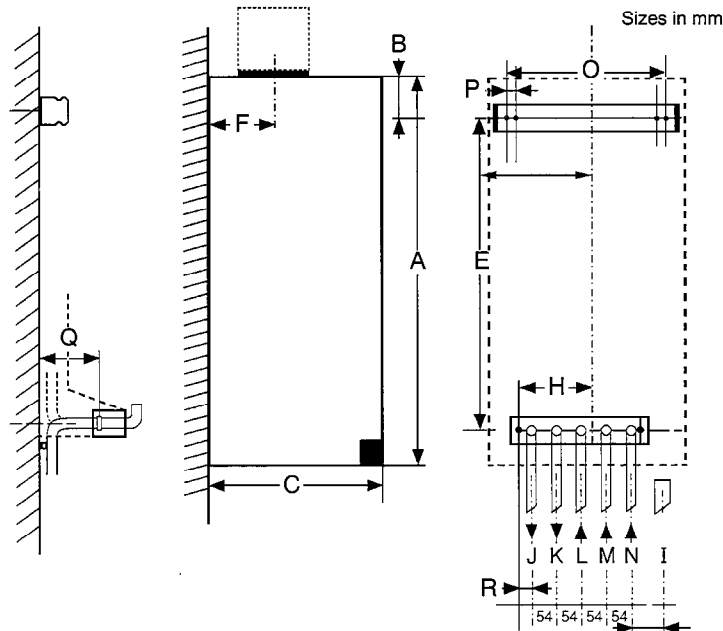
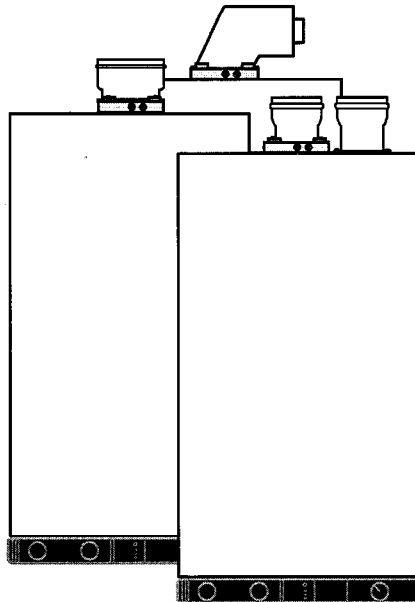


Britony combi 80 and 100

Fanned Flue Combination Boiler Heating and Instantaneous Domestic Hot Water

Dimensions



A	850
B	67
C	380
D	440
E	721
F	212
H	198
O	360
P	50
Q	190
R	40
S	155

Flue types:

C 12 C 22 or C 42: horizontal
C 32 xx: vertical concentric
C 32 xy: Twin flue

Boiler outer case dimensions :

- Height : 850
- Boiler width : 440 (minimum space required 450)
- Depth : 380

- I Safety valve outlet
- J Heating flow
- K D.H.W. flow
- L Gas supply
- M Cold water inlet
- N Heating return

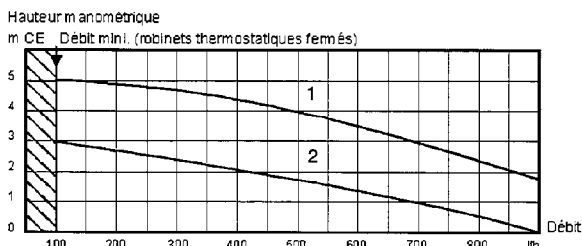
Technical data

Heat input C/H & DHW Combi 80 :	11.73 to 28.70 kW	DHW flow rate at @ 30°C Combi 80 :	11.1 l/min
Combi 100 :	15.43 to 34.57 kW	Combi 100 :	13.4 l/min
Heat output C/H & DHW Combi 80 :	9.5 to 23.25 kW	DHW flow rate at @ 35°C Combi 80 :	9.54 l/min
Combi 100 :	12.5 to 28 kW	Combi 100 :	11.5 l/min
Max. operating pressure C/H circuit :	2.5 bar	Minimum DHW operating flow rate :	2 l/min
Expansion vessel net capacity :	5.4 l	Minimum DHW working pressure :	0.1 bar
Expansion vessel initial pressure :	0.7 bar	Maximum DHW working pressure :	10 bar
Electrical consumption :	150 w	Gas category :	II 2E+ 3+
Voltage :	230 v		
Electrical protection index :	IP24		
Fuses :	2 A and 1.25 A		

Nominal gas flow rate at 15°C and 1013 mbar	BRITONY Combi 80		BRITONY Combi 100	
	Maximum power 23.25 kW	Minimum power 9.5 kW	Maximum power 28.2 kW	Minimum power 12.5 kW
-Natural gas (G 20) at 20 mbar	2.74 m ³ /h	1.22 m ³ /h	3.34 m ³ /h	1.57 m ³ /h
-Butane gas (G 30) at 28 mbar	2.04 kg/h	0.91 kg/h	2.45 kg/h	1.17 kg/h
-Propane gas (G 31) at 37 mbar	2.00 kg/h	0.89 kg/h	2.42 kg/h	1.15 kg/h

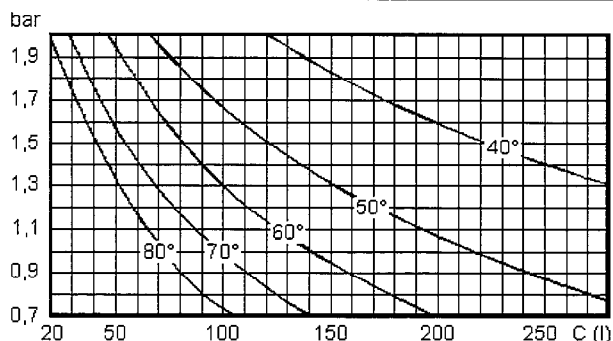
Injectors and gas valves seat diameter	BRITONY Combi 80		BRITONY Combi 100	
	Natural gas	Butane or Propane	Natural gas	Butane or Propane
-Blue solenoid restrictor diameter	2.40 mm	1.74 mm	2.80 mm	1.90 mm
-Black solenoid restrictor diameter	4.25 mm	5.00 mm	5.20 mm	3.80 mm
-Manifold injectors (16)	1.23 mm	0.72 mm	1.26 mm	0.76 mm

