembly as described in Section 6.5.

The thermocouple should be removed as in Section 6.6 its condition inspected. Replace if necessary.

Inspect the electrode for damage. Replace if necessary, see Section 6.7.

The pilot burner should be pulled off and inspected for damage and any deposits cleaned away with a soft brush. Inspect the injector for deposits or blockage which should be carefully removed and the orifices blown clear, see diagram 12.

Check the pilot filter, see Section 6.9.

After reassembly ensure that the electrode to pilot dimension is as shown in diagram 13 and that the pilot flame strikes the thermocouple.
Guide dimensions are given in diagram 13.

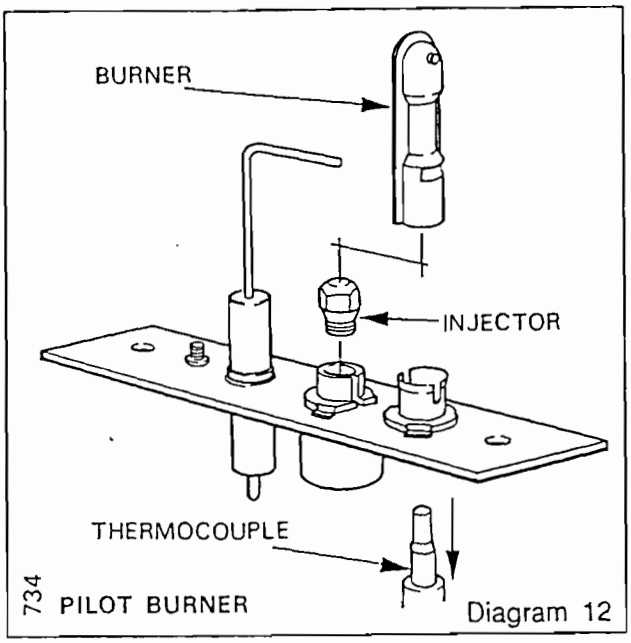


Diagram 12

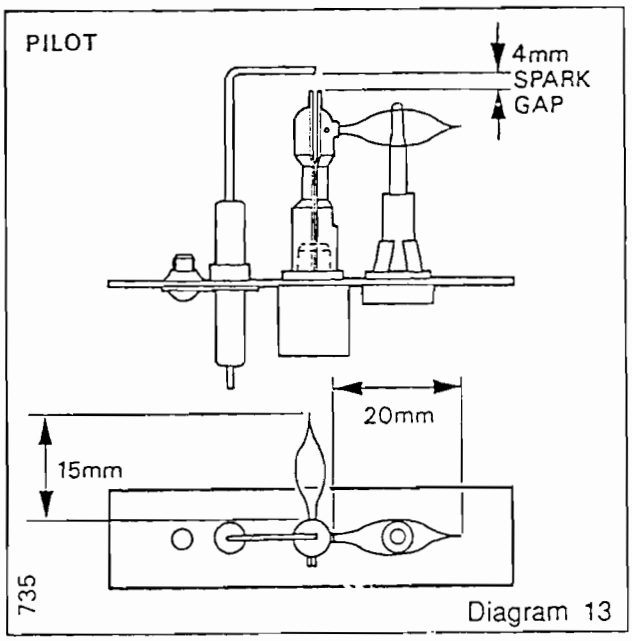


Diagram 13

5.3 Body

For normal annual service the body need not be removed but should be examined and all deposits formed brushed from the heat exchanger.

Remove the flue hood as described in Section 6.3.

Periodically it may be necessary to remove the body, see Section 6.4, for descaling, the time interval for this work will be determined largely by the amount of usage and the hardness of the water.

5.4 Diaphragm Assembly and Automatic Gas Valve

Annual servicing of this component will normally include only the checking of the diaphragm and regreasing of the gas valve spindle.

The spindle may be removed after having removed the diaphragm as Section 6. DO NOT USE GRIPS when pulling the gas valve spindle out of its location. Inspect the spindle for straightness and for score marks. If in any doubt renew this item.

Clean the spindle carefully with a soft CLEAN cloth and apply silicone grease, Dow Corning 111 or equal, to the spindle.

Replace gas valve spindle ensuring that it moves freely. If it does not, examine automatic valve spindle seals for wear.

On completion of servicing the appliance should be re-commissioned as Section 4 to check the operation of the summer/winter switch, water temperature and flow rate, gas pressure and the like.

Removal and replacement of parts must be carried out by a competent person.

Before removing any gas carrying component, turn off the heater at the gas service cock.

After completing the replacement of gas carrying components, always test for gas soundness with a suitable leak detection fluid.

6.1 Front Case

Remove controls tray by pulling forwards and disengaging, see diagram 14.

Unscrew the two securing screws on the lugs at the bottom of the front case.

Pull bottom of case forward and lift the case upwards to clear the retaining brackets on the top of the main case.

The front case can now be pull forward and removed.

Reverse this procedure to refit front case ensuring that case seal is in good condition and seated correctly.

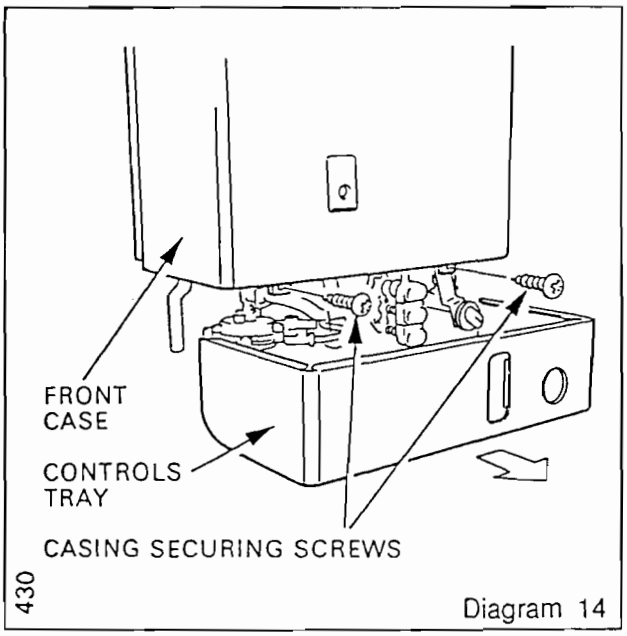


Diagram 14

6.2 Burner

Remove the case as Section 6.1.

