

Baxi Bermuda 551

Cat. 1 N

Gas Fireside Central Heating Unit

Installation and Service Instructions

Boiler Unit

GC No. 44 077 48

These instructions must be read in conjunction with the separate instructions for the Fire Section.

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Bermuda 551

Cat. 1 N - Boiler Unit

Installation and Service Instructions

INTRODUCTION

This unit is the boiler section of 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 is for use with Natural Gas Only. The boiler unit output is range rated from 10 kW (34,000 Btu/h) to 16 kW (55,000 Btu/h). The gas fire unit has a maximum heat output of 3.5 kW (12,000 Btu/h). There are five gas fire units

Bermuda S	GC No. 32-077-12
Bermuda C	GC No. 32-077-11
Bermuda W	GC No. 32-077-09
Bermuda PW	GC No. 32-077-08
Bermuda LFE	GC No. 32-077-10

SITE REQUIREMENTS

Builders Opening ([Fig. 1](#)).

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. Such openings should be soundly constructed of brick work, 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 ([Fig. 2](#))

If a surround is to be used it must have a vertical flat area centrally placed about the fireplace opening. The areas required for the different gas fires are shown on the table below:

The Hearth

The floor of the fireplace 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 non-combustible hearth is always 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.

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

	VERTICAL FLAT AREA MINIMUM DIMENSIONS	
	HEIGHT	WIDTH
W	660 mm (26")	1118 mm (44")
S	672 mm (26 1/2")	815 mm (32")
PW	660 mm (26")	840 mm (33")

C	660 mm (26")	840 mm (33")
LFE	685 mm (27")	1015 mm (40")
SURROUND OPENING		
MINIMUM DIMENSIONS		MAXIMUM DIMENSIONS
HEIGHT	WIDTH	HEIGHT
	ALL	FIRES
508 mm (20")	406 mm (16")	560 mm (22") 584 mm (23")

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 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) **Light quality 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.

(d) **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 - The connection of the unit is Rc1/2 (1/2" BSPT) internal, located on the right hand side of the appliance. For full information on gas supply pipes, pipe sizes, etc, reference should be made to BSCP 331 part 3 or the local Gas Region will advise. Generally it is advisable to run a 22mm (3/4") supply pipe (preferably fitted with a filter) from the meter to the building opening with the last 1M (3 ft) in 15 mm (2") pipe.

Electrical Supply - All external wiring should be correctly earthed and polarised and be in accordance with IEE regulations. For wiring instructions see 'Electrical connection'.

Water Circulation Systems - The unit is suitable for use with fully pumped, systems (small bore and micro bore with open vents) and gravity domestic hot water with pumped central heating systems. The unit is not suitable for use with sealed systems.

When the unit is to be installed to an existing or new gravity domestic hot water and pumped central heating system the following considerations should be given to the design of the gravity domestic hot water flow and return pipes.

(i) The minimum circulating head should be not less than 1 m (3 ft) with a maximum horizontal run of 3 m (10 ft) when, using 28 mm (1") pipes. Smaller pipe sizes and longer horizontal runs are acceptable with suitably increased circulating heads.

(ii) The system must be designed to prevent reverse circulation.

(iii) Pipes should be laid to maximum fall avoiding points of possible air lock.

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The following conditions should be observed on all types of system

(i) THE INJECTOR TEE MUST BE FITTED TO THE BOILER RETURN CONNECTION ON ALL SYSTEMS.

(ii) The static head must not exceed 30m (100 ft) of water.

(iii) The boiler must only be used with an indirect cylinder.

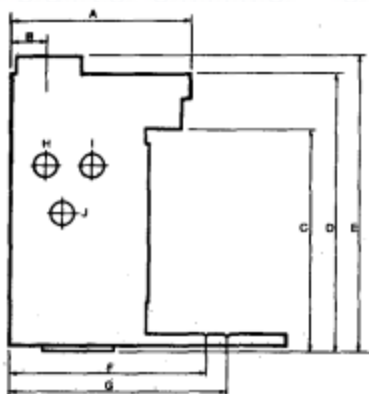
(iv) Drain points should be fitted to the lowestest points in the system.

(v) All electrical wiring, gas and water pipes must be installed in a way which would not restrict the servicing of the boiler.

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.