Pump and expansion vessel characteristics



- 1 = by-pass closed
- 2 = by-pass open

Head available / flow

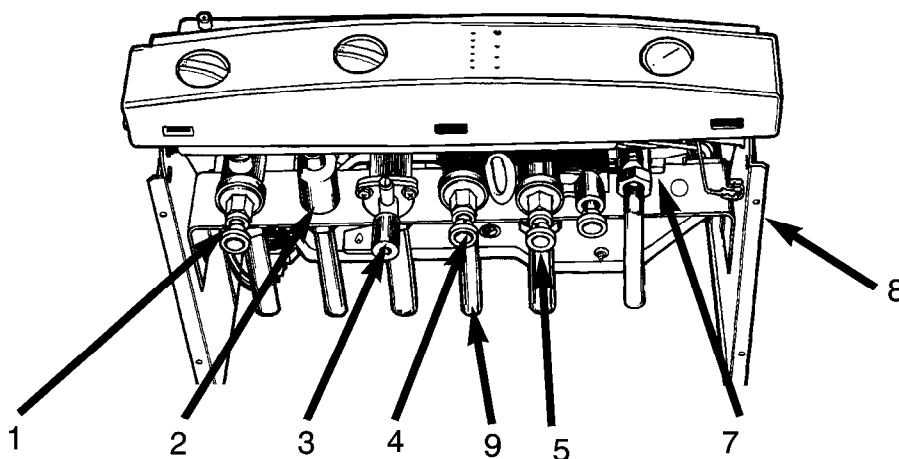


Note : The system initial pressure should be over the following value :
 $\frac{\text{System static height (in metre)} + 0.7}{10} = \text{Initial pressure (in bar)}$

Components location

1. CH Flow isolating valve
2. DHW outlet
3. Gas service tap
4. Water service tap
5. CH Return isolating valve

7. Pressure relief valve
8. Chassis
9. Connecting tails (x 5)



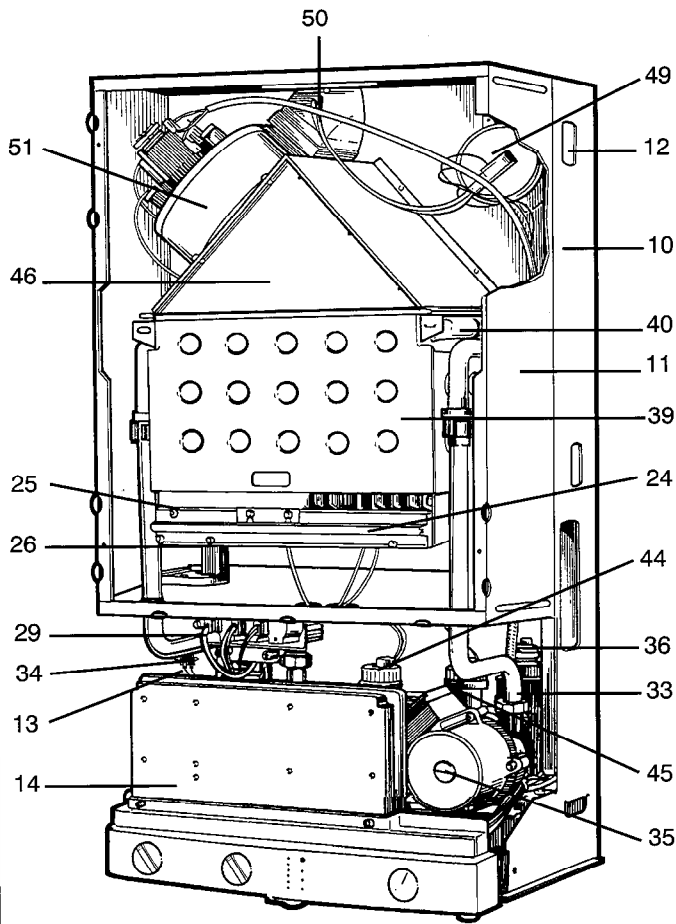
10. Steel chassis complete with expansion vessel
11. Sealed chamber
12. Expansion vessel (not visible)
13. Overheat thermostat
14. Electrical box
15. Three position selector switch
16. User's guide
17. Heating flow temperature adjustment
18. CH pressure gauge
20. Green indicator - Power ON
21. Orange indicator - Burner ON
22. Red indicator - Lock out / flame failure
23. Reset button

24. Multigas burner comprising:
 - 25. 16 burner head
 - 26. Manifold
 - 27. 2 Ignition electrode
 - 28. Ionization electrode
29. Gas section comprising:
 - 30. Security valve (grey)
 - 31. 1/3 gas stage (blue)
 - 32. 2/3 gas stage (black)
33. Right hydraulic assy
34. Left hydraulic assy
35. Single speed pump
36. Air separator
37. Heating thermistor
38. DHW thermistor

39. Combustion chamber made of aluminium coated steel with 4 ceramic fibre panels to insure heat insulation
40. Copper main exchanger
41. Stainless steel secondary plate exchanger
42. Three way valve
43. connecting bracket
44. DHW flowstat
45. Heating flowstat
46. Flue hood
47. Adjustable by-pass
49. Air Pressure switch
50. 45° elbow comprising venturi
51. Fan

FUNCTIONING

COMPONENTS LOCATION



Switching on

- 1) Check that the gas service tap is opened at the gasmeter and main power is on.
- 2) Check that pressure in central heating system is above 0.7 bar and below 2.5 bar with the pressure gauge (8).
- 3) Open the gas tap (3) by turning from right to left. ⚙️
- 4) The boiler is now ready to use.

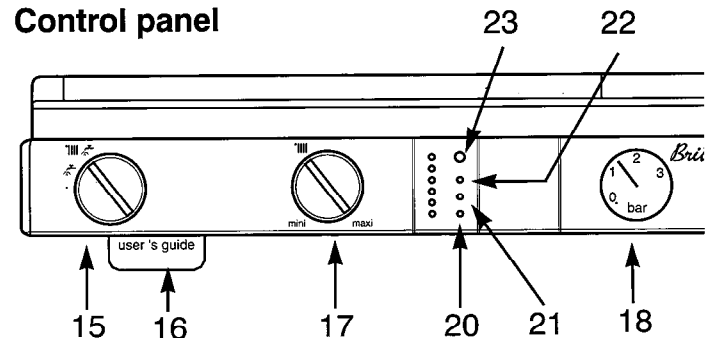
Hot Water

- 1) Turn selector switch (15) to position . The green "power on" indicator (20) will light.
- 2) Turn on a hot water tap, the orange "burner on" indicator (21) will light and the water will become hot.

