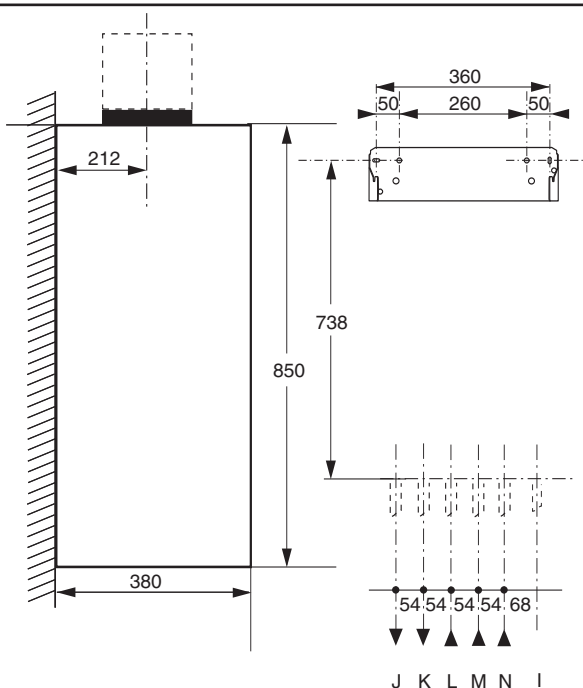
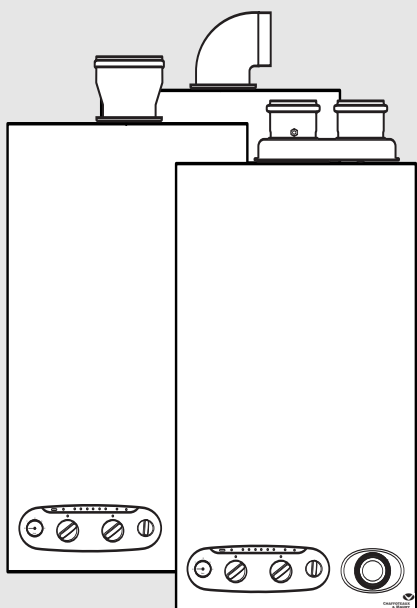


## Calydra comfort

### Fanned Flue Combination Boiler Heating and Storage Domestic Hot Water

#### Dimensions

All dimensions in mm



**Outer case dimensions :**

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

**Fig. 1**

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

The boiler is suitable for the 4 flue types:

- type C 12
- type C 22
- type C 32 xx or C 32 xy
- type C 52

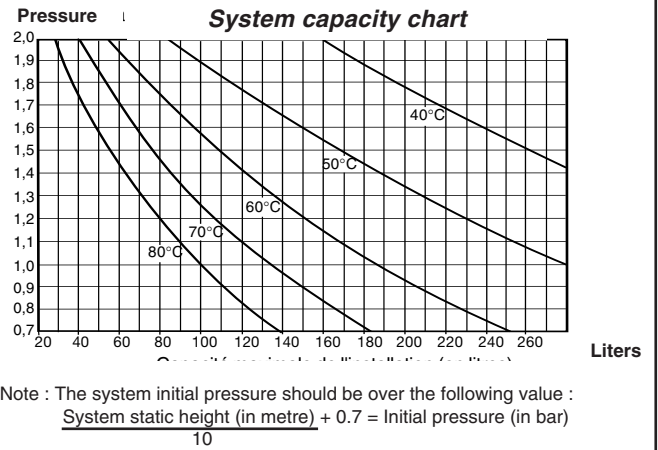
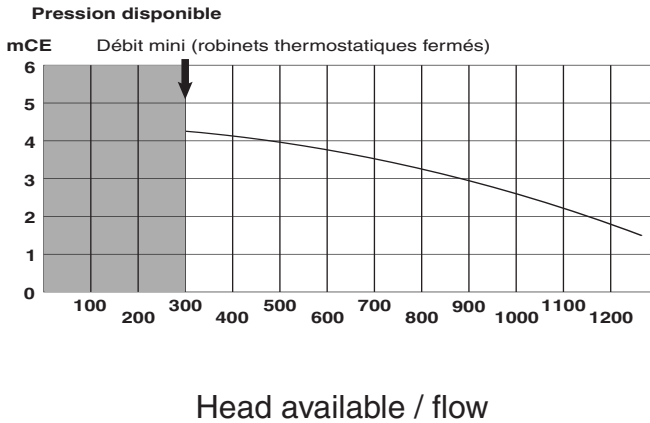
#### Technical data

Heat input C/H & DHW	Cal. comfort 80 : 11.73 to 28.70 kW Cal. comfort 100 : 15.43 to 31.57 kW	DHW flow rate at @ AT 30 K	Cal. comfort 80 : 12.1 l/min Cal. comfort 100 : 14.1 l/min
Heat output C/H & DHW	Cal. comfort 80 : 9.5 to 24 kW Cal. comfort 100 : 12.5 to 28,2 kW	DHW flow rate at @ AT 35 K	Cal. comfort 80 : 10.4 l/min Cal. comfort 100 : 12.1 l/min
Max. operating pressure C/H circuit	: 2.5 bar	Minimum DHW operating flow rate	: 2.00 l/min
Expansion vessel net capacity	: 5.44 l	Minimum DHW working pressure	: 0.5 bar
Expansion vessel initial pressure	: 0.7 bar	Maximum DHW working pressure	: 10 bar
Electrical consumption	: 150 w	Gas category	: II 2H 3+
Voltage	: 230 v		
Electrical protection index	: IP44		
Fuses	: 2 A and 1.25 A		

Nominal gas flow rate at 15°C and 1013 mbar	Calydra. comfort 80		Calydra. comfort 100	
	Maximum power 25,9 kW	Minimum power 9.5 kW	Maximum power 31,1 kW	Minimum power 9,5 kW
- Natural gas ( G 20) at 20 mbar	2.74 m <sup>3</sup> /h	1.00 m <sup>3</sup> /h	3.29 m <sup>3</sup> /h	1.00 m <sup>3</sup> /h
- Butane gas ( G 30) at 28 mbar	2.04 kg/h	0.74 kg/h	2.45 kg/h	0.74 kg/h
- Propane gas ( G 31) at 37 mbar	2.00 kg/h	0.72 kg/h	2.42 kg/h	0.72 kg/h