Disconnect the ignition lead from the spark electrode, see diagram 15.

Remove the sealing plates held in place by two M5 screws. When replacing the plates care should be taken to ensure that the seal is correctly made.

Withdraw thermocouple sufficiently to clear assembly by pulling downwards. This is best achieved by pulling the thermocouple from underside of base.

Disconnect the pilot supply tube.

Remove the central M5 screw securing the deflector plate, remove deflector plate and pilot assembly.

Remove the two M5 screws securing the burner feed tube flange to the transfer elbow, see diagram 16. Remove the M5 screw in base, withdraw burner and burner feed tube complete.

Separate the burner feed tube and burner by removing the two screws securing the flange, then removing the tube.

Refit in reverse order, ensuring that both "O" rings are in good condition. Renew if necessary.

Note. The rear of the burner is located on a dowel-bracket and it is important to ensure that when replacing the burner it is engaged on the dowel-bracket.

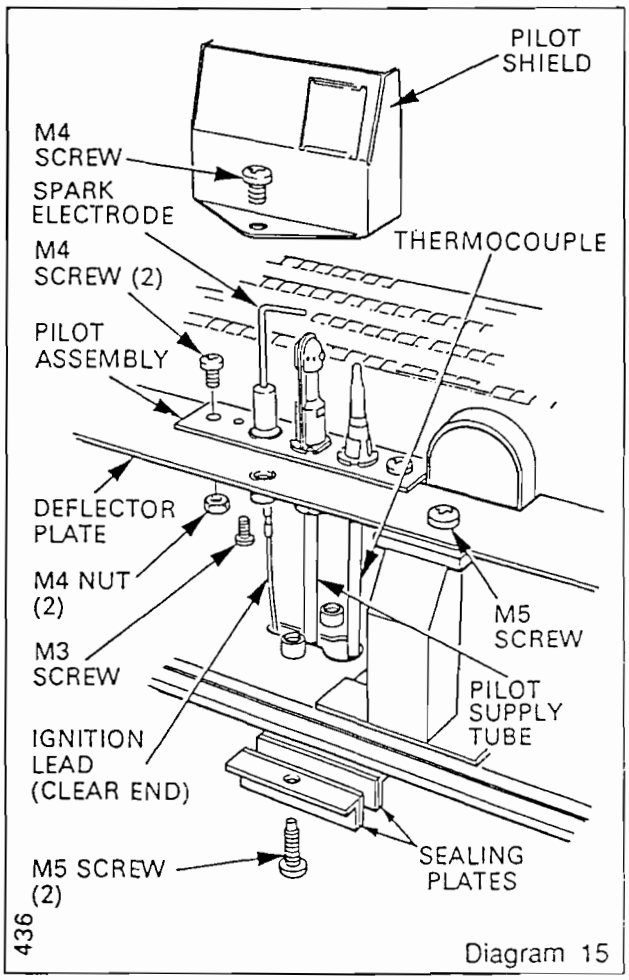


Diagram 15

6.3 Flue Hood

Remove the front case as Section 6.1.

Release the hook bolts from the heating body. Using a long screwdriver, remove the two screws at the top rear corners of the flue hood, see diagram 17.

Raise the hood to clear heating body and pull forward to remove.

Refit the flue hood in the reverse order, taking care not to damage the heating body and ensure that the hood fits squarely on the heating body.

6.4 Heating Body

Remove the front case as Section 6.1.
Remove the burner as Section 6.2.
Remove the flue hood as Section 6.3.

Turn off the water service cock and drain down the heating body by removing the plug on the water service cock, see diagram 7 and opening hot water outlet taps. Collect water in a suitable container. Examine the seal on the drain plug and renew if necessary.
Disconnect the two water connection unions on body legs, see diagram 17.

Lift the body upwards to clear the unions and remove from the case.
Refit the body in the reverse order, ensuring that the body face marked "Back" is to the rear of the heater. Renew the washers on the union connections.

6.5 Pilot Assembly

Remove the case as Section 6.1.

Disconnect the ignition lead from the spark electrode, see diagram 15.

Remove the two sealing plates held in place by two M5 screws. When replacing, care should be taken to ensure that the seal is correctly made.

Withdraw thermocouple sufficiently to clear assembly by pulling downwards. This is best achieved by pulling the thermocouple from underside of base.

Disconnect the pilot supply tube.

Remove the M4 screw securing the pilot shield and remove pilot shield.

Remove the central M5 screw securing the deflector plate. Remove deflector plate and pilot assembly.

Remove the two M4 screws and nuts securing the pilot assembly to the deflector plate. Remove pilot assembly.

Reassemble pilot in reverse order making sure that the gap between the spark electrode and pilot burner is as shown in diagram 13 and deflector plate rests on top of the tab fixed to the left-hand side of the burner.

