
Wall hung, fanflue, roomsealed, high efficiency open vent gas boiler

Service manual

ADVANCE

Models

G.C. Appl. No.

ADVANCE 150V **41-583-35** **BOILER**

ADVANCE 180V **41-583-36** **BOILER**

ADVANCE 240V **41-583-37** **BOILER**

Leave this manual adjacent to the gas meter

Warning:


Service / repairs must be carried out, only by a qualified Gas Safe Registered Engineer, who will be responsible for the current Regulations for gas appliances.

Note:

After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist of the user and installation manual.



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1 OVERALL INFORMATION

1.1 Overall View

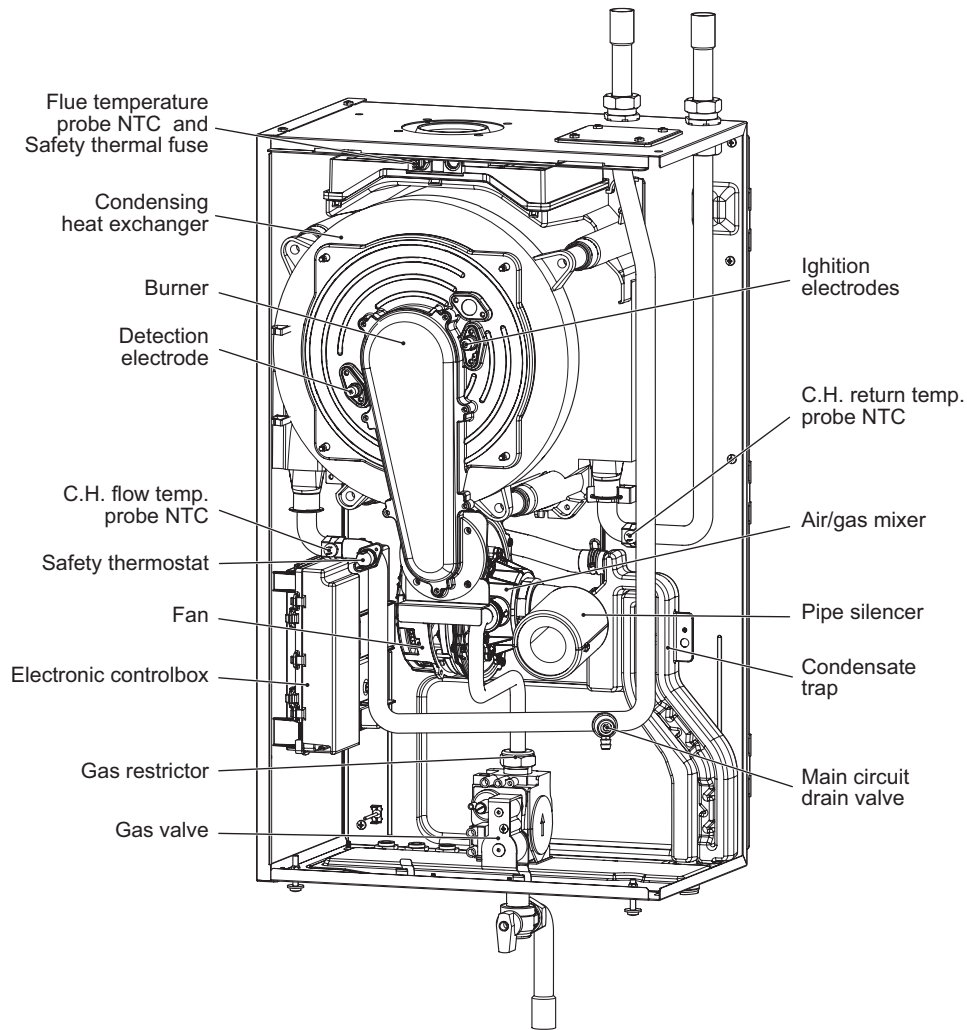


Figure 1.1

1.2 Hydraulic diagram

Central heating (C.H.) operation

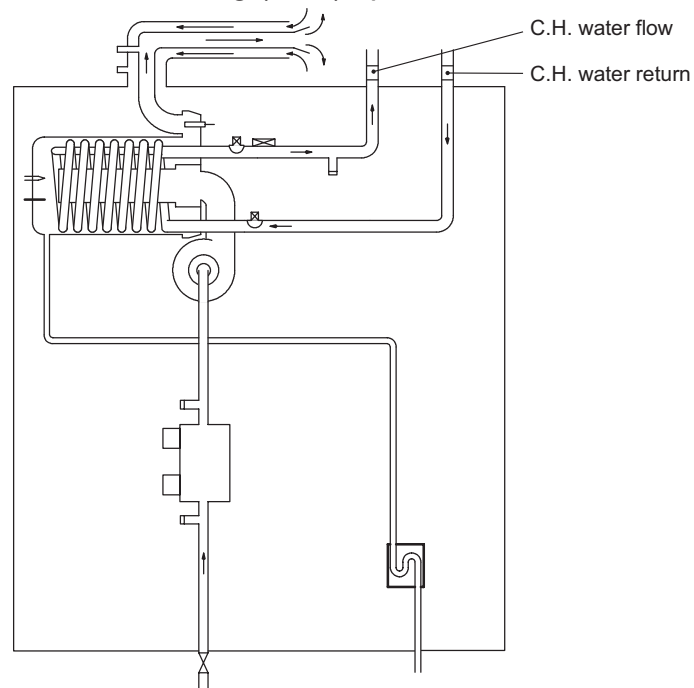


Figure 1.2

GENERAL ACCESS AND EMPTYING HYDRAULIC CIRCUITS

2 GENERAL ACCESS AND EMPTYING HYDRAULIC CIRCUITS

2.1 Nomenclature

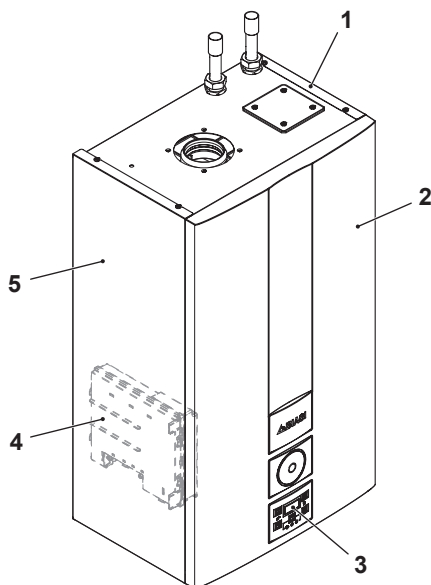


Figure 2.1

- 1 Right side panel
- 2 Front panel
- 3 Control panel
- 4 Main electronic p.c.b. box
- 5 Left side panel



Warning: open vent boilers can utilize extensive external controls and equipment that can have an effect on the correct operation of the boiler, under dysfunctional operation conditions it is advised that you safely disconnect any and all external equipment to identify if the boiler or external equipment is causing the issue. the boiler can be operated with any external zone valves in the manually locked open condition and with the room thermostat link replaced to prove correct operation of the boiler. Please take care to safely terminate any removed wiring during this test.

2.2 Case panels



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

For the most part of the check and maintenance operations it is necessary to remove one or more panels of the case.

The side panels can be removed only after the removal of the front panel.

To remove the front panel loosen screws "A" (Figure 2.2), lift the panel and remove it.

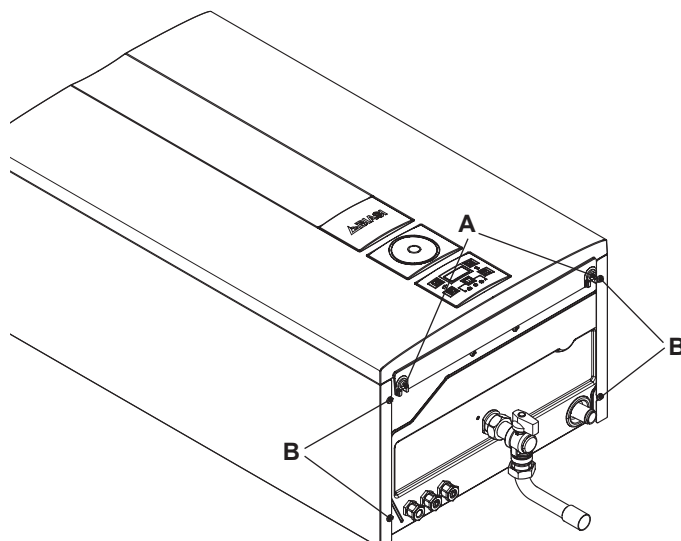


Figure 2.2 - Bottom view of the boiler

Pull the lower part of the front panel and lift it upwards (Figure 2.3).

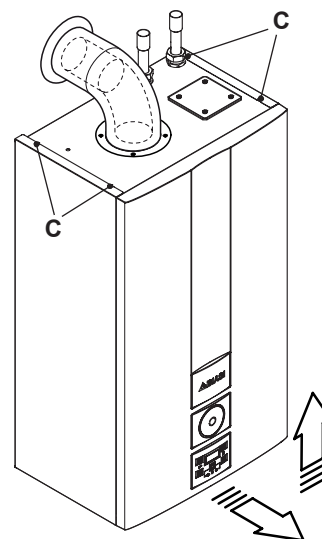


Figure 2.3

To remove the side panels loosen the screws "B" (Figure 2.2) and "C" (Figure 2.3).

Pull the side panels towards the outside.

To Fit the case panels

Fit the side case panels.



Warning: Fit the front panel hooking it on the upper side.

Push the spring towards the internal side of the boiler and simultaneously push the front case panel until it is completely hold in place (Figure 2.4 step 1, 2).

Repeat the same operation on the opposite side of the front panel (Figure 2.4 step 3, 4).

Ensure that the front panel edge is close-fitting to the side panels. Lock in place the panel with the appropriate screws.

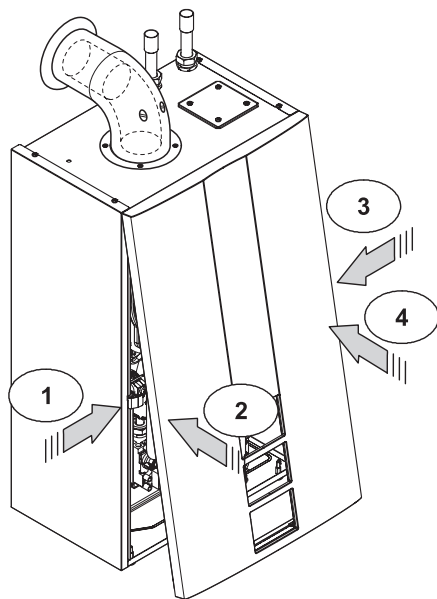


Figure 2.4

2.3 Control panel



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

To gain access to the parts located inside the control panel proceed as follows:

- 1 Remove the front panel of the case
- 2 Unscrew the screw "D" (Figure 2.5).
- 3 Free the hooks indicated and rotate the lid towards left.