Injectors and gas valves seat diameter	Calydra. comfort 80		Calydra. comfort 100	
	Natural gas	Butane or Propane	Natural gas	Butane or Propane
- Solenoid restrictor diameter	2.60 mm	1.75 mm	2.90 mm	2.00 mm
- Gas valve restrictor diameter	6.70 mm	4.90 mm	no restrictor required	6.70 mm
- Manifold injectors (16)	1.23 mm	0.70 mm	1.28 mm	0.76 mm

# Pump and expansion vessel characteristics



## Components location

- 21. DHW pressure relief valve
- 34. Heating Flow isolating valve
- 35. DHW outlet

- 36. Gas service tap
- 37. Water service tap
- 38. CH Return isolating valve

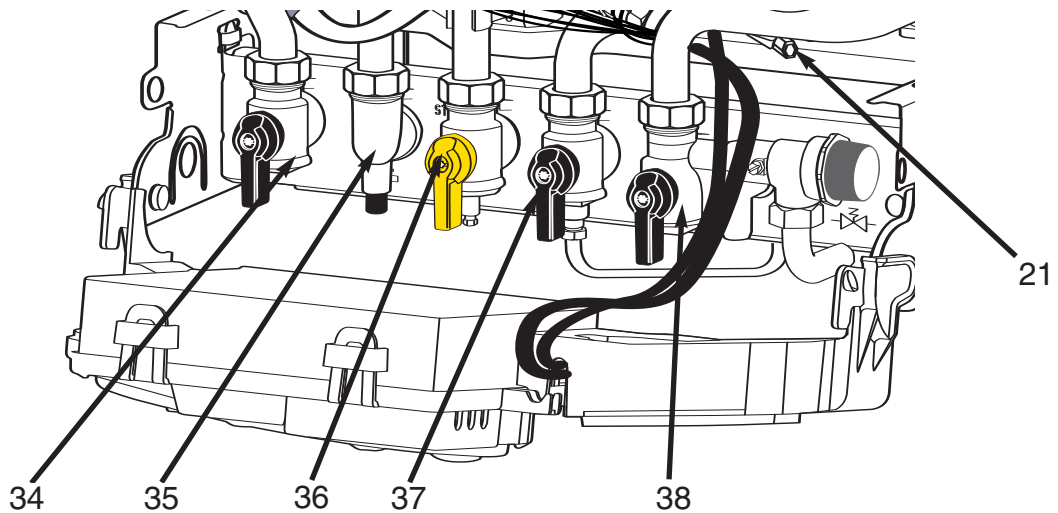


Fig. 2

- |   |  |  |
|---|--|--|
| 1. Air Pressure switch  | 11. Sealed chamber                       | 28. Orange indicator - Burner ON             |
| 2. Steel chassis complete with expansion vessel   | 12. Electrical box                       | 29. Red indicator - Lock out / flame failure |
| 3. Fan  | 13. Overheat safety cutout               | 30. Reset button                             |
| 4. Main heat exchanger  | 14. Gas section comprising:              | 31. Pressure gauge                           |
| 5. Combustion chamber made of aluminium coated steel with 4 ceramic fibre panels to provide heat insulation | 14a. Security valve (grey)               | 32. DHW mode indicator                       |
| 6. Multigas burner comprising:  | 14b. 1/3 gas stage (blue)                | 33. Heating mode indicator                   |
| 6a. 16 burner head  | 14c. 2/3 gas stage (black)               |  |
| 6b. Manifold  | 15. TSS mini cylinder                    |  |
| 6c. 2 Ignition electrode  | 16. Central heating control thermistor   |  |
| 6d. Ionization electrode  | 17. Three way valve                      |  |
| 7. Single speed pump  | 18. TSS thermistor                       |  |
| 8. Heating flow switch  | 19. DHW flow switch                      | 50. Adjustable by-pass                       |
| 9. Automatic air separator and automatic vent   | 20. Secondary heat exchanger             | 51. connecting bracket                       |
| 10. DHW thermistor  | 23. Two position selector switch         | 52. 45° elbow including ventur               |
|   | 24. DHW temperature adjustment           | 53. Expansion vessel (not visible)           |
|   | 25. Heating flow temperature adjustment  | 54. Right hydraulic assy                     |
|   | 26. Heating temperature indicator lights | 55. Left hydraulic assy                      |
|   | 27. Green indicator - Power ON           |  |

# FUNCTIONING

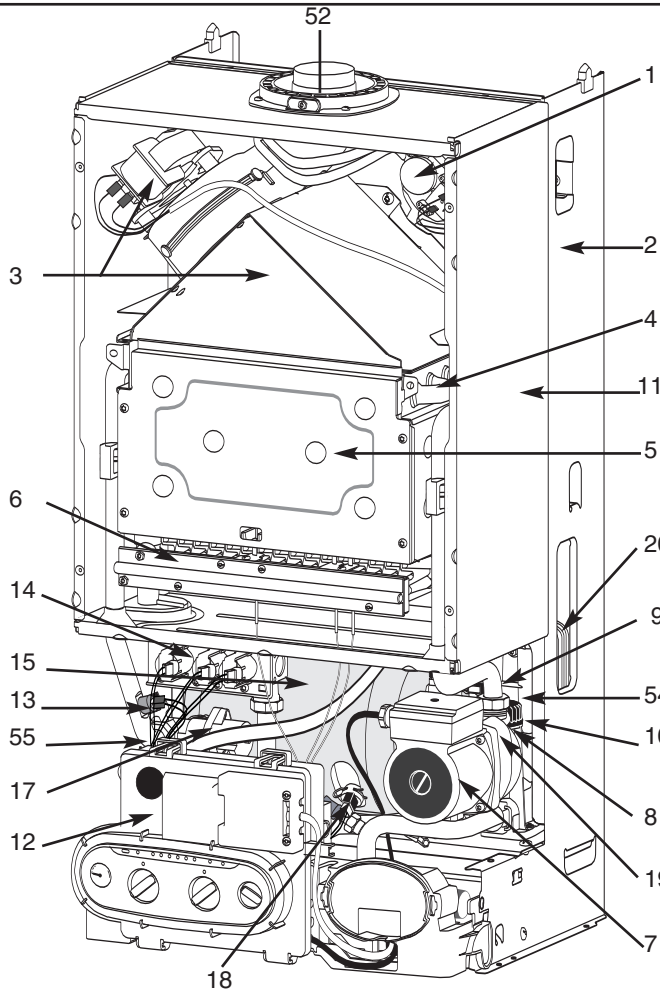


Fig. 3

## 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 0.7 bar and below 1.5 bar with the pressure gauge 31.
- 3) Open the gas tap 36.
- 4) The boiler is now ready to use.
- 5) Turn main switch 23 to position I. The green "power on" indicator 27 will light.