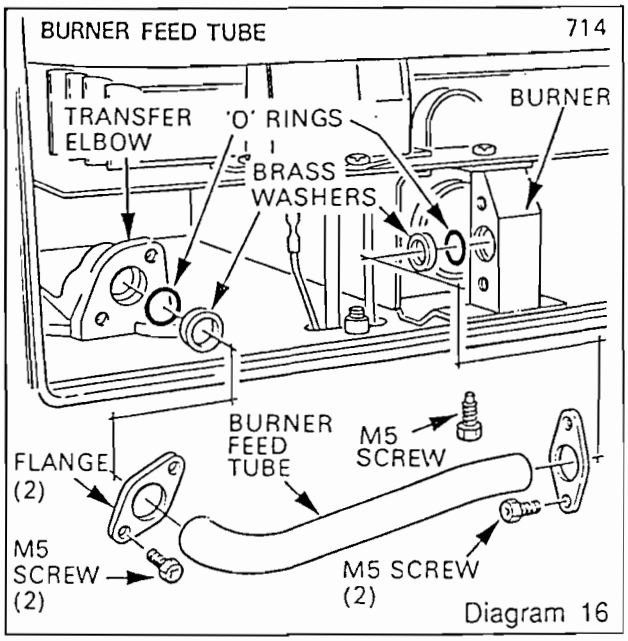


Diagram 16

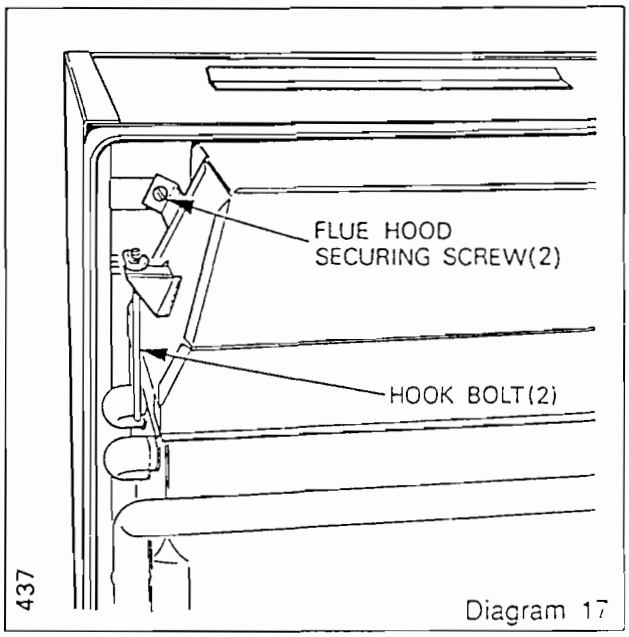


Diagram 17

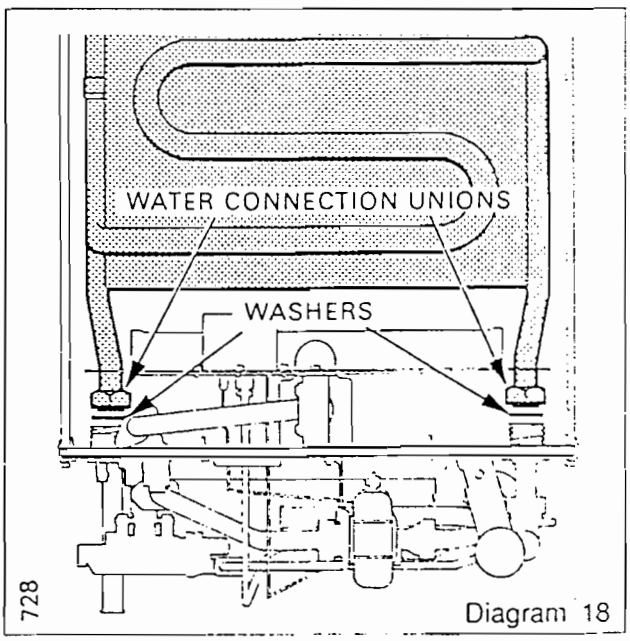


Diagram 18

6.6 Thermocouple

Remove front case as Section 6.1.

Remove the sealing plates held in place by the two M5 screws, see diagram 15.

Withdraw thermocouple from the pilot assembly. This is best achieved by pulling the thermocouple from underside of base.

Withdraw the thermocouple.

Replace in reverse order ensuring that the sealing plates seal correctly and that the thermocouple connection is providing a good contact.

Note. A quarter turn beyond finger tight is sufficient.

6.7 Spark Electrode

Remove the pilot assembly as Section 6.5.

Undo M3 screw securing the spark electrode to pilot assembly bracket.

Replace in reverse order ensuring that the gap between the spark electrode and pilot burner as shown in diagram 13.

6.8 Piezo Unit

Remove control tray by pulling forward and disengaging, see diagram 14.

Remove ignition lead from rear of piezo unit, see diagram 19.

Remove the M5 screw securing the piezo button retainer.

Remove piezo button and unscrew piezo unit.

Replace in reverse order.

6.9 Pilot Filter

Remove control tray by pulling forward and disengaging, see diagram 14.

Disconnect the pilot supply tube at connection to main gas control unit and withdraw the tube, see diagram 19.

Release the pilot filter cap, note position of sealing washer.

Remove filter and sealing washer from housing, renew the filter and sealing washer.

Replace in reverse order.

6.10 Main Gas Control Unit

Remove control tray by pulling forward and disengaging, see diagram 14.

Turn the gas service cock off, see diagram 19.

Disconnect the pilot feed tube at connection to main gas control unit.

