

Baxi W.M. 532 RS

Baxi W.M. 381 RS

Baxi W.M. 281 RS

Central heating boilers

Cat. 1N

**Installation and
Service Instructions**

B. G. C. No. 41 077 06

B. G. C. No. 41 077 05

B. G. C. No. 41 077 07 respectively

Installation Instructions

Introduction

The Baxi WM 532 RS is a wall mounted room-sealed boiler, range rated between 15.5 and 7.3 kW (53,000 and 25,000 Btu/h) heat outputs.

The Baxi WM 381 RS is a wall mounted room-sealed boiler, range rated between 11.1 and 4.4 kW (38,000 and 15,000 Btu/h) heat outputs.

The Baxi WM 281 RS is a wall mounted room-sealed boiler, range rated between 8.2 and 4.4 kW (28,000 and 15,000 Btu/h) heat outputs.

All appliances are designed for use on Natural Gas only. Each appliance consists essentially of four components, namely:

1. Wall mounting plate.
2. Combustion chamber with heat exchanger, burner and controls.
3. Outer case.
4. Balanced flue terminal assembly. (Packed separately.)

Installation Requirements

General

The installation must be carried out by a competent installer and be in accordance with relevant B.S. Codes of Practice, I.E.E. Regulations, Gas Safety Regulations, Building Regulations and Regional Water Bye-laws. Any Local Gas Region or Local Authority requirements should also be observed.

Siting

The appliance must be fitted on a suitable outside wall, the position permitting a satisfactory flue and an adequate air supply.

A cupboard or compartment used to enclose the boiler must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used provided that it is modified for the purpose. Details of essential features of cupboard/compartment design are given in BS 5376:2.

Clearances

A vertical area is required for each appliance as follows:

- (a) **For WM 532 RS** (Fig. 2)
660 mm (26") wide × 750 mm (29½") high
- (b) **For WM 381 RS and WM 281 RS** (Fig. 3)
560 mm (22") wide × 750 mm (29½") high

The above dimensions include the necessary clearances around the appliances for case removal, spanner access and for air movement.

The minimum outer case clearances are indicated in Figs. 2 and 3 and are as follows:

Top Minimum 50 mm (2"). (Additional clearance

may be required for the passage of pipes around local obstructions such as joists running parallel to the front face of the appliance.)

Bottom Minimum 100 mm (4").
Sides Minimum 30 mm (1¼").

The wall mounting plate should be used as a template to determine the position of the appliance on the wall.

Ventilation

Detailed recommendations for air supply are given in BS 5440:2.

The following notes are intended to give general guidance.

The room in which a room-sealed appliance is installed does not require a purpose provided air vent. Where a room-sealed appliance is installed in a purpose made cupboard or compartment air vents are required (for cooling purposes) in the cupboard or compartment at high and low level which may communicate with a room or direct to outside air.

The actual minimum effective area requirements of cupboard/compartment air vents which are based upon the rated INPUT of the appliances are in table at foot:

Note—Both air vents must communicate with the same room or must both be on the same wall to outside air.

Flue arrangement

Detailed recommendations for flues are given in BS 5440:1.

The standard flue terminal supplied with the appliance is suitable for use with wall thicknesses between 241 mm (9½") to 343 mm (13½").

Optional extra flue terminal kits are available as alternatives for the following wall thicknesses:

- (a) 102 mm (4") to 229 mm (9"). To enable the flue to be suitable for a 102 mm (4") to 128 mm (5") wall the outer duct on the back of the appliance needs trimming back by 25 mm (1") with a suitable tool (tinsnips, hacksaw, etc.)
- (b) 356 mm (14") to 457 mm (18").

The balanced flue terminal is designed such that it must be fitted from inside the building. The air inlet/products outlet duct must be horizontal and square with the inner wall face.

The following hole size is required through the wall for the appliances:

310 mm (12¾") wide × 255 mm (10") high. (Figs. 2 and 3).

Balanced Flue Siting Requirements

The following guide lines indicate the general requirements for balanced flue terminals.

Position of air vent	Air from room			Air direct from outside		
	WM 532 RS	WM 381 RS	WM 281 RS	WM 532 RS	WM 381 RS	WM 281 RS
High and Low level	190 cm ² (30 in ²)	140 cm ² (20 in ²)	100 cm ² (15 in ²)	95 cm ² (15 in ²)	70 cm ² (10 in ²)	50 cm ² (7½ in ²)

1. On a clear expanse of outside wall, preferably not less than 600 mm (2') from a corner, recess or projection.
2. Not less than 300 mm (1') vertically beneath an openable window or ventilator.
3. Not less than 600 mm (2') from any surface facing the terminal.
4. Not less than 300 mm (1') from ground level.
5. Not immediately beneath eaves or a balcony.
6. If the terminal is less than 2 m (6') above the ground or balcony to which people have access the terminal should be protected by a guard.
7. If the outer surface of an outside wall is of combustible material it should be protected by fitting a non combustible plate so that it extends not less than 50 mm (2") around the terminal.

A terminal guard is available as an optional extra or may be obtained from:

South Tower Flue Components Ltd.,
Morley Road, Deacon Trading Estate,
Tonbridge, Kent, TN9 1RA. Tel: 0732-351 555

North Tower Flue Components Ltd.,
Victoria Mills, The Knowle, Shepley,
Huddersfield, HD8 8AS. Tel: 048-483 3254.

When ordering a terminal guard quote the appliance name.

Water Circulation Systems

The appliance is only suitable for connection to a cistern supply.

The appliance is suitable for use with:

1. Pumped domestic hot water and pumped central heating systems.
2. Gravity flow domestic hot water systems and pumped central heating systems.
 - (a) With 28 mm pipes the minimum circulating head for gravity domestic hot water should not be less than 1 m (3.3') measured vertically from the 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 3 m (10'). Greater horizontal distances and smaller pipe sizes are acceptable with suitably increased heads. Allowances must be made for pipe bends where necessary.
 - (b) If the above conditions are not easily met, then pumped primaries should be used.
 - (c) Gravity flow and return pipes should be laid to maximum fall avoiding points of possible air locks.

The following points are of particular importance:

- (i) **THE INJECTOR TEE WITH ITS PLASTIC SPREADER MUST BE FITTED TO THE BOILER RETURN CONNECTION ON ALL SYSTEMS.**
- (ii) The appliances are not suitable for use with sealed systems.
- (iii) The system must be designed to avoid reverse circulation.
- (iv) The static head must not exceed 30 m (100') of water.

- (v) The boilers must only be used with an indirect cylinder when domestic hot water is required.
- (vi) Drain points should be fitted at the lowest points in the system.

Gas Supply

The gas installation should be in accordance with CP 331:3.

The connection of the appliances is RC $\frac{1}{2}$ ($\frac{1}{2}$ " BSPT internal) located at the bottom right-hand side of the appliances.

Ensure that the pipework from the meter to the appliance is of adequate size. Do not use pipes of a smaller size than the appliance gas connection.

Electrical Supply

External wiring must be correctly earthed and polarised and in accordance with the I.E.E. Regulations.

For wiring instructions see 'ELECTRICAL CONNECTIONS'.

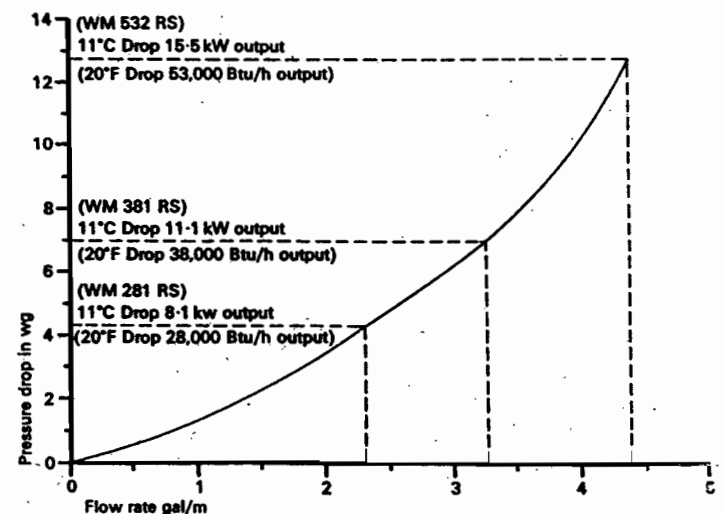
Appliance Details

Overall sizes with outer case in position.

	WM 532 RS	WM381 RS and WM281 RS
Height	600 mm (23 $\frac{5}{8}$ ")	600 mm (23 $\frac{5}{8}$ ")
Width	600 mm (23 $\frac{5}{8}$ ")	500 mm (19 $\frac{5}{8}$ ")
Forward projection from wall	330 mm (13")	330 mm (13")
Weight empty	59.3 kg (131 lbs)	54.3 kg (120 lbs)
Water content	2.6 ltrs (·575 gals)	2.2 ltrs (·48 gals)

Boiler tappings 3 × RC 1 (1" BSPT internal)
 Gas connection Rc $\frac{1}{2}$ ($\frac{1}{2}$ " BSPT internal)
 Electrical supply 240V A.C. 50 Hz-3 amp fuse
 Max. working head 30 m (100').