## Hot Water

- 1) Turn the DHW temperature control knob clockwise 24. The DHW indicator will light 32.
- 2) Turn on a hot water tap, the orange "burner on" indicator 28 will light and the water will become hot..

## Heating

- 1) Turn the CH thermostat control knob clockwise 25. The CH indicator will light 33.
- 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 will light and the heating will be on.

## Control panel

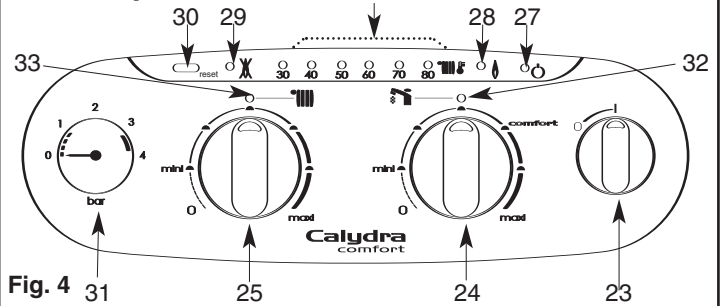


Fig. 4

# CALYDRA FUNCTIONAL DIAGRAM

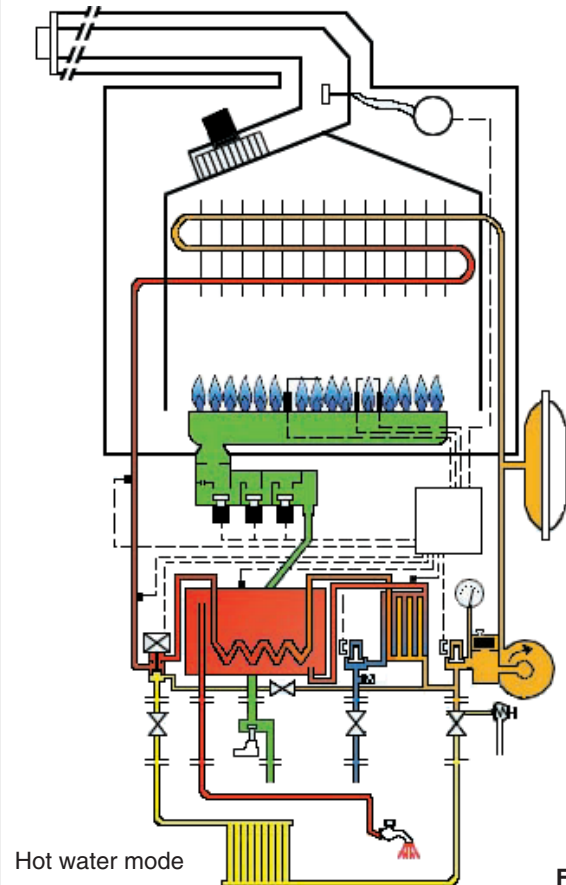


Fig. 5

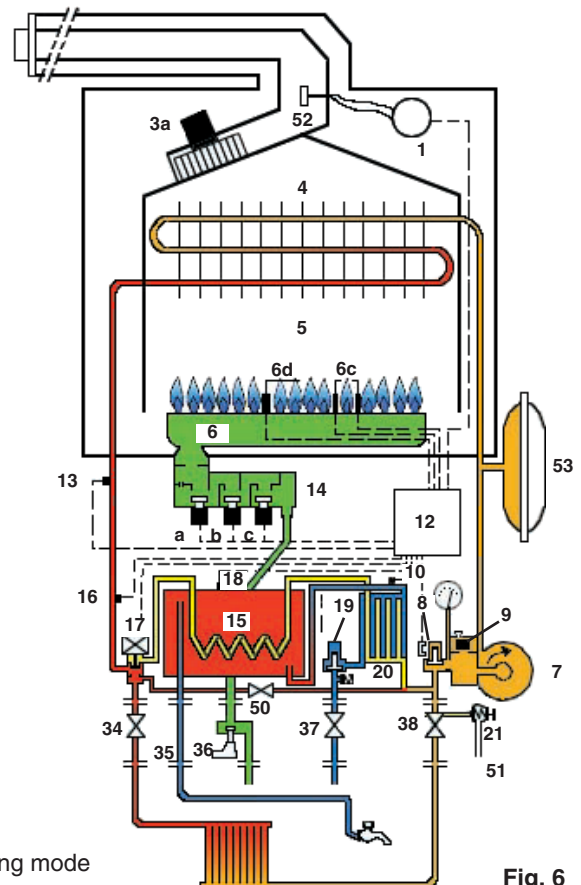


Fig. 6

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  $\times$ . If this happens press the reset button **30** and the boiler will light.

### To Turn Boiler Off Completely

- 1) Turn the main switch **23** to the off position **O**.
- 2) Turn the gas tap **36** (fig.2) OFF.

### Domestic Hot Water Mode

In order to supply hot water, the main switch **23** (fig. 4) must be in ON position **I**. This will be confirmed by the green indicator light  $\odot$  **27** (fig. 4). Turn DHW temperature adjustment knob **24** clock wise to establish the green DHW indicator **32** (fig. 4).