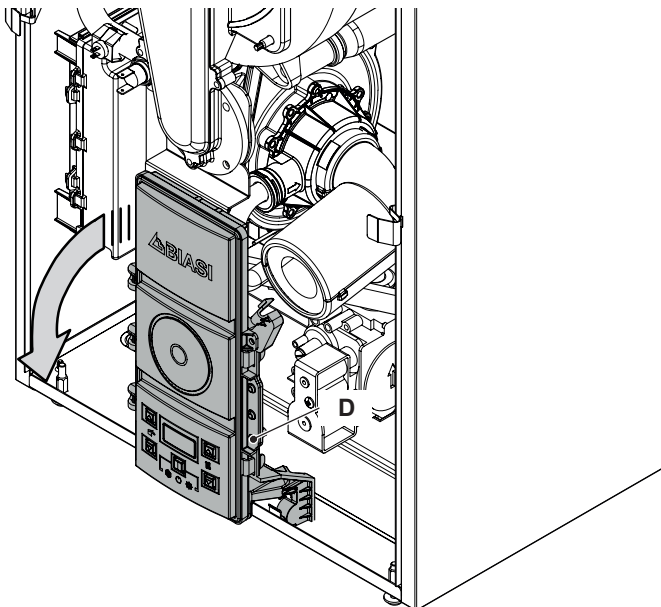


Figure 2.5

- 4 To access to the parts located behind the control panel to free the hook "E" and turn it as shown in Figure 2.6.

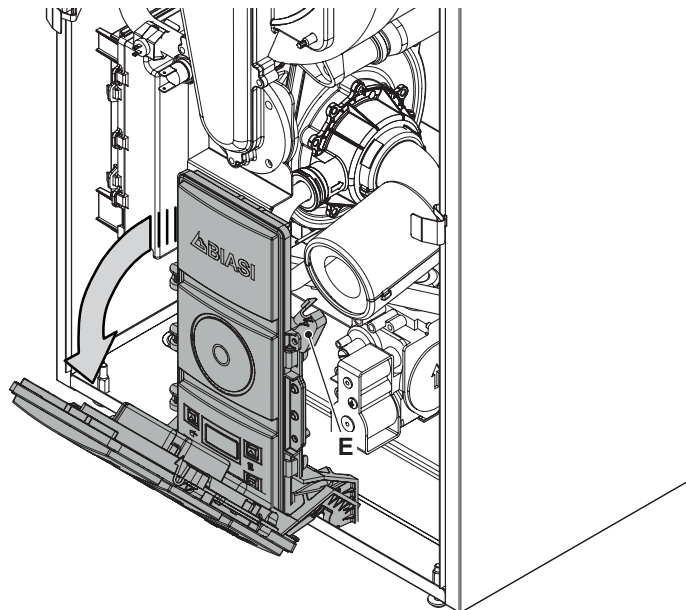


Figure 2.6

2.4 Main electronic p.c.b. box



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

To gain access to the parts located into main electronic p.c.b. box proceed as follows:

- 1 Remove the front panel of the case.

Terminal block lid removal

- 2 To remove the terminal block lid "F" (Figure 2.7), free the front hooks.

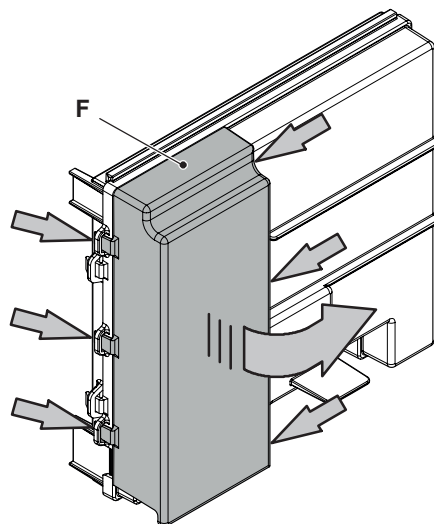


Figure 2.7

- 3 Slightly rotate the lid as indicated by the curved arrow and free the rear hooks.
- 4 Remove the lid.

GENERAL ACCESS AND EMPTYING HYDRAULIC CIRCUITS

Main electronic p.c.b. lid removal

To get access to the main electronic p.c.b.:

- 5 Pull the box that contains the electronic p.c.b. and rotate it (Figure 2.8).

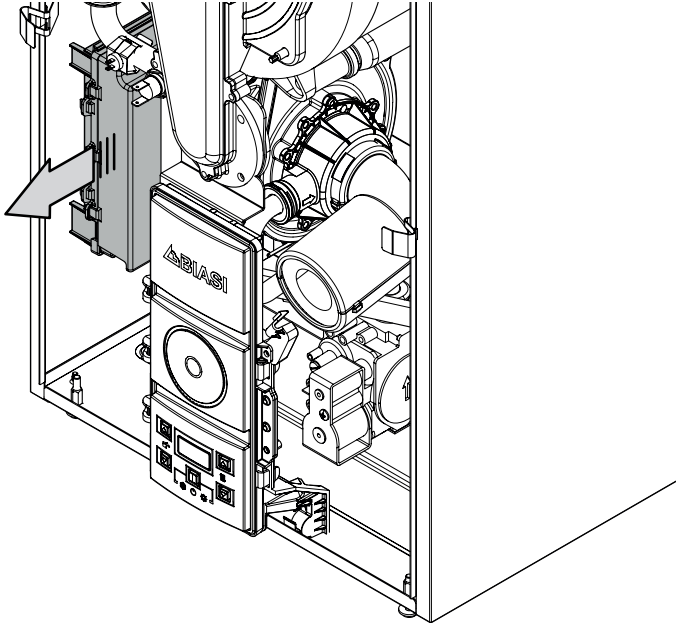


Figure 2.8

- 6 Remove the terminal block lid "F" (Figure 2.7).
- 7 Free the hooks placed on the three sides indicated and rotate the lid towards left (Figure 2.9).

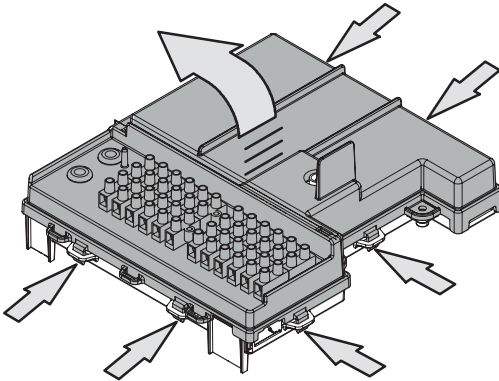


Figure 2.9

2.5 Emptying the primary circuit

- 1 Isolate the cold feed to the F&E tank, also if fitted isolate the heating circuit flow and return valves.
- 2 Remove the front and right panels of the boiler.
- 3 Loosen the central heating drain cock "G" (Figure 2.10) until the boiler is completely emptied.