Hydraulic resistance chart WM 532 RS, WM 381 RS and WM281 RS



Fitting the Appliance

1. Ensure that the length of flue ducting is suitable for the wall thickness.
2. Select the most suitable position for the boiler using the wall mounting plate as a template, ensuring adequate clearances where necessary (Figs. 2 and 3).
 - (a) Mark the position of the bottom and side edges of the flue opening. (The sides are indicated by the sides of the cutout).
 - (b) If the bottom edge of the outer case is required to line up with wall cupboards, the lower edge of the plate should be positioned 183 mm ($7\frac{3}{8}$ ") above the bottom edge of the cupboards.
3. Remove the plate.
 - (a) Complete the marking out of the hole for the flue ducting above the marked lines and then cut out the hole (for sizes see Figs. 2 and 3).
 - (b) Refit the plate to the wall ensuring correct level.
 - (c) Mark off the position of the four widest sound anchorage points and the wallplug.
 - (d) Remove the plate and drill the anchorage holes 10 mm diameter ($\frac{3}{8}$ ") 70 mm deep ($2\frac{3}{4}$ ") ensuring the holes are not more than 1 mm ($\frac{1}{32}$ ") oversize. Drill the wallplug hole to suit the plug supplied.
4. Secure the wall fixing plate to the wall with the fixing bolts and screws provided ensuring that the frame is horizontal.
5. Measure the wall thickness at the aperture of the wall. Assemble the flue terminal to the back of the appliance and adjust until the dimension from the back of the combustion chamber to the edge of the lip on the terminal mesh is the same as the wall thickness, ensuring that the four screws securing the terminal mesh to the flue duct will be accessible from outside the building. Tape up the joint between the flue terminal assembly and the air duct on the back of the combustion chamber. (Fig. 4.)
6. Lift the combustion chamber assembly into position onto the four brackets on the wall mounting plate until the screws drop in the slots.
 - (a) Secure the four screws to the wall mounting plate with the nuts and washers provided.
 - (b) Make good the hole in the wall around the flue terminal outside the premises, ensuring the flue terminal is horizontal.
 - (c) If appropriate fit a terminal guard.
 - (d) Make good the hole in the wall around the boiler inside the premises.
7. Connect the water flow and return pipes (see 'Boiler Connections').
8. Connect the electrical supply (see 'Electrical Connections').
9. Complete the installation as outlined in 'Commissioning the Unit'.

N.B. Boiler Connections

The boilers have three Rc 1 (1" BSPT internal) connections on the right-hand side and are supplied with the following fittings:

- 1 — injector tee and 1 — R1 (1" BSPT) plug both supplied loose.

Installation of Water Circulation System

(BS 5376:2, BS 5449:1, CP 342:1)

Pumped Domestic Hot Water and Pumped Central Heating System

The pipes should be connected in the following order: See Fig. 5 for example.

- (a) Fit the injector tee provided in the bottom return tapping on the boiler using suitable jointing compound. Do not use excessive jointing compound which may obstruct the holes in the plastic water spreader.
- (b) Plug the unrequired flow connection (top front).
- (c) Plug the unrequired Rp $\frac{3}{4}$ ($\frac{3}{4}$ " BSP) return connection on the 'T' and then connect the return pipework to the Rp 1 (1" BSP) connection on the 'T'. This return pipework can be run either upwards or downwards.
- (d) Connect the flow pipework as shown in Fig. 5 if running upwards or run at the side of the return pipework if running downwards.
- (e) When installing this pipework ensure that:
 - (i) Suitable union fittings are used at the first joint of all boiler connections.
 - (ii) The pipework will run through the cutouts provided in the outer case when fitted. (Fig. 1).
 - (iii) Drain off points should be provided as appropriate.
 - (iv) Pipe sizes are suitable for the system design.

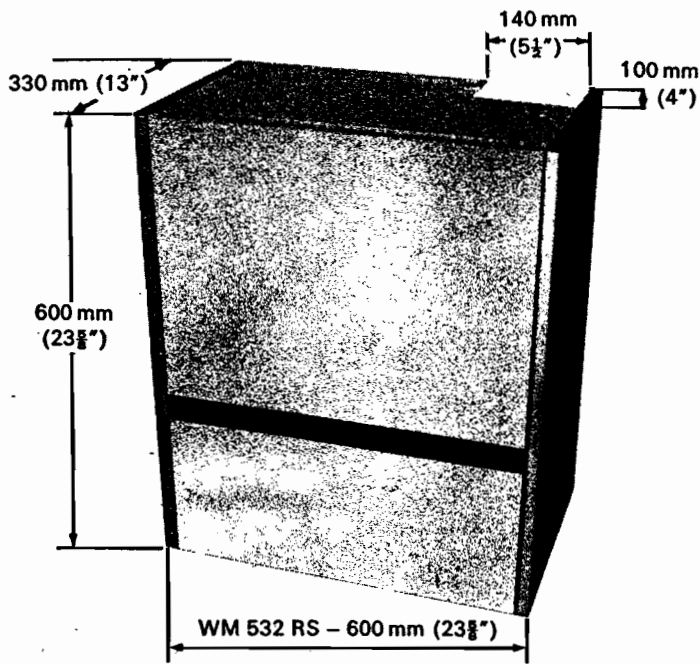
Gravity Domestic Hot Water and Pumped Central Heating System

The pipes should be connected in the following order, see Fig. 6 for example.

- (a) Fit the injector tee provided in the bottom return tapping WITH THE BRANCH FACING DOWN. Do not use excessive jointing compound which may obstruct the holes in the plastic water spreader.
- (b) Connect the gravity return pipework to the Rp 1 (1" BSP) tapping on the 'T'.
- (c) Connect the gravity flow pipework.
- (d) Connect the pumped return pipework to the Rp $\frac{3}{4}$ ($\frac{3}{4}$ " BSP) tapping on the 'T'.
- (e) Connect the pumped flow pipework upwards as illustrated or downwards behind the pumped return pipe.
- (f) When installing the pipework ensure that:
 - (i) Suitable union fittings are used at the first joint of all boiler connections.
 - (ii) The pipework will run through the cutouts provided in the case when it is fixed. (Fig. 1).
 - (iii) Drain off points should be provided as appropriate.
 - (iv) Pipe sizes are suitable for the system design.

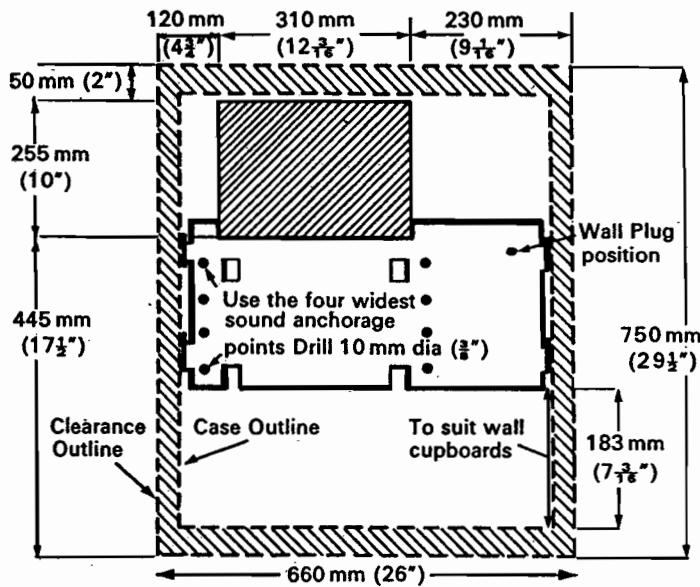
Gas Connection (Fig. 6)

Adapt the gas supply 15 mm ($\frac{1}{2}$ " BSP) within the outer casing to suit the particular flow and return arrangement, making the gas connection to the gas service tap. Connect to the service tap using either an ext/int malleable iron elbow or BSPT/capillary elbow.

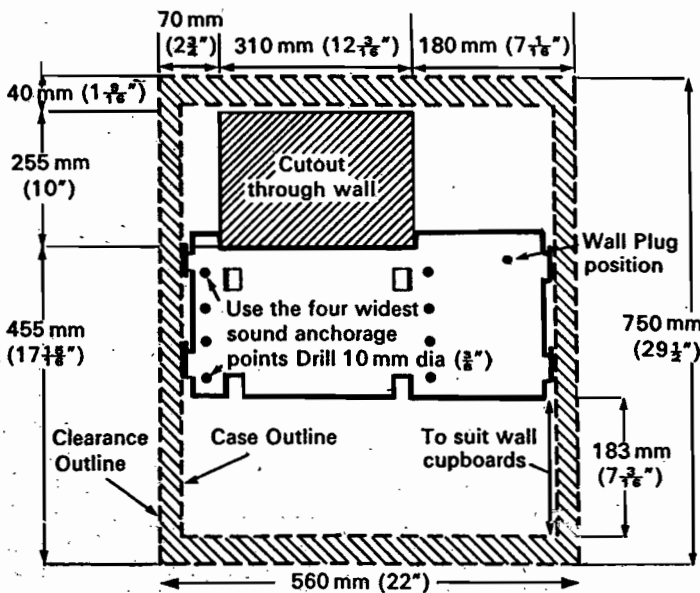


1. The Unit

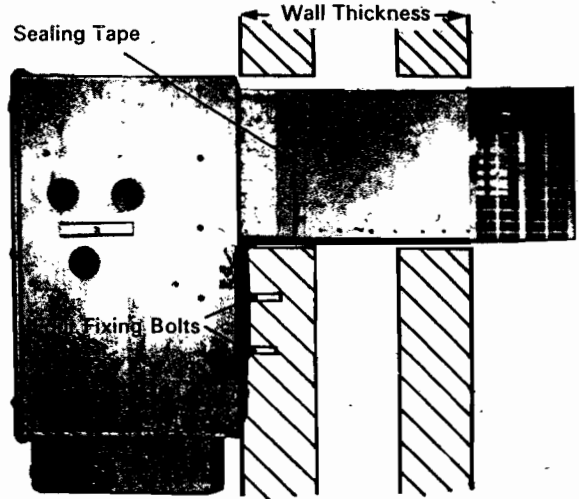
WM 381 RS - 500 mm (19 5/8 inches)
and WM 281 RS