The hot water temperature in the mini cylinder can be adjusted between 40 and 60°C using control knob **24** (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 **17** (fig. 4) 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 first stage solenoid **a** (fig. 6) and safety solenoid **c** (fig. 6) 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  $\uparrow$  **28** (fig.4) will light and the second stage solenoid **b** (fig. 6) 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  $\times$  **29** (fig.4) will show. Over 2 l/min, the domestic hot water temperature is controlled by the hot water control thermistor **9** (fig.6) and the heating control thermistor **16** (fig.6), but dependant upon to the position of the DHW temperature adjustment knob **24** (fig.4). 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. (unless the mini cylinder thermistor is calling for heat, in which case the burner will remain on at a low rate and the pump will continue running until the mini cylinder thermistor is satisfied). The boiler will now stay in the hot water mode for 30 seconds to be ready for a subsequent draw off

Priority is given to a demand for hot water. This will interrupt the central heating for the duration of hot water delivery or recovery of the mini cylinder.

When the boiler has been in standby in Hot Water Mode for some time or when drawing DHW at flow rates of less than 2 l/min the temperature in the mini cylinder will eventually decrease and the TSS® control thermistor **18** (fig.6) will call for heat. Bringing the pump and burners to operate, until the cylinder thermistor is satisfied. this is quite normal.

### Central Heating Mode

To be able to supply heating, the main switch **23** (fig.4) must be in **I** position. This will be confirmed by the green indicator light  $\odot$  **27** (fig.4.) Turn the temperature control knob **25** clock wise to establish the green heating indicator **33** (fig.4).

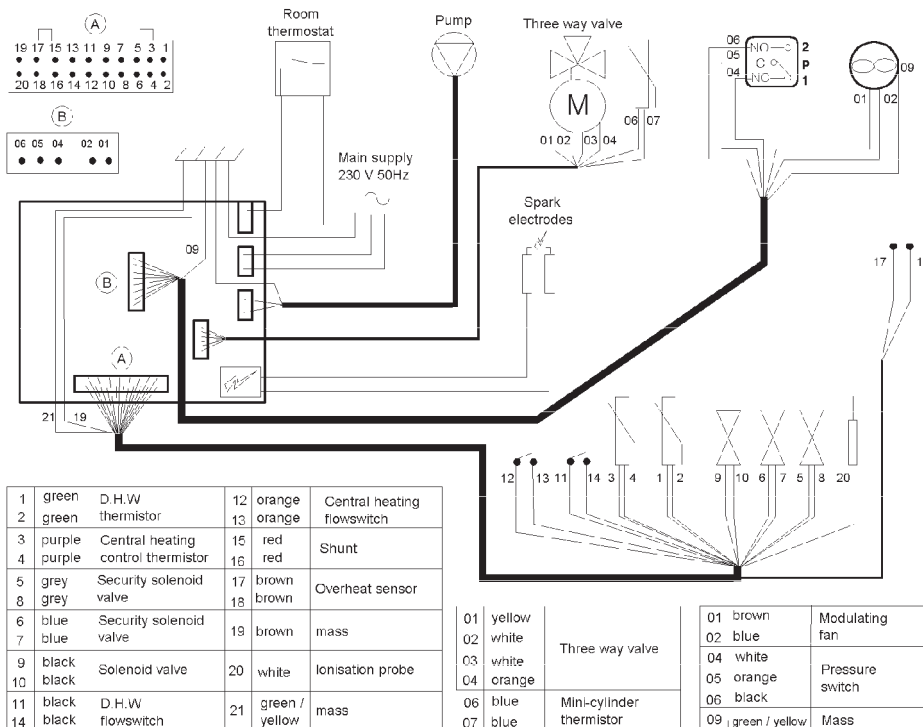
When there is a demand for heating (either from the room thermostat or the clock) and the boiler temperature control is calling for heat. The pump starts allowing the ignition sequence to begin. The first stage solenoid **a** (fig.6) and safety solenoid **c** (fig.6) open together to allow gas to the 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  $\uparrow$  **28** (fig.4) will light. After 45 seconds the second stage solenoid **b** (fig.6) 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  $\times$  **29** (fig.4) will show.

The central heating flow temperature is controlled by the central heating control thermistor **16** (fig.6). 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 (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 to stops.

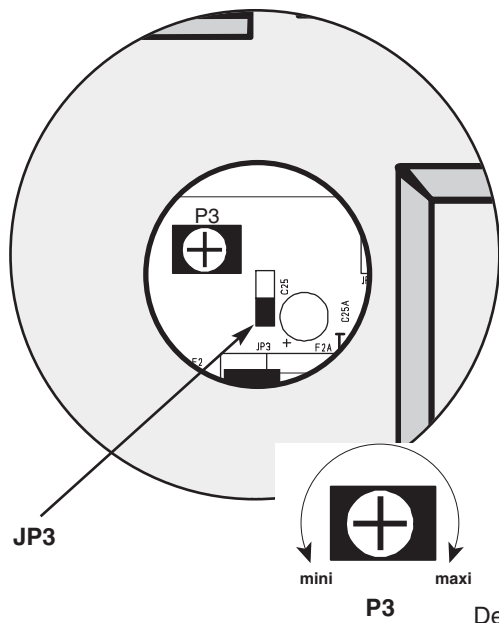
**NB :** It is possible to override the 3 minute delay by pressing the RESET button **30** (fig. 4)

## WIRING

### DIAGRAM



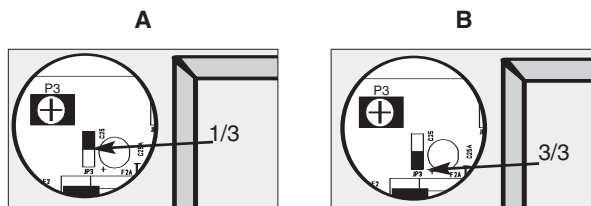
## ADJUSTMENTS ON CONTROL PCB



### Adjustment on the PCB :

- P3 : potentiometer TAC (Temporisation Anti Cycle) may now 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	$\Delta P < 100 \text{ Pa}$

### 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 filters.
- 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

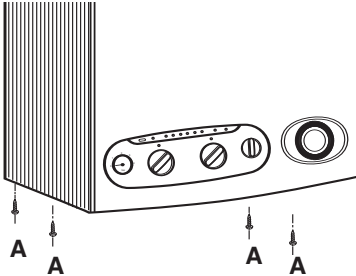
- Remove outer case
- Check the system pressure is at least 0.8 bar cold
- Check operation of solenoids.
- Check that the burner is extinguished fully when solenoids are closed in both DHW and C/H modes.
- Test ionisation functions and check that lockout occurs by turning off gas tap.

