

Baxi Bermuda 675

Cat. II T/N

**Gas Fireside Central
Heating Unit**

**Installation and Service
Instructions**

Boiler Section

GC Numbers:

675 PW—44 077 43

675 S —44 077 44

675 C —44 077 45

675 W —44 077 46

675 LFE—44 077 47 Cat. I N only

Bermuda 675

Cat. II T/N – Boiler Section

Installation and Service Instructions

If the Boiler is to be used with the LFE Fire make sure it is a Natural Gas Boiler.

INTRODUCTION

Boiler

This unit is a combined central heating boiler and gas fire designed for installation in a living room. It is fitted in the normal builders opening at the base of the chimney and can be installed into most tiled surrounds, proprietary surrounds, or as a panel fire.

The unit consists of two major components:

(a) The Boiler—The output is range rated from 16 kW (55,000 Btu/h) to 10 kW (34,000 Btu/h). As received from the manufacturer it will be set for an output of 12 kW (41,000 Btu/h).

(b) The Fire—This has a maximum heat output of 3.5 kW (12,000 Btu/h).

The unit is available for use with Town Gas or Natural Gas. Before commencing installation, check that the unit is suitable for the gas to be used.

SITE REQUIREMENTS

Builders Opening

This opening is used to accommodate the boiler. The minimum dimensions are 343 mm (13 1/2") deep x 584 mm (23") wide x 584 mm (23") high (Fig. 1). Such openings should be soundly constructed of brickwork, pre-cast concrete or of material such as Marinite. Care must be taken to mount pre-cast units or boxes at a height appropriate to the type of installation, e.g. wall fix or hearth fix, and the dimensional requirements must be maintained.

The Surround and Fireplace Opening

If a surround is used it must have a vertical flat area centrally placed about the fireplace opening of the dimensions shown below. (Fig. 2).

The Hearth

The floor of the builders opening must be sound and ON THE SAME LEVEL AS THE FRONT HEARTH.

No Surround

The unit can be fitted as a hearth fire without a surround, but a hearth is necessary.

Wall fixing

The unit can be wall mounted using a fire support bracket supplied with each fire. The hearth on which the boiler rests should be 100 mm (4") to 125 mm (5") above the floor level. If a surround is being removed the opening should be made to the maximum dimensions indicated in the table above.

Flue

A variety of types of flue may be used for the unit.

(a) **9" x 9" brick chimneys**—These must be of sound construction and lined with a 125 mm (5") flue liner terminating with a flue terminal. Only liners and terminals

approved by British Gas should be used. Previously used chimneys should be swept and dry before a flue liner is fitted. A seal around the space between the liner and the chimney is essential at the top and if possible a seal at the base of the chimney is advantageous.

(b) **Acid Resistant Liners**—If the chimney is already fitted with acid resistant liners suitable for gas appliances then a further liner is not necessary but an approved terminal is required. A short length of 125 mm (5") diameter flue pipe is required to connect the boiler to the chimney. It is necessary to seal the space between the short piece of the flue pipe and the chimney.

(c) **Pre-cast flues**—Pre-cast concrete flue blocks may be used to provide a flue which is non-impered, properly constructed and of one or two stories in height. The flueways must be at least 198 mm (7 3/4") x 67 mm (2 5/8"). It is emphasized that mortar flanges between the flue blocks must not extrude into the flueway. If raking blocks are used they must be fitted correctly and mortar must not be allowed to accumulate in the raked position.

(d) **Asbestos cement flue pipes and proprietary insulated flue pipes**—Flues of this type can be used taking care to design and install the flue in accordance with good practice and the flue manufacturers recommendations.

(e) **Terminals**—A suitable approved type of terminal is required.

If the flue exceeds 4.3 M (14ft) in height the restrictor ring 90 mm (3 1/2") in diameter, which is supplied with the unit, will generally be required.

Gas Supply—For full information on gas supply pipes refer to BSCP 331 Part 3. The connection of the unit is Rc 1/2 (1/2" BSPT) internal, located on the right hand side of the appliance. Generally it is necessary to run a 22 mm (3/4") gas supply pipe (preferably fitted with a filter) from the meter to the builders opening. If the run is over 9M (30ft) including bends etc. then the pipe size should be in accordance with the tables in BSCP 331 Part 3. The last 1M (3ft) may be 15 mm (1/2") pipe. The local Gas Region will advise on gas supply pipes.

Electrical Supply—All external wiring should be correctly earthed and polarised and be in accordance with IEE regulations. For wiring instructions see "Electrical Connections."

Water Circulation Systems—The unit is suitable for use with—

(a) Fully pumped systems (small bore and micro-bore with open vents).

(b) Gravity domestic hot water and pumped central heating systems.