BOILER DIMENSIONS

From Back of Boiler From Hearth Level

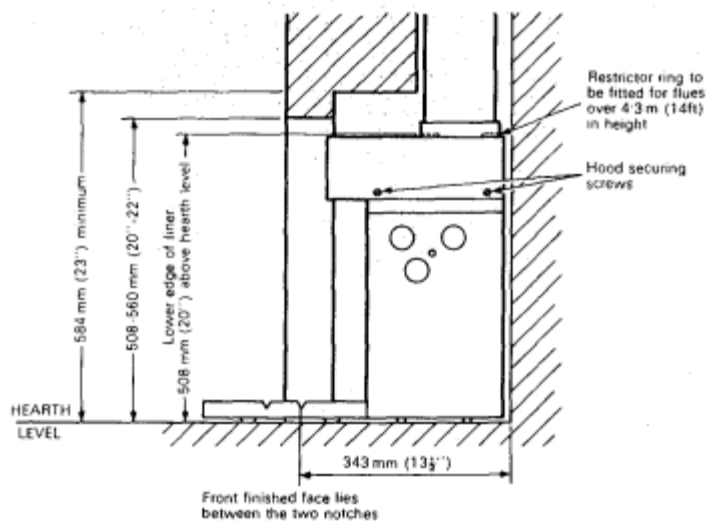
A	327 mm	-
B	85 mm	-
C	-	407 mm
D	-	507 mm
E	-	532 mm
F	343 mm	-
G	390 mm	-

FLOW AND RETURN TAPPINGS

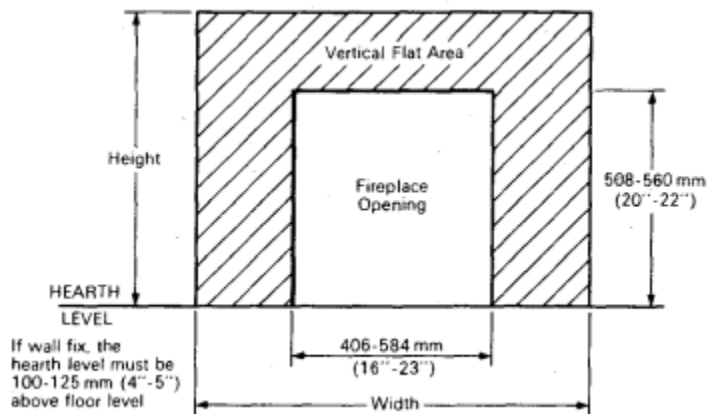
	From Back of Boiler		From Hearth
	When On		Level
	Left Hand	Right Hand	
H Rear Flow	69 mm	98 mm	332 mm
I Front Flow	156 mm	185 mm	332 mm
J Return	97 mm	157 mm	244 mm

Boiler details

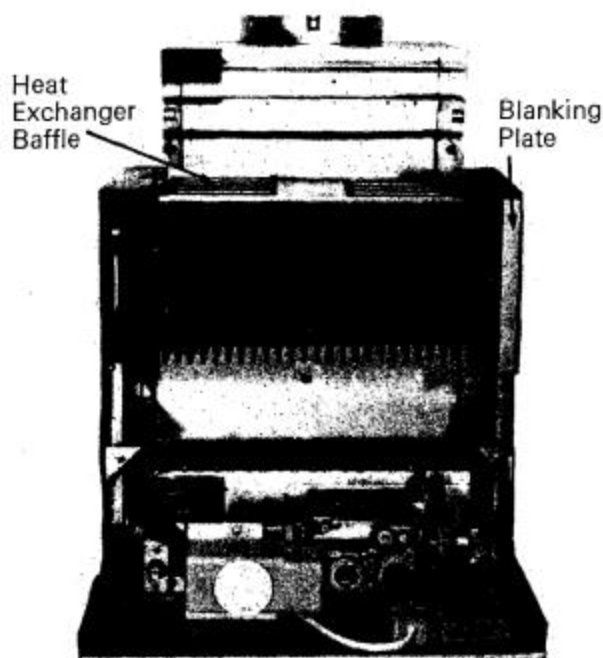
Height	- 533 mm (21")
Width	- 394 mm (15 1/2")
Weight (empty)	- 53 kg (117 lbs)
Water Content.	- 2.6 litres (0.58 galls)
Boiler tapings	- 3 x Rc1 (1" B.S.P.T. internal)
Gas Connection	- Rc1/2 (1/2" B.S.P.T. internal)
Electrical supply	- 240 V.A.C. 50 Hz - 3 amp fuse



1. Builder's Opening



2. Fireplace Opening



3. Boiler Connections

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Installation

References should be made to B.S. Codes of practice. 331 Part 3, 5376 Part 2, 5440 Part 1, and 5449 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.

- (a) With a tiled surround
- (b) Without a tiled surround but with a hearth
- (c) As a wall mounted fire
- (d) 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.