# REMOVAL AND REPLACEMENT OF PARTS

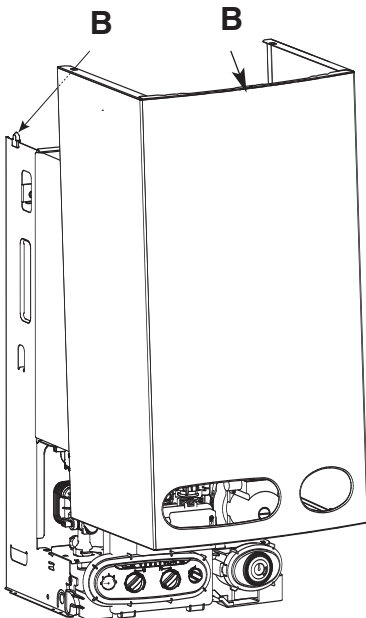
Before removing appliance case, isolate the gas and electrical supplies. Isolate boiler from the system and drain before removing any component in the waterways. Ensure that the appliance is cool.

## 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.

## 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.

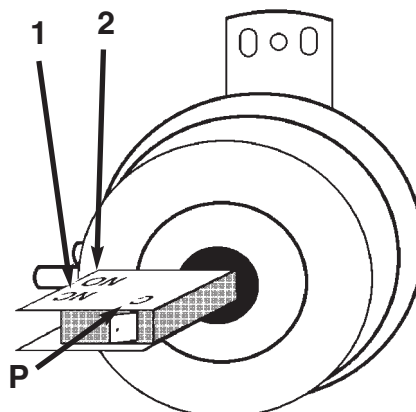
## 8. Fan Assembly

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.

## 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 -).

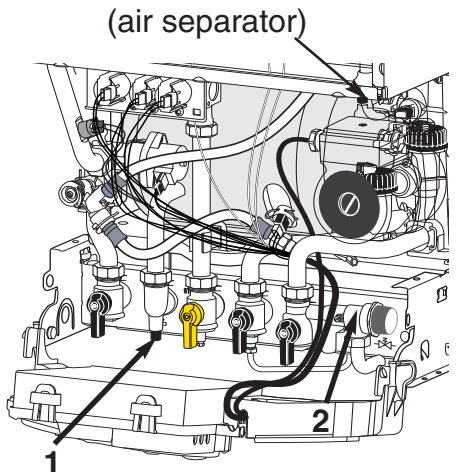
Remove switch. Reassemble in reverse order.

## 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.

1 = DHW circuit drain point

2 = Heating circuit drain point

(Pressure release valve)

## 13. Water filters ( Heating and DHW)

The C/H filter ensures a seal between the return tail and the tap 5 Fig. 2 unscrew the pipe nut and the tap nut. Pull the tap toward you and remove the C/H filter.

The DHW filter is located in the DHW command 37 Fig. 2 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.

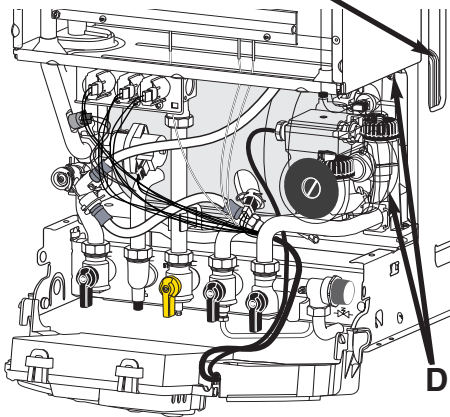
## 15. Pressure relief valve

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

### 16. 3-Way valve

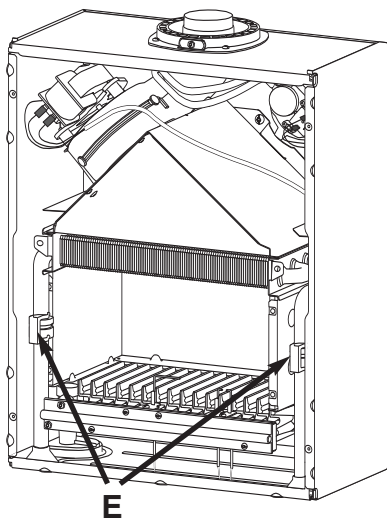
Drain boiler as in step 12. Remove the 2 clips on the 3 way valve hydraulic motor 17 (fig. 6). Pull up the motor. Turn anti-clockwise the 3 way valve body, rise it up using a screw driver and remove it. Reassemble in reverse order.

### 17. Secondary heat exchanger 20



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.

### 18. Main heat exchanger



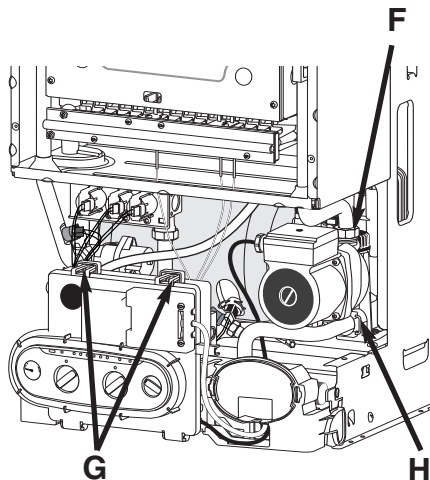
Carry out steps 1 and 2 as above. Drain boiler as in step 12. Remove the 2 clips **E** located on return and flow pipes and pull them downwards. Pull the main exchanger toward you to remove. Reassemble in reverse order

### 19. 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.

### 20. Pump

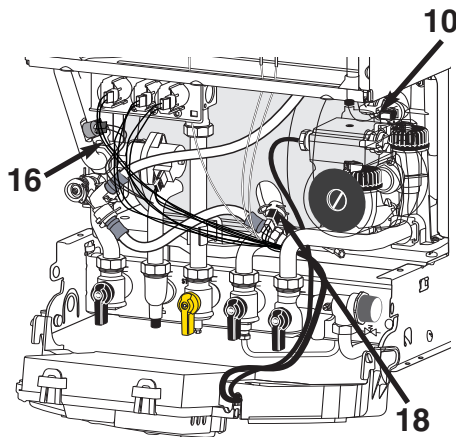
Drain the boiler as in step 12. Open the electrical box cover removing the 2 screws. Remove the main lead connection. Open the electrical box, 2 clips **G**



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.