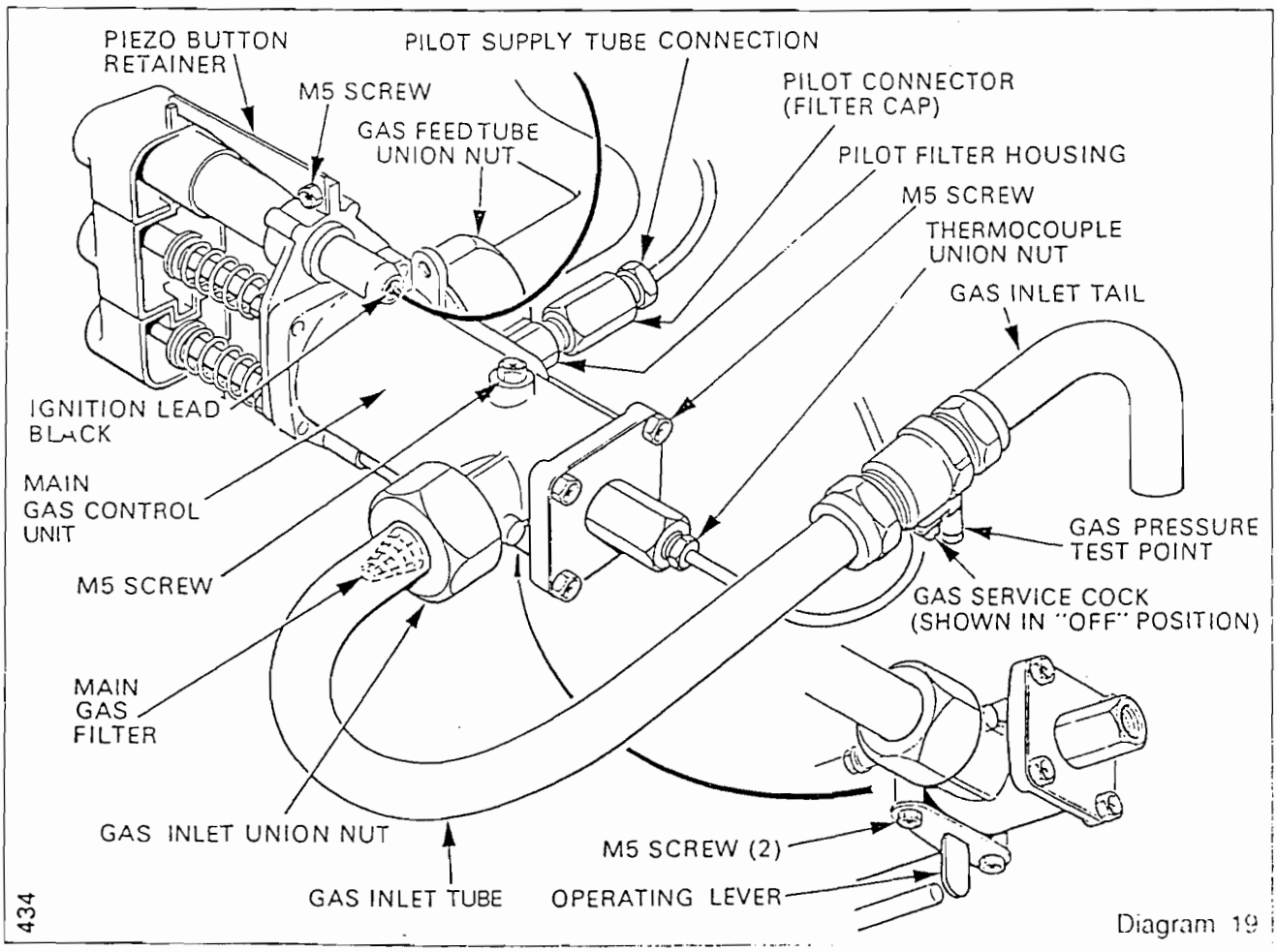


Diagram 19

Disconnect the thermocouple nut from rear of main gas control unit.

Disconnect the ignition lead from the rear of piezo unit.

Remove the M5 screw securing the piezo button retainer. Pull off all knobs.

Remove the four M5 screws to release clamping plates from both ends of high and low pressure tubes, see diagram 20 and 21. Remove tubes and examine "O" ring seals, renewing if necessary.

Disconnect the gas inlet union nut at control and at gas service cock, see diagram 19. Remove the gas inlet tube, taking care not to damage main gas filter.

Disconnect the gas feed tube union nut at control and remove the two M5 screws at automatic valve gas feed flange connection then remove the tube.

The main gas control unit can now be removed, by removing the two M5 screws securing it to the bracket.

Replace in reverse order.

6.11 Electro-magnet Unit

Remove the main gas control unit as in Section 6.10.

Remove two M5 screws securing the operating lever to the body of the gas control unit, see inset in diagram 19 and remove the operating lever.

Remove single M5 screw on the top and the four M5 screws on the end.

Carefully pull magnet unit clear of housing.

Replace in reverse order.

6.12 Gas Filter

Remove control tray by pulling forward and disengaging, see diagram 14.

Turn the gas service cock off.

Undo M5 screws to release clamping plates from both ends of high and low pressure tubes, see diagrams 20 and 21. Remove tubes and examine the "O" ring seals, renew if necessary.
Release unions securing gas inlet tube to the main gas control unit and service cock, see diagram 19. Remove the tube. Examine "O" ring seal and renew if necessary.

Withdraw the main gas filter. Clean or renew as necessary.

Replace in reverse order.

6.13 Summer/Winter Control

Remove the controls tray by pulling forwards and disengaging, see diagram 14.
Turn the water service cock off and drain the heater at the drain screw, see diagram 20. Examine drain plug seal and renew if necessary.

Pull the summer/winter knob from shaft.
Disconnect the summer/winter control connection and carefully withdraw the summer/winter assembly.
Examine "O" ring seal, renew if necessary.

Reassemble in the reverse order ensuring that the summer/winter knob is correctly aligned with the shaft before pushing into position. The knob should be positioned so that with the shaft turned fully anticlockwise the knob points towards the word "WINTER" on the controls cover. When the knob is turned fully clockwise it will point towards the word "SUMMER".

6.14 Water Filter

Remove the controls tray by pulling forwards and disengaging, see diagram 14.
Turn the water service cock off and drain the heater at the drain screw, see diagram 20.
Examine drain plug seal and renew if necessary.

