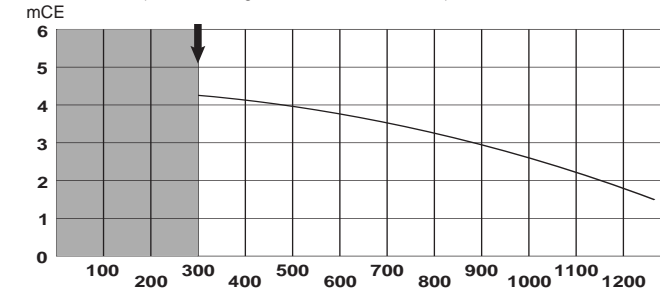


Pump and expansion vessel characteristics

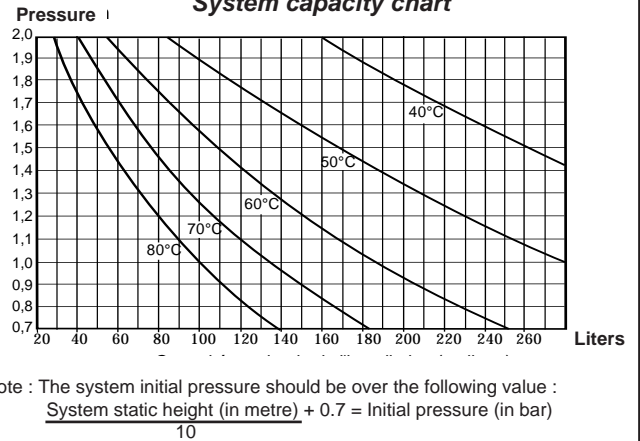
PUMP HEAD AVAILABLE

Minimum flow rate (with all heating thermostatic valves closed)



Head available / flow

System capacity chart



Components location

1. Heating Flow isolating valve
2. DHW outlet
3. Gas service tap
4. Water service tap

5. CH Return isolating valve
7. Pressure relief valve
8. Steel chassis

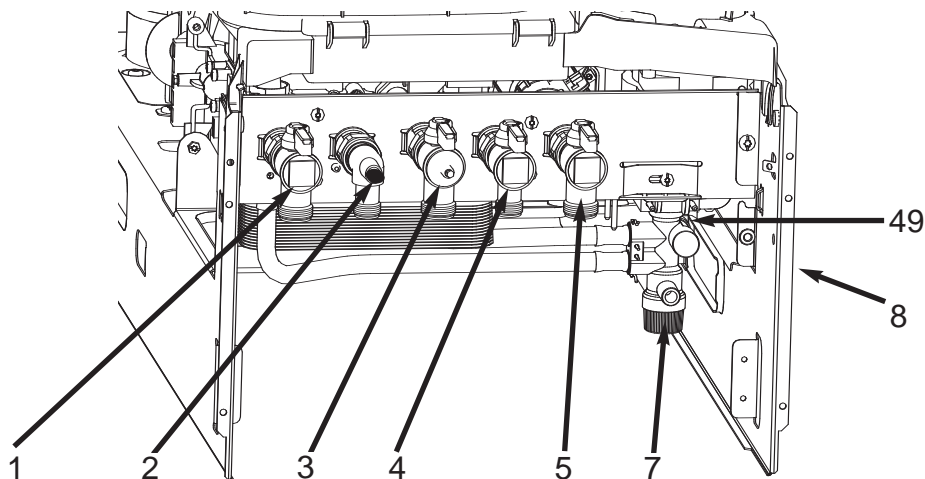


Fig. 2

- | | | |
|---|--|---|
| 9. CH control thermistor | 23. Reset button | 37. Heating mode indicator |
| 10. DHW control thermistor | 24. Multigas burner comprising: | 38. DHW mode indicator |
| 11. Sealed chamber | -25. 16 burner head | 39. Combustion chamber made of aluminium coated steel with 4 ceramic fibre panels to insure heat insulation |
| 12. Expansion vessel (not visible) | -26. Manifold | 40. Main heat exchanger |
| 13. Over heat security | -27. 2 Ignition electrodes | 41. Three way valve |
| 14. Electrical box | -28. Ionization electrode | 42. Flue hood with fan |
| 15. Two position Selector switch | 29. Gas section comprising: | 43. Air Pressure switch |
| 16. Domestic hot water temperature adjustment | -30. Security valve (grey) | 44. CH water pressure switch |
| 17. Heating flow temperature adjustment | -31. Security valve (grey) | 45. Water/water heat exchanger |
| 18. CH pressure gauge | -32. Second stage solenoid | 46. DHW microswitch |
| 19. Heating temperature indicator | 33. Right hydraulic assy | 47. DHW flow sensor |
| 20. Green indicator - Power ON | 34. Left hydraulic assy | 48. 3 way valve hydraulic motor |
| 21. Orange indicator - Burner ON | 35. Single speed pump | 49. Automatic by-pass |
| 22. Red indicator - Lock out / flame failure | 36. Automatic air separator and automatic vent | 50. Flue sampling point |