### 21. Thermistors

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



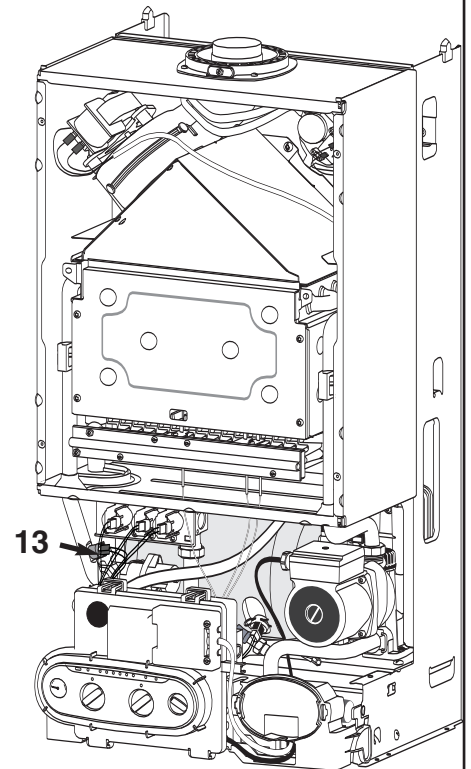
10 = DHW thermistor  
16 = Heating thermistor  
18 = TSS thermistor

### 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.

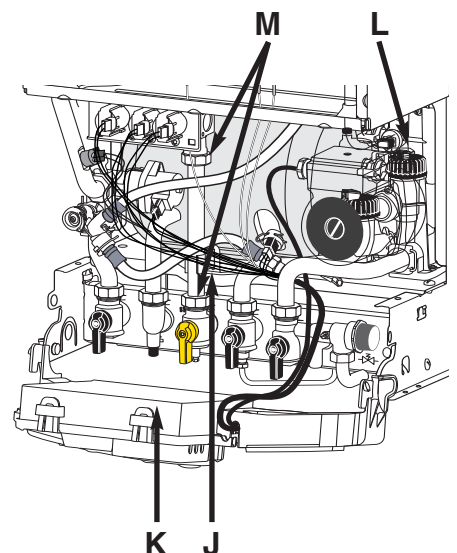
### 23. Safety thermostat

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.