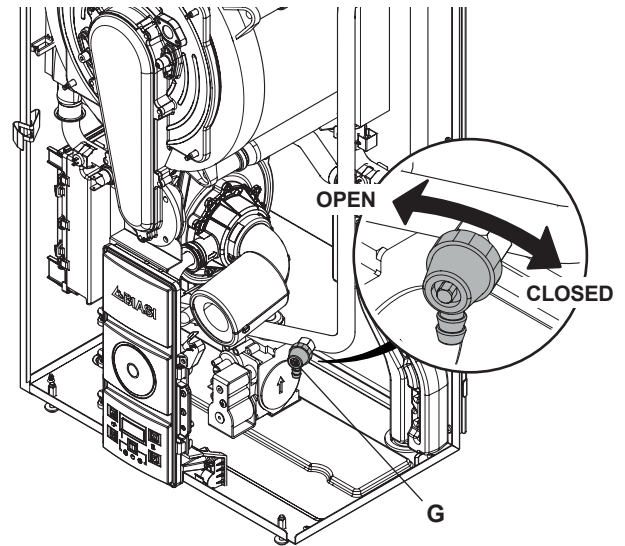


Figure 2.10

3 DIAGRAMS

3.1 Wiring diagram

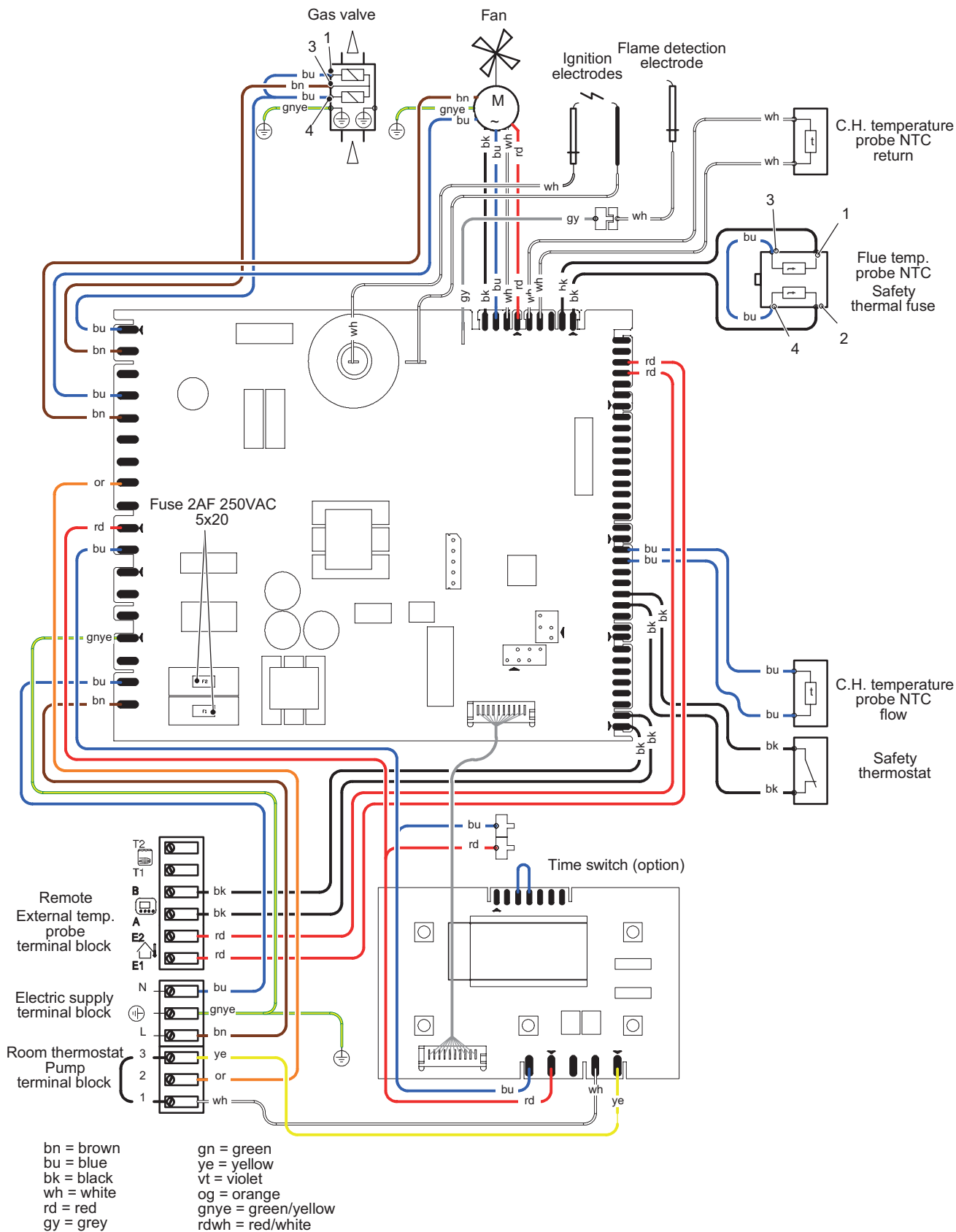


Figure 3.1

3.2 Circuit voltages

Electrical voltages with burner on — only during C.H. operation

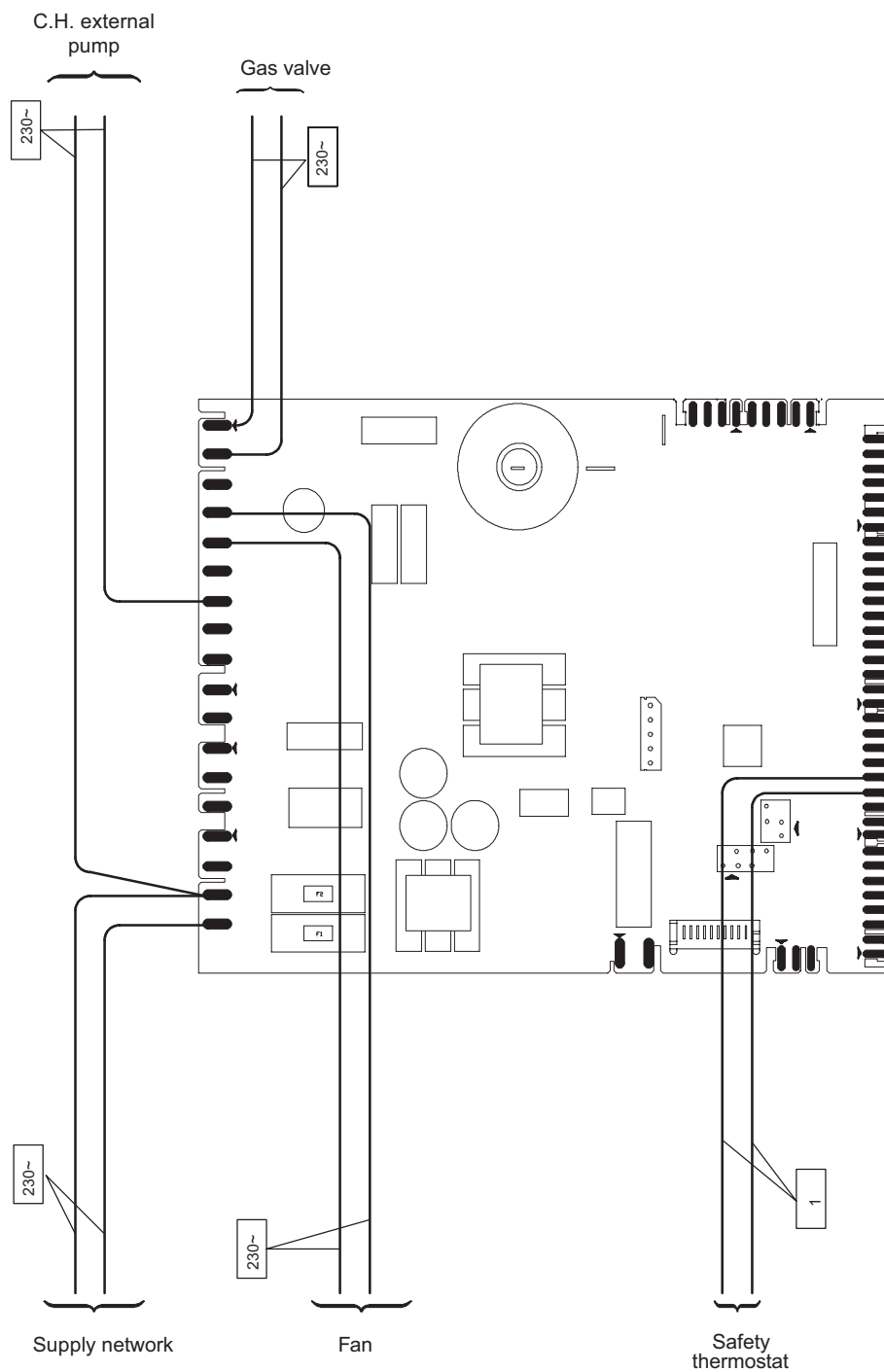







Figure 3.2

4 FAULT FINDING

FAULT FINDING

Section of the manual → (note ref. in brackets)		Components to check																													
		(1)	(2)	(3)	14.1	(4)	5	External pump	Fuses (Electronic p.c.b.)	Main electronic p.c.b.	Boiler settings	7	8.4	C.H. flow temp. probe	C.H. return temp. probe	10	11.4	Detection electrode	Safety thermostat	12.2	12.2	13.1	(7)	Expansion vessel external	Safety valve external	Pressure gauge external	External temp. probe	Room thermostat delayed			
Appliance lock-out (*) ↓ Defect																															
	Er 01 + RESET		A		B								D					C		B								External temp. probe	Room thermostat delayed		
	Er 02 + RESET																		B								Pressure gauge external	External temp. probe			
	Er 03 + RESET								A																		Safety valve external	Pressure gauge external			
	Er 04 + 						B																								
	Er 05 + 																A														
	Er 06 + 														A	A															
	Er 08 + 																												A		
	Er 09 + 			A																			B								
	Er 10 + RESET			A																			B								
	11 up				A					C									B												
		Er 14 + RESET					A	C	B																						
		Er 15 + RESET					A	C	B																						
		Er 16 + RESET													A	A															
		Er 17 + RESET													A	A															
Er 18 + RESET					B	D	C																		A						
L3					B	D	C							A	A																
TD														B	B													A			

Display indicates "Er"

The letter in the cells indicates the possible fault cause.

A.....Z indicates the most probably (A) to less probably (....Z)

FAULT FINDING

		Components to check																									
Section of the manual → (note ref. in brackets)		(1)	(2)	(3)	14.1	(4)	5	External pump	Fuses (Electronic p.c.b.)	Main electronic p.c.b.	Boiler settings	7	8.4	C.H. flow temp. probe	C.H. return temp. probe	10	11.4	Detection electrode	12.2	12.2	13.1	(7)	Expansion vessel external	Safety valve external	Pressure gauge external	External temp. probe	Room thermostat delayed
Appliance lock-out (*)	Defect ↓	Power supply line	Gas supply line	Flue pipes	Cond. drain pipe and trap	C.H. circuit	Condensing heat exchanger					●															
	The boiler does not start. The control panel display OFF Fan still.	●							●	●		●															
	Incorrect modulation.									●				●	●	●											
	Noisy boiler.		●	●				●					●	●	●	●											
—	Water leaks from the safety valve during operation on C.H.					●																●	●	●	●	●	
—	Water leaks from the safety valve when the boiler is off.																										

* Lock out is indicated as "Er" on the display.

Note

Useful information can be obtained also from the optical indication given by the appliance display (see section 4.1).

- 1 Check for 230V~ between line (L) and neutral (N).
Verify the integrity of supply cable, plug and external fuses.
Check the polarity of line and neutral connection.
- 2 Check the gas supply pipe and isolation tap for gas tightness.
- 3 Check for soundness and absence of obstructions. Verify that the flue terminal is correctly installed (see clearances) and ensure that exhaust gas is not sucked back by the boiler.
- 4 Check for soundness of the circuit and verify its correct filling (see also installation manual).
- 5 A jammed by-pass could cause the over-heating of the main circuit and the intervention of the safety thermostat.
- 6 Using the flue analyser, check the CO₂ value of the flue gases.
This reading is a reference value for the gas valve setting.
- 7 Check the pressurization of the expansion vessel. Refer to the installation manual for proper values.
- 9 The boiler doesn't reach the nominal heat input.








FAULT FINDING

4.1 Display diagnostic

The display indications provide help in the diagnosis of fault finding.

The control panel display gives other information for the user.

The following table gives fault code, error and the reason for the fault.

Er 01 + RESET	Lack of burner ignition
Er 02 + RESET	Safety thermostat lockout
Er 03 + RESET	Other faults
Er 04 + 	Faulty primary circuit (no water or absence of flow)
Er 05 + 	Faulty fan control system
Er 06 + 	Faulty C.H. temperature probe NTC flow
Er 08 + 	Faulty external temperature probe NTC (if fitted)
Er 09 + 	Faulty flue temperature probe NTC
Er 10 + RESET	Lockout – flue temperature probe NTC (Flue temperature > 120 °C)
An 11	Parasite flame
Er 12 + 	Faulty central heating temp. probe NTC (return)
Er 14 + RESET	Faulty pump (absence of water flow in the main circuit) or primary temperature above 105 °C
Er 15 + RESET	None or too low water flow; Faulty pump (temp. difference between probes higher than 35° C)
Er 16 + RESET	Possible exchange of NTC probes (Flow or Return) or pump wrongly mounted (upside – down)
Er 17 + RESET	Faulty C.H temperature probe NTC (Flow or Return)
Er 18 + RESET	Faulty primary circuit (no water or absence of flow)
Er 25 + RESET	Flame detection error
Er 69	Wiring error lockout
L3	Useful output limitation (temperature difference between probes higher than 25° C); Boiler test performing
Td	Thermostat Delayed: Boiler test performing
 65 °C	Maintenance required The wrench symbol is flashing (without showing any error)

4.2 Programming the maintenance period

- 1 To enter in the parameters setting mode press sequentially the 3 keys "B - C - A" (Figure 4.1) and hold in for 10 second until the display shows Figure 4.2.