FUNCTIONING

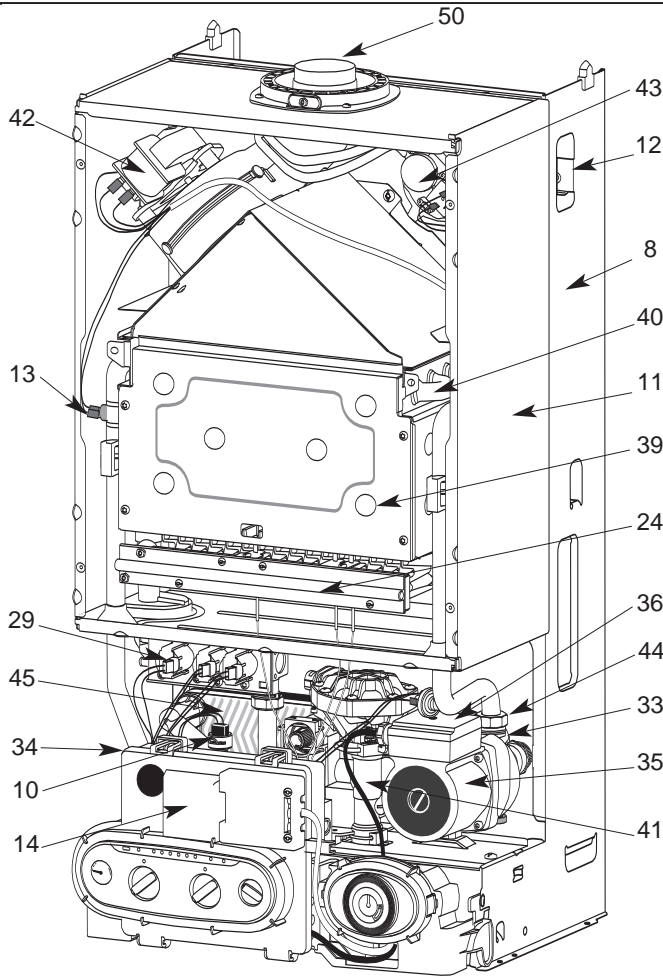


Fig. 3

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 0.8 bar and below 1.5 bar with the pressure gauge 18.
- 3) Open the gas tap 3.
- 4) The boiler is now ready to use.
- 5) Turn main switch 15 to position I. The green "power on" indicator 20 will light.

Hot Water

- 1) Turn the DHW thermostat clock wise 16. The DHW indicator will light 38.
- 2) Turn on a hot water tap, the orange "burner on" indicator will light 21 and the water will become hot.

Heating

- 1) Turn the CH thermostat clockwise 17. The CH indicator will light 37.