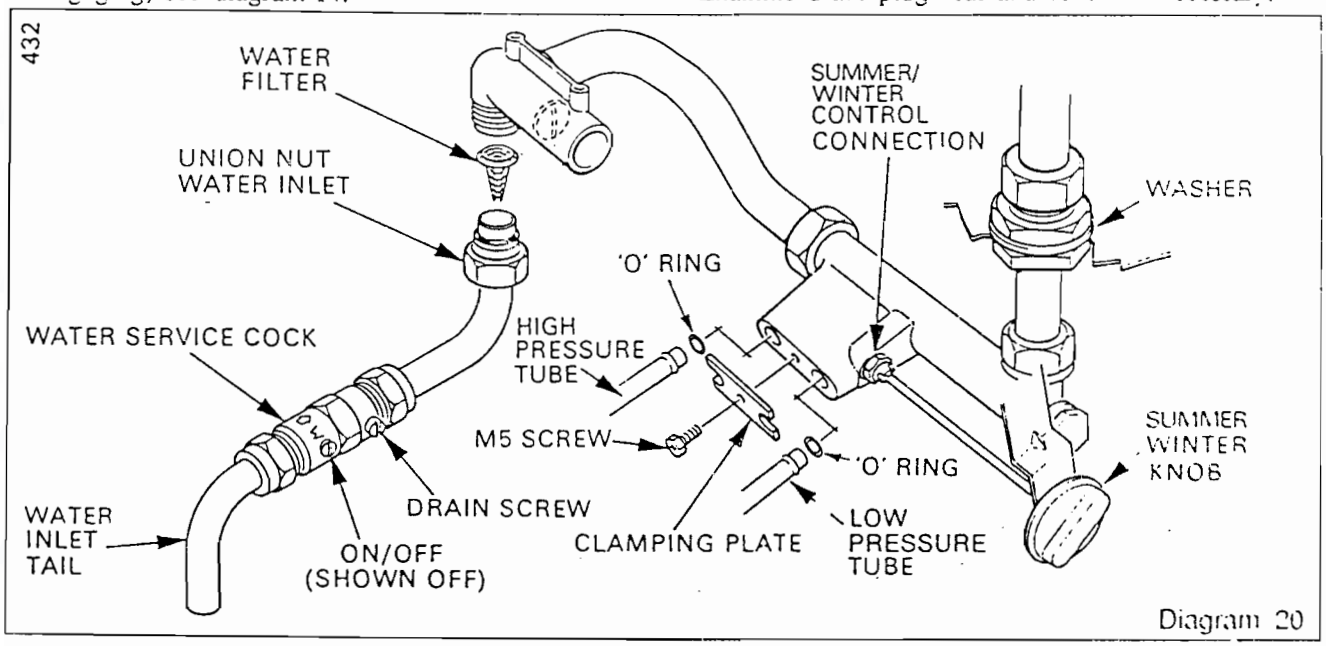


Diagram 20

Disconnect the union nut at water inlet to throttle housing and at water service cock. Remove tube and withdraw filter. Examine "O" ring seal, renew if necessary.

Clean the filter or renew if necessary.

Replace in reverse order.

6.15 Diaphragm and Plate Assembly

Remove the controls tray by pulling forwards and disengaging, see diagram 14.

Turn the water service cock off and drain the heater, see diagram 20. Examine seal on drain plug and renew if necessary.

Remove the M5 screw to release the clamping plate from high and low pressure tubes, see diagram 21.

Remove the eight M5 screws securing the bottom cover of diaphragm housing.

Separate the halves of diaphragm housing.

Note. When replacing diaphragm ensure that the high pressure side is facing downward.

6.16 Spindle Seals - Diaphragm Housing

Remove the control tray by pulling forwards and disengaging, see diagram 14.

Turn the water service cock off and drain the heater, see diagram 20. Examine seal on drain plug, renew if necessary.

Remove the M5 screw to release clamping plate from high and low pressure tubes, see diagram 21. Examine "O" ring seals and renew if necessary.

Remove the two M5 screws securing the diaphragm housing to the automatic valve. Carefully withdraw the diaphragm assembly downwards leaving spindle in automatic valve section.

Remove brass washer to expose seal. Carefully prise out the spindle seal and replace with new seal. Lubricate with silicone grease, Dow Corning 111 or equal.

Replace in reverse order, taking care no to bend the spindle.

6.17 Automatic Valve

Complete the steps in the first five paragraphs of Section 6.16 to remove the spindle and seals.

Remove the burner as in Section 6.2.

Remove the M5 screws at automatic valve gas feed pipe flange connection.

Remove the four M5 screws securing the transfer elbow to automatic valve.

Remove the automatic Valve. Examine gaskets and "O" ring seal, renew as necessary.

Replace in reverse order.