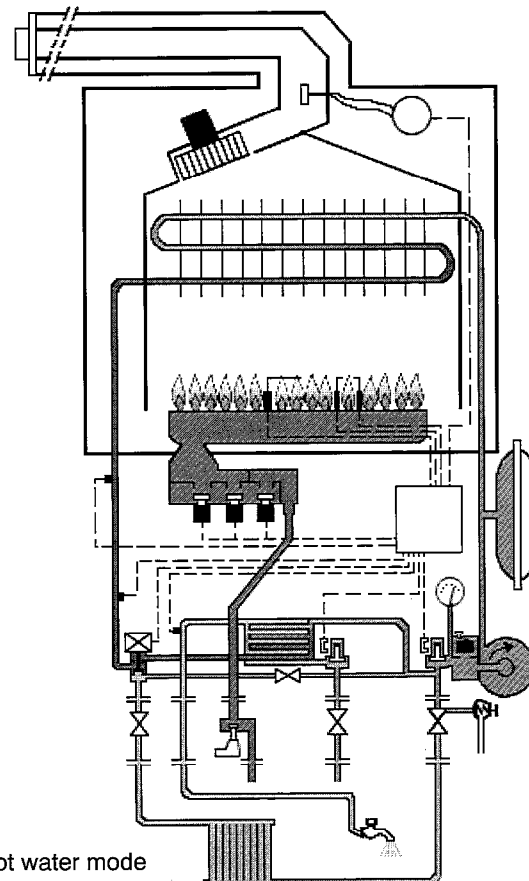
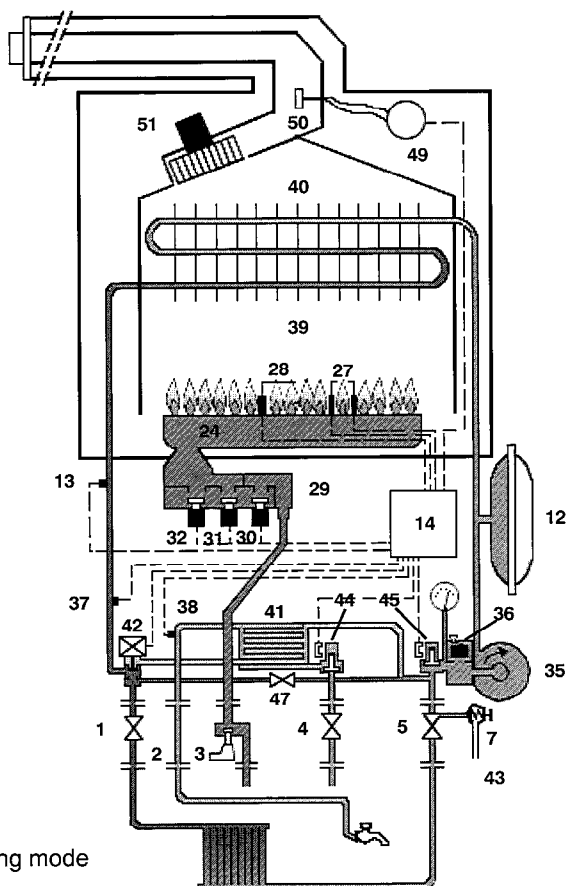
Heating and Hot Water

- 1) Turn selector switch (15) to position . The green "power on" indicator (20) will light (20).
- 3) If the room thermostat (if fitted), the boiler temperature control and the clock (if fitted) are all calling for heat, the orange

Control panel



BRITONY COMBI FUNCTIONAL DIAGRAM





"burner on" indicator (21) will light and the heating will be on.

When there is a need for hot water while the heating is on, it is only necessary to turn on a hot tap. The heating will be interrupted momentarily while the hot water is being delivered. The boiler will switch back automatically to heating when the tap is turned off.

Note: If the boiler has been turned off for some time the first attempt to light it may result in a lockout (22). If this happens press the reset button (23) and the boiler will light.

Domestic Hot Water Mode

To be able to supply hot water, the selector switch 15 must be in either on  or  position. This will be confirmed by the green indicator light (20)

When a tap or shower is turned on, the flow of mains water, above 2 litres per min., will activate the DHW flow switch (44) and allow the 3 way valve (42) to move to the DHW position. The pump can now circulate primary water heated by the main heat exchanger through the secondary heat exchanger.


The first stage solenoid (31) (blue) and security solenoid (30) (grey) open together to allow gas to the burner. The ignition sequence begins and a continuous high speed spark ignites the gas. As soon as a flame is detected the orange indicator bulb (21) will light and the second stage solenoid (32) (black) opens to allow the full gas rate. If a flame is not detected, after 8 seconds, the security solenoid closes and shuts off the gas. The red lockout indicator bulb (22) will light. The domestic hot

water temperature is controlled by the hot water control thermistor 38 and the central heating control thermistor (37). This system anticipates the changes of temperature in the secondary heat exchanger and ensures accurate temperature regulation.

When the tap is closed the burner is extinguished and the pump stops. The boiler will now stay in the hot water mode for three minutes to maintain temperature to ensure a fast response in the event of a subsequent hot water demand.

Priority will be given to a demand for hot water. This will interrupt the central heating for the duration of hot water delivery.

Central Heating Mode

To be able to supply heating, the selector switch (15) must be on  position. This will be confirmed by the green indicator light (20).

When there is a demand for heating (either from the room thermostat or the clock) the pump starts. If the boiler temperature control is calling for heat and primary flow rate over 4 ltr/min, the central heating flow switch operates allowing the ignition sequence to begin. The first stage solenoid (31) (blue) and security solenoid (30) (grey) open together to allow gas to the burner. The ignition sequence begins and a continuous high speed spark ignites the gas. As soon as a flame is detected the orange indicator bulb (21) will light. After 45 seconds the second stage solenoid (32) (black) opens to allow the full gas rate. If a flame is not detected, after 8 seconds, the security solenoid closes and

shuts off the gas. The red lockout indicator bulb (22) will light.

The central heating flow temperature is controlled by the central heating control thermistor (37). The boiler has been designed to minimise cycling and will not attempt to relight for at least 3 minutes after the boiler thermostat has been satisfied. When the room thermostat is satisfied the burner will switch off and the pump will remain running for a further 3 minutes before it too stops.

NB

It is possible to override the 3 minute delay by pressing the RESET button (23).

Lock out procedure

Flame disappearance :

When the ionisation electrode (28) does not detect flame presence. The orange indicator lamp (21) extinguishes. A lighting cycle starts. If a flame is not detected before 8 seconds, the grey security solenoid (30) and the blue 1/3 solenoid (31) will close. The lock out red indicator (22) lights, the pump (35) runs and the 3 way valve (42) stays in its position.

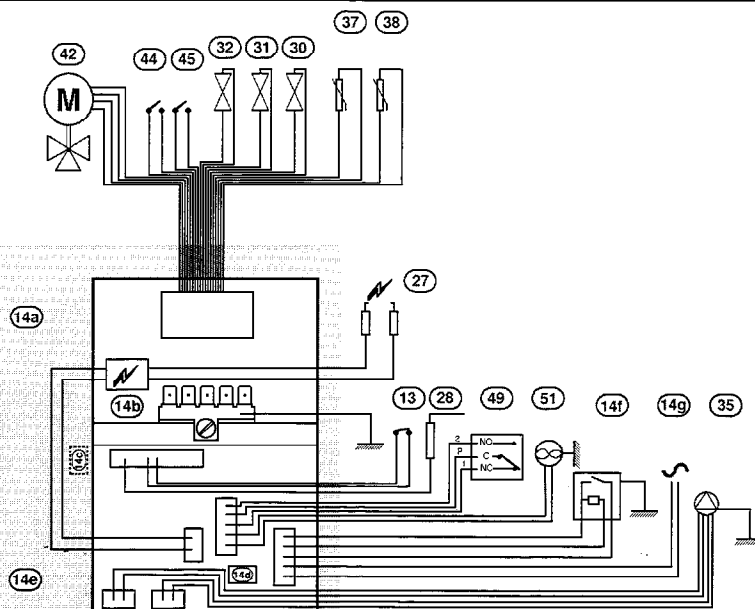
After a few seconds, it will become possible to reset the boiler by pressing the reset button (23).