(i) With 28 mm (1") pipes the minimum circulating head for gravity domestic hot water should not be less than 1M (3.3ft) measured vertically from the

	VERTICAL FLAT AREA		SURROUND OPENING			
	MINIMUM DIMENSIONS		MINIMUM DIMENSIONS		MAXIMUM DIMENSIONS	
	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH
675 W	672mm (26 1/2")	1095mm (43")	508mm (20")	406mm (16")	560mm (22")	584mm (23")
675 S	672mm (26 1/2")	815mm (32")				
675 PW	660mm (26")	840mm (33")				
675 C	660mm (26")	840mm (33")				
675 LFE	675mm (27")	865mm (34")				
ALL FIRES						

flow connection on the boiler to the flow connection on the cylinder. At this head the maximum horizontal distance measured along the run of the pipe should not exceed 3M (10ft). Greater horizontal distances and 22mm (¾") pipes are acceptable with suitably increased heads. Allowances must be made for pipe bends where necessary.

- (ii) If the above conditions are not easily met then pumped primaries should be used.
- (iii) Gravity flow and return pipes should be laid to maximum fall, avoiding points of possible air locks.

(c) The unit is NOT SUITABLE FOR USE WITH SEALED SYSTEMS.

Boiler Connections—The Boiler is supplied with the flow and return connections on the left hand side. If the connections are required on the right hand side the boiler castings can be reversed within the combustion chamber. See "Boiler Connections" on page 4.

Ventilation

Ventilation via a permanent air vent of 9,810 mm² (15 sq. ins.) to the outside atmosphere is required. This vent may be directly into the room containing the unit or via an adjacent room which has a similarly sized permanent air vent to the room containing the appliance.

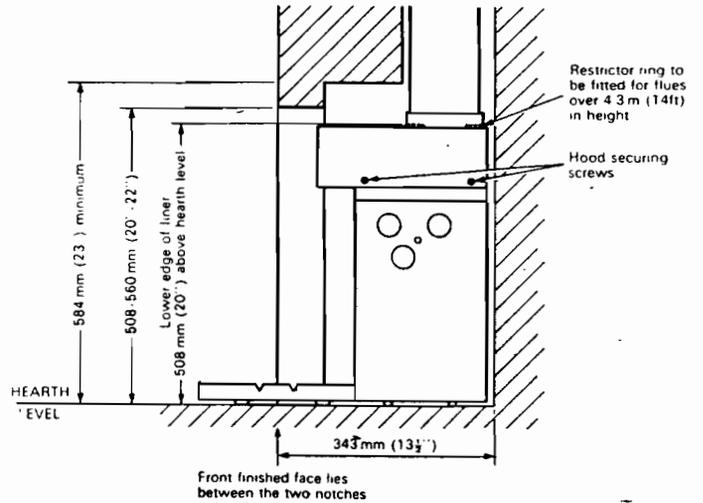
General

1. THE BOILER IS NOT SUITABLE FOR USE WITH SEALED SYSTEMS.
2. The system must be designed to avoid reverse circulation.
3. The static head must not exceed 30 metres (100ft) of water.
4. The boiler must only be used with an indirect cylinder.
5. Electrical wiring, gas and water pipes must not be installed in a way which would restrict servicing of the boiler.
6. Drain points should be fitted at the lowest points in the system.