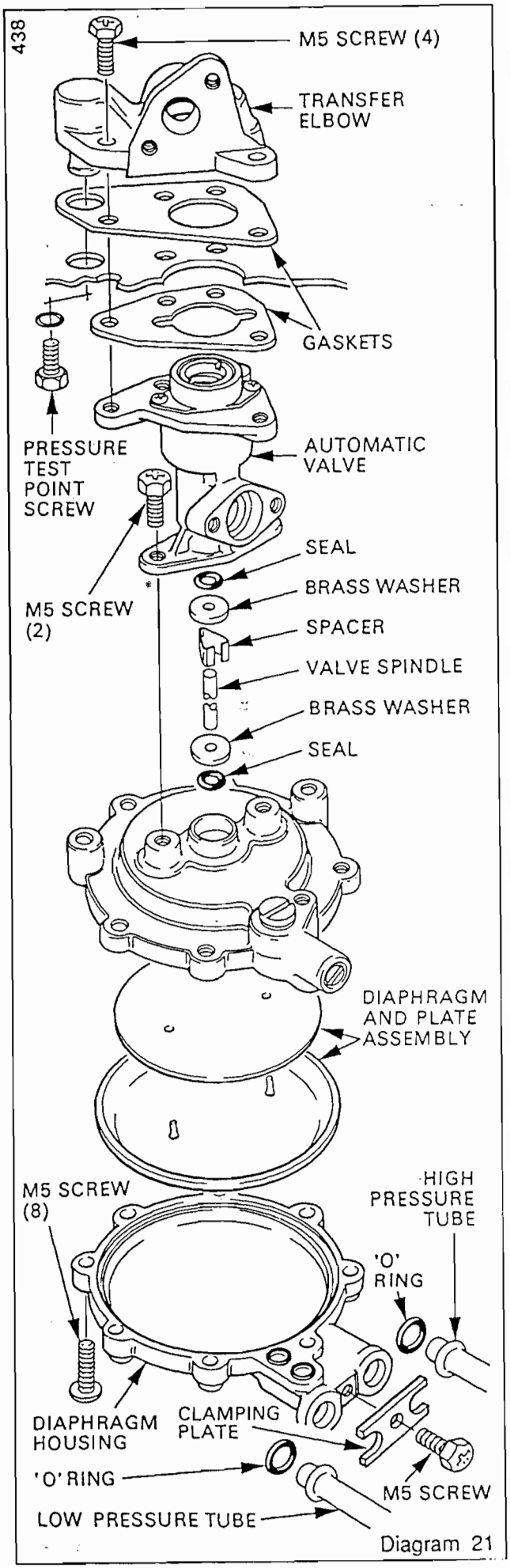


Diagram 21

7 Fault Finding

7.1 Pilot will not light

CAUSE	REMEDY
Operating instructions not correctly carried out.	Follow lighting instructions correctly.
Gas inlet pressure inadequate/restricted.	Check all gas cocks are open and gas line is unrestricted.
Air in gas line.	Purge out air.
Pilot supply blocked.	
(a) Remove pilot injector and press on ◊ knob, gas flows freely.	Clean injector.
(b) No gas when on ◊ knob is pressed.	Clean pilot filter and gas ways.
Gas supply to pilot, but pilot will not light.	Check there is a spark at electrode by placing an earthed screwdriver 2mm away from electrode and pressing control knob.
Spark at electrode, but pilot still not lighting.	Check correct gap between pilot and electrode, see diagram 13.
No spark at electrode.	(a) Check ignition lead for shorting out. renew if defective. (b) Renew faulty piezo unit.

7.2 Pilot will not stay alight when Control Knob is released.

CAUSE	REMEDY
Pilot flame not impinging on thermocouple.	Check pilot is correctly positioned, see diagram 12. Renew pilot if no thermocouple flame evident. Check for partial blockage and clean.
Thermocouple tip burnt away.	Renew thermocouple.
Thermocouple has faulty contact at main gas control unit.	Check that thermocouple contact in main gas control is tight. Note. One quarter turn beyond finger tight is adequate.
Faulty thermocouple.	Renew thermocouple
Faulty electro-magnet unit.	Renew unit.
Outer case seal ineffective.	Check case fitted correctly. Check seal is not damaged and is seated correctly.

7.3 Main Gas will not light when Hot Tap is opened

CAUSE	REMEDY
Insufficient water flow/inadequate pressure	
(a) Cistern supply	Raise tank or connect to mains supply (subject to water undertaking regulations).
(b) Mains supply (when other cold water draw off taps in use).	Connect to cistern supply if head is available or consult water company with regard to low pressure.
Inlet water supply restricted by stop cock.	Fully open all stop cocks.
Air lock in supply pipes.	Remove air lock.
Heat exchanger fouled by scale.	Descale or change heat exchanger.

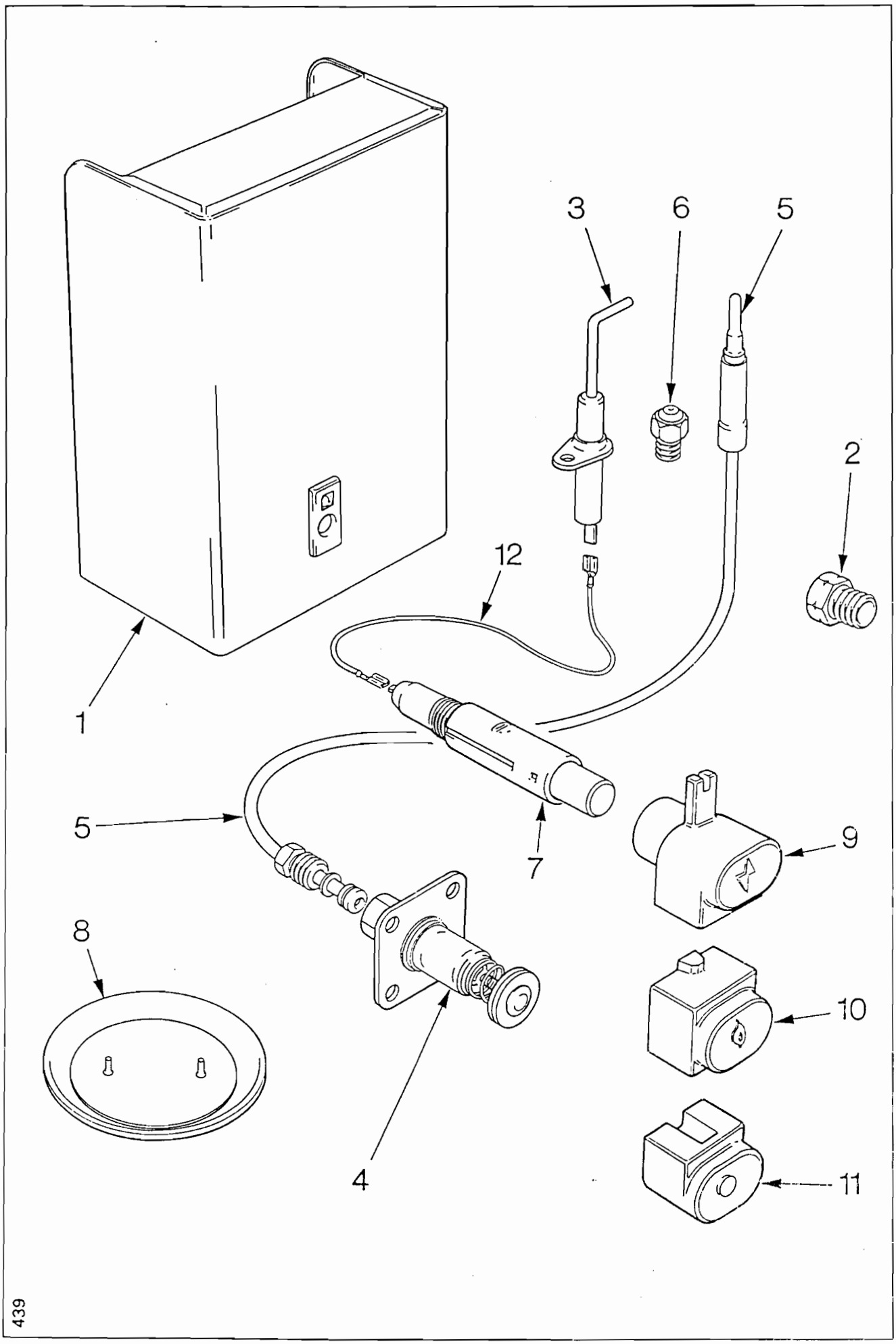
Water filter blocked.	Clean or change water filter.
Venturi or high and low pressure tubes blocked.	Check that venturi and pressure tubes are clear.
Slow ignition valve not adjusted correctly or blocked.	Readjust or clean as necessary.
Diaphragm damaged.	Inspect and renew diaphragm if necessary.
Valve spindle sticking.	Check valve spindle is undamaged, lubricate or renew as necessary.
Throttle incorrectly set.	Check throttle, reset as necessary.
Main gasways or injector blocked.	Inspect and clear any obstruction.