Control panel

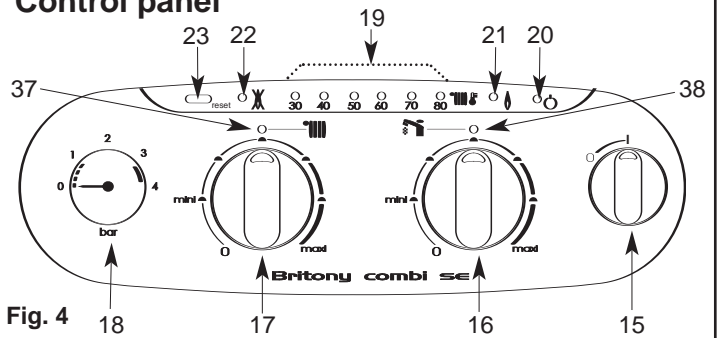


Fig. 4

BRITONY COMBI FUNCTIONAL DIAGRAM

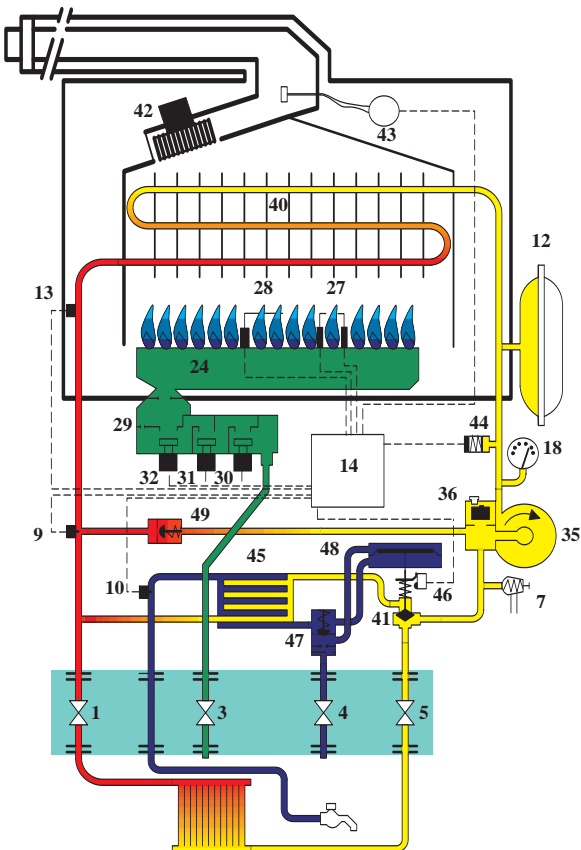


Fig. 6

Heating mode

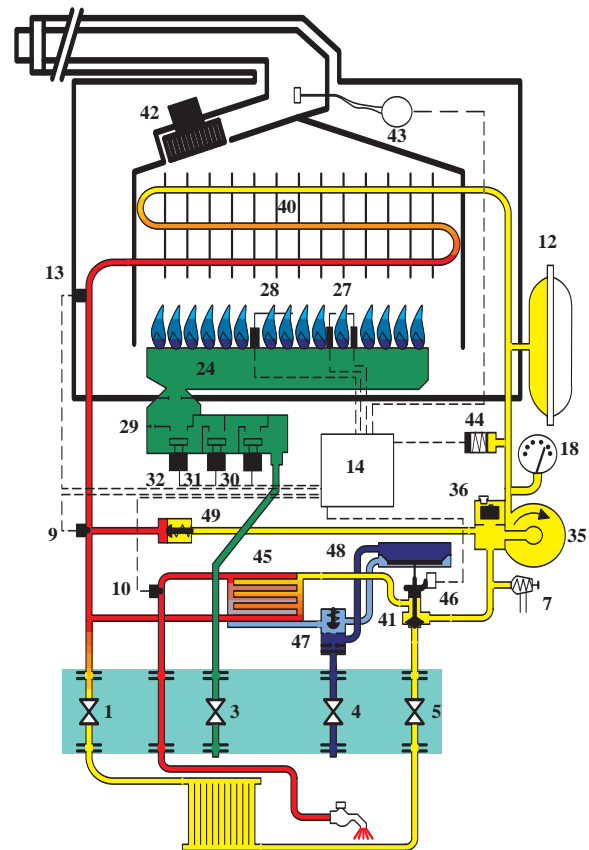





Fig. 5

Hot water mode


2) If the room thermostat (if fitted), the boiler temperature control  and the clock (if fitted) are all calling for heat, the orange "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 . If this happens press the reset button 23 and the boiler will light.

To Turn Boiler Off Completely



- 1) Turn the selector switch 15 to the off position **O**.
- 2) Turn the gas tap 3 Fig. 2 OFF.

Domestic Hot Water Mode

In order to supply hot water, the main switch 15 Fig. 4 must be in ON position **I**. This will be confirmed by the green indicator light  20 Fig. 4. Turn the selector switch 16 clock wise to establish the green DHW indicator 38 Fig. 4.

When a tap or shower is turned on, the flow of mains water, above 2 litres per min., will activate the 3 way valve 41 Fig. 5 to move to the DHW position. The pump


will now circulate primary water heated by the main heat exchanger through the secondary heat exchanger.

The safety solenoid 30 and 31 Fig. 5 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 Fig. 4 will light and the second stage solenoid 32 Fig. 5 opens to allow the full gas rate. If a flame is not detected, after 8 seconds, the security solenoids close and shut off the gas. The red lockout indicator bulb  22 Fig. 4 will show. The domestic hot water temperature is controlled by the hot water control thermistor 10 Fig. 5 and the central heating control thermistor 9 Fig. 5. 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.

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 main switch 15 Fig. 4 must be in **I** position. This will be confirmed by the green indicator light  20 Fig. 4. Turn the selector switch 17 clock wise to establish the green heating indicator 37 Fig. 4.

When there is a demand for heating (either from the room thermostat or the clock) and the boiler temperature control is calling for heat. The pump starts allowing the ignition sequence to begin.

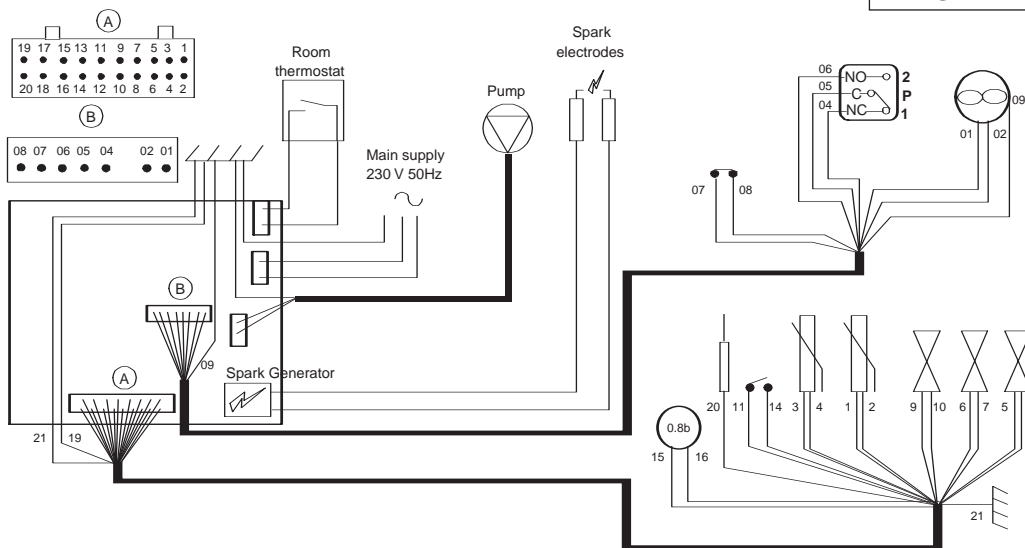
The safety solenoid 30 and 31 Fig. 5 open together to allow gas to the burner. The ignition sequence begins and a continuous high speed spark ignites the gas. As soon as a flame is detected the orange indicator bulb  21 Fig. 4 will light. After 45 seconds the second stage solenoid 32 Fig. 5 opens to allow the full gas rate. If a flame is not detected, after 8 seconds, the security solenoids close and shut off the gas. The red lockout indicator bulb  22 Fig. 4 will show.

The central heating flow temperature is controlled by the central heating control thermistor 9 Fig. 5. The boiler has been designed to minimise cycling and will not attempt to relight for 3 minutes after the boiler thermostat has been satisfied (it is possible to reduce the time to 30 s if necessary). When the room thermostat is satisfied the burner will switch off and the pump will remain running for a further 4 minutes before it stops.

NB : it is possible to override the 3 minute delay by putting off and on the central heating selector switch 17.