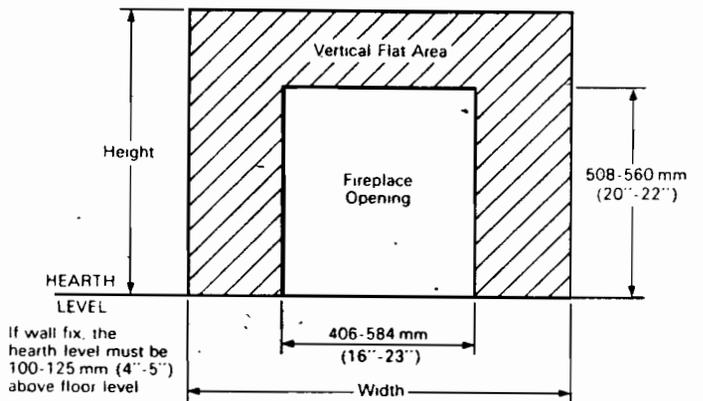
Appliance details

BOILER

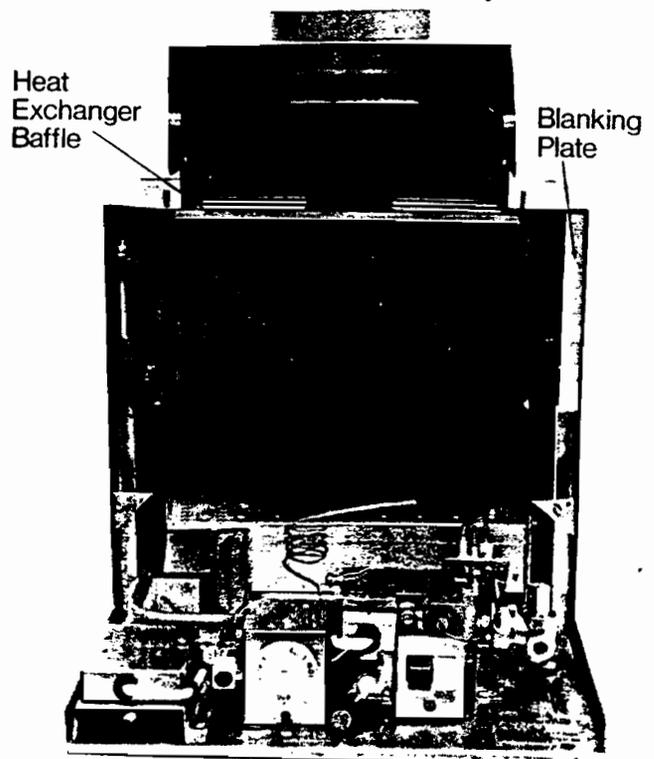
Height	—533 mm (21")
Width	—394 mm (15½")
Weight (empty)	—53 kg (117 lbs)
Water Content	—2.6 litres (0.58 galls)
Boiler tappings	—3 × Rc1 (1" B.S.P.T. internal)
Gas Connection	—Rc½ (½" B.S.P.T. internal)
Electrical supply	—240 V.A.C. 50 Hz—3 amp fuse



1. Builder's Opening



2. Fireplace Opening



3. Boiler Connections

Installation

References should be made to B.S. Codes of practice. C.P.331 Part 3, 332, Part 2, 337 and 3006 Part 1. The latest requirements of the Local Gas Region and the Local Authority should be observed. The unit can be used in different circumstances.

- With a tiled surround
- Without a tiled surround but with a hearth
- As a wall mounted fire
- In a proprietary surround, constructed of a suitable material.

The general method of installation is the same in all cases, but slight changes in procedure must be made to suit the particular circumstances. The installation procedure is based upon fitting the unit with a surround in position.

Boiler connections (Fig. 3)

If the boiler connections are required on the right hand side, proceed as follows—

- Lay the boiler on its back on the floor.
- Remove the thermostat capillary from behind the clip on the front panel and withdraw the thermostat phial.
- Remove the front panel.
- Slide out the baffle from above the boiler castings and slide out the blanking plate at the right hand side.
- Slacken the tee bolt securing nut at the left hand side, (Fig. 4) turn the bolt until it releases the casting. Withdraw the bolt through the slot in the combustion chamber.
- Lift out the casting.
- Retrieve the 3 sealing rings.
- Reassemble in reverse order ensuring that:
 - The 3 sealing rings are positioned correctly after refitting the casting.
 - The blanking plate is fitted at the left hand side of casting.
 - The heat exchanger baffle is fitted above the casting.
 - The tee bolt is in position at the right hand side.
 - The thermostat phial now fits in the pocket at the left hand side in the lower section.

Fitting the boiler

- Remove the fireback, back boiler rubble, etc. and expose the builders opening.
- Line the flue. Terminate the lower end of the liner at 508 mm (20") above the finished hearth level. (Fig. 1.).
- Build up a level solid hearth within the builders opening flush with the front hearth. Scribe a centre line on the hearth from the front finished face to a point at least 150 mm (6") forward of the face.
- Using the template, drill and plug the hearth so that the unit can be fixed with the two screws and plugs provided.
- If the surround opening is less than 533 mm (21") high, lower the draught diverter hood after removing the four securing screws (Fig. 1).
- Fit the boiler in the builders opening and fix to the hearth. Check that the front finished face lies between the two notches on the sides of the boiler base (Fig. 1), and that the arrowhead cut out at the front is on the centre line of the hearth.
- Run the gas supply to the approximate position of the gas tap, taking care that there are no joints in inaccessible places. It is preferable to have the gas supply coming from the right hand side of the builders opening. If however it does come from the left hand side and must pass in front of the boiler, then for ease of servicing it is imperative that the pipe passes under the burner feed pipe and under the bracket fixing the controls to the burner.
- Connect the water flow and return pipes.
 - Fully pumped systems (Fig. 4)
 - Fit the 28 mm (1") common return pipe.
 - Fit the R1 (1" B.S.P.T.) plug to the rear flow connection for an appliance with the water connections at the left hand side or the front flow connection for an appliance with water connections at the right hand side.
 - Fit the 28 mm (1") common flow pipe.

(iv) If the flow and return pipes are dropping, a manually operated air vent must be fitted at the high point near the boiler.

(v) The injector tee is not used in this system and can be discarded.

(b) Gravity domestic hot water and pumped central heating systems (Fig. 5).

(i) Fit a R1 × 28 mm copper (1" B.S.P.T. × 1" copper) elbow to the injector tee.

(ii) Fit the injector tee to the return connection. The branch of the tee should be angled downwards by at least 45°.

(iii) Connect up the gravity return pipe and the pumped return pipe.