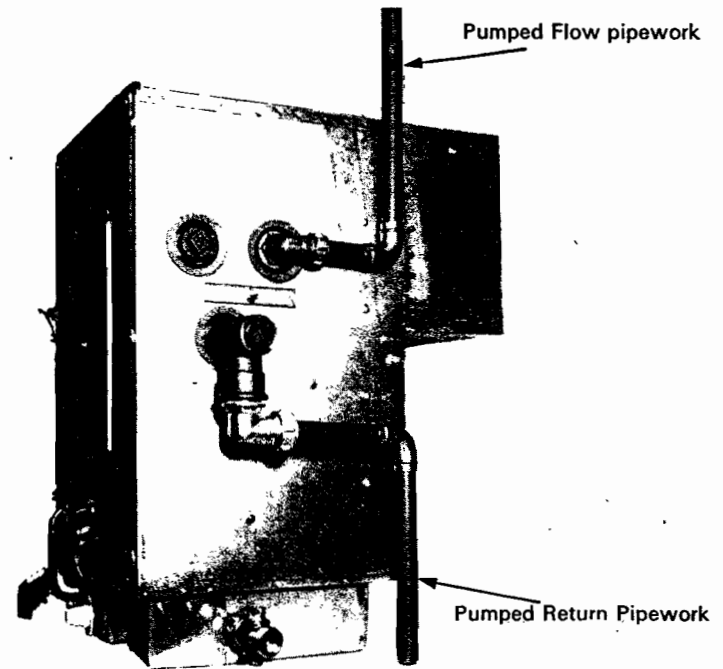
2. WM 532 RS Wallmounting Plate requirements



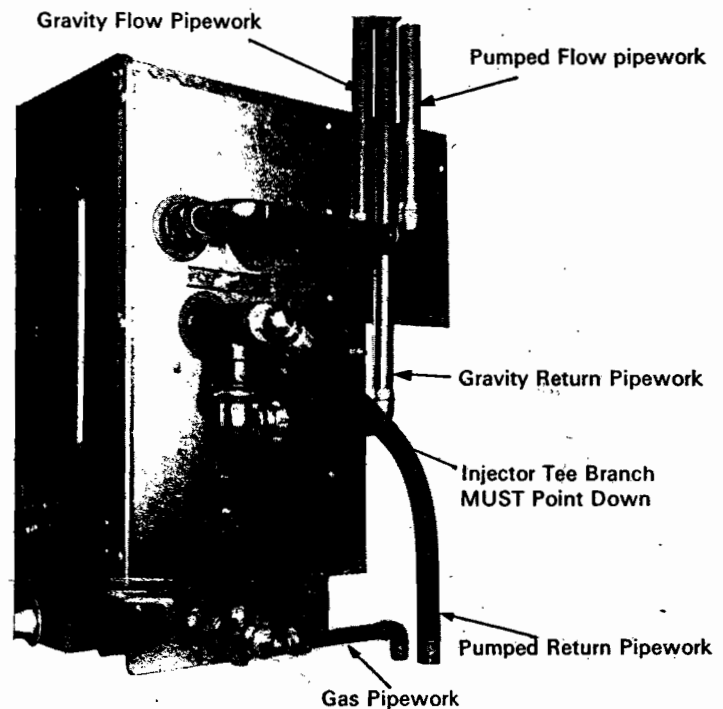
3. WM 381 RS and WM 281 RS Wallmounting Plate requirements



4. Securing the Combustion Box



5. Boiler Connections (1)



6. Boiler Connections (2)

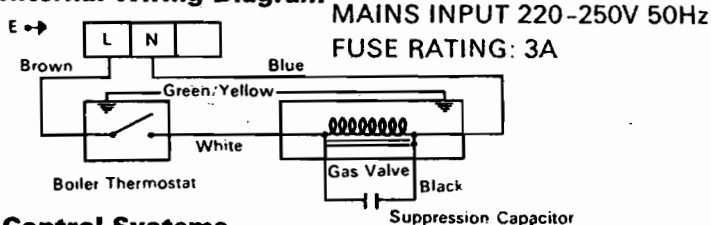
General

The mains supply required is 220/250V 50 Hz fused at 3 amp. A double pole switch should be provided in the installation or an unswitched socket outlet should be used. All external wiring shall be correctly earthed and polarised and generally in accordance with IEE regulations.

Electrical Supply to Controls

1. The recommended cable for connection to the appliance terminal strip is 0.5 sq.mm 16/20 PVC heat resistant grade or 23/0076 PVC heat resistant grade or equivalent PVC heat resistant grade
2. The input cable should be secured with the cable clip(s) provided and pass behind the boiler support bracket(s) on the underside of the combustion box.

Internal Wiring Diagram



Control Systems

A selection of control systems is indicated with the appropriate heating circuit arrangements (Figs. 10-16). Connect the electrical controls system to the unit as follows:

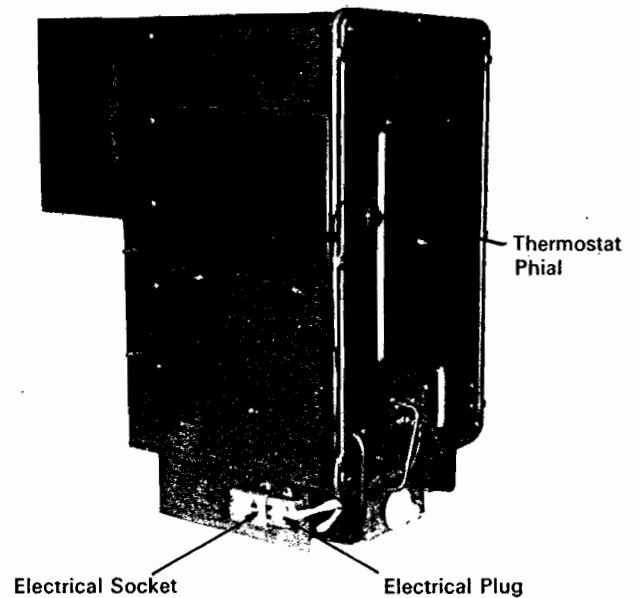
1. Disconnect the electrical plug and socket by pulling the plug forwards in the direction of the arrow, after first removing the retaining screw, nut and washer, (Fig. 7.)
2. Remove the electrical socket by removing the retaining screw, nut and washer. (Fig. 7.)
3. Feed the input electrical cable behind the boiler support bracket(s) beneath the combustion box to the electrical socket and then connect the live and neutral wires as indicated inside the socket and run approximately 50 mm (2") of the earth wire through the slot in the side of the housing. Clamp the cable using the cable grip provided.
4. Refit the electrical socket in the position provided at the back left-hand side of the appliance and replace the retaining screw, nut and washer. Connect the earth wire to the point provided. (Fig. 7.)
5. Clip the input electrical cable to the cable grip(s) provided ensuring that the cable does not touch the underside of the combustion box.
6. Refit the electrical plug to the socket and replace the retaining screw, nut and washer.

1. Flush the whole system with all valves open.
2. Fill the system with water, vent the radiators and check for water leaks.
3. Connect the gas supply pipe and then turn the gas service tap clockwise to the 'on' position. Check for gas soundness. (CP 331 part 3)
4. Purge the air from the supply pipe at the gas service tap.
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. 8.)
7. Turn on the mains electricity supply.
8. Slacken the burner pressure test point screw $\frac{1}{2}$ turn and connect a pressure gauge.
9. Hold in the grey on/off button on the gas control valve. (Fig. 8.)
10. Press in the igniter button and release. Repeat until pilot lights. Hold in grey on/off button for a further 20 seconds and then release. The pilot should then stay alight. If pilot fails to remain alight turn the grey on/off button clockwise, wait three minutes and start again from 9. The flame should be without a yellow tip and be approximately 25 mm (1" long). Adjust if necessary (Fig. 8). (Turn the restrictor screw anticlockwise to increase the flame length.)
11. Operate the burner by turning the thermostat knob to the high setting.
12. Remove the cover screw and adjust the appliance governor to give the correct pressure corresponding to the required input. See table below. Check this pressure after 10 minutes and adjust if necessary. (Fig. 8.)
13. Turn the boiler thermostat to the 'off' position and re-check the pilot flame length. Adjust if necessary. (Fig. 8.)
14. The system should be flushed again, when hot, refilled, vented and checked for water leaks.
15. Make a final check for gas soundness.
16. Retighten the burner pressure test point screw and then turn the boiler thermostat to the required setting.
17. Turn off the electrical supply.