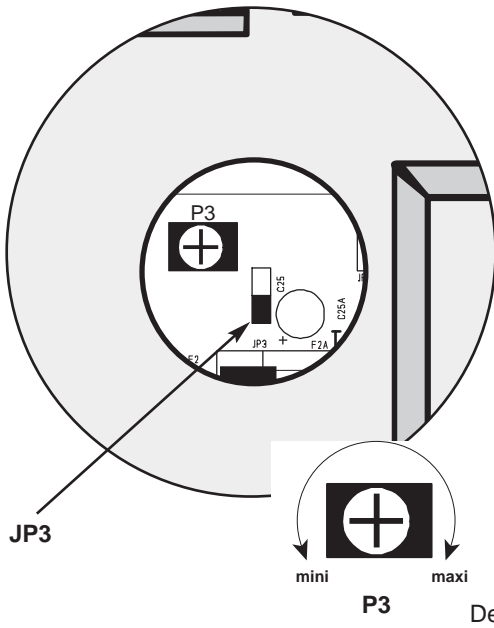
WIRING

DIAGRAM



cable (A)	1	green	H.W. Thermistor	
	2	green	Thermistor	
	3	purple	Heating Thermistor	
	4	purple	Thermistor	
	5	grey	Security solenoid valve	
	8	grey	Security solenoid valve	
	6	blue	Security solenoid valve	
	7	blue	Security solenoid valve	
	9	black	Solenoid valve	
	10	black	Solenoid valve	
	11	brown	D.H.W. microswitch	
	14	brown	D.H.W. microswitch	
	15	black	Pressure switch security	
	16	black	Pressure switch security	
	19	brown	mass	
	20	white	Sensing electrode	
	21	green / yellow	mass	
	cable (B)	01	brown	Fan
		02	blue	Fan
		04	white	Pressure switch
		05	orange	Pressure switch
06		black	Pressure switch	
07	brown	Safety thermostat		
08	brown	Safety thermostat		
09	green / yellow	mass		

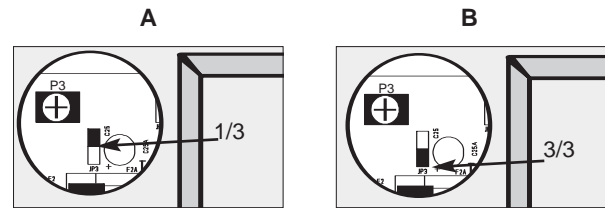
ADJUSTMENTS ON CONTROL PCB



Adjustment on the PCB :

- P3 : potentiometer TAC (Temporisation Anti Cycle) may be adjusted between 30 seconds and 3 minutes (see detail) (factory set at 3 minutes).
- JP3 : the spade connector allows the gas rate to be reduced to 1/3 performance by positioning spade across pins as shown **A**
Full performance across pins as shown **B**.(factory set)

After completing adjustments replace rubber cover and refit outer casing



REGULATION

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.

Resistance value are

-5000 Ω at	25 °C
-2631 Ω at	40°C
-620 Ω at	80°C
-255 Ω at	110°C

AIR PRESSURE SWITCH

The air flow rate is detected by a pressure differential created by a venturi located in the flue duct.

ON threshold	$\Delta P > 130 \text{ Pa}$
OFF threshold	$\Delta P < 100 \text{ Pa}$

COMBUSTION TESTING

Nox Values

Britony SE Natural Gas G20	
SE 80	95 ppm
SE 100	109 ppm

CO Values

Britony SE Natural Gas G20	
SE 80	15 ppm
SE 100	21 ppm

ROUTINE SERVICING

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.

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.

The service schedule should include the following operations:

- 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 filter.
- Check expansion vessel charge pressure.
- Clean and check operation of safety valve.

Additional Procedures that may be necessary:

- Check burner pressure and gas flow rates.

- 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.

SUGGESTED SEQUENCE for SERVICING

Before disconnecting or removing any parts, isolate the gas and electricity supplies. Ensure that the appliance is cool.

(for detail please see section on Parts Removal and Replacement)

Preliminary Checks

- Remove outer case
- Check the system pressure is at least 0.8 bar cold
- Check operation of solenoids.
- Check that the burner is extinguished fully when solenoids are closed in both DHW and C/H modes.
- Test ionisation functions and check that lockout occurs by turning off gas tap.

CLEANING THE BOILER

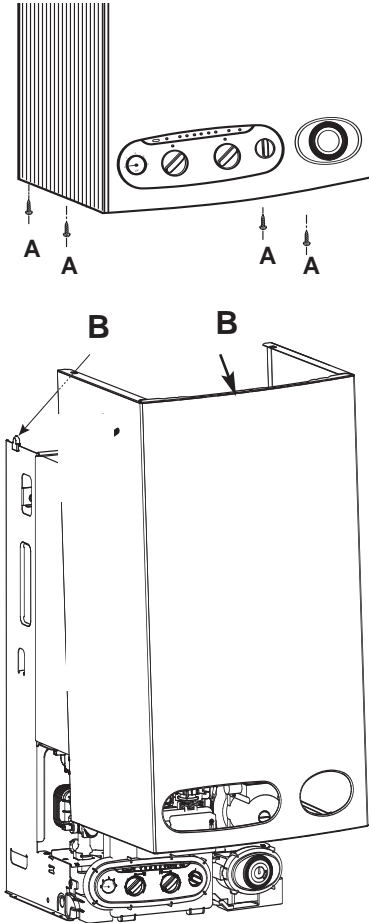
Any cleaning work must only be done when the boiler is switched off. Under normal circumstances dusting should be enough. An occasional wipe over with a damp cloth will remove any marks from the casing. On no account use an abrasive cleaning powder or liquid.

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 Electrode

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. remove the wiring cover undo the power lead plug open the electrical box 2 clips. Disconnect leads from spark generator on PCB. 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. Carry out combustion tests utilising the test points on the turret

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.