(iv) Fit the gravity flow pipe and the pumped flow pipe.

9. If the draught diverter hood has been lowered at 5 then it must now be returned to its correct position and fixed with the four screws.

10. Fit the flue liner to the draught diverter hood.

11. Connect the gas supply to the gas cock.

12. Connect the electrical supply—See "Electrical connections."

13. Any holes within the builders opening, e.g. to accommodate pipework, wiring etc. must be made good.

14. Complete the installation as described under "Commissioning the boiler."

Electrical Connections

General

The mains supply required is 240V, 50 Hz, fused at 3 amp. A double pole switch or an unswitched socket outlet should be provided. All external wiring should be correctly earthed and polarised and in accordance with I.E.E. regulations.

Electrical supply to controls

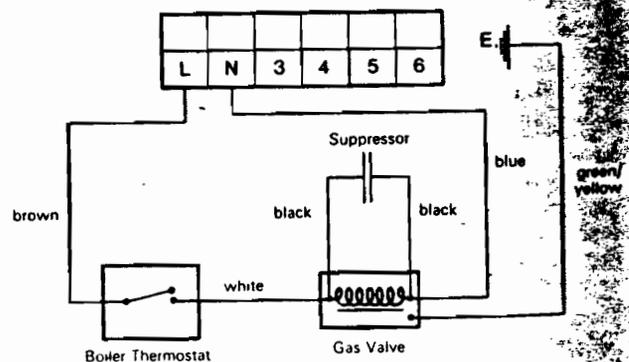
The recommended cable for connection to the appliance terminal strip is

0.5 sq.mm. 16/0.20 PVC heat resistant grade
or 23/0.0076 PVC heat resistant grade
or equivalent PVC heat resistant grade.

It is preferable that the input cable comes from the left hand side of the builders opening. If however it comes from the right hand side and passes in front of the boiler, then it must pass under the channel section fitted to the base of the boiler behind the controls.

The input cable must be laid to avoid contact with the sides of the combustion chamber.

Internal wiring



Control systems

Connect the electrical control system to the unit as follows.

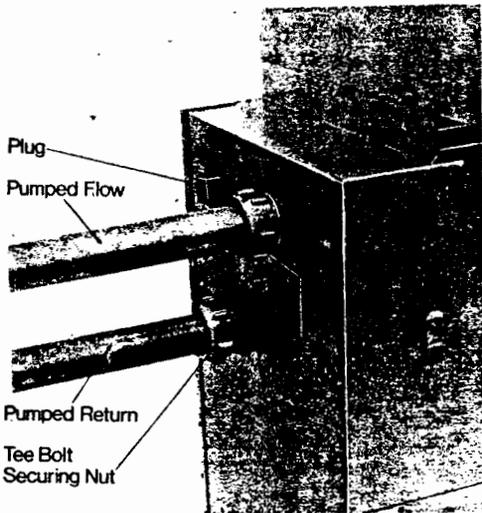
- Remove the nut and shakeproof washer retaining the plugged terminal strip to the socket at the left hand side. Disconnect the strips by sliding the upper housing in the direction of the arrow (Fig. 6).
- Remove the housing (two fixing screws).
- Connect the wires to the socket terminal strip in the housing and clamp using the cable grips provided. If the 675W fire is to be fitted a permanent live connection is required to terminal 3.
- Re-assemble the electrical housing.

COMMISSIONING THE BOILER

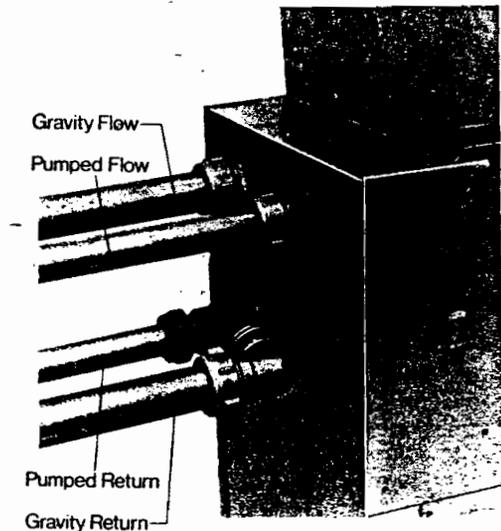
1. Flush the whole system with all valves open.
2. Fill the system with water, vent the radiators and check for leaks.
3. Connect the gas supply pipe, and purge the air from the supply pipe at the gas service tap (C.P. 331 Part 3).
4. Turn the gas service tap clockwise $\frac{1}{2}$ turn from the off position, this will supply gas to the boiler only (Fig. 7). Check for gas soundness.
5. Ensure that all external controls e.g. room thermostat, timer etc are calling for heat.
6. Turn the boiler thermostat to the "off" position (Fig. 6).
7. Turn on the mains electrical supply.
8. Connect a pressure gauge to the test point (Fig. 6).
9. Hold in the white start button on the control valve (Fig. 6).
10. Press the igniter button (Fig. 6) and release. Repeat until pilot lights. Hold in the start button for a further 30 seconds and then release. The pilot should then stay alight.