Overheat detection :

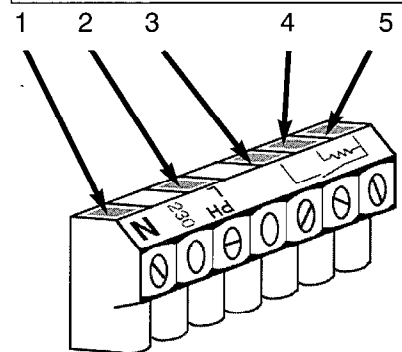
If an overheat is detected by the sensor (13), the grey security solenoid (30) and the blue 1/3 (31) closes, the orange indicator lamp (21) extinguishes. The ignitor is energised for 8 seconds and the red lockout indicator (22) lights. If the burner cannot relight the boiler will go to lockout.

WIRING

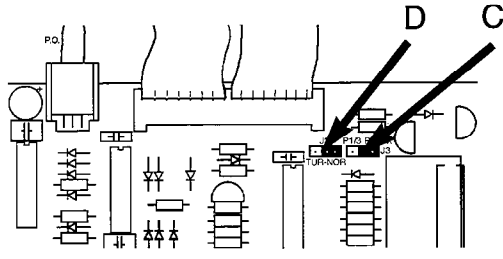
DIAGRAM



Plug for main power and Room thermostat connection



1. Neutral
2. Phase
3. Room thermostat live
4. Accelerator resistor
5. Common for Accelerator and room thermostat.

ELECTRICAL WIRING continuation			ADJUSTMENTS ON CONTROL PCB
N°	Designation	Wiring colours	<p>The following adjustments are available on the regulation PCB. To gain access to them, pivot down electrical box, remove the rear cover and the rear panel of electrical box, unplug connectors from regulation PCB and pull it toward you.</p> <p>Heating output limitation :</p> <ul style="list-style-type: none"> - Functioning without limitation plug C on "P MAX" - Functioning at 1/3 gas rate only plug C on "P 1/3" <p>Burner functioning:</p> <ul style="list-style-type: none"> - Regulation available 3/3, 1/3, 0 plug D on "NOR" - Functioning at full gas rate only plug D on "TUR" 
13.	-Overheat sensor	Brown	
14.	-Electrical box		
14a.	-Regulation PCB		
14b.	-Ignitor	Red, Black	
14c.	-Fuse 1.25 A		
14d.	-Fuse 2A		
14e.	-Power PCB		
14f.	-Room thermostat		
14g.	-Mains 230V 50 Hz		
18.	-Pressure switch	2: Black P: Orange 1: White	
27.	-Spark electrodes	White	
28.	-Ionisation probe	White	
30.	-Security solenoid (grey)	Grey	
31.	-2/3 gas stage solenoid (black)	Black	
32.	-1/3 gas stage solenoid (blue)	Blue	
35.	-Pump		
37.	-C/H thermistor	Violet	
38.	-DHW thermistor	Green	
42.	-3 way valve	White, Yellow, Orange	
44.	-DHW flow switch	Brown	
45.	-C/H flow switch	Red	
51.	-Fan	Brown, Blue	

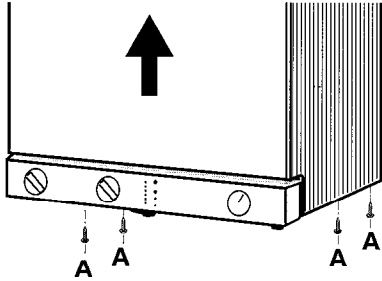
REGULATION	ROUTINE SERVICING									
<p>Temperature regulation for both C/H and DHW circuits are controlled by 2 thermistors. The C/H knob allows the adjustment of temperature between 35 and 85°C. The DHW temperature is limited to 60°C. DHW and C/H thermistors are identical and interchangeable.</p> <p>Resistance value are</p> <table> <tr> <td>-5000 Ω at</td> <td>25 °C</td> </tr> <tr> <td>-2631 Ω at</td> <td>40 °C</td> </tr> <tr> <td>-620 Ω at</td> <td>80 °C</td> </tr> <tr> <td>-255 Ω at</td> <td>110 °C</td> </tr> </table>	-5000 Ω at	25 °C	-2631 Ω at	40 °C	-620 Ω at	80 °C	-255 Ω at	110 °C	<p>To ensure continued efficient operation of the appliance, it is recommended that it is checked and serviced as necessary at regular intervals. The frequency of servicing will depend upon the particular installation condition and usage, but in general, once a year should be adequate.</p> <p>It is the law that any service work must be carried out by a competent person such as your local Chaffoteaux Service Centre, British Gas or other CORGI registered personnel in accordance with the current Gas Safety (Installation and Use) Regulations.</p> <p>The service schedule should include the following operations:</p> <ul style="list-style-type: none"> - Check the pressure in the system. - Check the correct operation of the appliance. - Check the correct operation of the gas controls. - Check the functions of the safety controls. - Check combustion chamber insulation panels for damage. - Clean the burner. - Clean the heat exchanger. - Check the burner manifold injectors. - Clean gas and water filters. - Check expansion vessel charge pressure. - Clean and check operation of safety valve. <p>Additional Procedures that may be necessary:</p> <ul style="list-style-type: none"> - Check burner pressure and gas flow rates. 	<ul style="list-style-type: none"> - Check that the fan blades are clean. - Check, clean and replace components as necessary. - Carry out combustion test utilising the test points in the flue turret. <p>SUGGESTED SEQUENCE for SERVICING</p> <p>Before disconnecting or removing any parts, isolate the gas and electricity supplies. Ensure that the appliance is cool.</p> <p>(for detail please see section on Parts Removal and Replacement)</p> <p>Preliminary Checks</p> <ul style="list-style-type: none"> - Remove outer case - Check the system pressure is at least 0.7 bar cold - Check operation of 1/3 and 2/3 solenoids. - Check that the burner is extinguished fully when both solenoids are closed in both DHW and C/H modes. - Test ionisation functions and check that lockout occurs by turning off gas tap. - Whilst boiler is operating, check operation of primary flow switch by closing heating flow valve and by pass screw (turn clockwise) noting the number of turns so that it may be reset correctly.
-5000 Ω at	25 °C									
-2631 Ω at	40 °C									
-620 Ω at	80 °C									
-255 Ω at	110 °C									
<p>FLOW SWITCHES</p> <p>Flow in both D.H.W. and Heating circuits are detected by 2 flow switches. A piston with a magnet at the top operates a REED switch. The piston is lifted by flow rates listed below :</p> <p>Flow rate threshold :</p> <table> <tr> <td>D.H.W.</td> <td>120 l/h ±20 l/h</td> </tr> <tr> <td>C/H</td> <td>250 l/h ±20 l/h</td> </tr> </table>	D.H.W.	120 l/h ±20 l/h	C/H	250 l/h ±20 l/h						
D.H.W.	120 l/h ±20 l/h									
C/H	250 l/h ±20 l/h									
<p>AIR PRESSURE SWITCH</p> <p>The air flow rate is detected by a pressure differential created by a venturi located in the flue duct.</p> <table> <tr> <td>ON threshold</td> <td>ΔP > 130 Pa</td> </tr> <tr> <td>OFF threshold</td> <td>ΔP < 100 Pa</td> </tr> </table>	ON threshold	ΔP > 130 Pa	OFF threshold	ΔP < 100 Pa						
ON threshold	ΔP > 130 Pa									
OFF threshold	ΔP < 100 Pa									