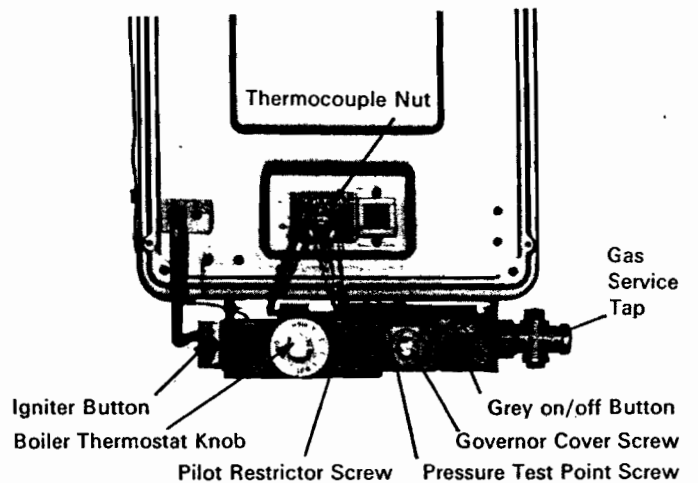
Setting Pressures

Appliance	Maximum Input	Setting Pressure	Intermediate Input	Setting Pressure	Minimum Input	Setting Pressure
WM 532 RS	21.5 kW 73,400 Btu/h	17.6 mbar 7.0 in wg	16.3 kW 55,600 Btu/h	10.2 mbar 4.1 in wg	10.3 kW 35,200 Btu/h	4.4 mbar 1.8 in wg
WM 381 RS	15.15 kW 51,700 Btu/h	17.5 mbar 7.0 in wg	10.77 kW 36,700 Btu/h	9.0 mbar 3.6 in wg	6.2 kW 21,000 Btu/h	2.7 mbar 1.1 in wg
WM 281 RS	10.64 kW 36,400 Btu/h	14.7 mbar 5.9 in wg	8.21 kW 28,000 Btu/h	9.0 mbar 3.6 in wg	5.86 kW 20,000 Btu/h	4.7 mbar 1.9 in wg

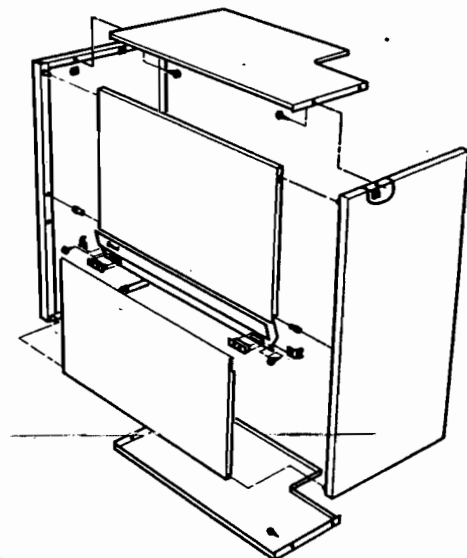
18. Assemble the outer case in the following manner leaving the top front panel off, (Fig. 9).
 - (a) Place the top panel on a flat solid surface face down, ensuring that the cutout for the pipes is at the back left-hand side of the panel.
 - (b) Position the right-hand side panel to the left of the top panel (top labels together) and line up the holes in the top panel with the clips in the side panel. Secure using two screws provided.
 - (c) Position the other side panel next to the top panel and secure as above using two screws.
 - (d) Turn the assembly upside down positioning the bottom panel between the two side panels and secure the left-hand side panel to the bottom panel.
 - (e) Position the lower front panel to the side panels such that the bottom pegs in the side panels locate in the lower front panel holes. Secure the bottom panel to the right-hand side panel.
 - (f) Remove the two right angled clips from the bag and tap in position so they are securely located in the vacant slots in the side panels.
19. Lift the outer case onto the lugs on the wall fixing plate, taking care not to damage the loose lower front panel.
20. Fit the upper front panel on the pegs on the side panel and secure at the bottom using the two short flanged head screws provided. Raise the lower front panel until it is held by the magnets on the panel behind.
21. Turn on the electrical supply.
22. Instruct the customer in the use of the unit.



7. Electrical Connections



8. Controls



9. Outer Case

1. Pipe Sizing

- (a) The sizes of flow and return pipes from the boiler should be determined by normal methods according to the requirements of the system. Assuming a 11°C (20°F) drop across the system it is recommended that the main flow and return pipes should be sized in accordance with the table below.

Total Load		Flow Rate of Water		Pipe Size
kW	Btu/h	l/m	lbs/h	
15.5	53,000	201	2,650	28 mm
11.1	38,000	144	1,900	22 mm
7.3	25,000	95	1,250	22 mm
4.4	15,000	57	750	15 mm

- (b) The open vent pipe must be a minimum of 22 mm and must rise continuously to above the feed tank. The flow pipe from the boiler may form part of the open vent. No part of the open vent should contain a valve.
- (c) The cold feed pipe, 15 mm, should be connected to the return main as near as possible to the boiler and should not include a valve unless required by the local water authority.

2. Feed System

- (a) The bottom of the feed tank should be a minimum of 1 m (3') above the highest point in the circulation system.
- (b) With the pump in the flow as shown, the total resistance to flow between points C and A (cold feed entry to vent position including the boiler) must not exceed the height between point A and the bottom of the tank. With a minimum tank height of 1 m (3') above the open vent connection this can be achieved with pipe lengths as indicated below.

Load		Flow rate of water		F & R pipe size	Max. length of pipe from A to B to C*
kW	Btu/h	l/m	lbs/h		
15.5	53,000	201	2,650	28 mm	9 m (30')
11.1	38,000	144	1,900	22 mm	4.5 m (15')
7.3	25,000	95	1,250	22 mm	6 m (20')
4.4	15,000	57	750	15 mm	7.5 m (25')

*An allowance has been made for the resistance of fittings. Increasing the tank height permits the use of greater lengths between these points to meet different circumstances.

Fuel Economy

When designing a control system for a central heating installation, better fuel economy is achieved by exercising control of the boiler from a room thermostat or cylinder thermostat as appropriate. Allowing the boiler to cycle under the control of the boiler thermostat does not produce the best results. The examples given below and on the following pages indicate alternatives to meet different circumstances.

Fully Pumped Systems

One Zone Valve (fig. 12)

Zone valve with auxiliary switch fitted at point V. A cylinder thermostat and a room thermostat are used to control both the pump and the boiler. The room thermostat also controls the zone valve to stop water circulation in the heating system.

Two Zone Valves (fig. 13)

Zone valves are fitted at points V and U to stop water circulation to the heating system and the cylinder. The valves are controlled by a room thermostat and a cylinder thermostat respectively, each of which also control the boiler and the pump.

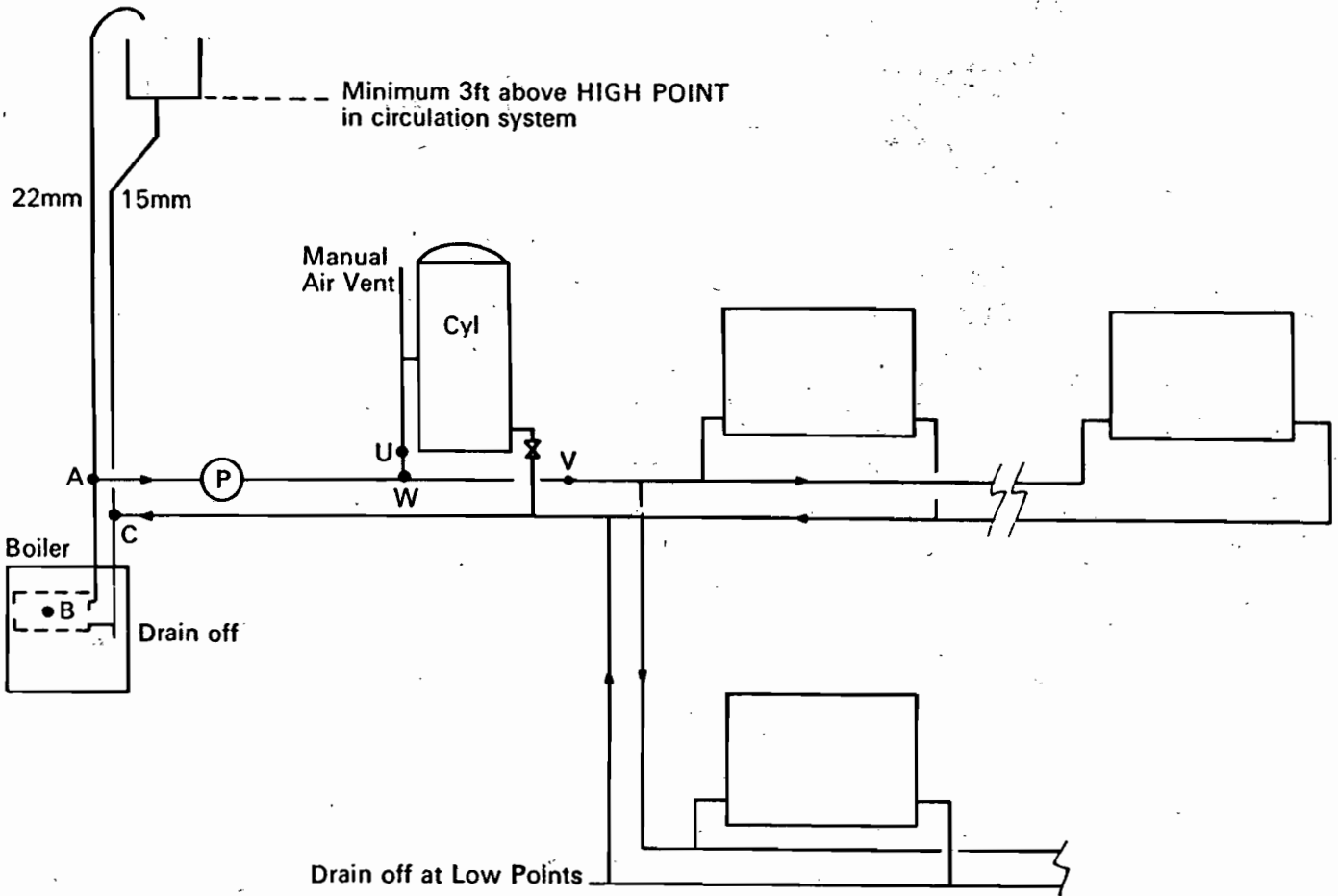
Diverter Valve (fig. 14)

A diverter valve is inserted at point W to direct water circulation to either the cylinder or the heating system. The valve along with the pump and the boiler is controlled by a cylinder thermostat and a room thermostat.