11. Operate the boiler burner by turning the thermostat knob to its highest setting.
12. Remove the cover screw and adjust the appliance governor (Fig. 6) to give the correct pressure corresponding to the required input. Check this pressure after 10 minutes burning time and adjust if necessary.
13. The system should be flushed again, when hot, refilled and checked for water leaks.
14. Make a final check for gas soundness.
15. Turn the boiler thermostat to the required setting.
16. Turn off the electrical supply.
17. Replace the pressure test point screw.
18. Fit the fire as described in the fire installation instructions.

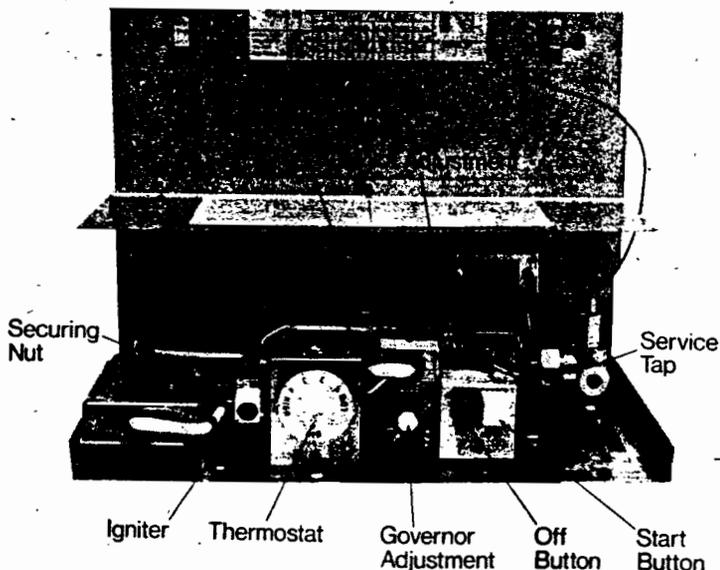
Gas Group	SETTING PRESSURES					
	Heat Input 21.8 kW 74500 Btu/h		Heat Input 18 kW 61400 Btu/h		Heat Input 13.8 kW 47000 Btu/h	
	m bar	in. wg	m bar	in. wg	m bar	in. wg
N	18.7	7.5	12.3	4.9	7.4	3.0
G4	5.4	2.2	3.5	1.4	2.2	0.9
G5	6.5	2.6	4.3	1.7	2.6	1.0



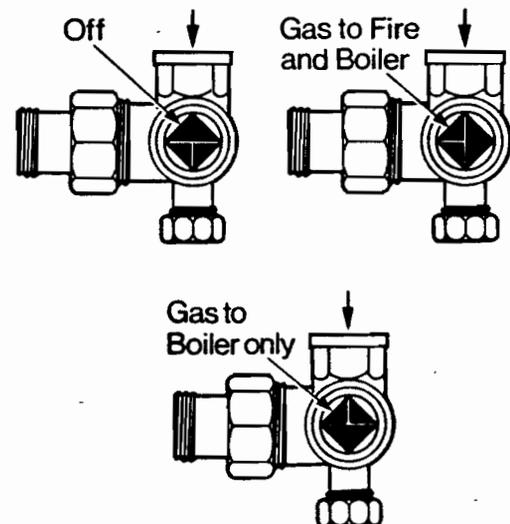
4. Fully Pumped System



5. Gravity DHW (Refer to 8 (b) (ii) page 4)



6. Boiler Controls



7. Service Tap

SERVICING THE UNIT

Fire—See separate instructions provided with the fire.

Boiler—items 1 to 25 to be carried out annually.