REMOVAL AND REPLACEMENT OF PARTS

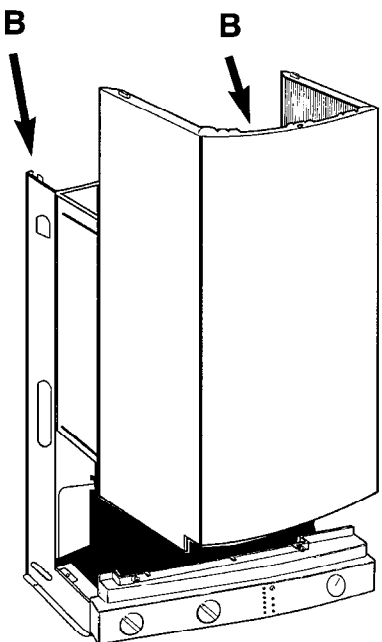
Before removing appliance case, isolate the gas and electrical supplies. Isolate boiler from the system and drain before removing any component in the waterways. Ensure that the appliance is cool.

1. Outer Case

Remove four screws in base of case and



lift free. When replacing, carefully locate on lugs (B) on top edge of chassis.



2. Combustion Chamber

Unscrew four self tapping screws securing the sealed chamber front panel and lift over top corner locating lugs. Unscrew four self tapping screws to release combustion chamber front plate and lift clear. Reassemble in reverse order.

3. Burner Manifold

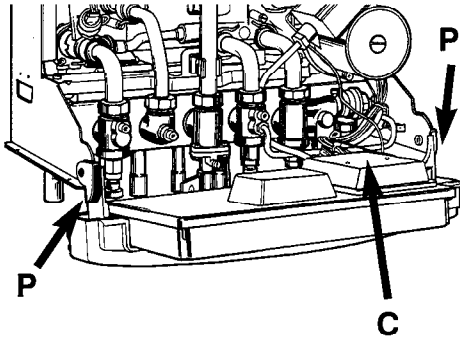
Carry out steps 1 and 2 as above. Remove two screws securing the closure plate and the remaining four screws to release the manifold. Lift clear. Replace the manifold gasket. Reassemble in reverse order.

4. Ionisation Electrodes

Carry out steps 1 and 2 as above. Loosen screws securing the closure plate and remove. Disconnect the lead from the main wiring loom. Remove screw securing electrode to burner. Thread wire through grommet and lift clear. Reassemble in reverse order.

5. Ignition Electrodes

Carry out steps 1 and 2 as above. Hinge down electrical box by pressing retaining tabs P on either side. Remove wiring cover C. Disconnect leads



from spark generator. Loosen screws securing the closure plate and remove. Remove grommet from base of sealed chamber. Remove screw securing electrode bracket and lift clear easing spade connectors through the grommet. Reassemble in reverse order, twisted together electrodes cable at least 10 times to avoid electrical interference.

6. Burner Assembly

Carry out steps 1,2, disconnect electrodes as mentioned in section 4 and 5. Remove two screws securing burner assembly to the back panel of the boiler. Lift right hand back corner first. Reassemble in reverse order.

7. Gas Solenoids

Disconnect colour coded leads. Remove six screws. The solenoids are attached to their base plate. Lift clear taking care not to lose the three plungers and springs. Reassemble in reverse order replacing the cork gasket.

8. Fan Assembly

Remove outer case and sealed chamber front panel (See Steps 1 and 2). Disconnect spade connectors noting positions. Remove two screws securing the front of the fan assembly and loosen screw on flue outlet. Twist fan assembly anticlockwise to disengage from flue outlet and lift clear. Re-assemble in the reverse order ensuring that the wiring is re-connected correctly and the screw on the flue outlet tightened.

9. Flue Hood

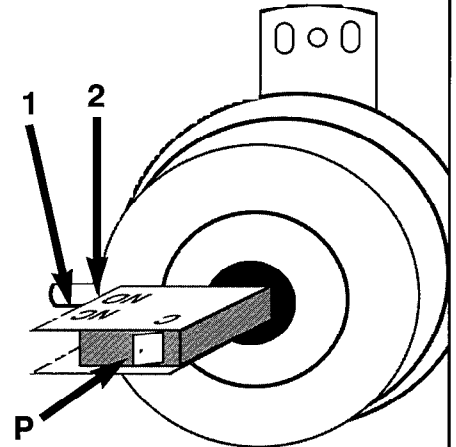
Carry out steps 1 and 2 as above. Remove the three screws securing the angled top of the hood to the chassis. Lift and remove taking care not to snag the pressure switch cables. Re-assemble in the reverse order ensuring that the hood is located behind the combustion chamber rear panel.

10. Pressure Switch

Remove outer case and sealed chamber

front panel as in steps 1 and 2. Disconnect three pressure switch cables noting their positions.

1 = white cable connected to NC
2 = black cable connected to NO



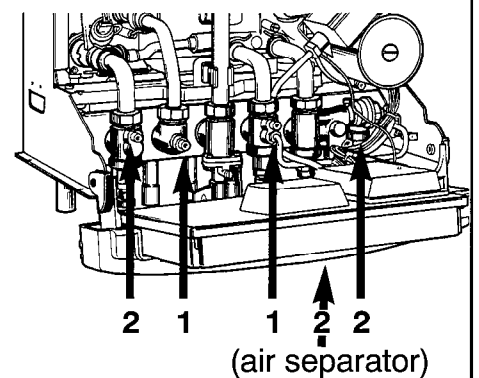
P = orange cable connected to C
Remove screw securing the switch bracket to the chassis. Disconnect the sampling tubes again noting their positioning (+ and -). Remove switch. Reassemble in reverse order.

11. Pressure Switch Venturi

Carry out steps 1, 2 and 8, as above. Disconnect the sampling tubes and remove the screw securing the venturi to the flue outlet. Remove venturi by the bottom of the 45° elbow. Reassemble in reverse order.