Boiler connections ([Fig. 3](#))

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

1. Remove the cardboard packing but do not lift the boiler off the base.
2. Remove the thermostat capillary from behind the clip on the front panel and withdraw the thermostat phial.
3. Remove the front panel.
4. Slide out the baffle from above the boiler castings and slide out the blanking plate at the right hand side.
5. Slacken the tee bolt securing nut at the left hand side, turn the bolt until it releases the casting. Withdraw the bolt through the slot in the combustion chamber.
6. Lift out the casting. Retrieve the 3 sealing rings.
7. Reverse boiler casting and re-assemble ensuring that :
 - (a) The 3 sealing rings are positioned correctly after refitting the casting.
 - (b) The blanking plate is fitted at the left hand side of casting.
 - (c) The heat exchanger baffle is fitted above the casting.
 - (d) The draw bolt is in position at the right hand side.
 - (e) The thermostat phial now fits in the pocket at the left hand side in the lower section.

Fitting the boiler

1. Remove the fireback, back boiler rubble, etc. and expose the builders opening.
2. Line the flue. Terminate the lower end of the liner at 508 mm (20") above the finished hearth level. ([Fig. 1](#)).
3. 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.
4. Using the template, drill and plug the hearth so that the unit can be fixed with the two screws and plugs provided.
5. If the surround opening is less than 533 mm (21") high, lower the draught diverter hood after removing the four securing screws ([Fig. 1](#)).

6. 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 boilerbase ([Fig. 1](#)), and that the arrowhead cut out at the front is on the centre line of the hearth.

7. Connect the gas supply to the service tap. It is preferable to have the gas supply coming from the right 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 feedpipe and under the bracket fixing the controls to the burner.

8. Connect the flow and return pipes to the boiler to suit the type of installation installed.

(a) Gravity domestic hot water and pumped central heating. The connections must be made as follows: ([Fig. 5](#))

(i) THE INJECTOR TEE MUST BE FITTED IN THE LOWER OF THE 3 TAPPINGS WITH THE BRANCH FACING STRAIGHT DOWN. It is acceptable for the branch to be angled up to 45° either side of this position.

(ii) Connect the pumped heating return to the compression fitting end of the injector tee.

(iii) Connect the gravity hot water return to the branch of the injector tee.

(iv) Connect the pumped heating flow to the top front tapping for left hand connections or the top rear tapping for right hand connections.

(v) Connect the gravity hot water flow to the remaining top tapping.

(b) Fully pumped systems. ([Fig. 4](#))

The connections must be made as follows

(i) THE INJECTOR TEE MUST BE FITTED IN THE LOWER OF THE THREE TAPPINGS. The branch of the tee may be angled to suit the pipework where necessary.

(ii) Connect the pumped return to the injector tee. Either the branch or the compression end of the tee may be used depending on the size and position of the pipework. If the compression end of the tee is not used it can be blanked off using the blanking disc provided.

(iii) Connect the pumped flow to the top front tapping for left hand connections or the top rear tapping for right hand connections.

(iv) Plug the remaining top tapping using the Rc1 (1 " BSP) plug provided.

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

10. 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.

11. Connect the electrical supply - See "[Electrical connections](#)."

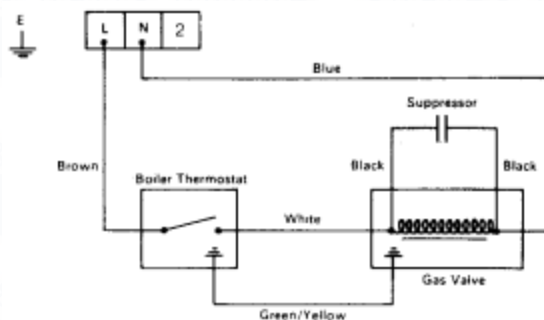
12. Any holes within the builders opening, e.g. to accommodate pipework, wiring etc. must be made good.

13. Complete the installation as described under "[Commissioning the boiler](#)".

Electrical Connections

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 boiler terminal strip is 0.5 sq. mm. 16/0.20 PVC heat resistant grade. It is preferable to have the electrical supply cable coming from the right hand side of the builders opening. If however it must come from the left hand side it must pass under the channels section fitted to the base of the boiler behind the controls. It is important to route any input cable to avoid contact with the combustion box sides. To connect the electrical wiring to the boiler proceed as follows: ([Fig. 6](#))

1. Remove the screw retaining the controls connection plug and disconnect

2. Remove the screw retaining the input socket and slide the socket to the right then lift to remove.

3. Connect the wires to the socket as follows

(a) Connect the brown wire (live) to the terminal 'L'.

(b) Connect the blue wire (neutral) to the terminal 'N'.

(c) Route the green and yellow wire (earth) through the cut out in the side of the socket housing leaving sufficient length to connect the wire to the adjacent earth terminal on the base.

(d) If the W fire is to be fitted, connect a permanent live supply to the remaining terminal in the socket marked '2'.

(e) Clamp the cables securely within the socket and re-assemble the socket to the base.

(f) Connect the earth wire to the earth terminal.

(g) Refit the controls connection plug and replace its securing screw.

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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. Purge the air from the gas supply pipe at the gas service tap (CP 331 part 3).