1. Remove the fire as described in the separate instructions supplied with the fire.
2. After noting its original setting turn the boiler thermostat to "OFF".
3. Turn off the electrical supply to the boiler.
4. Turn off the gas supply at the service tap and disconnect the union.
5. Remove the nut and shakeproof washer securing the two halves of the electrical housing and disconnect by sliding the upper housing in the direction of the arrow (Fig. 8).
6. Remove the thermostat dial from the boiler.
7. Remove the front panel.
8. Remove the burner and controls complete (3 screws) (Fig. 9).
9. Slide out the heat exchanger baffle (Fig. 10).
10. Remove the rear insulation by removing the retaining screw and washer (Fig. 10).
11. Clean the top section of the heat exchanger with a bristle brush from front to back and then end to end between the finned tubes. Brush between the two boiler sections and clean the underside of the heat exchanger taking care not to damage the insulation. Brush out the bottom of the combustion chamber and replace the heat exchanger baffle. Suitable brushes for cleaning the heat exchanger are as follows
 - 2" diameter × 6" long bristle brush
 - 1" diameter × 2½" long bristle brush
12. Clean the boiler burner (Fig. 11).
 - (a) Disconnect the burner feed pipe nut at the burner
 - (b) Remove the two nuts and washers securing the pilot support bracket and the bracket from the control to the burner. Remove the burner.
 - (c) Remove the two lint arresters by pulling away from the burner, and clear away any lint which may have accumulated.
 - (d) Remove the burner injector and clean if necessary.
 - (e) Remove the burner end plate. Clear away any lint or deposits that have accumulated inside the burner. Replace the injector, end plate and gasket using the nuts and spring washers ensuring that the gasket is not damaged—replace if necessary (Fig. 11).
13. Clean the pilot (Fig. 12).
 - (a) Unscrew the pilot tubing nuts at both ends, and remove the tube. Remove the pilot injector from the pilot head and clean the pilot injector and pilot head.
 - (b) Re-assemble in reverse order of dismantling.
14. Reconnect the gas union nut and turn on the tap through ½ turn in a clockwise direction. (This will supply gas to the boiler only). Check for leaks.
15. Turn on the electrical supply to the boiler.
16. Turn the thermostat to the "OFF" position.
17. Hold in the white start button on the control valve (Fig. 8).
18. Press the ignition button and release. Repeat until the pilot lights. Hold in the white start button for a further 30 seconds and then release. The pilot should then stay alight. If the pilot fails to remain alight, press the red "OFF" button, wait 3 minutes and start again from 17. The flame should be without a yellow tip and be approximately 25 mm (1") long. Adjust if necessary (Fig. 8). Turn the adjuster screw anti-clockwise to increase the flame length.
19. Connect a pressure gauge to the test point and operate the boiler burner by turning the thermostat knob to its highest setting.
20. Check that the pressure is correct for the installation (See Data label). If necessary remove the cover screw and adjust the appliance governor (Fig. 8). Turn the screw clockwise to increase pressure. Alter the input indicator on the data label to suit.
21. Turn the boiler thermostat to the "OFF" position and replace the pressure test point sealing screw.
22. Turn the boiler thermostat to its original setting noted at 2.
23. Replace the fire.
24. Service the fire as described in the separate instructions supplied with the fire.

EXCHANGE OF INDIVIDUAL COMPONENTS

In all cases it is necessary to carry out items 1 to 8 of the servicing instructions.

Thermocouple (Fig. 11)

1. Release the thermocouple nut at the control and the nut securing the thermocouple to the pilot bracket.
2. Withdraw the thermocouple assembly.
3. Re-assemble the new thermocouple unit securing at the control and at the pilot bracket.
4. Re-assemble in reverse order.

Spark Electrode (Fig. 11)

1. Disconnect the spark electrode lead at the spark electrode.
2. Disconnect the nut securing the spark electrode to the pilot bracket.
3. Fit the new spark electrode checking that the spark gap is between 3.5 and 4.5 mm and reconnect the spark electrode lead.
4. Test the igniter and check that the spark electrode is sparking correctly to the pilot shroud.
5. Re-assemble in reverse order.

Igniter (Fig. 12)

1. Disconnect the igniter lead.
2. Unscrew the 2 screws securing the igniter to the thermostat housing and replace the igniter.
3. Reconnect the lead and check that the igniter is sparking correctly at the pilot shroud.
4. Re-assemble in reverse order.

Burner (Fig. 11)

1. Disconnect the burner feed pipe nut at the burner end.
2. Remove the two nuts and washers securing the pilot support bracket and the bracket from the controls to the burner. The burner can now be lifted clear of the rest of the controls.
3. Remove the injector, lint arresters and baffle at the injector end and refit to the new burner.
4. Re-assemble in reverse order.

Boiler Thermostat (Fig. 13)

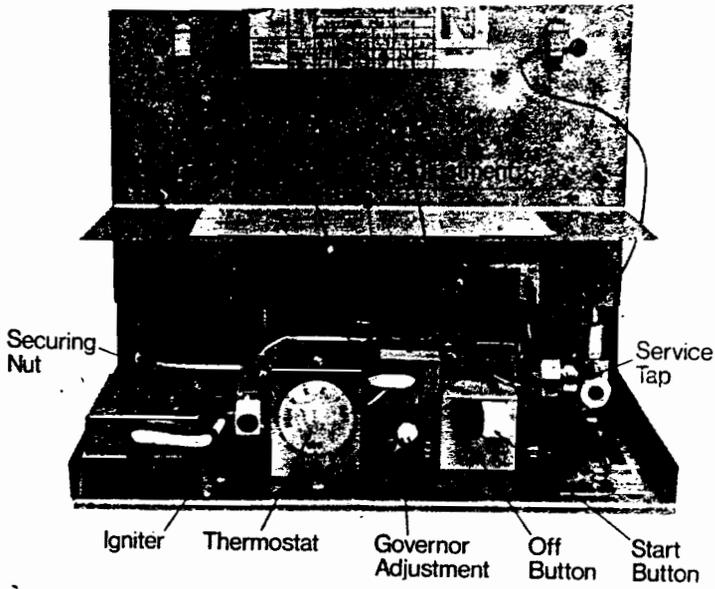
1. Remove the thermostat capillary from behind the clip on the boiler front panel and withdraw from the boiler.
2. Remove the single screw securing the thermostat slide to the thermostat housing.
3. Withdraw the thermostat and slide and disconnect the two electrical spade connections.
4. Remove the thermostat knob.
5. Remove the nut securing the thermostat to the slide.
6. Replace the thermostat.
7. Re-assemble in reverse order.