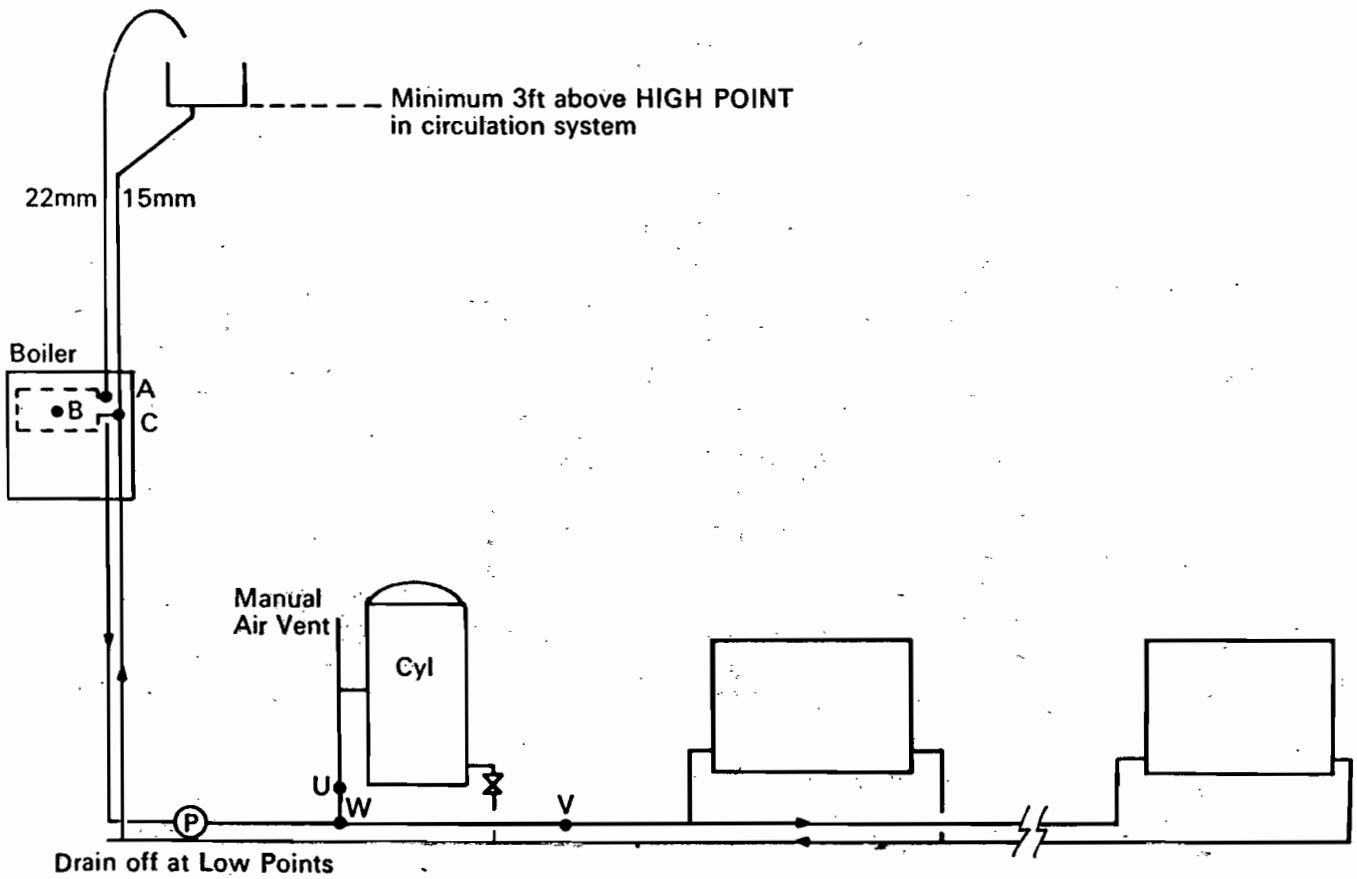
Gravity D.H.W. Systems

Sundial Control

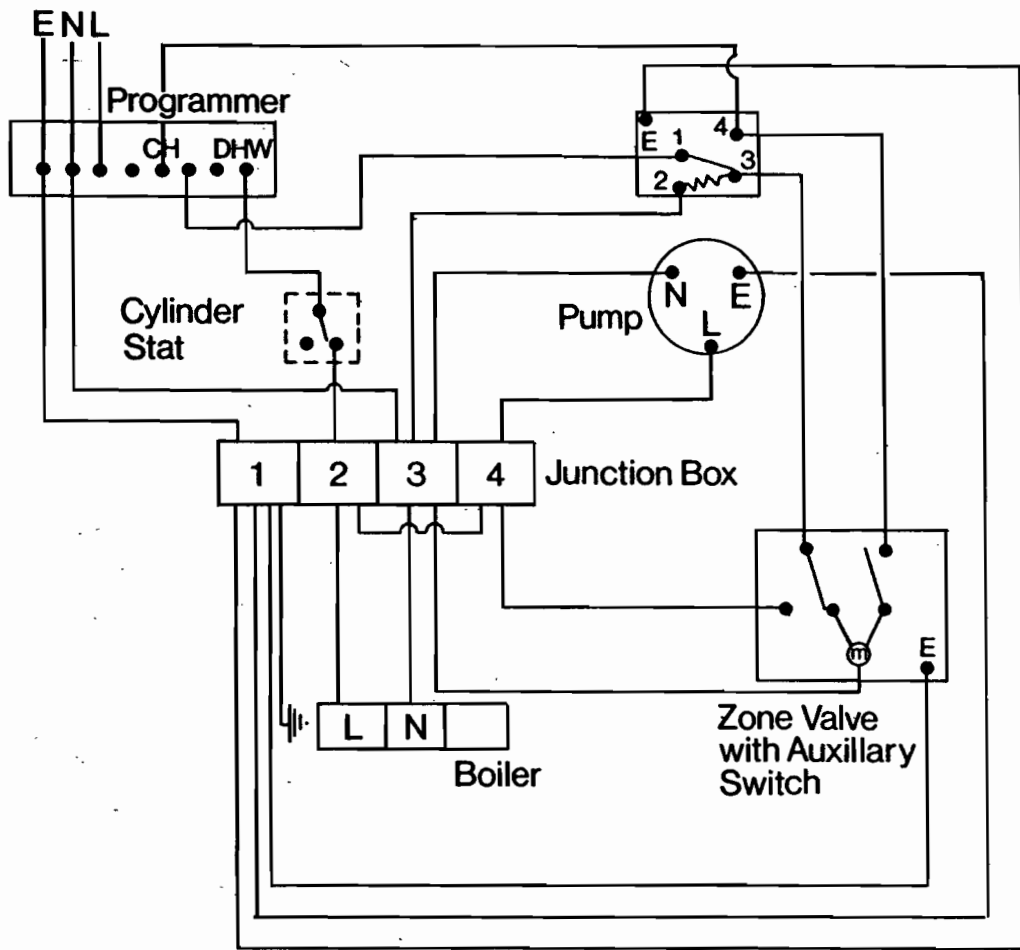
Both the boiler and the pump are controlled by a cylinder thermostat and a room thermostat. The room thermostat overrides the cylinder thermostat when heating is called for.