4. Turn the gas service tap clockwise 1/2 turn from the off position, this will supply gas to the boiler only ([Fig. 7](#)). Test 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. Slacken the pressure test point screw and connect a pressure gauge .([Fig. 6](#))

9. Hold in the grey button on the gas control valve. ([Fig. 6](#))

10. Press the ignitor button and release. Repeat until pilot lights. Hold in the flame failure button for a further 30 seconds and then release. The pilot should then stay alight. If the pilot fails to remain alight twist the grey button, wait three minutes and start again from 9. The pilot flame should be without a yellow tip and be approximately 25 mm (1 ") long. Adjust if necessary. ([Fig. 6](#))

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 the setting pressure corresponding to the required input Check the pressure after 10 mins burning time and adjust if necessary. Adjust the input indicator arrow 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.

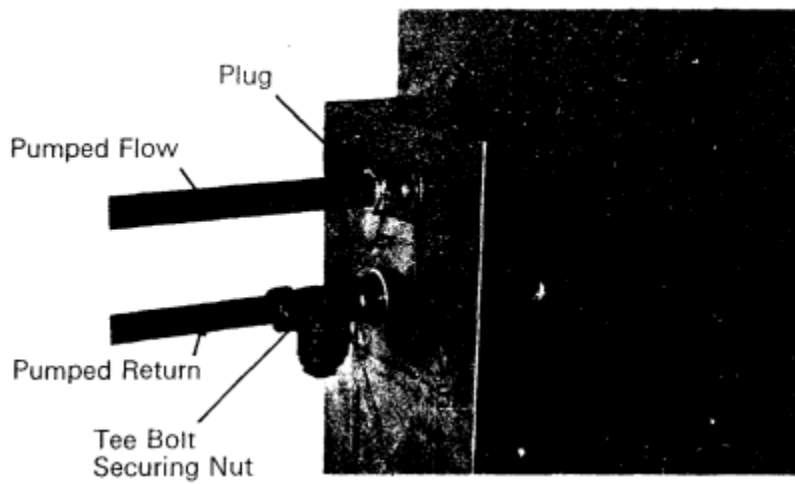
16. Turn off the electrical supply.

17. Remove pressure gauge and tighten the test point screw.

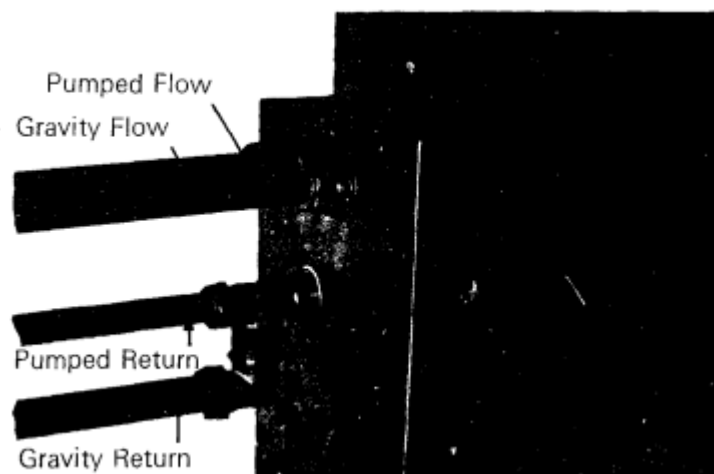
18. Fit the gas fire section as described in the fire installation instructions.

SETTING PRESSURES

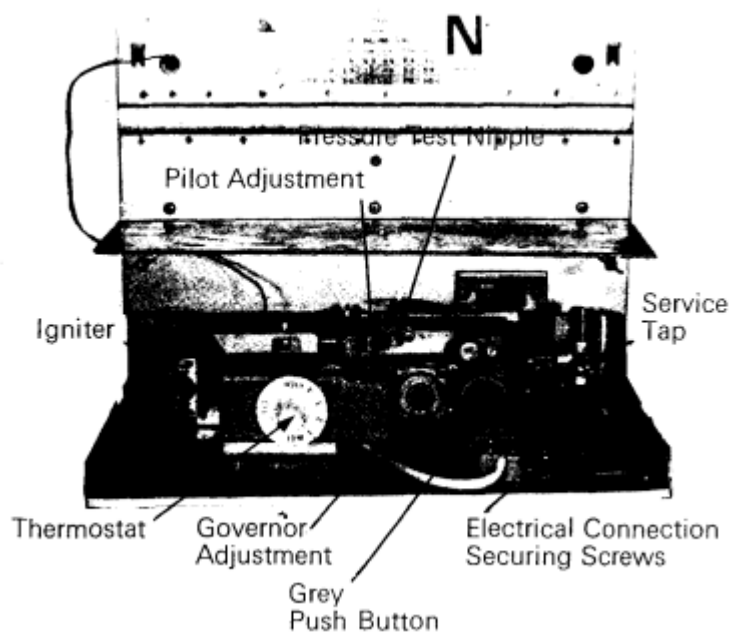
Heat Input	21.8 kW (74,500 Btu/h)	18.0 kW (61,400 Btu/h)	13.8 kW (47,000 Btu/h)
Natural Gas	18.7 m bar (7.5" wg)	12.3 rim bar (4.9" wg)	7.4 m bar (3.0" wg)