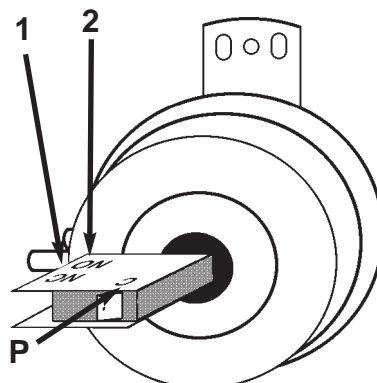
8. Fan Assembly

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 fan assembly as in step 8. 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.



6

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.

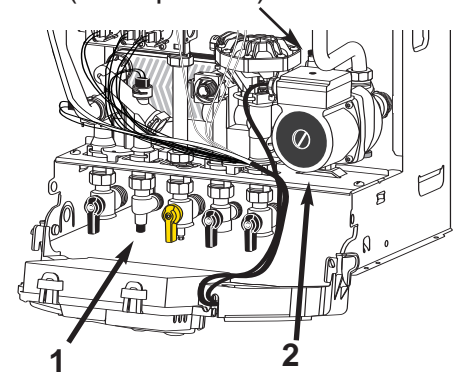
11. Pressure Switch Venturi

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

2 drain points are located on the boiler.

(air separator)



1 = DHW circuit drain point

2 = Heating circuit drain point

(Pressure release valve)

13. DHW Water filter

The DHW filter is located in the DHW command 47 Fig. 5 on the right hydraulic assembly. Remove the clip and pull toward you the DHW command remove the plug and clean the filter. Reassemble in reverse order.

14. DHW Flow switch

Disconnect the electrical connections undo the securing clip and remove the microswitch reassemble in reverse order.

46 Fig. 5

15. 3-Way valve

Drain boiler as in step 12. Remove the 2 clips on the 3 way valve hydraulic motor **48** Fig. 5. Pull up the motor. Turn anti-clockwise the 3 way valve body, rise it up using a screw driver and remove it. Reassemble in reverse order.

45



16. Secondary heat exchanger **45**

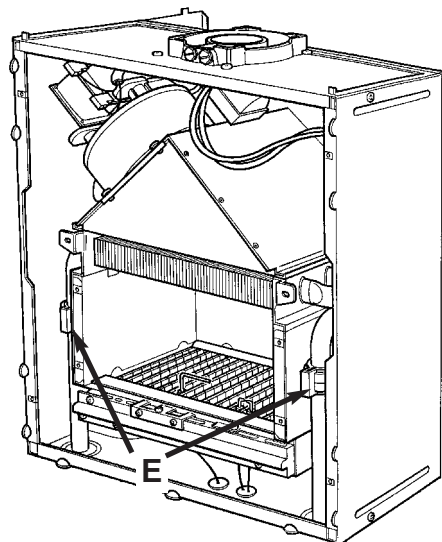
Drain both circuits of the boiler as in step 12. Unscrew the 2 fixing screws **D** and remove the DHW exchanger from the front. Prior to reassembly, check that the 4 gaskets are correctly positioned. The heat exchanger is so designed that it cannot be remounted incorrectly.

17. Main heat exchanger and insulation pads

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.

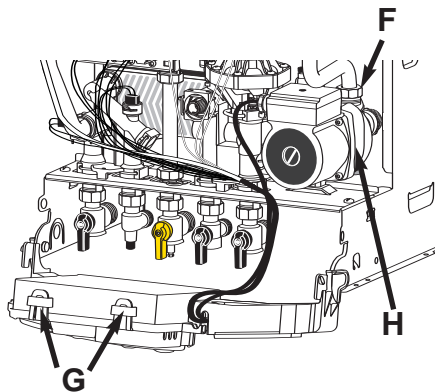
To replace insulation pads carry out the above procedure. To remove the pads bend down the retaining clips and retract the pads.

Reassemble in reverse order



18. Pump

Drain the boiler as in step 12. Open the electrical box cover removing the 2 screws. Remove the main lead connection. Open the electrical box, 2 clips **G**. Remove the pump plug from the control board and earth plug from earth socket. Pivot the electrical box downwards. Unscrew the nut **F** of the flow pipe from the volute. Remove the clip **H** on the pump volute and pull pump toward you. Remove the back clip. Reassemble in reverse order.



19. Pressure relief valve

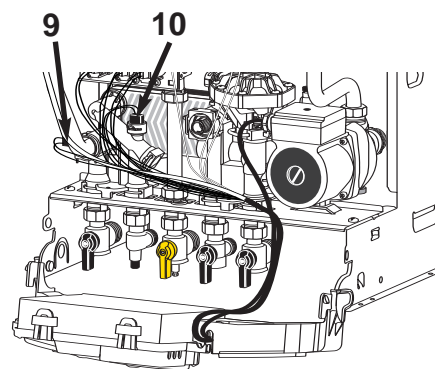
Drain the boiler first, unscrew the safety valve head with a 24 mm spanner. Reassemble in reverse order.

20. Thermistors

Drain the boiler as step 12. Disconnect the plug, remove the retaining clip for the DHW thermistor **10** and unscrew the nut for the CH thermistor **9**, pull the thermistor out. Reassemble in reverse order.