Honeywell Gas Valve

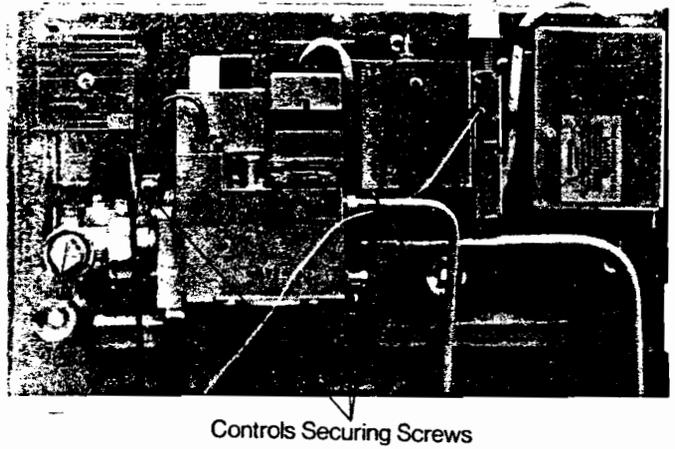
1. Disconnect the gas inlet union at the inlet to the gas valve.
2. Disconnect the thermocouple nut at the gas valve.
3. Disconnect the pilot feed tube at the gas valve.
4. Remove the two screws securing the heat shield and bracket from control to burner to the control.
5. Remove the four screws securing the control to the thermostat housing and the mounting bracket.
6. Release the burner feed pipe nut at the control.
7. Remove the two posidrive screws retaining the terminal cover on the control. Remove the cable grip and disconnect the five wires at the electrical connections on the gas valve.
8. Remove the gas valve from the unit.
9. If the complete gas valve is to be replaced, unscrew the adaptor from the outlet connection of the valve and unscrew the pressure test point nipple from the gas valve.
10. Individual sub-components of the valve may be replaced as outlined by Honeywell instructions.
11. Re-assemble the new valve using suitable jointing compound wherever necessary and re-assemble the appliance in the reverse order.

Insulation in Combustion Chamber (Fig. 10)

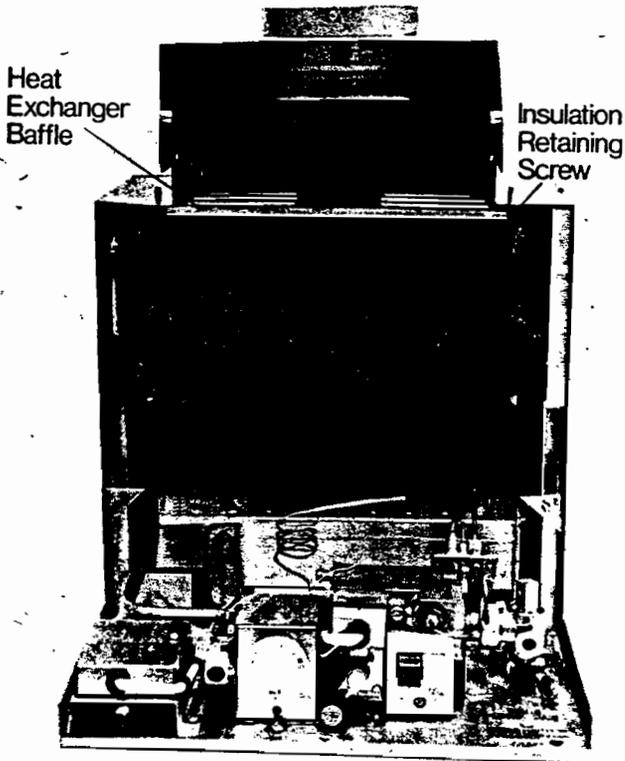
1. Remove the screw and washer securing the back panel insulation.
2. Remove the screw, nut and washer securing the front panel insulation.
3. Fit the new insulation.
4. Re-assemble in reverse order.