7.4 Slow Ignition of Main Burner or Low Outlet Temperature.

CAUSE	REMEDY
Reduced gas pressure at burner:	
(a) Gas service cock not fully open.	Turn gas cock fully on.
(b) Obstruction in main gas ways.	Inspect for and clear any obstruction.
(c) Reduced inlet pressure.	Ensure that gas supply is clear of any obstructions and that it is adequate for the heater when other gas appliances are in use.
Insufficient water flow to fully open gas valve.	
(a) Water service cock not fully open	Turn water cock fully on.
(b) Water filter blocked.	Clean water filter or renew as necessary.
(c) Insufficient pressure from water supply.	See Section7.3.
(d) Heat exchanger fouled by scale.	Descale or replace heat exchanger.
Excessive water flow through heater.	Check water flow rate through the heater. Reset throttle heater as necessary, if stiff, examine throttle for obstruction.
Slow ignition valve incorrectly set.	Clean and adjust slow ignition valve.
Diaphragm defective.	Examine and renew diaphragm as necessary.
Automatic gas spindle stiff.	Examine spindle, renew if necessary. Lubricate spindle.

7.5 Main Burner Remains Alight after Tap is turned off.

CAUSE	REMEDY
Automatic gas valve held open by foreign body.	Clean gas valve seat, check main gas filter. Blow out feed tubes.
Diaphragm defective.	Examine and replace as necessary.
Automatic gas valve spindle stiff.	Examine spindle, renew if necessary. Lubricate spindle.
Automatic gas valve spring weak or damaged.	Renew spring.
Low and high pressure tubes blocked.	Remove and blow through.
Ball stuck in slow ignition valve.	Clean or renew ball.
Dead leg in water supply creating an air lock.	Remove dead leg.
Automatic gas valve seal damaged.	Inspect seal and renew if necessary.


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When replacement parts are required, apply to your local supplier, quoting the name of the appliance, Ascot 1.4S Water Heater and its serial number.

Key No	GC. No	Glow-worm Part No.	Description
1	281 306	420020	Front cover assembly
2	281 318	203008	Burner injector
3	384 266	202602	Electrode
4	281 389	203300	Electro - Mag Unit
5	281 311	202401	Thermocouple
6	281 313	203502	Pilot Injector
7	281 386	202704	Spark Igniter
8	281 370	208018	Diaphragm and Plate assembly
9	281 362	204607	Igniter button
10	281 363	204606	Starter button
11	281 364	204605	Stop button
12	281 317	WW4610	Ignition lead assembly

Control of Substances Hazardous to Health

Information for the Installer and Service Engineer.

Under Section 6 of the Health and Safety at Work Act 1974, we are required to provide information on substances hazardous to health.

The adhesives and sealants used in this appliance are cured and give no known hazard in this state.

GLASS YARN

Can cause irritation to skin, eyes and the respiratory tract.

If you have a history of skin complaint you may be susceptible to irritation. High dust levels are usual only if the material is broken.

Normal handling should not cause discomfort, but follow normal good hygiene and wash your hands before eating, drinking or going to the lavatory.

If you do suffer irritation to the eyes or severe irritation to the skin seek medical attention.

Because of our constant endeavour for improvement details may vary slightly from those in the instructions.

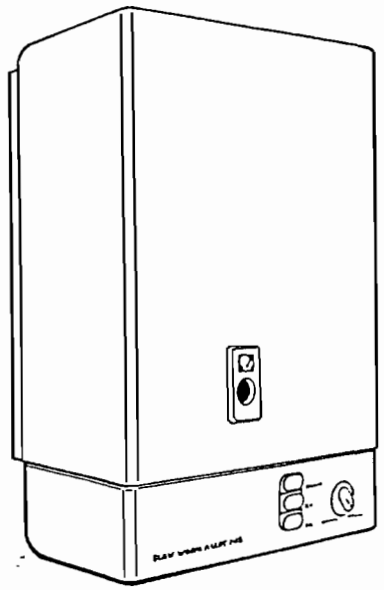
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Glow-worm

User Instructions

Keep for future reference

1970



ASCOT 1·4S

Instantaneous Multipoint Balanced Flue Water Heater

INTRODUCTION

This is a modern room sealed instantaneous water heater designed to supply hot water to several taps which may be situated in different rooms.