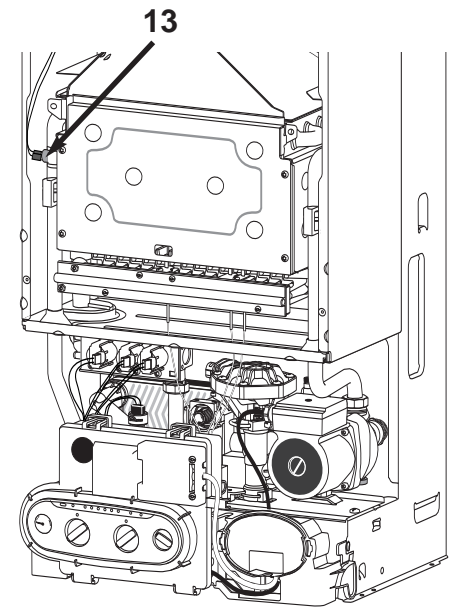
10 = DHW thermistor

9 = Heating thermistor



21. Safety thermostat

Remove the casing as step 1 unscrew four self tapping screws securing the sealed chamber front panel. Disconnect the 2 cables, pull out the sensor with the clip **13**. Reassemble in reverse order.



22. Control board

Carry out step 1, open the electrical box cover as mentioned in step 5. unplug all cables from the PCB remove earth plug from earth socket undo the screw fixing the PCB. Hang out the control board. Reassemble in reverse order.

23. Expansion vessel

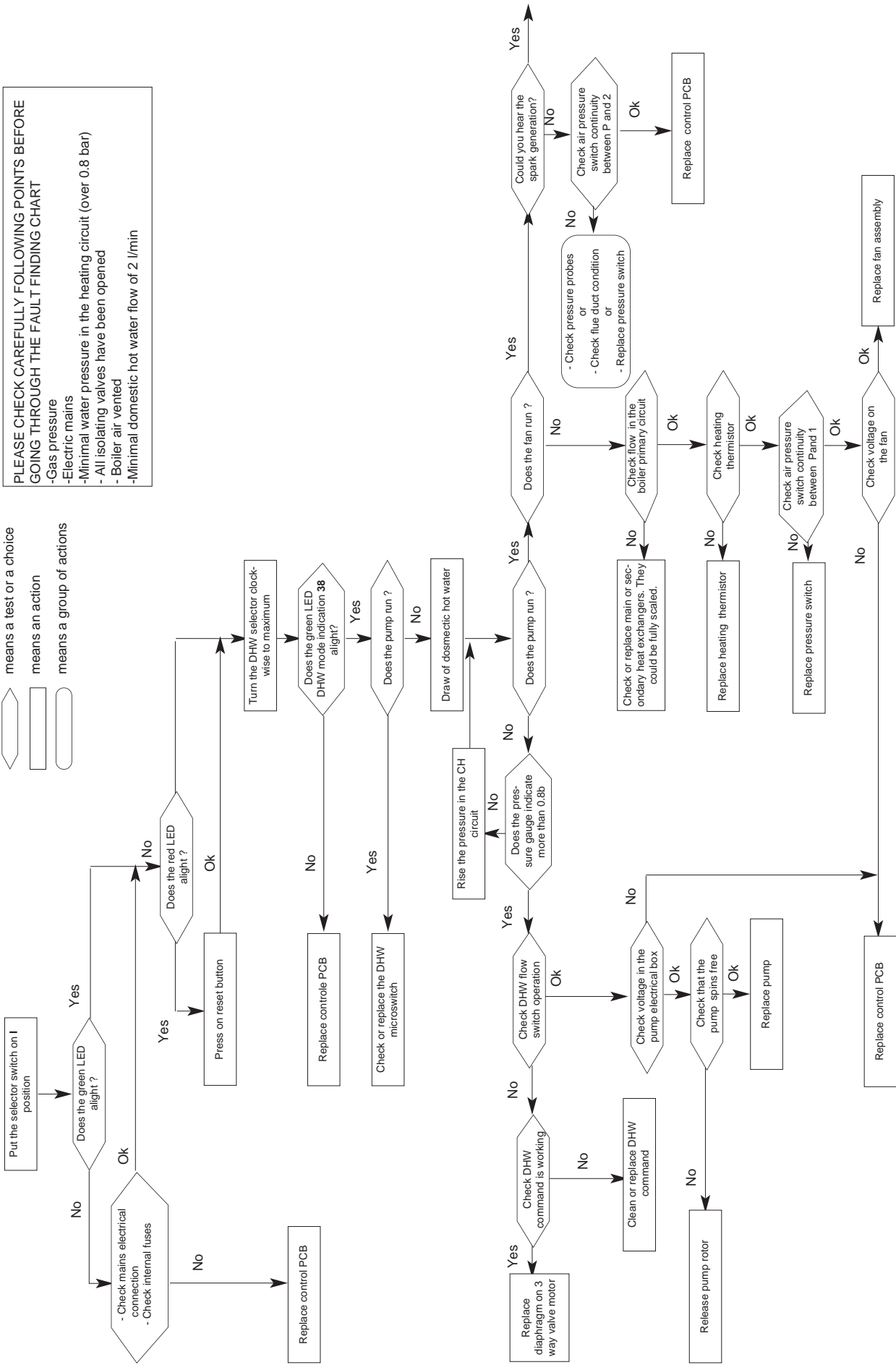
Remove the casing as step 1 and drain the boiler as step 12 above. Unscrew the connecting nuts and lift out the boiler from the wall. Place it on a side on the floor. Remove the expansion vessel bracket retaining screws, disconnect the pipe from the vessel and pull it toward you. Reassemble in reverse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