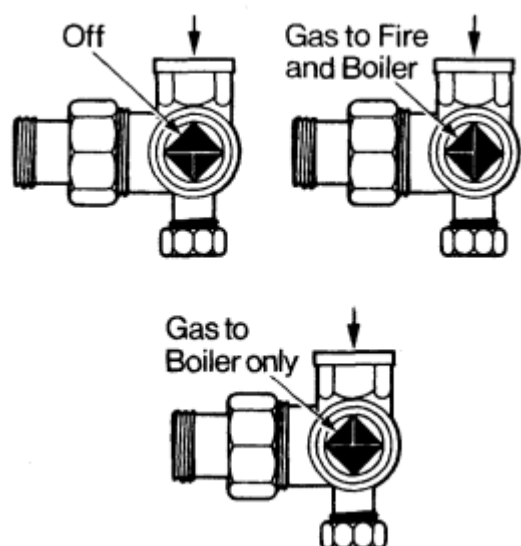
4. Fully Pumped System



5. Gravity DHW



6. Boiler Controls



7. Service Tap

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SERVICING THE UNIT

Fire-See separate instructions provided with the fire.

Boiler-items 1 to 26 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.
4. Turn off the gas supply at the service tap and disconnect the union.
5. Remove the screw securing the controls connection plug and disconnect the plug and the inlet socket. ([Fig. 8](#))
6. Remove the thermostat dial from the boiler.
7. Remove the front panel.
8. Remove the burner and controls complete (2 screws) ([Fig. 9](#)) and pull off the lint arresters.
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 remaining insulation Suitable brushes for cleaning the heat exchanger are:
 - 2" diameter x 6" long bristle brush
 - 1" diameter x 2 1/2" long bristle brushBrush out the bottom of the combustion box and then replace the heat exchanger baffle.
12. Clean the burner as follows: ([Fig 11](#))
 - (a) Remove the boiler burner end plate.
 - (b) Clean away any lint deposits that may have accumulated inside the burner.
 - (c) Remove the burner injector and clean if necessary.

(d) Replace the end plate, ensuring that the gasket, where used, is not damaged. Replace if necessary.

13. Clean the pilot as follows: ([Fig 12](#))

(a) Disconnect and remove the pilot tube.

(b) Remove the pilot injector from the pilot head and clean both these items

(c) Re-assemble the pilot components in the reverse order of dismantling.

14 Clean all traces of lint and dust from the lint arresters.

15 Replace the controls and lint arresters and all other items in reverse order of dismantling.

16 Reconnect the gas union nut and turn on the tap 1/2 turn in a clockwise direction. (This will supply gas to the boiler only). Test for gas soundness.

17. Turn on the electrical supply to the boiler.

18. Turn the thermostat to the 'OFF' position.

19. Hold in the grey button on the gas control valve.

20. Press the igniter button and release. Repeat until pilot lights. Hold in the flame failure button for a further 30 seconds and then release. The pilot should then stay alight. If the pilot fails to remain alight twist the grey button, wait 3 minutes and start again from 19. The pilot flame should be without a yellow tip and be approximately 25 mm (1 ") long.

21. Slacken the pressure test point screw and connect a pressure gauge then operate the boiler burner by turning the thermostat knob to its highest setting.

22. Check that the correct pressure corresponding to the range rated output is adequate for the installation (see data label). If necessary remove the cover screw and adjust the appliance governor ([Fig. 8](#)) (Turn screw clockwise to increase pressure) and alter the position of the input indicator arrow on the data label to suit.

23. Turn the boiler thermostat off remove the pressure gauge and tighten the test point sealing screw.

24. Turn the boiler thermostat to its original setting noted at 2.

25. Replace the fire.

26. Service the fire as described in the separate instructions supplied with the fire unit.

EXCHANGE OF INDIVIDUAL COMPONENTS

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

Thermocouple ([Fig. 12](#))

1. Release the thermocouple nut at the control valve 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 valve and 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 locking 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 spark electrode lead.

2. Unscrew the 2 screws securing the igniter to the thermostat housing bracket 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.

3. Remove the two nuts and washers securing the bracket from the control to the burner. The burner can now be pulled clear of the rest of the controls.