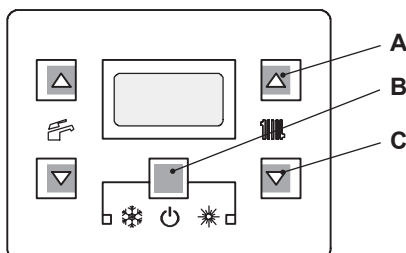


Figure 4.1

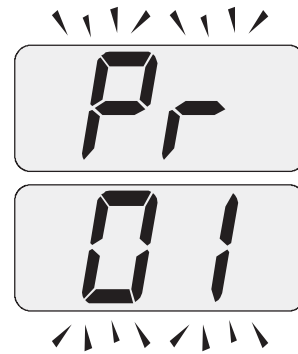


Figure 4.2

- 2 Scroll the various parameters using keys "A" or "C" (Figure 4.1) until the LCD display indicates the letters **Pr**, alternating with the code **28**, indicating entry in "parameter 28" (Figure 4.3).

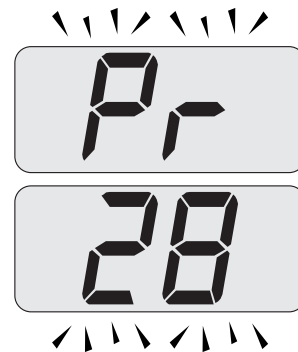


Figure 4.3

- 3 Press keys "B" and "A" (Figure 4.1) at the same time until the LCD display indicates the value of parameter 28 (e.g. 12 default value) Figure 4.4.

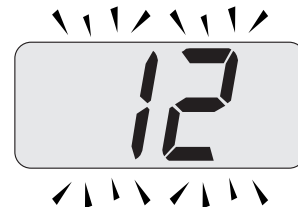



Figure 4.4

- 4 Pressing key "A" makes it possible to change the value of parameter 28 from **0** to **48** months. It is possible to set parameter 28 to **99** thereby disabling the maintenance request (symbol  will disappear from the display).
- 5 By pressing key "B" (Figure 4.1) confirmation of the inserted value is obtained.
- 6 By pressing keys "B" and "C" (Figure 4.1) together, you will exit without changing the value (return to parameter list Figure 4.3).
- 7 Press keys "B - C - A" (Figure 4.1) together for 10 seconds to exit "programming mode".

5 CONDENSING HEAT EXCHANGER

5.1 Function

The Condensing heat exchanger "A" in Figure 5.1 has the function of transferring heat produced from combustion of the gas and from the flue exhausted gas to the water circulating in it.

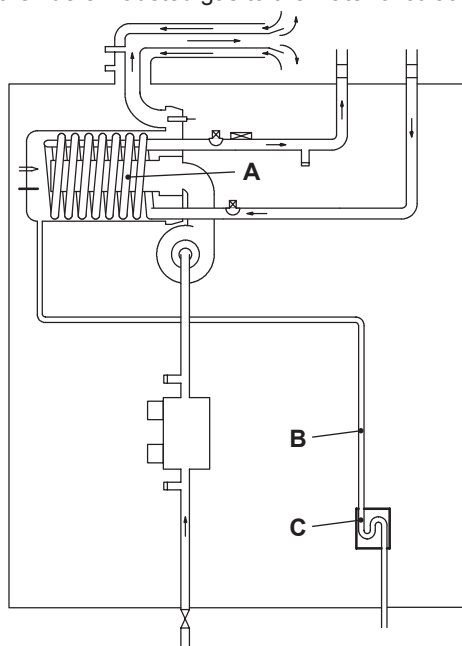


Figure 5.1

By reducing the combustion products temperature, the latent heat of the vapour is transferred to the water circuit, allowing an extra gain of useful heat.

The condensed vapour is then drained through the condensate trap "C" and the draining pipe "B".

5.2 Removal



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Disconnect the flue system from the boiler.
- 2 Remove the fan group (rubber pipe, gas pipe) following the instructions from 1 to 6 in section "10.2 Removal of the Air box and the Fan" on page 27.
- 3 Disconnect the detection electrode connector "D", the ignition electrodes connector "E" and the earth wire "F".
- 4 Disconnect the fan connector "G" by pressing the plastic hook placed on the side of the connector (Figure 5.2).
- 5 Unscrew the nuts "H" (Figure 5.2).
- 6 Remove the fan-burner group "I".
- 7 Empty the primary circuit of the boiler.
- 8 Remove the clips "J" (Figure 5.2).
- 9 Loosen the connection "L" and slightly move the pipe "K" upwards, turn it towards left (Figure 5.2) and then move the pipe downwards freeing it from the Condensing heat exchanger.
- 10 Loosen the connection "M" and slightly move the pipe "N" upwards, turn it towards left (Figure 5.2) and then move the pipe downwards freeing it from the Condensing heat exchanger.

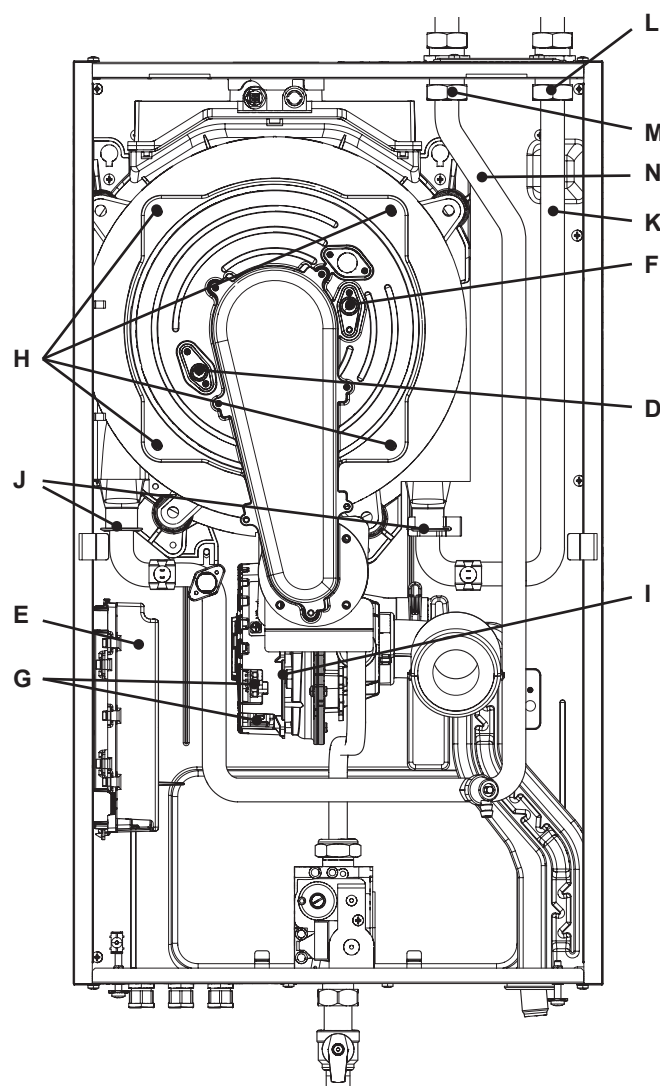


Figure 5.2

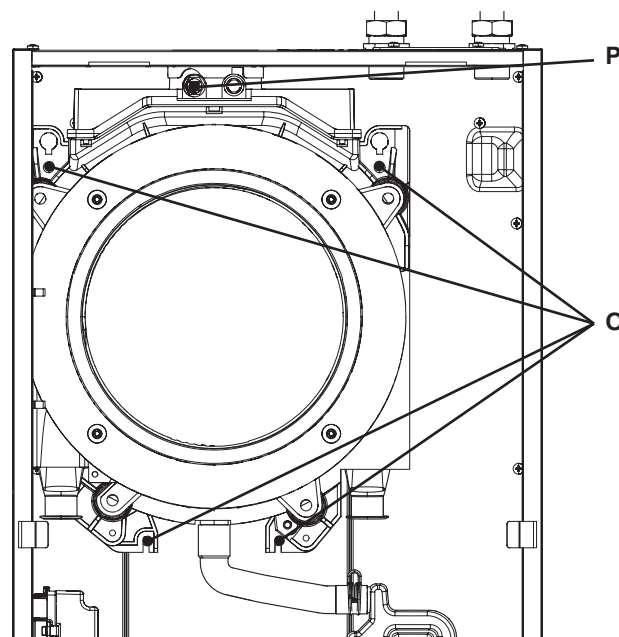


Figure 5.3

- 11 Unscrew the screws "O" and remove the clamps (Figure 5.3).
- 12 Disconnect the connector "P" by pressing the plastic hook placed on the side of the connector (Figure 5.3).
- 13 Remove the Condensing heat exchanger by levering it and sliding it forwards.

CONDENSING HEAT EXCHANGER

14 Reassemble the Condensing heat exchanger carrying out the removal operations in reverse order.

Ensure to tighten the nuts "H" - Figure 5.2 firmly.

5.3 Cleaning

If there are deposits of dirt on the coil of the Condensing heat exchanger, clean with a bristle paintbrush and remove the dust with a Hoover.



Warning: After cleaning or replacement as detailed above, it is deemed necessary to undertake a combustion analysis as detailed in chapter "8.3 Adjustment" on page 22 section "8 GAS VALVE" on page 22.

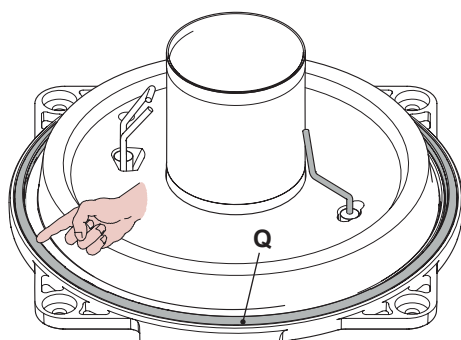


Figure 5.4

Caution:

After any periodical servicing or disturbance the combustion chamber silicon seal "Q" Figure 5.4 and the Air-gas duct gasket (Figure 5.5) must be fully inspected and replaced at the discretion of the service engineer.