The pilot is lit by a piezo spark igniter, no batteries or electricity are required. The main burners will automatically light when a hot water tap is turned on and go out when the tap is turned off.

This heater is not suitable for use with a swivel spout.

GAS SAFETY

In your own interest and that of safety it is law that all gas appliances are installed by competent persons in accordance with the current issue of the Gas Safety (Installation & Use) regulations. Failure to install appliances correctly could lead to prosecution.

If a gas leak or fault exists, or is suspected, turn the heater off and consult the local region of British Gas or your installation/servicing company.

IMPORTANT

ENSURE THAT ALL HOT WATER TAPS ARE TURNED OFF BEFORE LIGHTING THE PILOT. IF PILOT BLOWS OUT WAIT THREE MINUTES THEN CARRY OUT LIGHTING PROCEDURE AGAIN.

TO LIGHT THE PILOT

Ensure that the main gas supply is turned on. Turn off all HOT water taps. Fully depress the 'gas on' button marked and press and release the spark igniter button marked until the pilot is lit, see diagram 1. The pilot may be observed through the pilot viewing window. Keep the 'gas on' button fully pressed in for 10 seconds after the pilot has been lit and then release. If the pilot goes out repeat the operation.

TO OBTAIN HOT WATER

Once the pilot is alight the main burner will be lit by turning on any of the hot water taps.

TO TURN OFF THE HEATER

If the heater is not required for short periods the pilot may be left alight. For longer periods press the OFF button marked ●. Gas supply to both pilot and main burner will now be shut off. Check through the viewing window that the pilot flame is extinguished.

SUMMER-WINTER SWITCH

The summer-winter switch reduces the effect of seasonal variation in water supply temperature, so that in winter and summer hot water at a similar temperature is obtained.

The summer-winter switch should be turned to the summer position in the warm summer and autumn months and to the winter position in the cold winter and spring months. There is no advantage in frequent adjustment of the switch as the water supply temperature varies slowly through the year.

If installed in a hard water area correct use of the summer-winter switch will reduce the risk of scaling.

NOTE: Should the water flow through the heater be greater than normal, either by option or because of supply pressure variation, cooler hot water will be obtained and the summer-winter switch will have no effect. Reduction of water flow at the tap will restore the temperature and the action of the summer-winter switch.

CLEANING THE HEATER

The heater casing should be cleaned with warm, soapy water. DO NOT USE ABRASIVE POWDERS SINCE THEY WILL SCRATCH THE PAINTED SURFACE.

The heater contains metal parts and care should be taken when handling and cleaning, with particular regard to edges.

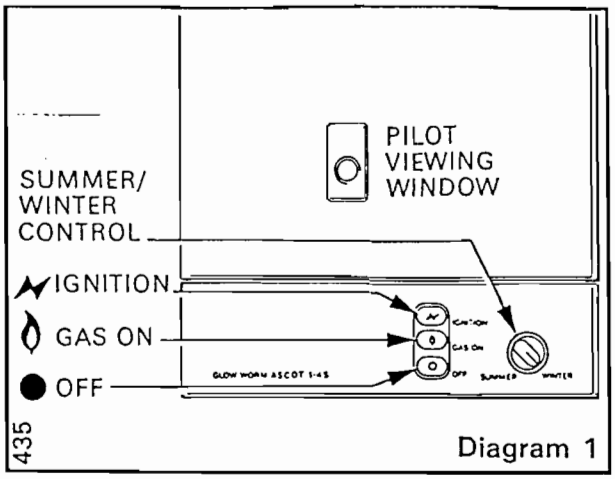


Diagram 1

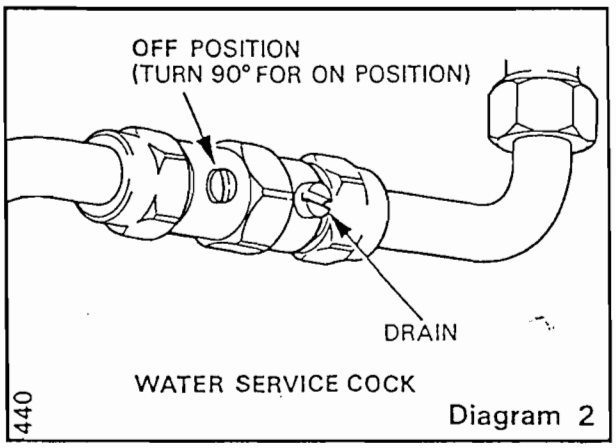


Diagram 2

MAINTENANCE

To obtain a long life, efficient, safe and trouble free service operation of the heater, it is strongly recommended that arrangements are made for regular inspection and maintenance. Please consult the local region of British Gas or your installation/servicing company.

FROST PRECAUTION

In frosty weather the pilot should be left alight. If the house is to be unoccupied for several days the heater should be drained. Turn off the gas and water supplies, see diagram 2. Open a hot tap to release the pressure.

Place a suitable receptacle beneath the water service cock then taking care not to lose the sealing washer remove the drain screw to drain the heater. Refit drain screw and sealing washer then turn off hot tap.

SPARES PARTS

If it is desired to refer to the manufacturers regarding spare parts or any question concerning the use of the heater, the heater type must be quoted, i.e. Glow-worm Ascot 1.45.

Glow-worm Ltd
Nottingham Road, Belper, Derby DE5 1JT
Telephone Belper (077 382) 4141
Telex 37586
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Because of our constant endeavour for improvement details may vary slightly from those quoted in these instructions.