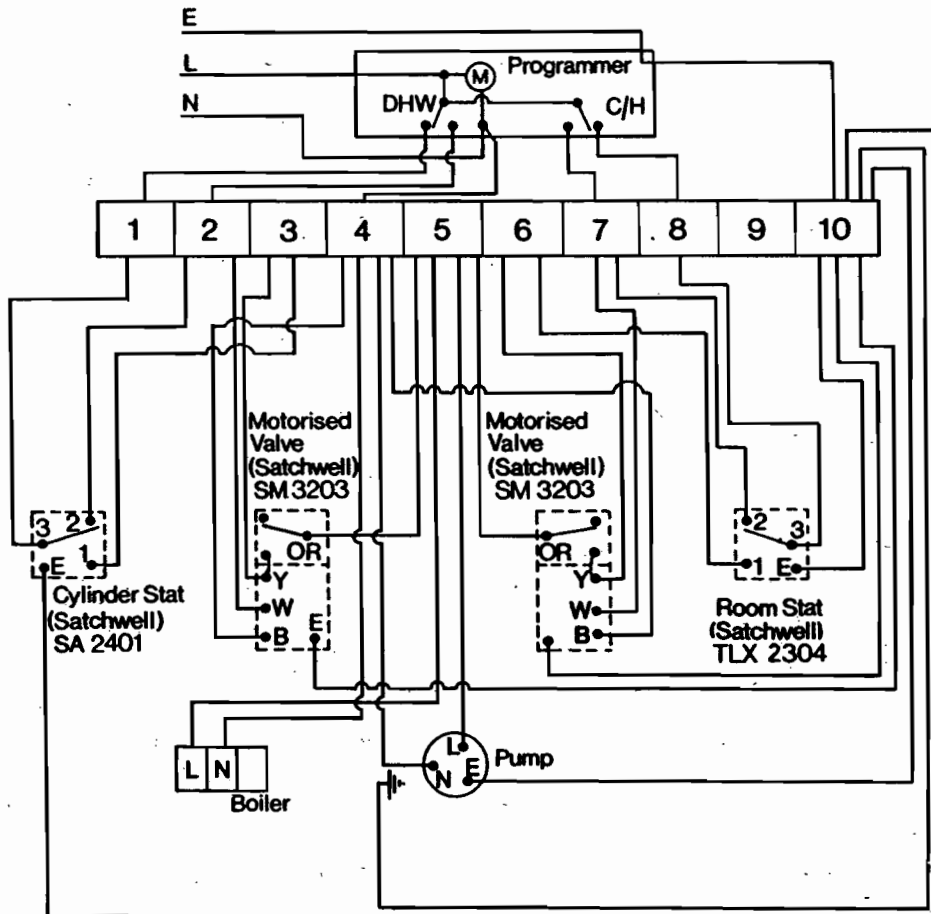
10. Rising Flow and Return Pipes



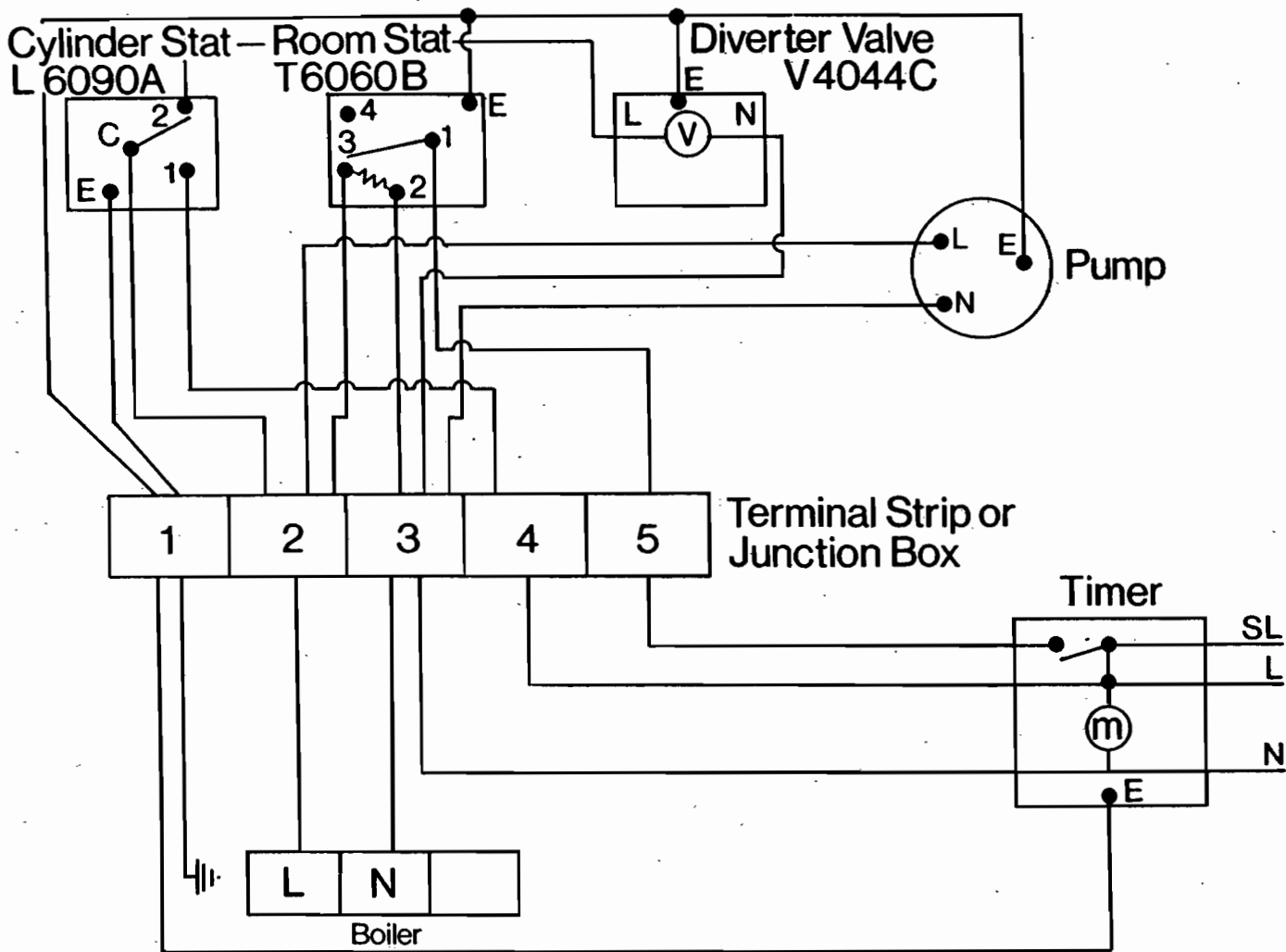
11. Dropping Flow and Return Pipes



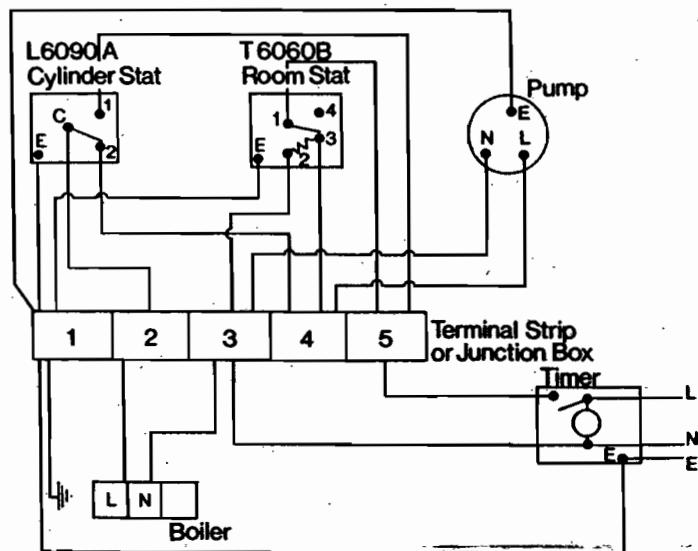
12. One Zone Valve—Fully Pumped System



13. Two Zone Valves—Fully Pumped Systems



14. Diverter Valve-Fully Pumped System

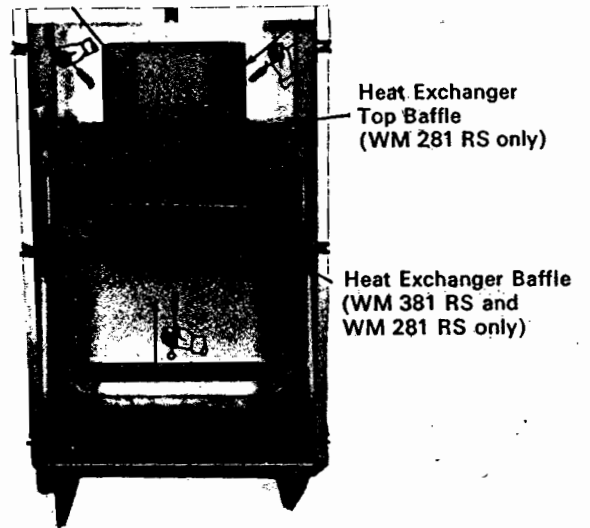


16. Sundial Control-Gravity Domestic Hot Water

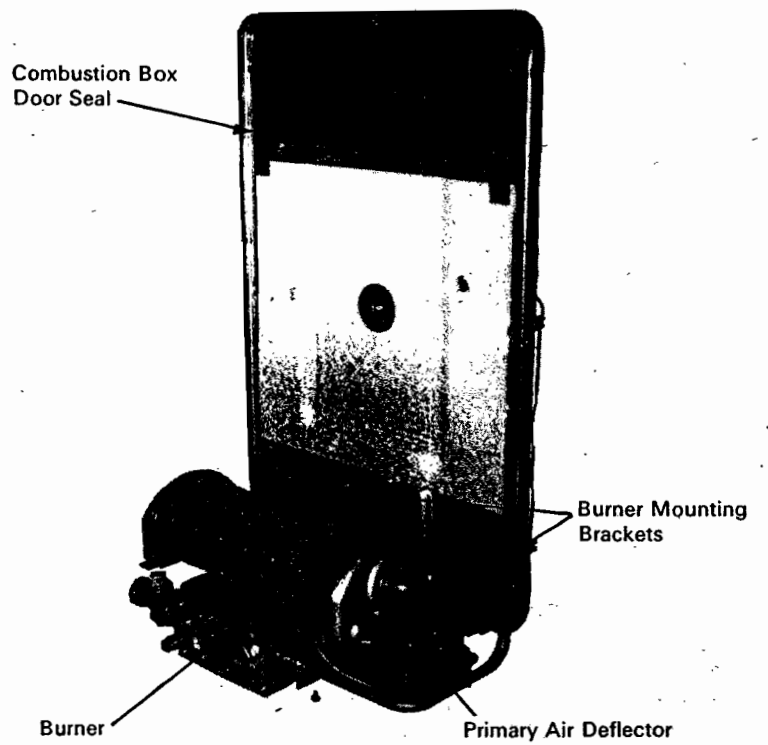
Servicing the Unit

Instructions 1–26 are for maintenance to be carried out annually.