After any disturbance to the chamber door seal the appliance must undergo a full analytical combustion performance check.



Remove any limescale from the detection electrode and replace it if worn.

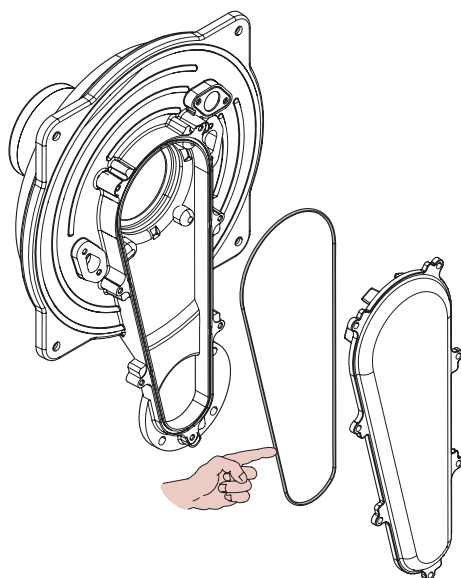


Figure 5.5

MAIN ELECTRONIC CONTROL/IGNITION P.C.B.

6 MAIN ELECTRONIC CONTROL/IGNITION P.C.B.

6.1 Function

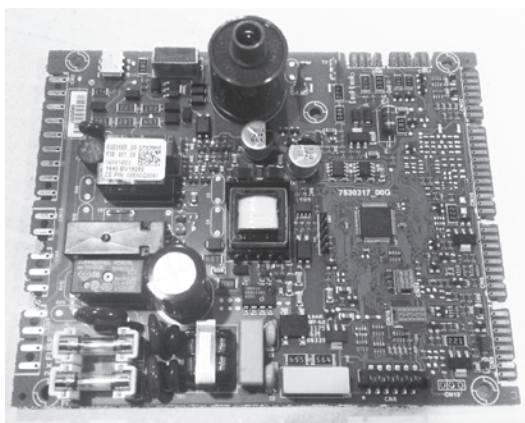
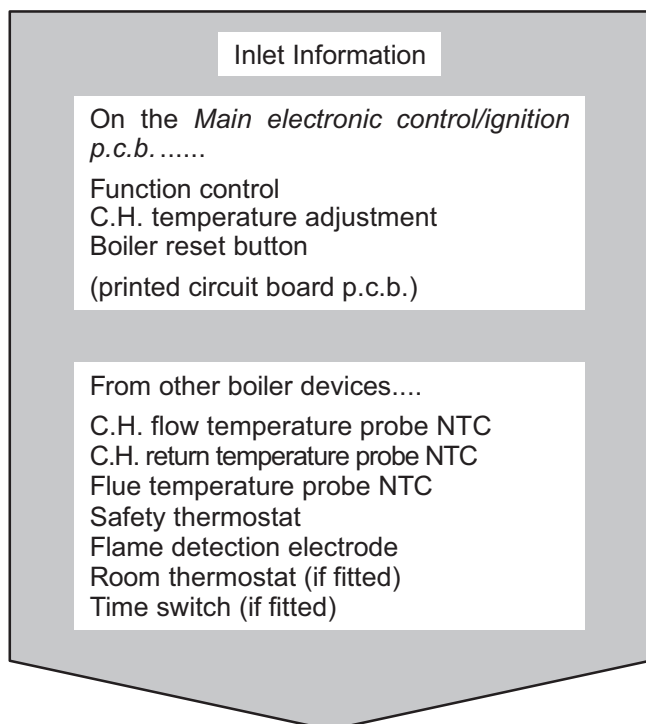


Figure 6.1

The fundamental function of the *Main electronic control/ignition p.c.b.* is that of controlling the boiler in relation to the external needs (i.e. heating the dwelling) and operating in order to keep the temperature of the hydraulic circuits constant.

This is obviously possible within the useful power and maximum working temperature limits foreseen.

Generally, the *Main electronic control/ignition p.c.b.* receives inlet information coming from the boiler (the sensors) or from the outside (printed circuit board p.c.b., room thermostat, etc.), processes it and consequently acts with outlet commands on other components of the boiler (Figure 6.1).

The *Main electronic control/ignition p.c.b.* is also a full sequence ignition device and does a sequence of operations (ignition cycle) which lead to the ignition of the gas at the burner.

It checks the presence of the flame during the entire period in which it is activated and supplies the fan regulating its speed.

The *Main electronic control/ignition p.c.b.* has a safety function and any incorrect interventions or tampering can result in conditions of dangerous functioning of the boiler.

The *Main electronic control/ignition p.c.b.* can lock the functioning of the boiler (lock state) and stop its functioning up to the resetting intervention. The lock-out is signalled on the display of the printed circuit board p.c.b. and can be reset only by using the boiler reset button placed on the control panel electronic p.c.b. (see section "7.1 Function" on page 20).

Some components which are connected to the device can activate the lock state. The causes of a lock state could be:

- The intervention of the safety thermostat (overheat of the primary circuit).
- The intervention of the flue temperature probe (overheat of the combustion products).
- A fault on gas supply.
- Faulty ignition (faulty ignition electrodes, their wiring or connection).
- Faulty flame detection (faulty detection electrode, its wiring or connection).
- Faulty condensate drainage.
- Faulty gas valve (faulty on-off operators or not electrically supplied).
- Faulty *Main electronic control/ignition p.c.b.*.
- Absence of water or insufficient flow rate in the primary circuit.

Figure 6.12 show the sequence of the operations that are carried out at the start of every ignition cycle and during normal functioning.

6.2 Selection and adjustment devices

On the *Main electronic control/ignition p.c.b.* several selection, adjustment and protection devices are located. (Figure 6.2).

Some of these devices are directly accessible by the user (function control, temperature adjustment etc.) others, like the fuses, are accessible by removing the main electronic p.c.b. lid.

MAIN ELECTRONIC CONTROL/IGNITION P.C.B.

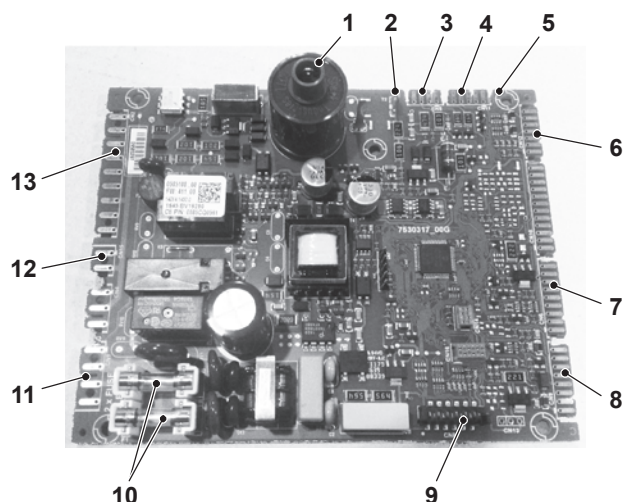



Figure 6.2

- 1 Connector - ignition electrode.
- 2 Connector - flame detection electrode
- 3 Connector - controller fan
- 4 Connector - C.H. return temperature probe NTC
- 5 Connector - flue temperature probe NTC
- 6 Connector - external temperature probe (optional)
- 7 Connector - safety thermostat and C.H. flow temperature probe NTC
- 8 Connector - remote control (optional)
- 9 Connector - display and function control / C.H. temperature adjustment control panel p.c.b.
- 10 Fuse F1, F2 2A F
- 11 Connector - electric supply Main electronic control/ignition p.c.b.
- 12 Connector - electric supply control panel p.c.b.
- 13 Connector - gas valve, external pump and fan


6.3 Checking the temperature

The *Main electronic control/ignition p.c.b.* makes it possible to separately adjust the C.H. water flow temperature.

The temperature of the water is converted into an electric signal by means of temperature probes.

The user, setting the desired temperature with the control panel p.c.b. key .

If the power requested is lower than 40% of the maximum power output then control is achieved by switching ON the burner at minimum power, then switching OFF (ON/OFF function). If the power requested is higher, then the burner is switched ON at maximum power and will control by modulating to 40% of the maximum power output.

During the C.H. operation (Figure 6.3), the signal coming from the C.H. temperature probe is compared to the signal given by the control panel through the adjustment made by the user (key ). The result of such a comparison operates the fan speed thus regulating the gas flow rate and consequently changing the useful output of the boiler.

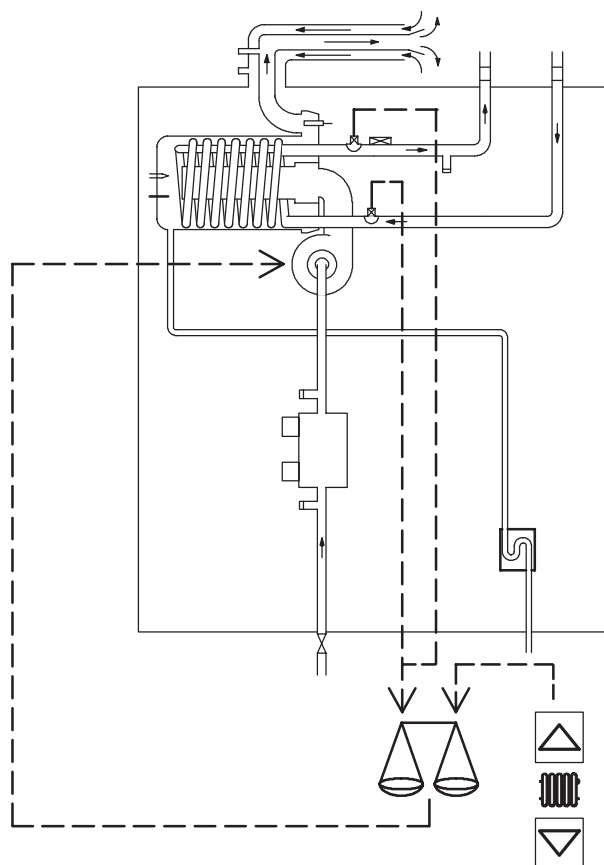




Figure 6.3

The control sequences in function  in function are illustrated in detail in sections "6.7 Thermal control in the  mode" on page 19.

6.4 Setting the boiler control function modes

It is possible to select the various boiler control function modes hereafter named "parameters" by using the keys of the control panel p.c.b.