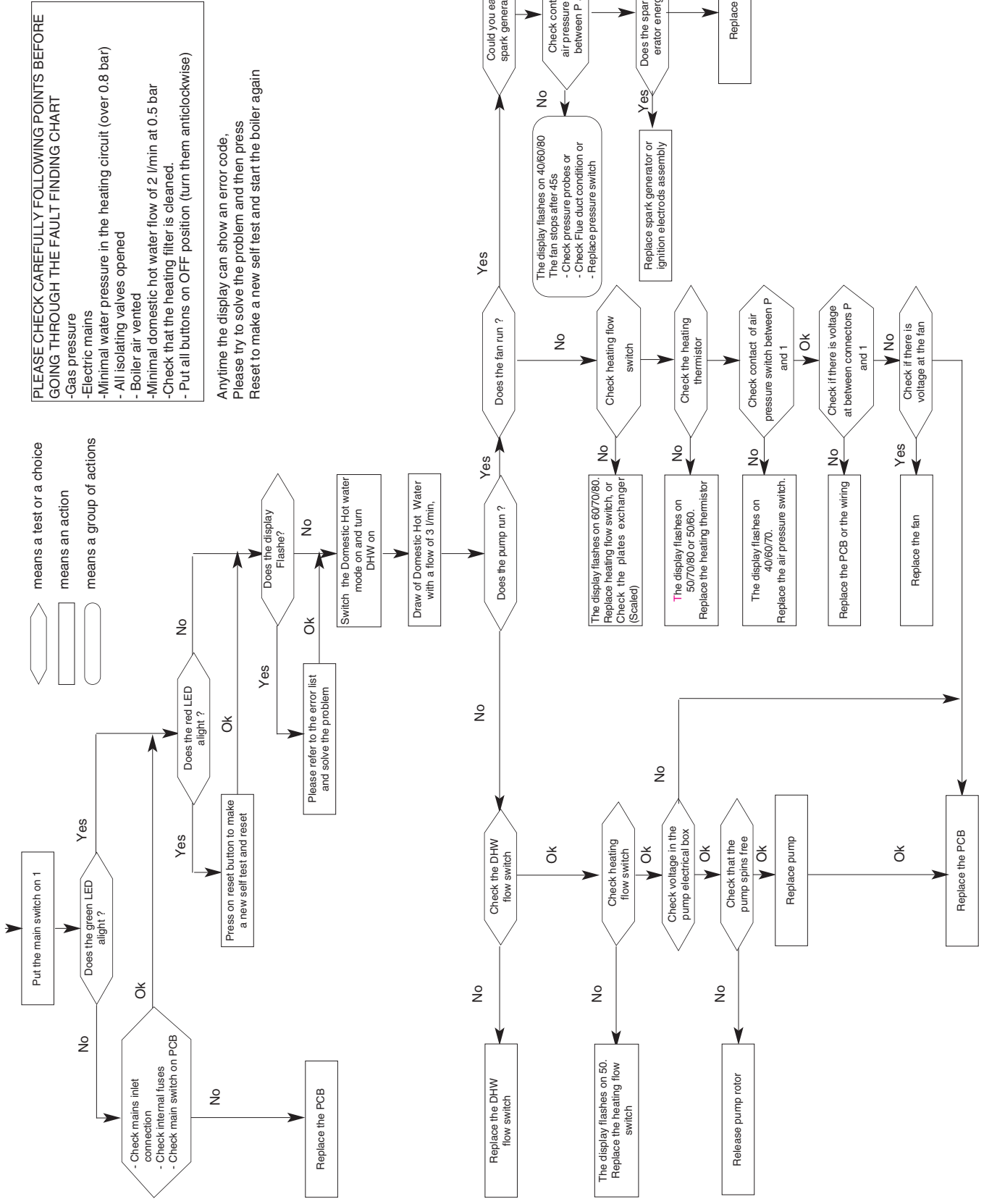


### 24. R2i mini cylinder

You have to remove the hydraulic bloc. Carry out steps 1 and 2 as above. Drain the cylinder by removing the drain plug **J**. Remove the 3 way valve as in step 16. Remove all the connections of main wiring. Remove the lid of connections box **K**. Disconnect the pump from electronic circuit. Remove the manometer. Unscrew the nut **L** of the pipe between the pump and the primary heat exchanger. Remove the gas pipe by unscrewing the two nuts **M**. Remove the gas block by removing the 4 screws. Unscrew the last nuts of connection from the pre-installation gig. Remove the two fastening screws of the hydraulic block from the frame. Pull all the hydraulic block toward you by inclining it slightly. Remove the two clips. Unscrew the two nuts fixing the cylinder. Reassemble in reverse order.



# FAULT FINDING CHART Part 1



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

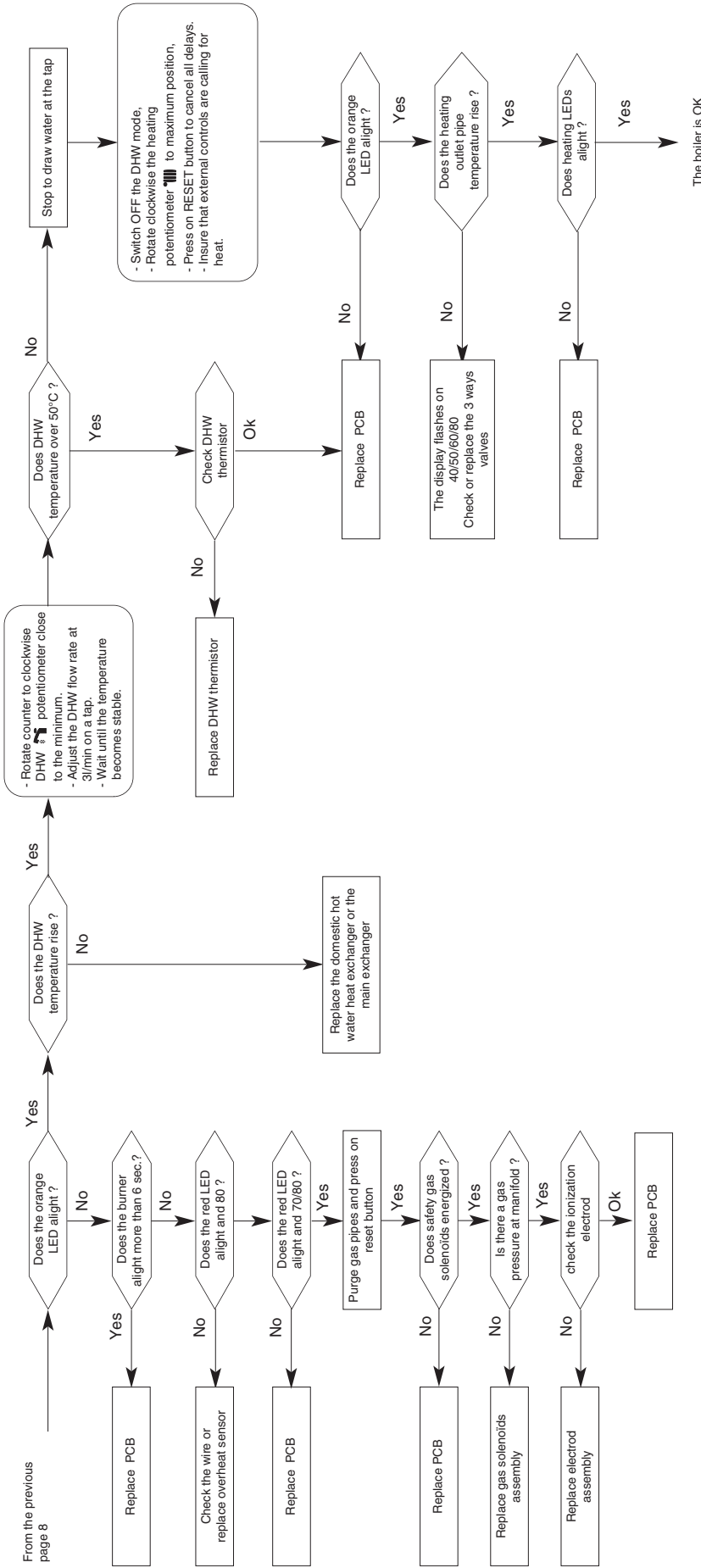
- Gas pressure
- Electric mains
- Minimal water pressure in the heating circuit (over 0.8 bar)
- All Isolating valves opened
- Boiler air vented
- Minimal domestic hot water flow of 2 l/min at 0.5 bar
- Check that the heating filter is cleaned.
- Put all buttons on OFF position (turn them anticlockwise)

Anytime the display can show an error code, Please try to solve the problem and then press Reset to make a new self test and start the boiler again