FAULT FINDING CHART Part 1

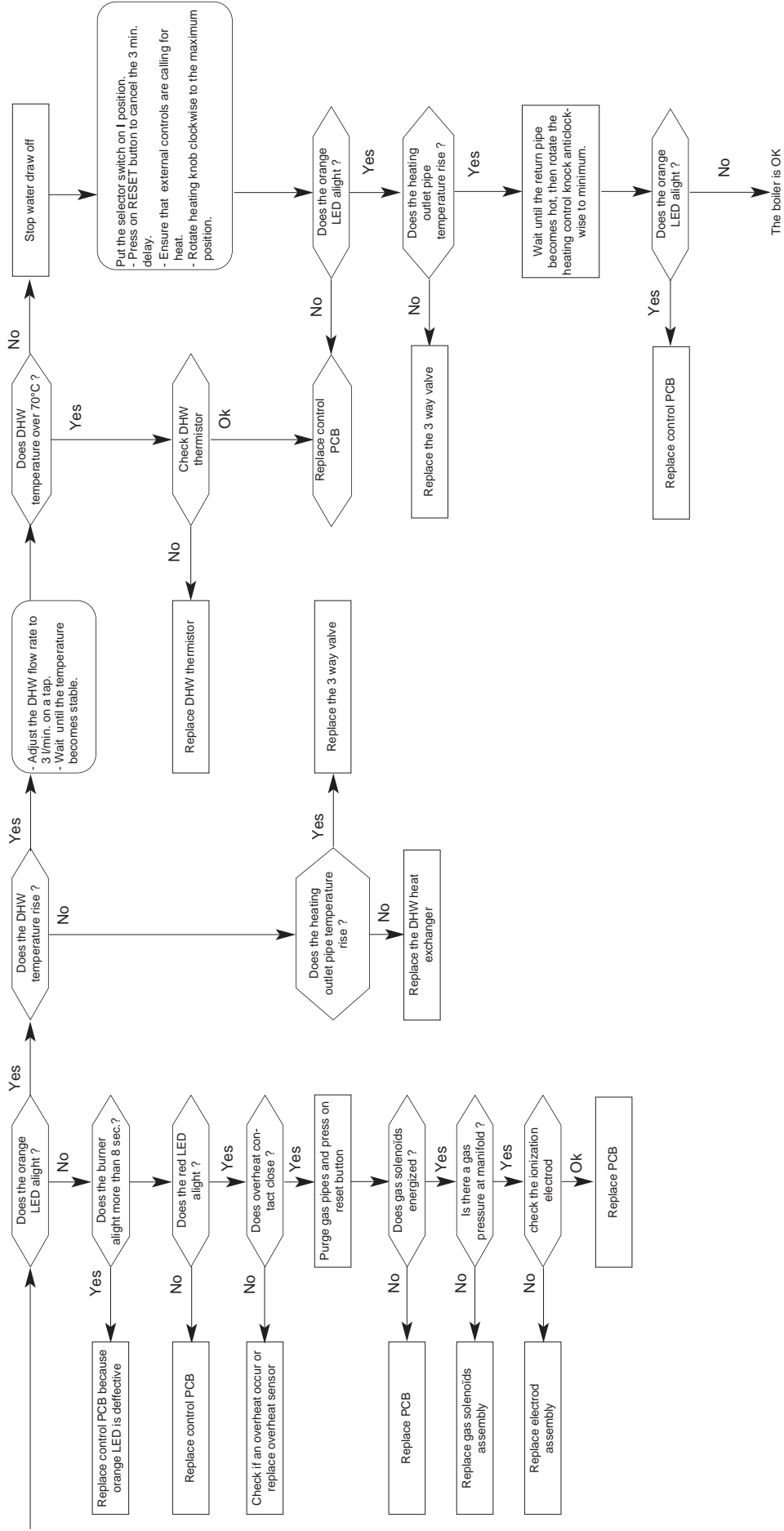
PLEASE CHECK CAREFULLY FOLLOWING POINTS BEFORE GOING THROUGH THE FAULT FINDING CHART