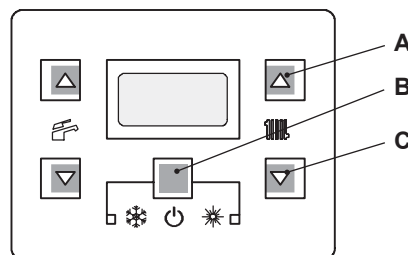


Figure 6.4

- 1 To enter in the parameters setting mode press sequentially the 3 keys "B - C - A" (Figure 6.4) and hold in for 10 second until the display shows Figure 6.5.

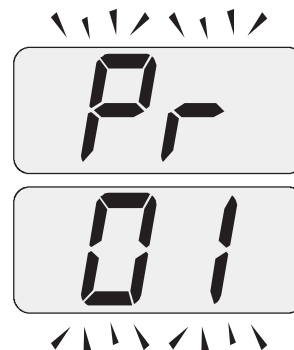


Figure 6.5

MAIN ELECTRONIC CONTROL/IGNITION P.C.B.

- 2 To move through the parameters press C.H. set keys ("A" or "C" Figure 6.6).

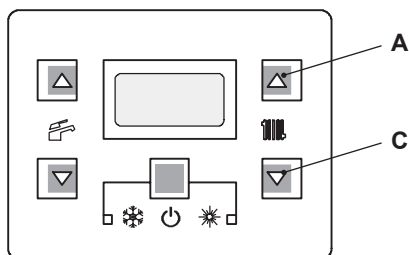


Figure 6.6

- 3 The display shows Figure 6.7.



Warning: You must wait for a period of at least 8 seconds after you have stored your last P.C.B. adjustment before you turn the boiler off or exit the setting mode using the same 3 keys you used to enter the mode as described above.

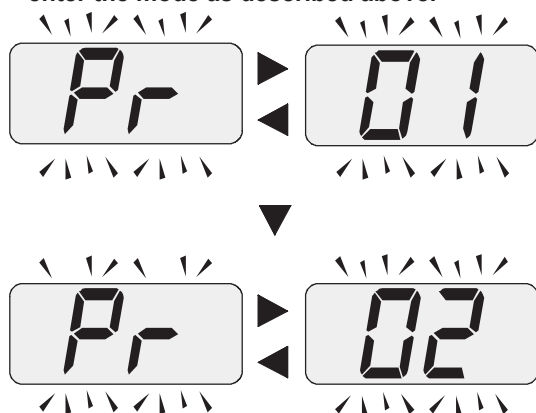


Figure 6.7

- 4 To modify the parameter press contemporary the keys ("A - B" Figure 6.8).

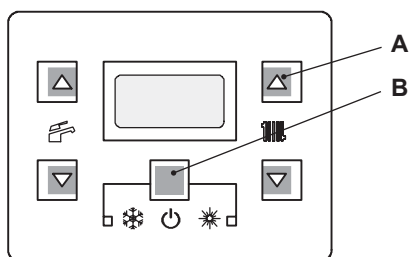


Figure 6.8

- 5 To change the parameters press C.H. set keys ("A" or "C" Figure 6.6).
6 To memorize the setting press the key ("B" Figure 6.9).

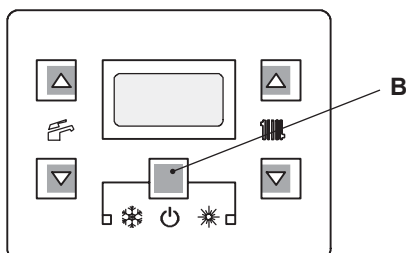


Figure 6.9

- 7 To exit for setting without modifying the set press the keys ("B - C" Figure 6.10).

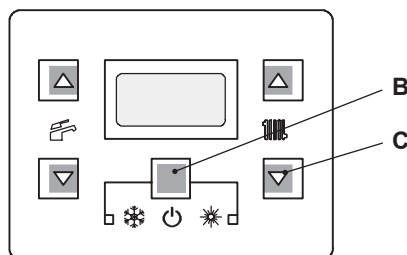


Figure 6.10

To reset the boiler to the normal operation press contemporary the 3 keys ("A - B - C" Figure 6.4) for 10 second.

The following table gives details of each parameter and the possible value that can be set.

Important: at the end of the setting operation it is important to fill/update the table in the installation manual see chapter **COMMISSIONING** section: Setting record.

PARAMETER	DIGIT	VALUES
Boiler type (to be updated with the complete range)	Pr 01	00 = No power Er 99 15 = ADVANCE 15OV 18 = ADVANCE 18OV 29 = ADVANCE 24OV
Not used	Pr 02	
Pump speed	Pr 03	00 = (2) Max factory set 01 = (1) Med 02 = Self regulat
Zone valve setting Room Thermostat / Remote Control	Pr 04	00 = No (factory set) 01 = Z1 with R.T., Z2 with R.C., Max. C.H. flow temperature 02 = Z1 with R.T., Z2 with R.C., Min. C.H. flow temperature 03 = Z1 with R.T., Z2 with three way diverter valve 04 = Safety low voltage R.T.
Gas type	Pr 05	00 = G20 Natural 01 = G25 02 = --- --- --- 03 = --- --- --- 04 = G30 Butane 05 = G31 Propane
Not used	Pr 06	
C.H. flow max temperature °C	Pr 07	85÷45 (factory set 80 °C)
Factory parameters reset	Pr 08	00 = No reset 04 = All parameters return to factory set with the exclusion of Pr 01 and Pr 05 39 = All parameters return to factory set included Pr 01 and Pr 05

MAIN ELECTRONIC CONTROL/IGNITION P.C.B.

PARAMETER	DIGIT	VALUES
Chimney sweep function	Pr 09	00 = No chimney sweep fun (factory set) 01 = D.H.W. low power sweep---test 02 = C.H. low power sweep---test 03 = C.H. max power sweep---test 04 = D.H.W. max power sweep---test
C.H. reignition frequency	Pr 10	00÷99 (0÷600 sec.) (factory set 30 = 3 minutes)
C.H. pump post-circulation	Pr 11	00÷99 (0÷600 sec.) (factory set 10 = 1 minute)
Max. useful output in C.H. mode	Pr 12	00÷99 (0÷100%)
C.H. pump working type	Pr 13	00 = Depends on room thermostat (factory set) 04 = Always running
Ignition power	Pr 14	00÷99 (0÷100%) factory set: Natural gas (G20) 70 = ADVANCE 15OV 51 = ADVANCE 18OV 58 = ADVANCE 24OV Propane (G31) 70 = ADVANCE 15OV 51 = ADVANCE 18OV 58 = ADVANCE 24OV
K value (external probe diagram)	Pr 15	01 (=0,1) ÷ 60 (=6,0) K value factory set: 00 = OFF
Min. re-ignition power	Pr 16	00 ÷ 99 (0%÷100 %) (factory set 00 = 0%)
Not used	Pr 17	
NTC on the C.H. return	Pr 18	00 = Probe not present 01 = Probe present (factory set)
LCD type	Pr 19	00 = TOP 02 = MEDIUM (factory set)
Not used	Pr 20	
Not used	Pr 21	
Not used	Pr 22	
Not used	Pr 23	
Duty Cycle Zone, Only if Pr 04 = 01 or 02 and contemporary requests from Z1 and Z2	Pr 24	10÷30 (0÷30 min.) (factory set 30 = 30 minute)
C.H. flow temperature in antifreeze protection mode °C	Pr 25	25÷85 (factory set 45 °C)
Not used	Pr 26	
C.H. minimum setpoint	Pr 27	25÷45 (factory set 25 °C)
Maintenance intervals	Pr 28	00 ÷ 48 (= months) (factory set 12 months)
Presence of domestic cold water temp. probe or set of inlet cold water with solar control	Pr 29	00 = No NTC probe (factory set) 01 = Yes NTC probe 04 ÷ 45 (°C) temp. NTC inlet probe with solar control

PARAMETER	DIGIT	VALUES
Not used	Pr 30	
C.H. temperature rising rate (gradient).	Pr 31	00÷99 (0÷600 sec.) (factory set 10 = 60 sec.)
Min. useful output C.H. or D.H.W.	Pr 32	00÷99 (0%÷100%) (factory set 00 = 0%)

Tab 9.1

6.5 Checks

✓ Check that the fuses are complete

If the Main electronic control/ignition p.c.b. does not supply any device (external pump, fan, etc.) check that the fuses 10 (Figure 6.2) are complete.

If a fuse has blown replace it with one that has the same characteristics after having identified the reason for failure.

✓ Lock sequence

Start the boiler until the burner is ignited.

With the burner firing, interrupt the gas supply. The Main electronic control/ignition p.c.b. must carry out four complete ignition cycles and then, after about 4 minutes, goes to lock-out state.

Switch off and on the electricity supply to the boiler, by means of the fused spur isolation switch, the device must not unlock and the burner must not turn on.

6.6 Removal of the electronic control p.c.b



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

When replacing the Main electronic control/ignition p.c.b. all parameters must be correctly checked / adjusted accordingly with the values noted in table in the installation manual see chapter COMMISSIONING section: Setting record (for information on parameters see also section "6.4 Setting the boiler control function modes" on page 15).

- 1 Remove all the body panels (see section "2.2 Case panels" on page 4).
- 2 Gain access to the parts located inside the Main electronic p.c.b. box as explained in the section "2.4 Main electronic p.c.b. box" on page 5 of this manual.
- 3 Remove all the wiring connected to the *Main electronic control/ignition p.c.b.*
- 4 Delicately flex the hooks "D" in the directions indicated (Figure 6.11) in order to release the circuit from the box.
- 5 Remove the *Main electronic control/ignition p.c.b.*

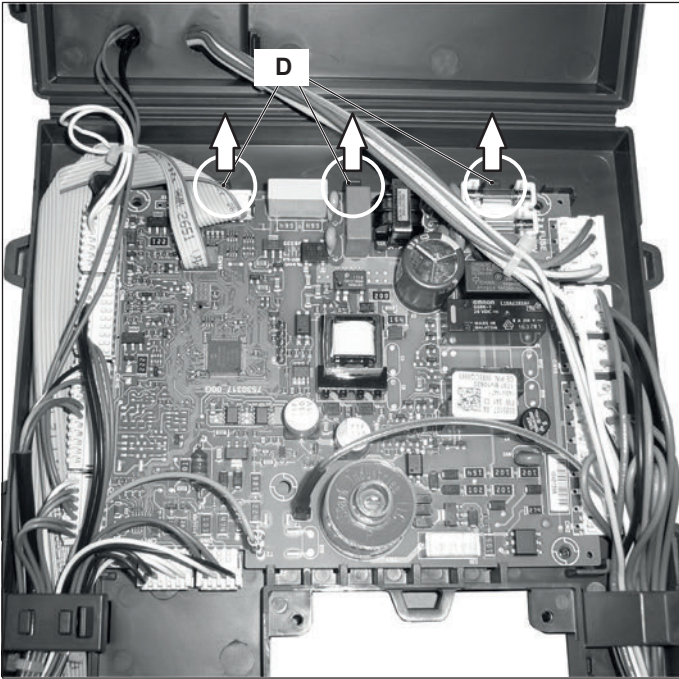


Figure 6.11

- 6 Re-assemble the *Main electronic control/ignition p.c.b.* following the removal procedures in the reverse order.