12. Drain down

5 drain points are located on the boiler.



1 = DHW circuit drain point
2 = Heating circuit drain point

13. Water filters (DHW and Heating)

The DHW filter ensures a seal between the connecting bracket and the pipe to the DHW flow switch. Drain the boiler as in step 12. Unscrew the pipe nut and remove the clip on the hydraulic assy. Pull the pipe toward you and remove the water filter from its location.

The C/H filter is located in the right hydraulic assembly. Remove the return pipe as described previously and withdraw the filter. Reassemble in reverse order.

14. Flow switches

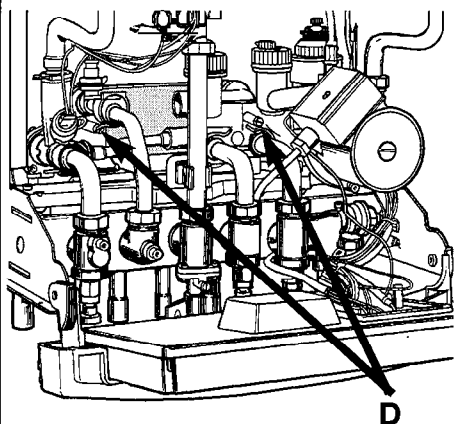
Drain boiler as in step 12. Disconnect the electrical plug, turn the top cover anti-clockwise, remove the O-ring and the brass piston. Reassemble in reverse order.

15. 3-Way valve

Drain boiler as in step 12. Remove the 3 clips on the 3 way valve. Remove the clip on the exchanger flow pipe. Pull the pipe down then pull it out of the 3 way valve. Disconnect the plug from the motor. Unscrew the nut on the pipe between the connecting bracket and the 3 way valve and pull it toward you. Rotate the 3 way valve body anti-clockwise to unclip it from the left hydraulic assembly.

16. Secondary heat exchanger

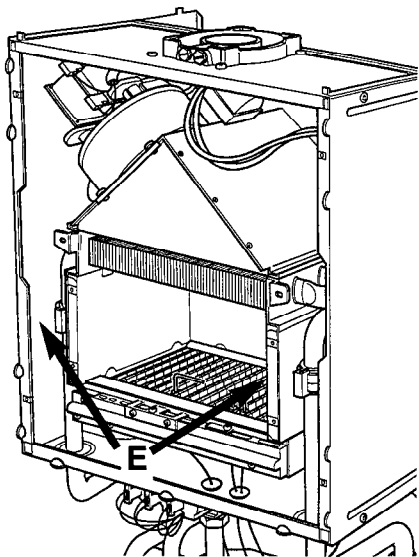
Drain both circuits of the boiler as in step 12. Unscrew the 2 fixing screws (D) and remove the DHW exchanger from the front.



Prior to reassembly, check that the 4 gaskets are correctly positioned. The heat exchanger is so designed that it cannot be remounted incorrectly.

17. Main heat exchanger

Carry out steps 1 and 2 as above. Drain boiler as in step 12. Remove the 2 clips (E) located on return and flow pipes and pull

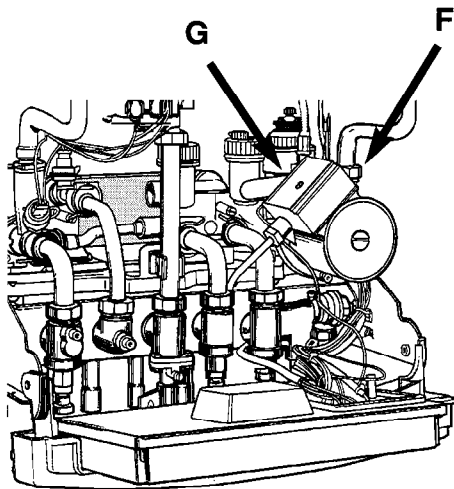


them downwards. Pull the main exchanger

toward you to remove. Reassemble in reverse order.

18. Pump

Drain boiler as in step 12. Pivot the electrical box downwards. Open the electrical box cover removing the 2 screws. Remove the pump plug from the power board and earth plug from earth socket. Unscrew the nut (F) of the return pipe from the volute. Remove



the clip (G) on the pump volute and pull pump toward you. Reassemble in reverse order.

19. Pressure relief valve

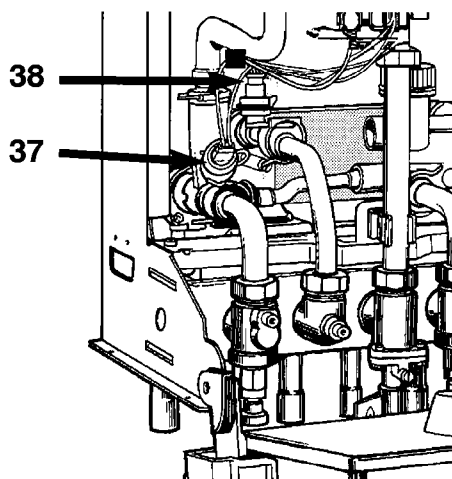
The pressure relief valve can be serviced from the front of the appliance. Drain the boiler first, undo the retaining screw and pull out the valve. Reassemble in reverse order.

20. Thermistors

Drain the boiler as step 12. Disconnect the plug, remove the retaining clip pull the thermistor out. Reassemble in reverse order.

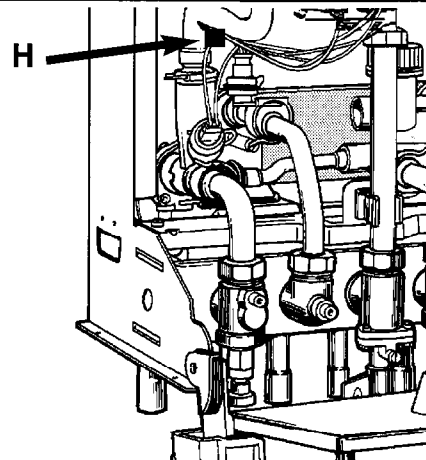
38 = DHW thermistor

37 = Heating thermistor



21. Safety thermostat

Remove the casing as step 1 and hinge down the electrical box as step 5. Disconnect the 2 cables, pull out the sensor with the clip (13). Reassemble in reverse order.



22. Spark generator

Carry out steps 1, 2, and open the electrical box cover as mentioned in step 5. Undo the 4 screws of the electrical rear panel and remove it. Unplug electrodes wires, remove the ignitor connector from the PCB, remove earth plug from earth socket. Hang out the ignitor. Reassemble in reverse order.

23. Power board

Carry out steps 1, 2, and open the electrical box cover as mentioned in step 5. Undo the 4 screws of the electrical rear panel and remove it. Unplug all cables from the PCB, remove earth plug from earth socket. Hang out the power board. Reassemble in reverse order.

24. Control board

Pull out plastic knob from the front panel and proceed as step 23. Reassemble in reverse order.