◇ means a test or a choice  
 ▭ means an action  
 ○ means a group of actions



# FAULT FINDING CHART Part 2



# INCORRECT FUNCTION

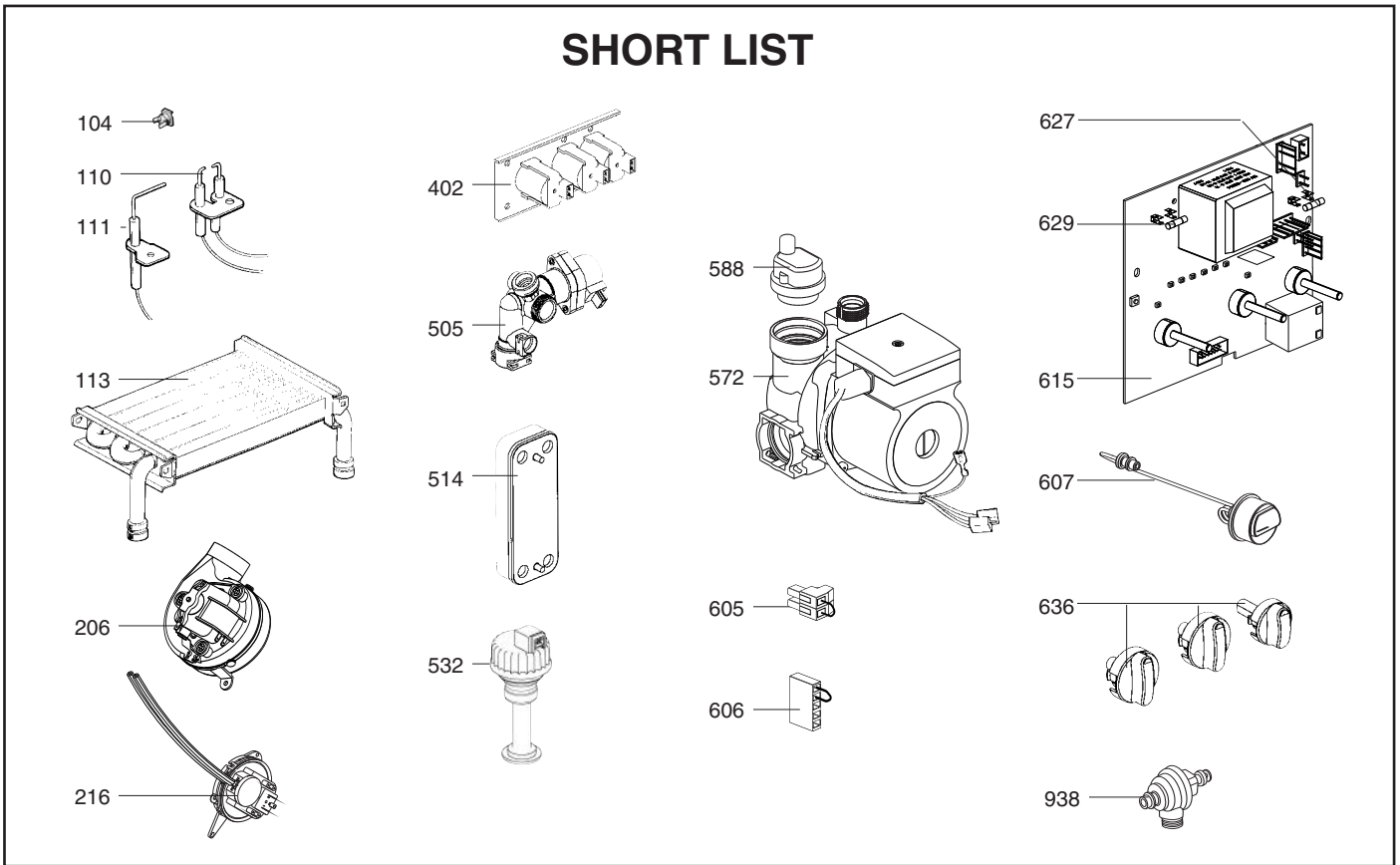
Incorrects functions is signalled by leds (rep 26) display flashing correspond with chart below.

CODE						FAULT	INFORMATION
30	40	50	60	70	80		
○	○	○	○	○	●	Overheating safety feature	
○	○	○	○	●	○	Overheating defect without locking	
○	○	○	○	●	●	Misfiring safety feature	
○	○	○	●	○	○	Fire detection without burner working	
○	○	○	●	○	●		Besides freezing pump
○	○	○	●	●	○		Besides freezing burnerr
○	○	○	●	●	●	Lack of water circulation.	
○	○	●	○	○	○	Primary water circulation defect	
○	○	●	○	○	●	Thermistor sanitary open	
○	○	●	○	●	○	Thermistor sanitary bypassed.	
○	○	●	○	●	●	Thermistor inlet heating open	
○	○	●	●	○	○	Thermistor inlet heating bypassed	
○	●	○	●	○	●	Extractor on and pressure regulator at rest	
○	●	○	●	●	○	Extractor off and pressure regulator at rest	
○	●	●	○	○	●	Thermistor cylinder open	
○	●	●	○	●	○	Thermistor cylinder bypassed	
○	●	●	●	○	●	Distribution valve stuck on heating	

○ = LED off

● = LED blinking

# SHORT LIST



Key N°	Description	G.C N°	Manf. Pt. N°	Type	80		100		Manf. date	
					CAU VORA COMFORT	CAU VORA COMFORT	from	to		
104	OVERHEAT THERMOSTAT 100°C	277783	1010572		●	●				
110	IGNITION ELECTRODE	277788	1002801		●	●				
111	IONIZATION ELECTRODE	277789	1002802		●	●				
113	HEAT EXCHANGER	277790	1010017		●					
	HEAT EXCHANGER	E00606	1011136			●				
206	FAN ASSY		1304720		●	●				
216	AIR PRESSURE SWITCH 24KW		1306697		●					
	AIR PRESSURE SWITCH 28KW		1307335			●				
402	SOLENOID VALVES KIT	E23494	81836	NAT	●	●				
505	THREE-WAY VALVE	E23510	81839		●	●				
514	WATER / WATER HEAT EXCHANGER		1302409		●	●				
532	WATER THROTTLE	277846	81471		●	●				
588	AIR SEPARATOR HEAD ASSEMBLY		1304608		●	●				
572	PUMP + AIR SEPARATOR 15/50		1301964		●	●				
	PUMP + AIR SEPARATOR 15/60		1303461		●	●				
605	CONNECTOR		1302101		●	●				
606	CONNECTOR		1303697		●	●				
615	PRINTED CIRCUIT BOARD		1307627		●	●				
627	FUSE 250V 2A - TEMPORIZED	277883	1003456		●	●				
629	FUSE 250V 1.25A - TEMPORIZED	277884	1003635		●	●				
607	PRESSURE GAUGE		1303159		●	●				
636	KNOBS SET		81979		●	●				
938	PRESSURE RELIEF VALVE		1020933		●	●				

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.

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