Important

When re-assembling the *Main electronic control/ignition p.c.b.*:

- 7 It is not necessary to utilise static protections but it is advisable to ensure that the p.c.b. is handled with care and held at the edges and with clean dry hands.

Attention

After installing the *Main electronic control/ignition p.c.b.* properly set the parameters.



Warning: After cleaning or replacement as detailed above, it is deemed necessary to undertake a combustion analysis as detailed in section "8.3 Adjustment" on page 22.

6.7 Thermal control in the ❄️ mode

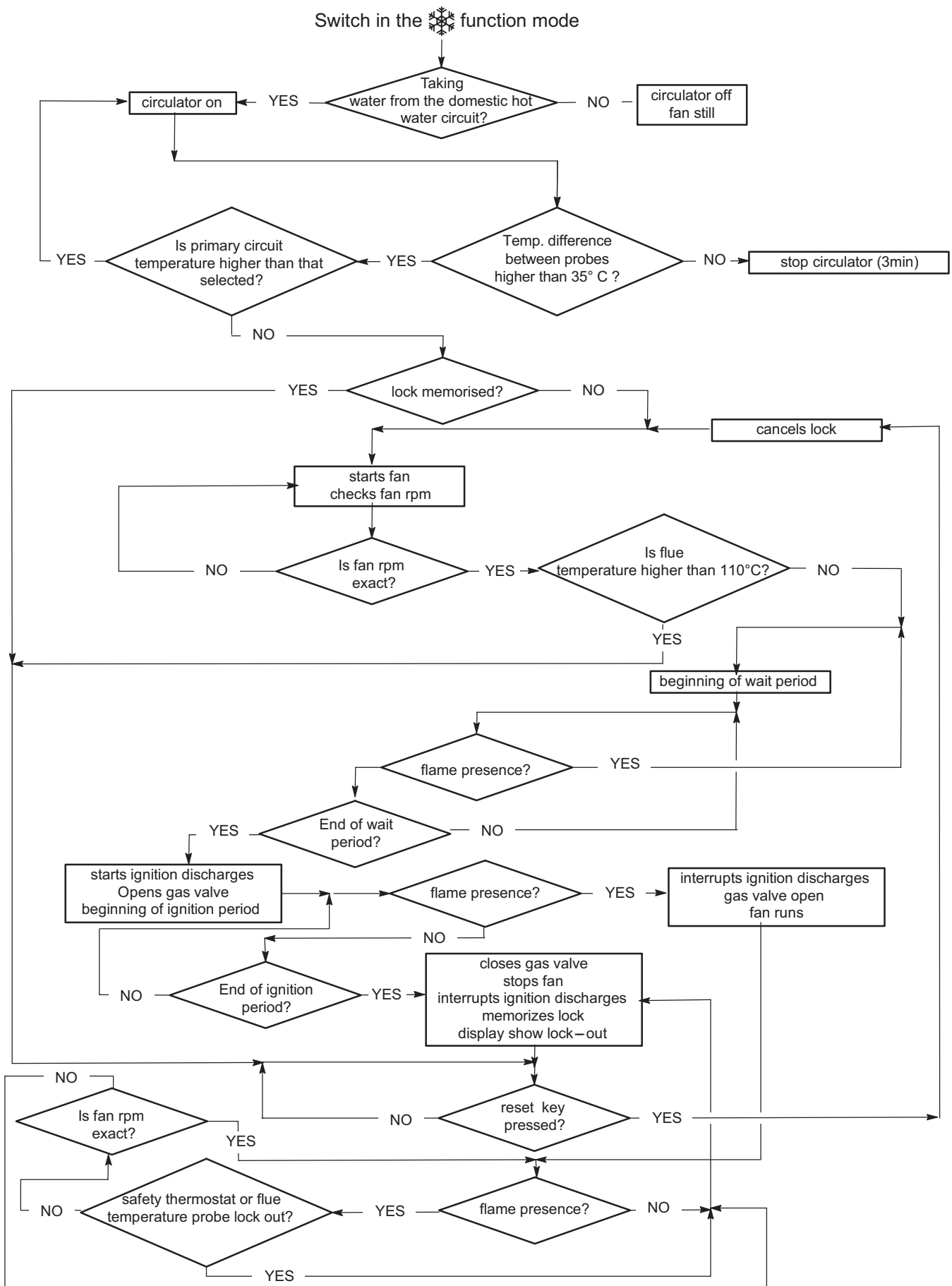


Figure 6.12

CONTROL PANEL ELECTRONIC P.C.B.

7 CONTROL PANEL ELECTRONIC P.C.B.

7.1 Function

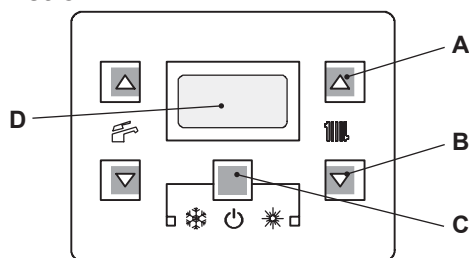


Figure 7.1

- A C.H. temperature increase key
- B C.H. temperature reduce key
- C Reset/Stand-by/Winter/Summer key
- D Display

The Control panel electronic p.c.b. can give to the service 3 levels of informations:

- Normally information
- Info modality
- Function modes setting modality

7.2 Normally information

KEY


RESET	The symbol indicates that the boiler can be directly reactivated by the user, by pressing the reset button.
	The symbol indicates that the fault requires intervention on behalf of specialised technical assistance.
	All symbols represented with lines that surround them, indicate that the symbol is flashing.

SIGNAL DISPLAYED BY THE LCD

LCD	FUNCTION
Er 01 + RESET	Lack of burner ignition on safety lockout
Er 02 + RESET	Safety thermostat intervention lockout
Er 03 + RESET	General lockout
Er 04 +	Faulty primary circuit (no water or absence of flow)
Er 05 +	Faulty fan control system
Er 06 +	Faulty C.H. temp. probe NTC
Er 08 +	Faulty external temp. probe NTC
Er 09 +	Faulty flue temp. probe NTC
Er 10 + RESET	Flue probe intervention lockout
	Flame detection error (An flashing + error flashing number)
Er 11 + RESET	Flame detection error
Er 12 +	Faulty central heating temp. probe NTC (return)
Er 13 +	Differential between the flow and return is too close

LCD	FUNCTION
Er 14 + RESET	Faulty pump or primary temperature above 105° C
Er 15 + RESET	None or too low water flow; Faulty pump (temp. difference between probes higher than 35° C)
Er 16 + RESET	Possible exchange of NTC probes (Flow or Return) or pump wrongly mounted (upside – down)
Er 17 + RESET	Faulty c.h. temp. probe NTC (Flow or Return)
Er 18 + RESET	Faulty primary circuit (no water or absence of flow)
Er 25 + RESET	Flame detection error
Er 69	Wiring error lockout
--	Boiler Stand-By, hyphens are turned on in sequence to simulate running /anti-freeze protection activated)
30°C	Boiler waiting for heat request
32°C	Boiler in winter mode The primary circuit temperature is displayed.
34°C	Boiler on demand for C.H. power.
	Burner ignition (spark)
	Flame present (Burner on)
bP 15°C	Boiler in anti---freeze phase (bP flashing + temperature flashing)
AF 16°C	Boiler in antifrost phase (AF flashing + temperature flashing)
78°C	Set C.H. (all other symbols are disabled)
	Remote control connected (one flash every 4 sec.)
Po 35°C	Pump activated for the post---circulation phase (Po flashing + temperature flashing)
uu 56°C	Delayed burner ignition for setting the system (uu flashing + temperature flashing)
65°C	Maintenance required The wrench symbol is flashing (without showing any error)

CONTROL PANEL ELECTRONIC P.C.B.

LCD	FUNCTION
	<p>Boiler in chimney sweep in function.</p> <p>The activation of the chimney sweep occurs configuring the "parameter P09=01" and is visualized:</p> <p>LP = minimum D.H.W. hP = minimum heating cP = maximum heating dP = maximum D.H.W..</p> <p>The transition occurs with keys A (increase) and B (decrease) C.H. temperature.</p> <p>The writing on the display alternates.</p>

7.3 Info modality

The INFO mode allows the display of some information on the boiler functioning status. In case of malfunctioning of the boiler, it may be useful to communicate such information to the Authorised Service Centre Engineer so that the causes can be understood.

In order to access the INFO mode, press keys A and C (Figure 7.1) at the same time until the letter di appears on the display that alternates with a code (Figure 7.1).



Figure 7.2

To scroll the values press B (reduce) and A (increase). keys (Figure 7.1). In order to exit the INFO mode, hold keys A and C (Figure 7.1) pressed at the same time. The following table gives details of each parameter and the possible value that can be show.

Description	Parameter	Value
External temperature °C (if fitted)	d1	-5
K value (external probe diagram) (the value is x 10)	d2	12
Offset (Translation of K diagram ± 15°C)	d3	-10
C.H. temperature °C (calculated by external sensor)	d4	66
C.H. flow temperature °C	d5	78
C.H. return temperature °C	d6	44
Flue temperature °C	d8	67
Fan speed (the value has to be x 100 = 4400 rpm)	d9	44
Number of months to maintenance	c3	12
SW version BC (burner control)	dc	01
SW version MB (main board)	dd	03

Tab. 10.1

7.4 Function modes setting modality

It is possible to select the various boiler control function modes hereafter named "parameters" by using the keys of the control panel p.c.b.

During the function modes setting, the boiler does not operate. To get in function modes setting modality see section "6.4 Setting the boiler control function modes" on page 15.