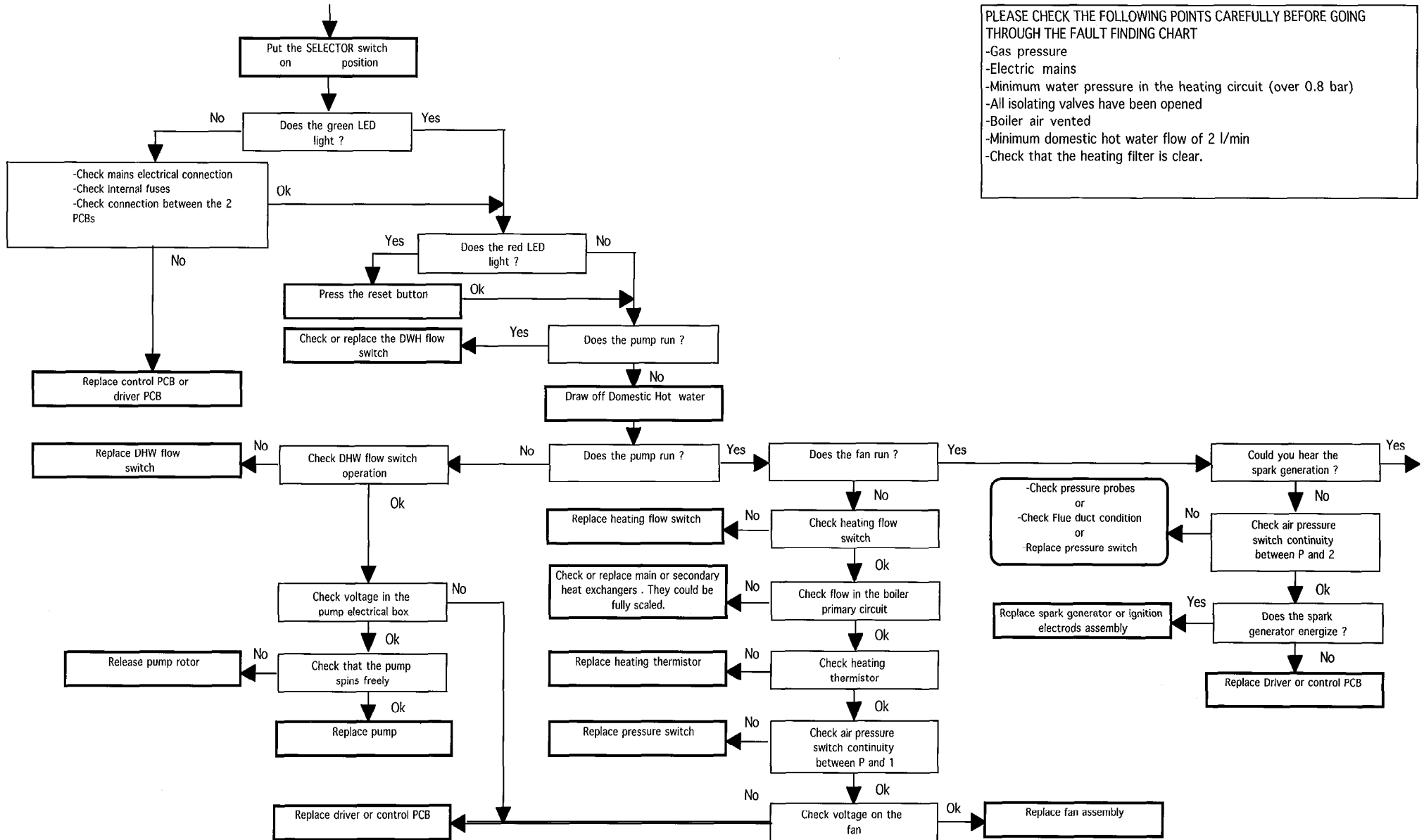
25. Expansion vessel

Remove the casing as step 1 and drain the boiler as step 12 above. Unscrew the connecting tails nuts and lift out the boiler from the wall. Place it on a side on the floor. Remove the expansion vessel bracket retaining screws, disconnect the pipe from the vessel and pull it toward you. Reassemble in reverse order.