4. Remove the injector and baffle at the injector end and refit to the new burner.

5. Re-assemble in reverse order.

Boiler Thermostat ([Fig. 13](#))

1. Remove the thermostat knob.

2. Remove the screw securing the thermostat housing to the mounting bracket.

3. Unhook the thermostat housing and pull forward until the three spade electrical connections on the thermostat can be disconnected. Unclip the capacitor from the retainer within the thermostat housing.

4. Remove the nut and washer securing the thermostat to the housing.

5. Replace the thermostat and re-assemble in reverse order. Ensure that the green/yellow wire is fitted to the earth tag on the thermostat.

Honeywell Gas Valve

1. Remove the inlet union from the valve inlet.

2. Disconnect the thermocouple nut at the valve.

3. Disconnect and remove the pilot feed pipe.

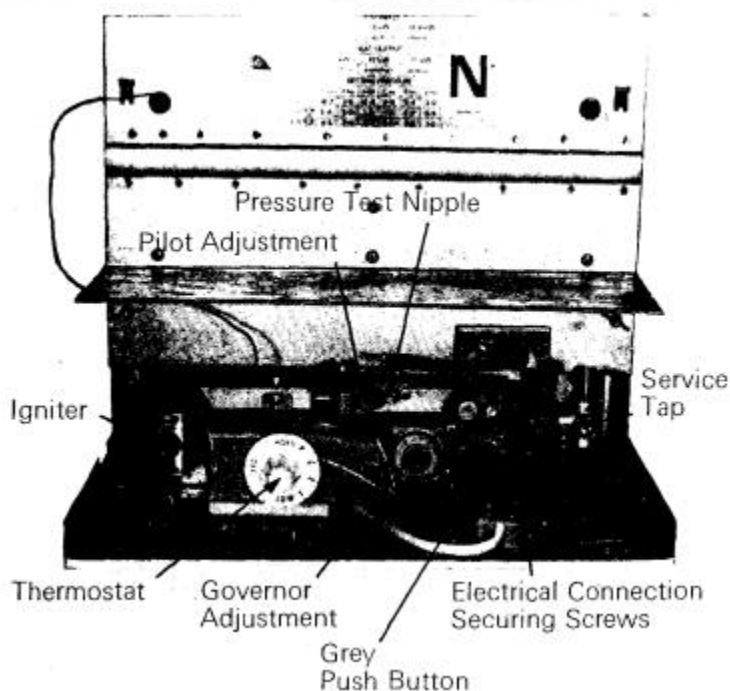
4. Disconnect the burner feed pipe and remove the adaptor from the valve outlet.

5. Remove the thermostat housing and disconnect the wires from the valve.
6. Remove the bracket securing the burner to the valve, the thermostat mounting bracket, the valve heat shield and the valve mounting bracket.
7. Individual sub-components of the valve may be replaced as outlined by Honeywell instructions.
8. Re-assemble the new valve in reverse order of dismantling using suitable jointing compound where ever necessary.

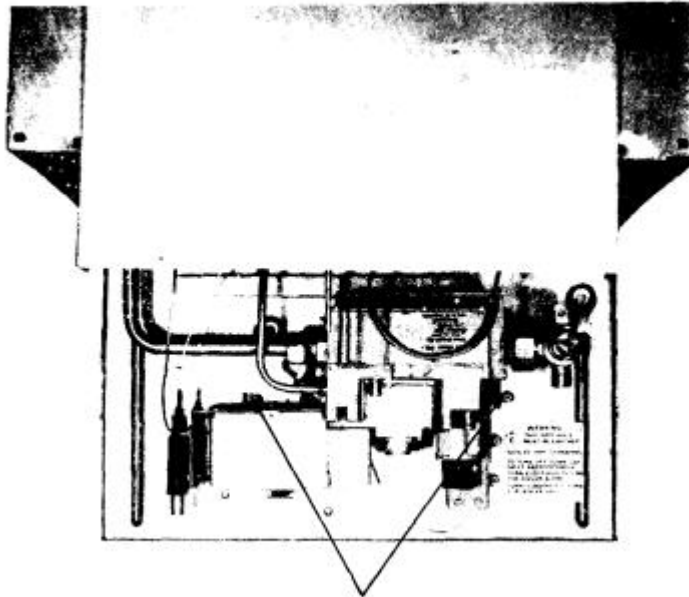
Insulation in Combustion Chamber ([Fig. 10](#))