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

means a test or a choice
 means an action
 means a group of actions



FAULT FINDING CHART Part 2

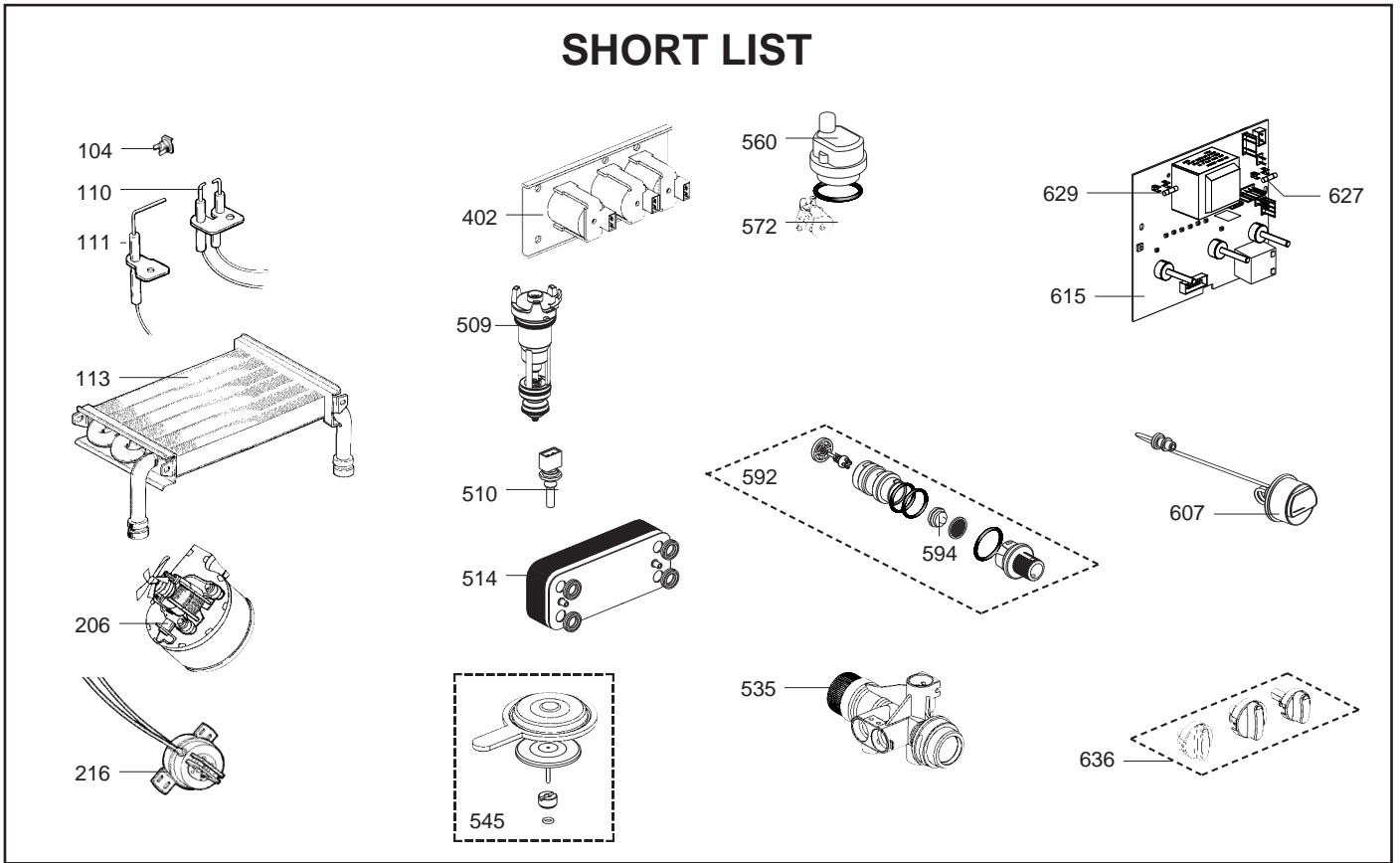


INCORRECT FUNCTION

Incorrects functions is signalled by leds (rep 22) display flashing correspond with chart below.

CODE						FAULT
30	40	50	60	70	80	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Overheat sensor switch open.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Overheating defect without lock out.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	No flame detection.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Ionisation printed circuit board faulty.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Anti-frost mode on (pump in operation).
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Anti-frost mode on (burner and pump in operation).
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Domestic hot water thermistor faulty (open circuit).
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Domestic hot water thermistor faulty (short circuit).
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Central heating thermistor flow faulty (open circuit).
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Central heating thermistor flow faulty (short circuit).
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Low water pressure in the Central Heating circuit.
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Fan on but does not activate air pressure switch.
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Fan off but air pressure switch fails to return to off position.

SHORT LIST



Key N°	Description	G.C N°	Manf. Pt. N°	Type	Type			Manf. date	
					B/C - SE (with time-lock)	B/C - SE (with time-lock)	B/T/ON COMBI SE	80	100
					FF	FF	FF	from	to
104	OVERHEAT THERMOSTAT 105°C		1303566		•	•	•		
110	IGNITION ELECTRODE	277788	1002801		•	•	•		
111	IONIZATION ELECTRODE	277789	1002802		•	•	•		
113	HEAT EXCHANGER	277790	1010017		•	•	•		
	HEAT EXCHANGER	E00606	1011136				•		
206	FAN ASSY		1304720		•	•	•		
	FAN ASSY		1304721				•		
216	AIR PRESSURE SWITCH 24KW		1306697		•	•	•		
	AIR PRESSURE SWITCH 28KW		1307335				•		
402	SOLENOID VALVES KIT	E23494	81836		•	•	•		
509	VALVE		1302411		•	•	•		
510	THERMISTOR TEMP. SENSOR	277834	1000733		•	•	•		
514	WATER / WATER HEAT EXCHANGER		1302409		•	•	•		
535	PRESSURE RELIEF VALVE KIT		81980		•	•	•		
545	DIAPHRAGM		81977		•	•	•		
560	AIR SEPARATOR HEAD ASSEMBLY		1304608		•	•	•		
572	PUMP + AIR SEPARATOR 15/50		1301964		•	•	•		
	PUMP + AIR SEPARATOR 15/60		1303461		•	•	•		
575	BY-PASS		1301960		•	•	•		
592	WATER CONTROL 8L/MN		1301952		•	•	•		
	WATER CONTROL 10L/MN		1305290				•		
594	FLOW REGULATORE 8L/MN (RED)		1017288.08		•	•	•		
	FLOW REGULATORE 10L/MN (WHITE)		1017288.10				•		
607	PRESSURE GAUGE		1303159		•	•	•		
615	PRINTED CIRCUIT BOARD		1308723		•	•	•		
627	FUSE 250V 2A - TEMPORIZED	277883	1003456		•	•	•		
629	FUSE 250V 1.25A - TEMPORIZED	277884	1003635		•	•	•		
636	KNOBS SET		81979		•	•	•		

This appliance is suitable for Natural gas or LPG. A gas conversion must be made by a competent person.
Chaffoteaux & Maury are continuously improving their products and therefore reserve the right to change specifications without prior notice and accepts no liability for any errors or omission in the information contained in this document.

Manufacturer: Chaffoteaux & Maury - France

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