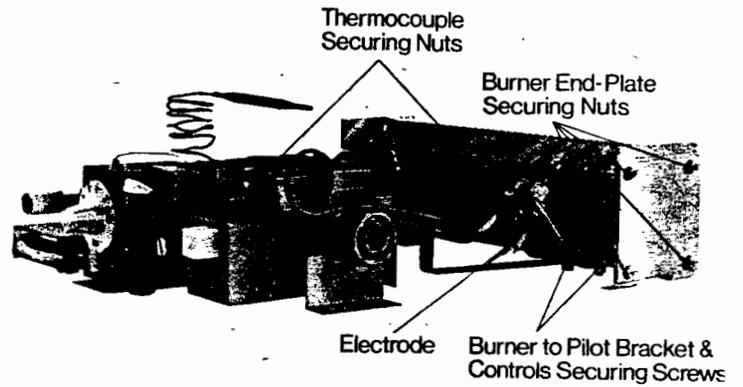
8. Boiler Controls



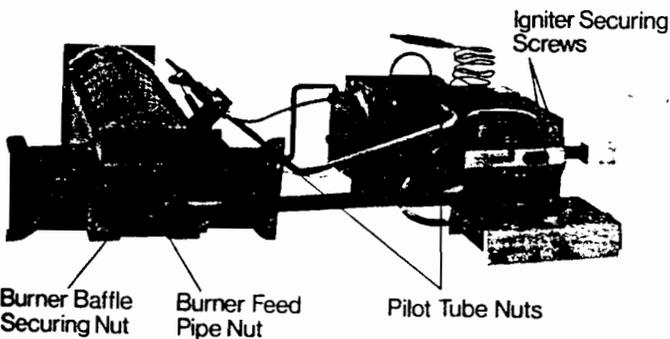
9. Securing Screws



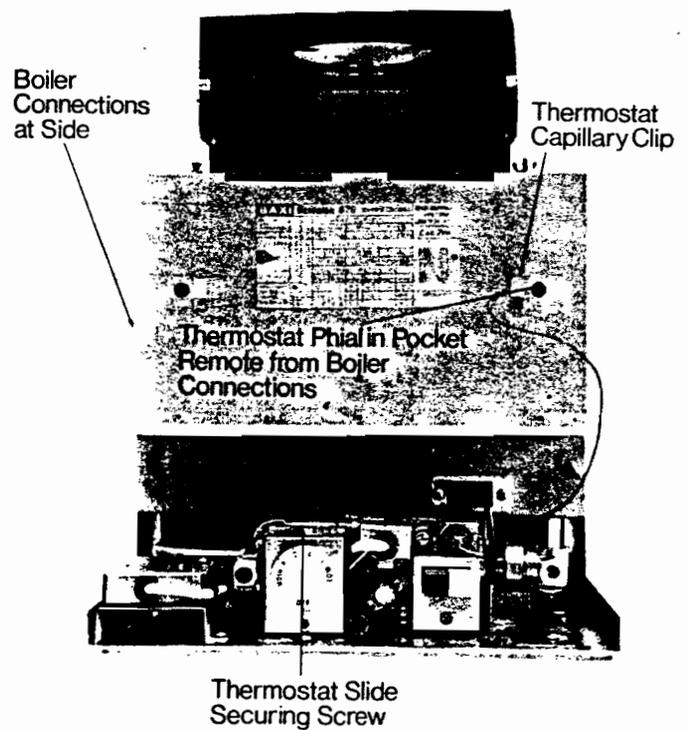
10. Combustion Chamber



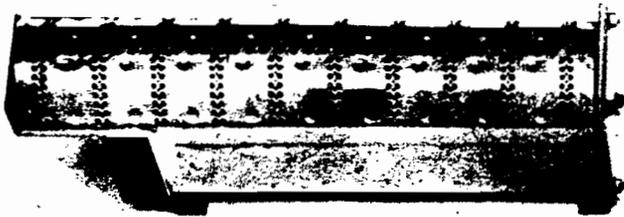
11. Burner & Controls (1)



12. Burner & Controls (2)



13. Boiler Assembly



38



45



37



42



43



7



63



61



52



57



58



50



68



60



69

Parts List

Key No.	B.G. No.	Description	Makers Part No.
7	183-530	Sight Window	082109
37	183-619	Arrester - Lint - Boiler	042779
38	183-620	Burner Boiler	042768
42	183-678	Injector Burner TG - Hole dia. 6.9mm	042751
43	183-623	Injector Burner NG Cat. 39 Size 1500	042710
45	392-505	Valve Controls Honeywell V4400A 1017	102004
50	390-131	Thermocouple 18 in Honeywell Q309A 2606	102005
52	391-222	Burner Pilot Honeywell Q314A 564	102006
57	390-793	Injector Pilot TG CAR 22 Honeywell	102042
58	390-794	Injector Pilot NG BCR 18 Honeywell	102041
60	183-628	Lead Electrode	042740
61	387-852	Electrode Pilot Ignition Kigass E3356	102024
63	382-275	Thermostat Boiler Ranco G1-11677	102027
68	183-630	Knob Control Thermostat Ranco 83151/36	042717
69	387-968	Igniter Piezo Kigass MK 3P D5065/A	042722