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

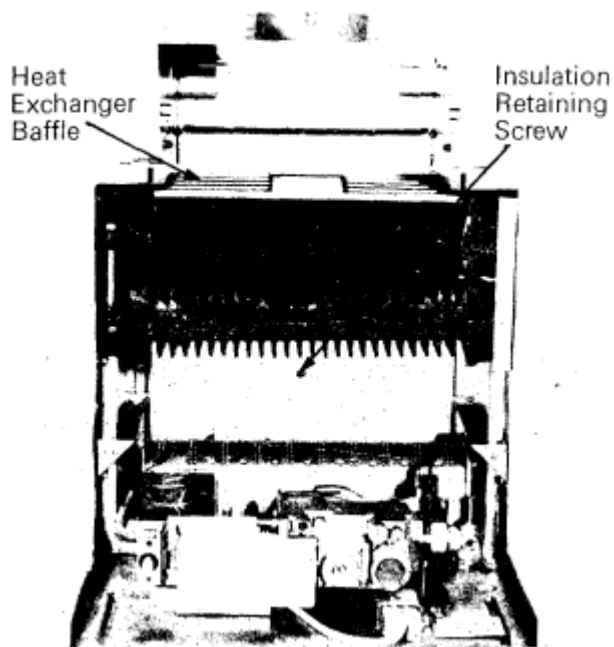
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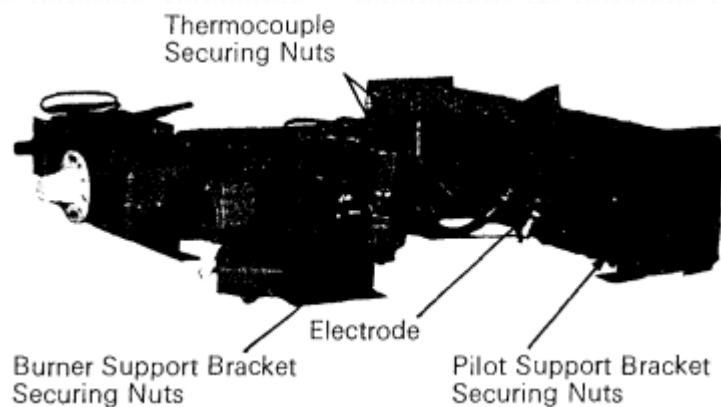
8. Boiler Controls