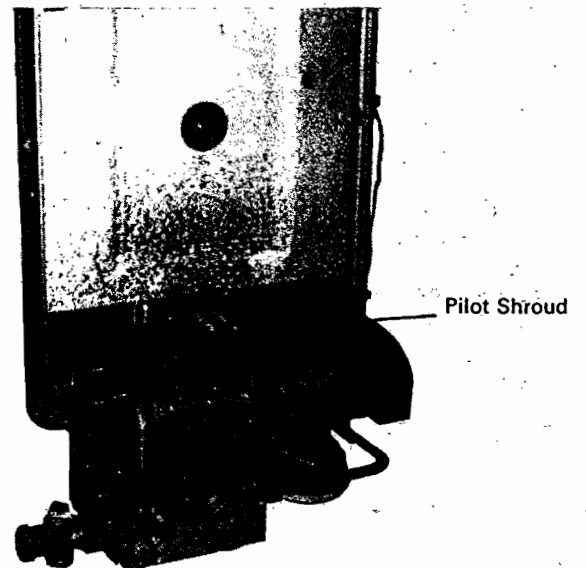
1. Turn off the electrical supply to the boiler.
2. Remove the outer case in the following manner:
 - (a) Drop the lower front casing panel exposing the two flanged head screws.
 - (b) Remove the two screws and lift the upper panel to disengage from the side panels.
 - (c) Lift the case out of the lugs on the wall fixing plate and pull clear of the combustion chamber taking care not to damage any of the panels.
3. Turn off the gas supply at the service tap and disconnect the union.
4. Disconnect the electrical plug by pulling in the direction of the arrow after first removing the retaining screw, nut and washer. (Fig. 7)
5. Remove the thermostat phial from the housing. (Fig. 7)
6. Remove the flange headed screws securing the combustion box door, WM 532 RS (10) WM 381 RS and WM 281 RS (8).
7. The combustion box door complete with all the controls can now be removed. Ease the assembly forward horizontally until the burner is clear of the combustion box bottom panel and place to one side.
8. Remove any dirt that has accumulated in the flue outlet duct.
9. (a) (WM 381 RS only). Remove the insulation securing plate at the bottom left-hand side of the combustion box and place the insulation to one side.
(b) Remove the baffle between the heat exchanger sections where applicable.
10. Clean the top section of the heat exchanger with a bristle brush from back to front and then end to end in between the finned tubes. Brush between the two heat exchanger sections and clean the underside of the lower section as the top section taking care not to damage the insulation on the side(s) and back of the combustion chamber. Brush out the bottom of the combustion chamber, ensuring air opening at rear is clear (Fig. 17).
WM 381 RS—Clean the gap down the left-hand side of the heat exchanger ensuring the slots in the support bracket are clear.
Suitable brushes for cleaning the heat exchanger are:
50 mm (2") diameter × 150 mm (6") bristle brush
25 mm (1") diameter × 63 mm (2½") long bristle brush
11. Clean the burner as follows:
Disconnect the burner feed pipe at the union connection on the burner elbow.
 - (a) Remove the four screws securing the burner mounting brackets to the combustion box door. (Fig. 18)
 - (b) Remove the nut and washer securing the burner end plates and dismantle the burner. Clear away any lint or deposits that may have accumulated inside the burner. Replace the end plates, nut and washer, ensuring the gaskets are not damaged and fit flush to their sealing faces. Replace if necessary.
- (c) Remove the primary air deflector from the injector end of the burner. (Fig. 18)
- (d) Disconnect the locknut securing the burner elbow to the burner and remove the elbow complete with the injector.
- (e) Remove the injector from the burner elbow and clean carefully.
12. Clean the pilot as follows:
 - (a) Unscrew the pilot tubing nuts at both ends and remove the pilot tube. Remove and clean the pilot injector and the pilot shroud (Fig. 19). Reassemble the pilot details and then the burner in reverse order of dismantling, ensuring the burner body is horizontal to the burner end plates.
13. Reassemble the combustion box door assembly in reverse order of dismantling. Check that the combustion box door seal is undamaged. Replace if necessary.
14. Reconnect the gas union at the service tap. Turn on the tap and check for gas soundness.
15. Re-fit the electrical plug and replace the retaining screw, nut and washer. Turn the thermostat knob to the 'OFF' position.
16. Replace the thermostat phial and plug in the housing.
17. Re-fit the outer case in reverse order of dismantling, leaving the top front panel off.
18. Hold in the grey on/off button on the gas control valve (Fig. 8).
19. Press in the igniter button and release. Repeat until pilot lights. Hold in the grey on/off button for a further 20 seconds and then release. The pilot should then stay alight. If the pilot fails to remain alight turn the grey on/off button fully clockwise and release, wait three minutes and start again from 19. The flame should be without a yellow tip and be approximately 25 mm (1") long. Adjust if necessary (turn the restrictor screw anti-clockwise to increase flame length). (Fig. 8.)
20. Turn on the electricity supply to the boiler.
21. Slacken the pressure test point screw, ½ turn, connect a pressure gauge and operate the burner by turning the thermostat knob to its highest setting, (Fig. 8).
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. (Turn screw clockwise to increase pressure) and alter position of input indicator arrow on data label to suit (Fig. 8).
23. Turn the boiler thermostat to the 'OFF' position and tighten the pressure test point sealing screw.
24. Re-check the pilot flame length and adjust if necessary.
25. Turn the boiler thermostat to its original setting.
26. Replace the top front panel and secure using the two screws, then lift the lower front panel until it is held by the magnets.



17. Heat Exchanger



18. Burner Assembly



19. Pilot

Servicing the Unit (Contd.)

Removal/Exchange of Individual Components

Thermocouple

1. Remove the outer case as described in the boiler servicing instructions, item 2, after first turning off the electrical supply, then:
 - (a) Turn off the gas supply at the service tap.
 - (b) Release the thermocouple nut from behind the gas valve (access from underneath the appliance), (Fig. 20).
 - (c) Release the thermocouple nut at the pilot bracket, (Fig. 20).
 - (d) Reassemble parts in reverse order of dismantling.

(If the appliance is at low level and access to the thermocouple nut behind the gas valve is limited, remove the combustion box door assembly as described in the servicing instructions, items 1-7 inclusive.)

Injector

Remove the combustion box door assembly as described in the servicing instructions from item 1-7 inclusive.

- (a) Disconnect the burner feed pipe at the union connection on the burner elbow.
- (b) Remove the four screws securing the burner mounting brackets to the combustion box door.
- (c) Remove the primary air deflector from the injector end of the burner.
- (d) Disconnect the locknut securing the burner elbow to the burner and remove the elbow complete with the injector.
- (e) Remove the injector from the burner elbow.
- (f) Replace parts in reverse order of dismantling.

Burner

Remove the combustion box door assembly as described in the servicing instructions items 1-7 inclusive. Disconnect the burner feed pipe at the union connection on the burner elbow.

- (a) Remove the four screws securing the burner mounting brackets to the combustion box door.
- (b) Remove the two burner mounting brackets, primary air deflector, burner elbow and injector if these parts are not to be exchanged, (Fig. 20).
- (c) Reconnect in reverse order of dismantling, ensuring that the burner is parallel to the combustion box door and the primary air deflector is on the side nearest the door.

Boiler Thermostat

Remove the outer case from the appliance and turn off the electrical supply as described in the servicing instructions items 1 and 2.

- (a) Remove the thermostat phial from the housing and disengage the capillary from the clips down the left-hand side of the door.
- (b) Remove the thermostat knob by pulling forwards.

- (c) Remove the screw securing the thermostat housing to its mounting bracket. Tilt the complete assembly forwards, release the lug from the locating slot and disconnect the three spade electrical connections. Release the capacitor from inside the thermostat box. The thermostat housing can now be removed from the appliance.
- (d) Remove the nut and washer securing the thermostat to the housing.
- (e) Replace the thermostat and reassemble in reverse order of dismantling, ensuring the green/yellow wire is fitted to the earth tag on the thermostat.

Honeywell Gas Valve

Remove the combustion chamber door as described in the servicing instructions 1-7 inclusive.