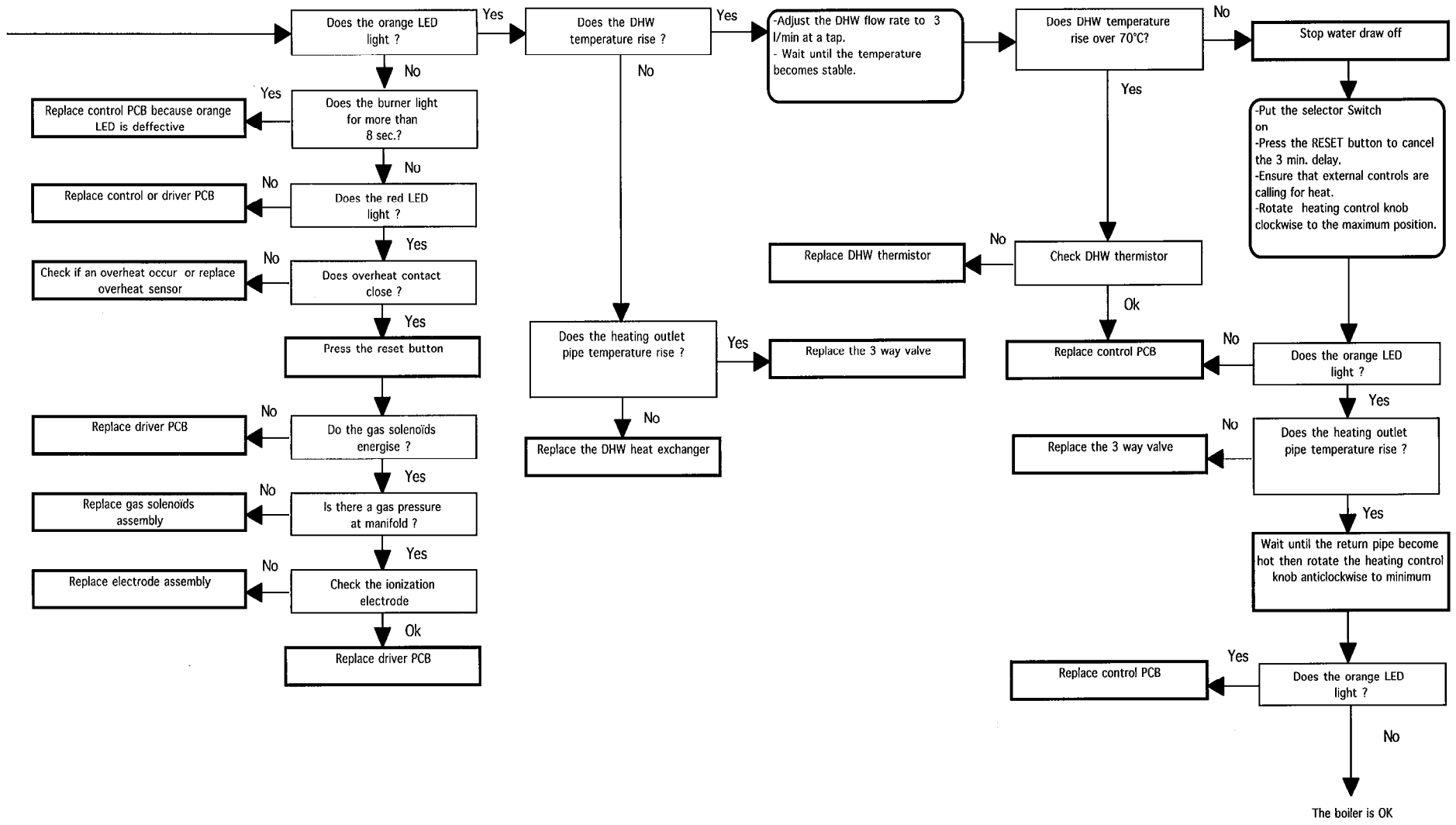
FAULT FINDING CHART Part 1

PLEASE CHECK THE FOLLOWING POINTS CAREFULLY BEFORE GOING THROUGH THE FAULT FINDING CHART

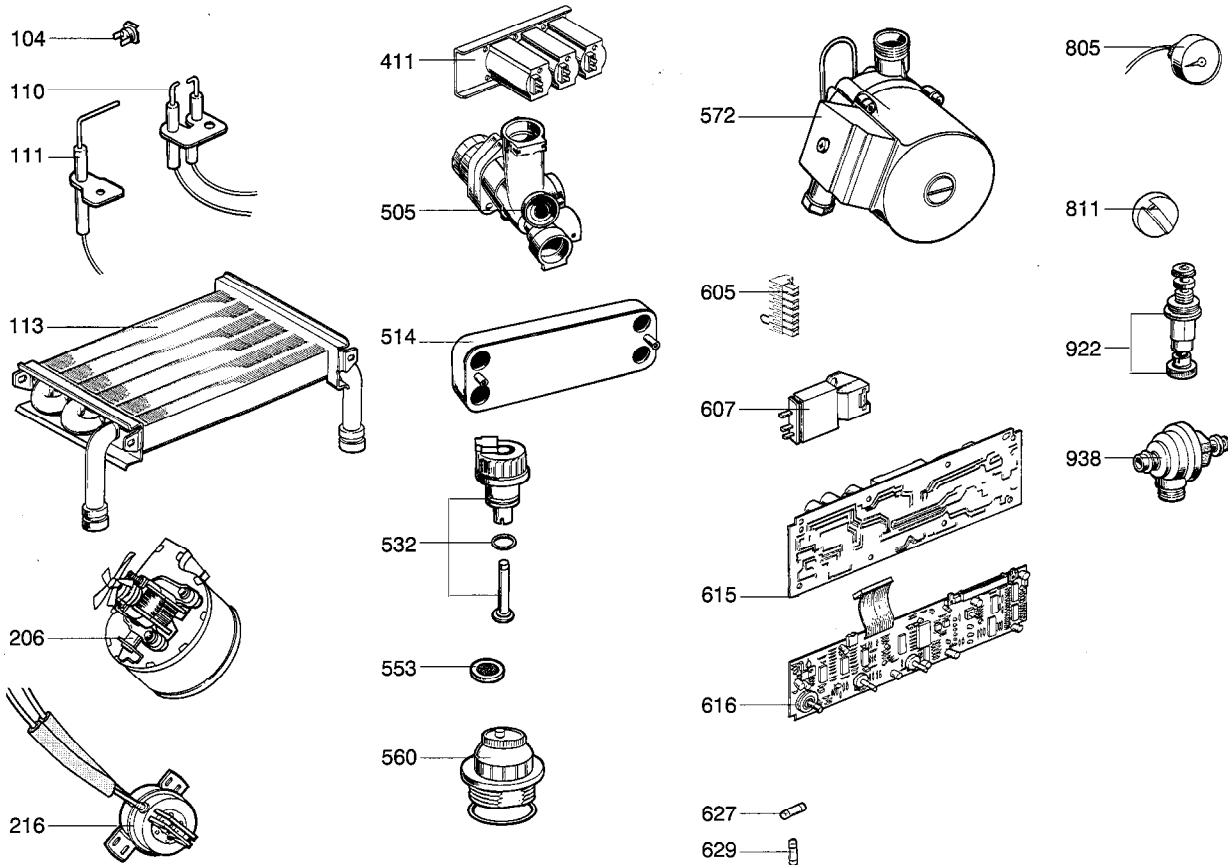
- Gas pressure
- Electric mains
- Minimum water pressure in the heating circuit (over 0.8 bar)
- All isolating valves have been opened
- Boiler air vented
- Minimum domestic hot water flow of 2 l/min
- Check that the heating filter is clear.



FAULT FINDING CHART Part 2



SHORT LIST



Key n°	Description	BRITONY COMBI 80		BRITONY COMBI 100	
		G.C. N°	Manf. Pt. N°	G.C. N°	Manf. Pt. N°
104	OVERHEAT THERMOSTAT 100°C	277783	1010572	277783	1010572
110	IGNITION ELECTRODE ASSY	277788	1002801	277788	1002801
111	IONIZATION ELECTRODE	277789	1002802	277789	1002802
113	HEAT EXCHANGER	277790	1010017		1011136
206	FAN ASSY	277804	1010212		1003011
216	PRESSURE SWITCH KIT	277808	81725	277808	81725
411	SOLENOID VALVE KIT	277812	81432	277812	81432
505	THREE-WAY VALVE	277833	1010000	277833	1010000
514	WATER/WATER HEAT EXCHANGER	277836	1002540		1011164
532	WATER THROTTLE HEAD ASSY	277846	81471	277846	81471
553	WATER FILTER	277854	1007727	277854	1007727
560	AIR SEPARATOR HEAD ASSY	277857	1002653	277857	1002653
572	PUMP 1 SPEED 240V	277862	1010774	277862	1010774
605	CONNECTOR	277872	1010349	277872	1010349
607	IGNITER	379075	1002105.20	379075	1002105.20
615	PRINTED CIRCUIT BOARD OF POWER	277880	1010592	277880	1010592
616	PRINTED CIRCUIT BOARD OF REGULATION	277881	1010047	277881	1010047
627	FUSE 250V 2A - TEMPORIZED	277883	1003456	277883	1003456
629	FUSE 250V 1.25A - TEMPORIZED	277884	1003635	277884	1003635
805	PRESSURE GAUGE		1012561		1012561
811	BLACK KNOB		1011699		1011699
922	TAP HEAD ASSY	366937	67704	366937	67704
938	PRESSURE RELIEF VALVE	277770	76584	277770	76584

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