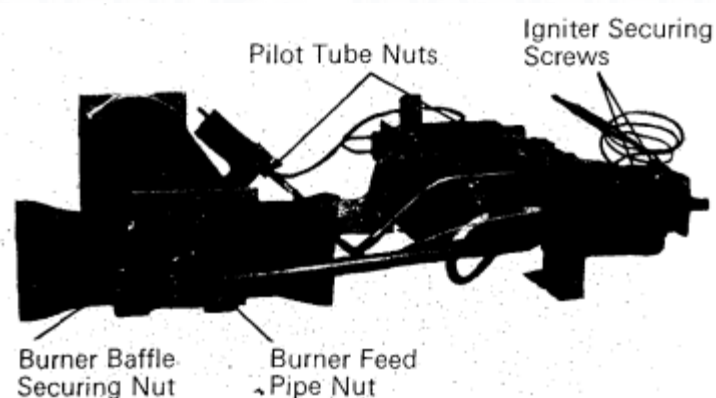
9. Securing Screws



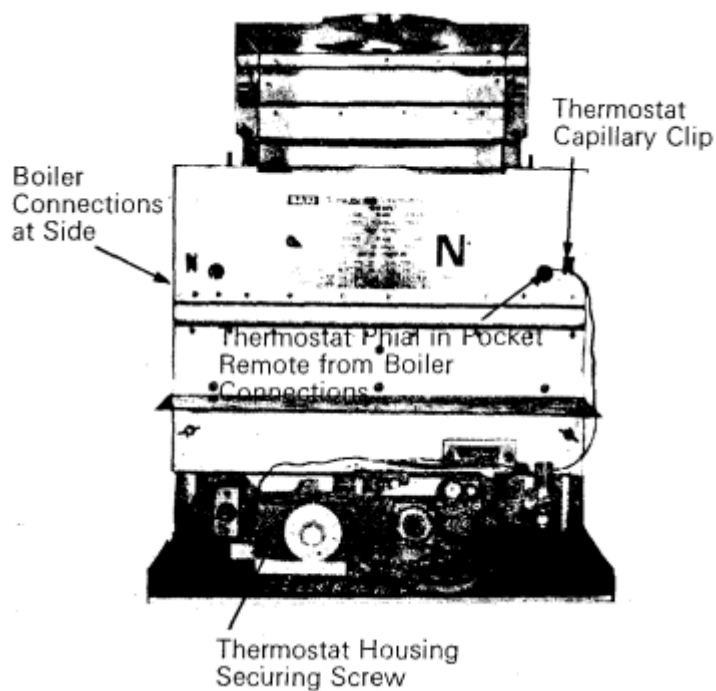
10. Combustion Chamber



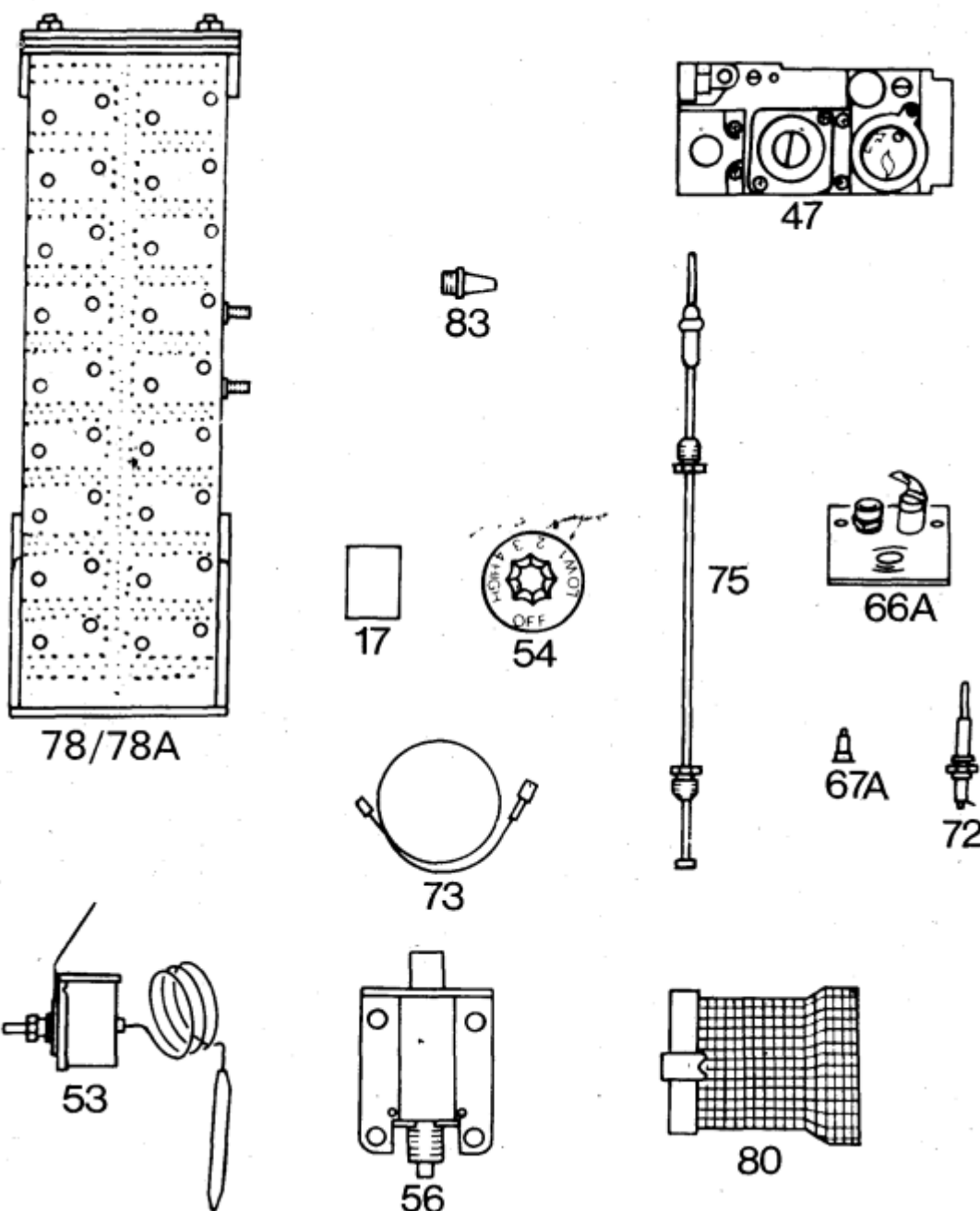
11. Burner & Controls (1)



12. Burner & Controls (2)



13. Boiler Assembly



SHORT PARTS LIST

Key Number	British Gas Corporation Number	Description
17	183 530	Sight Window
47	393 659	Valve - Control - Honeywell V4600A
53	382 275	Thermostat - Boiler - Ranco G1 - P.1000
54	183 630	Knob - Control - Thermostat Ranco 83151/36

56	393 444
66A	391 664
67A	391 665
72	387 852
73	183 628
75	390 131
78	183 620
78A	183 915
80	183 619
83	398 177

Ignitor - Piezo - Kigass Corvette	0.
Burner - L.E. Pilot - Honeywell Q359A 1041	0.
Injector - L.E. Pilot - Natural Gas - Honeywell 0.30A 0	0.
Electrode - Pilot - Ignition - Kigass E3356	1.
Lead - Electrode	0.
Thermocouple - 18" Honeywell Q309A 2606	1.
Burner - Boiler - Aeromatic	0.
Burner - Boiler - Worgas - (alternative)	0.
Arrester - Lint	0.
Injector - Burner - NG Cat. 39 1500	0.

Baxi heating Bamber Bridge Preston PR5 6SN Lancs

Tel Preston 36201