- (a) Disconnect the thermocouple nut behind the gas valve.
- (b) Disconnect the burner feed pipe nut at the gas valve end and release the pipe.
- (c) Remove the screw securing the thermostat housing to its mounting bracket. Tilt the complete assembly forwards, release the lug from the locating slot and disconnect the three spade electrical connections.
- (d) Disconnect the pilot feed pipe nut at the gas valve end.
- (e) Disconnect the screws securing the gas valve to the mounting brackets.
- (f) Remove the gas valve and if individual sub-components of the valve are to be replaced, refer to the maker's instructions.
- (g) If the complete valve is to be replaced remove the adaptor and union connector from the inlet and outlet connections. Remove the pressure test extension.
- (h) Remove the small screw at the pressure test point and discard.
- (i) Reassemble the new valve, using suitable jointing compound, in reverse order of dismantling.
- (j) Check and adjust governor if necessary to give correct burner pressure as shown on data badge.

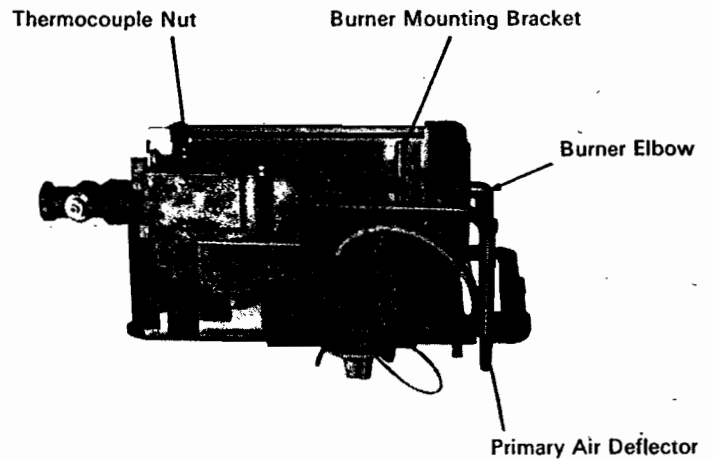
Insulation in Combustion Chamber

Remove the combustion box door as described in the servicing instructions items 1-7 inclusive.

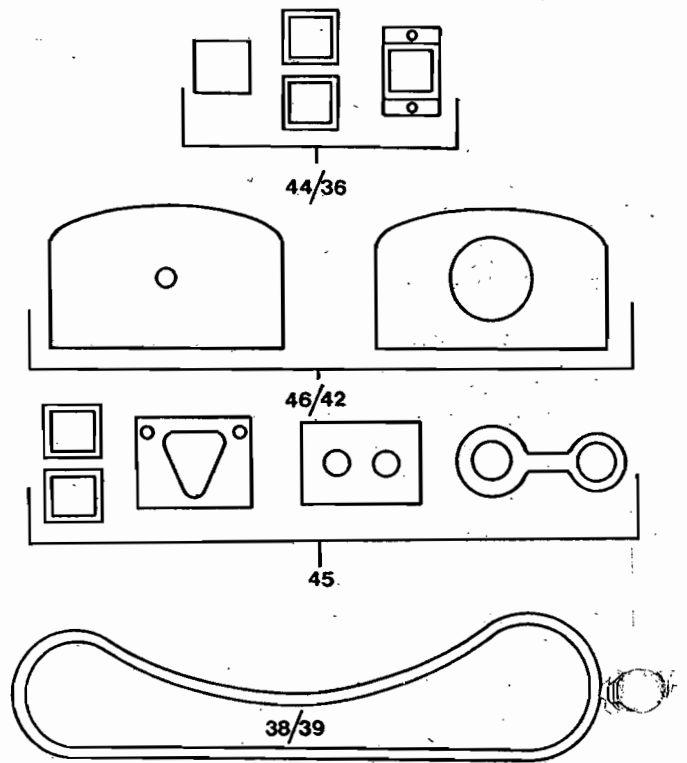
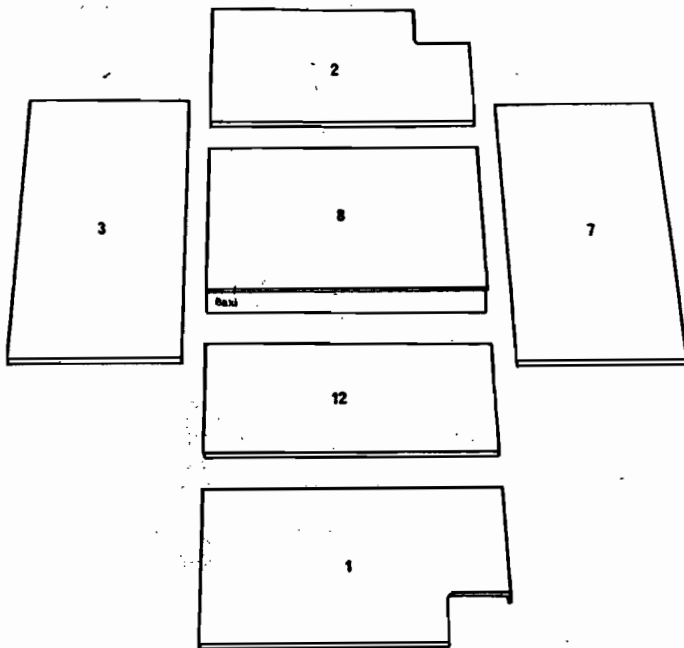
- (a) *Front and Side Panel Insulation*
Remove any brackets, plates securing the insulation as necessary and replace in reverse order of dismantling, ensuring the parts are correctly positioned.
- (b) *Rear Panel Insulation*
Remove the screw securing the plate and then slide the insulation panel upwards out of the retaining 'U' section at the bottom and then pull outwards at bottom and remove. Reassemble in reverse order of dismantling, taking care not to damage the insulation.

Heat Exchanger

- (a) Remove the combustion box door as described in the servicing instructions items 1–7 inclusive.
- (b) Drain off the central heating system to the boiler.
- (c) Disconnect the water union connections at the appliance.
- (d) Remove all the fittings that are secured to the heat exchanger tappings.
- (e) Slacken the nut securing the heat exchanger latching screw at the right-hand side of the combustion chamber and turn the screw anti-clockwise until it reaches the heat exchanger. Tighten the nut until most of the screw is outside the combustion chamber.
- (f) (WM 281 RS only). Remove the three sections of insulation at the left hand side of the heat exchanger by lifting upwards.
- (g) Push the heat exchanger towards the left-hand side of the combustion chamber and remove the three ring gaskets at the heat exchanger tappings.
- (h) Remove the baffle(s) in between and above the heat exchanger sections where applicable.
- (i) Remove the heat exchanger from the appliance and clean out any dirt that has accumulated inside the combustion box.
- (j) When replacing the heat exchanger ensure that the hole for the thermostat phial is in the bottom casting at the left-hand side.
- (k) Reassemble in reverse order ensuring that the three ring gaskets are correctly positioned to ensure the room seal and the combustion chamber door is not damaged.
- (l) Ensure that the heat exchanger baffle(s) are replaced correctly where applicable and that, on the WM 281 RS only, the three pieces of insulation at the left hand side of the heat exchanger are replaced.



20. Control Valve



SHORT PARTS LIST

WM 532RS G.C. No 41 077 06
 WM 381RS G.C. No 41 077 05
 WM 281RS G.C. No 41 077 07

British Gas Corporation		Description	Manufacturers Part No.
Key Number	Number		
1	364 170	Panel Bottom – WM 532 RS	100121
1	364 126	Panel Bottom – WM 381/281 RS	100093
2	364 171	Panel Top – WM 532 RS	100122
2	364 127	Panel Top – WM 381/281 RS	100118
3	364 128	Kit Panel Side L/H – WM 532/381/281 RS	100091
7	364 129	Kit Panel Side R/H – WM 532/381/281 RS	100092
8	364 172	Panel Front – WM 532 RS	100123
8	364 130	Panel Front – WM 381/281 RS	100090
12	364 174	Panel Door – WM 532 RS	100124
12	364 133	Panel Door – WM 381/281 RS	100095
36/44	364 143	Kit – Sight Window	100134
39	364 181	Seal Front Panel – Combustion Box – WM 532 RS	102134
38	364 140	Seal Front Panel – Combustion Box – WM 381/281 RS	102135
40	364 182	Burner Boiler – WM 532 RS	100126
42/46	364 145	Kit Gaskets Burner – WM 532/381/281 RS	100133
43	364 183	Injector N.G. – WM 532 RS	102125
45	364 144	Kit Gaskets – Front Panel – WM 532/381/281 RS	100128
48/56	393 180	Valve Control Honeywell V4600C – 1029	062623
50	364 148	Burner Boiler – WM 381/281 RS	100119
52	364 150	Injector N.G. – WM 381 RS	102106
52	364 199	Injector N.G. – WM 281 RS	102147
56/62	382 313	Thermostat – Ranco G1 – 11685 – WM 532/381/281 RS	102027
57/63	183 630	Knob Thermostat – Ranco 83151/36	042717
58/64	393 444	Igniter Piezo – Kigass Corvette – O2	042722
63/71	183 628	Lead Electrode	042740
65/73	387 852	Electrode Pilot Ignition	102024
66/74	391 664	Burner Pilot – Honeywell Q 359A 1041	062638
67/75	391 645	Injector Pilot – Honeywell 0-30 a	062639
69/70	390 131	Thermocouple 18" Honeywell – Q3909A 2606	102005