7.5 Removal of the control panel electronic p.c.b



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove all the body panels (see section "2.2 Case panels" on page 4).
- 2 Gain access to the parts located inside the *Control panel electronic p.c.b.* as explained in the section "2.3 Control panel" on page 5 of this manual.
- 3 Remove all the wiring "E" connected to the *Control panel electronic p.c.b.* (Figure 7.3).

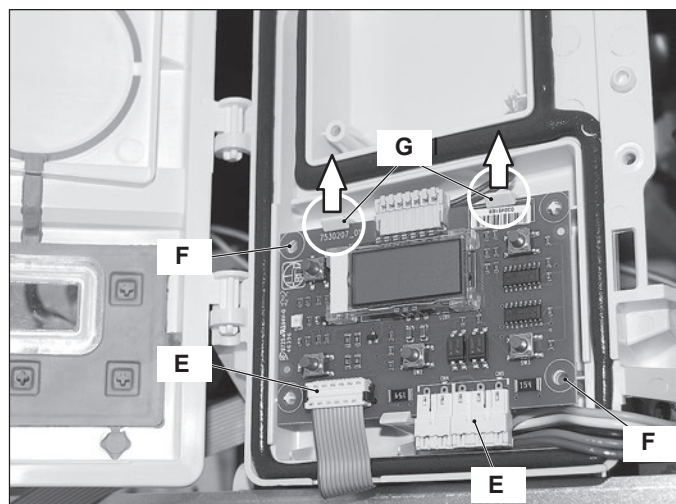


Figure 7.3

- 4 Unscrew the screws "F".
- 5 Delicately flex the hooks "G" in the directions indicated (Figure 7.3) in order to release the circuit from the box.
- 6 Remove the *Control panel electronic p.c.b.*
- 7 Reassemble the *Control panel electronic p.c.b.* carrying out the removal operations in the reverse order.

8 GAS VALVE

8.1 Function

The gas valve "A" in Figure 8.1 controls the gas inflow to the boiler burner.

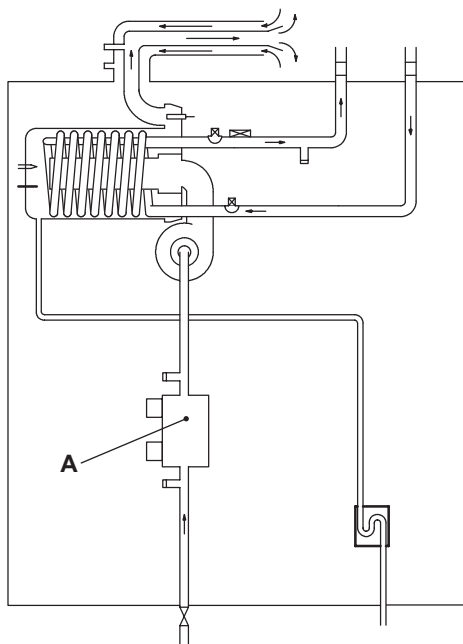


Figure 8.1

By means of an electric command given to the on-off operators the passage of the gas through the Gas valve can be opened or closed.

8.2 Description of the parts

(Figure 8.2)

- B** Maximum boiler power adjustment
- C** Minimum boiler power adjustment
- D** On-off operators
- E** On-off operators electric connector
- F** Gas valve inlet pressure test point

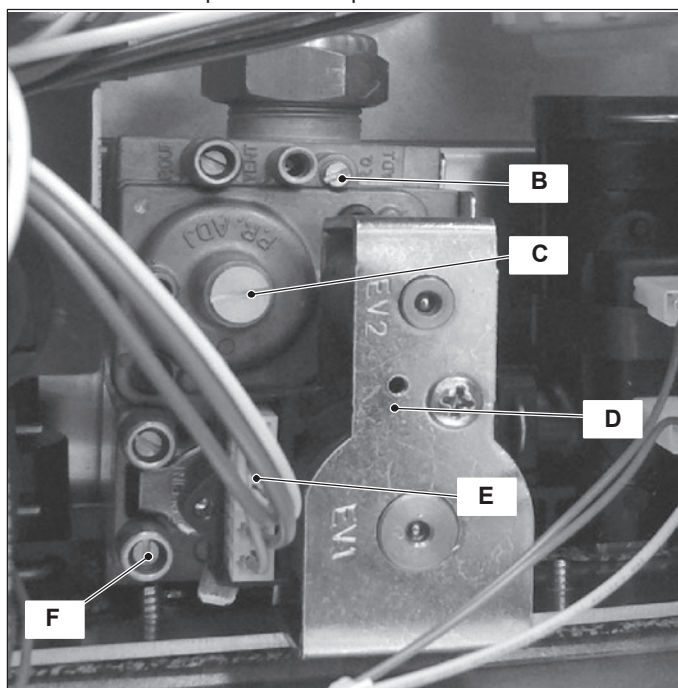


Figure 8.2

8.3 Adjustment



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

Check the supply pressure before making any adjustment to the gas valve.

- 1 Close the gas inlet valve.
- 2 Remove the front panel of the case and lower the control panel (see sections "2.2 Case panels" on page 4 and "2.3 Control panel" on page 5).
- 3 Loosen the internal screw on the Inlet Pressure Test Point "F" (Figure 8.2) of the Gas valve and connect a pressure gauge using a suitable hose.
- 4 Open the gas inlet valve.
- 5 Turn on the electricity supply to the boiler, switching on the fused spur isolation switch.
- 6 Set the boiler in C.H. function as illustrated in Figure 8.3.

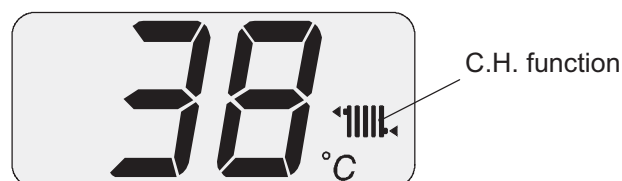


Figure 8.3

- 7 Make sure that the room thermostat is in the "heat request" position.
- 8 Read the inlet pressure value and ensure that it is within the limits given in the table *Gas supply pressures*, of the user/installation manual. If it does not comply with the required pressure check the gas supply line and governor for faults and/or correct adjustment.
- 9 Switch off the boiler **close the gas inlet valve** and close the water tap.
- 10 Disconnect the pressure gauge and close the Inlet Pressure Test Point "F" (Figure 8.2).

Gas valve adjustment



The person carrying out a combustion measurement should have been assessed as competent in the use of a flue gas analyser and the interpretation of the results. The flue gas analyser used should be one meeting the requirements of BS7927 or BS-EN50379-3 and be calibrated in accordance with the analyser manufacturers' requirements, and have a current calibration certificate.

- 11 Fit the probe of the flue analyser in the flue exhaust sampling point located on the exhaust pipes of the boiler (Figure 8.4).

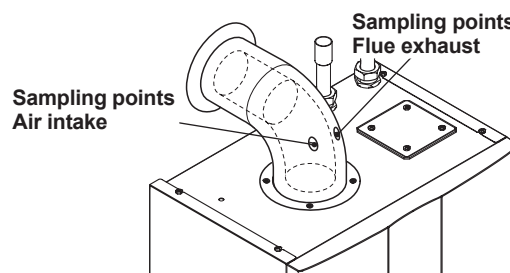


Figure 8.4

- 12 Turn on the boiler, switching on the fused spur isolation switch.
- 13 Open the gas inlet valve.

GAS VALVE

- 14 Turn on the boiler and operate for 2 minutes to pre-heat the flue, before commencing any adjustments
- 15 Open at least one hot water tap fully.

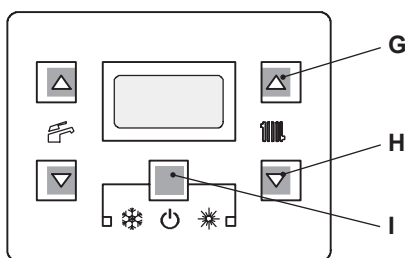


Figure 8.5

- 16 To enter in the parameters setting mode press sequentially and hold in the 3 keys ("G - H - I" Figure 8.5) for 10 second until the display shows Figure 8.6.



Figure 8.6

- 17 Press keys "G" and "H" (Figure 8.5) at the same time until the display shows the letters **LP** that alternate with the heating water temperature value (e.g. 45), indicating the activation of the "chimney sweep function" at minimum output (Figure 8.7).



Figure 8.7

- 18 Allow the analyser to give a stable reading.
- 19 Read the CO₂ % value. It should be between:

Model	Type gas	CO ₂ % value (range)
ADVANCE 15OV	Natural (G20)	8,2 - 8,8
ADVANCE 18OV	Propane (G31)	9,3 - 9,9
ADVANCE 24OV		

To adjust the CO₂ % value remove the brass plug by unscrewing it and rotate the Allen key screw Ø 4 mm ("C" - Figure 8.2) (by rotating it clockwise the CO₂ % increases).

Checking the maximum gas valve setting

- 20 Press key "G" to vary the output in chimney sweep mode: when the display shows the letters **cP** that alternate with the heating water temperature value (e.g. 60), the "chimney sweep function" is at maximum output in heating mode (Figure 8.8);



Warning: If the boiler has a correct CO₂ reading in LP but is incorrect CO₂ in DP before adjusting the boiler ensure the gas supply pressure is within acceptable limits!

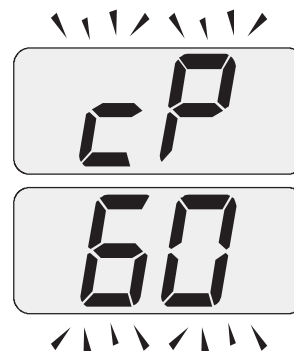


Figure 8.8

- 21 Press further key "G" to vary again the output in chimney sweep mode: when the display shows the letters **dp** that alternate with the heating water temperature value (e.g. 60), the "chimney sweep function" is at maximum output in domestic hot water mode" (Figure 8.9);

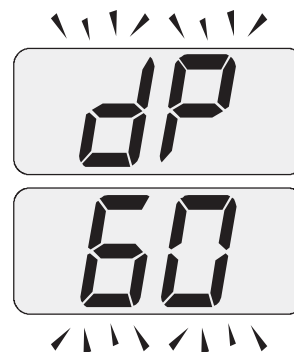


Figure 8.9

- 22 Allow the analyser to give a stable reading.
- 23 Read the CO₂ % value. It should be between:

Model	Type gas	CO ₂ % value (range)
ADVANCE 15OV	Natural (G20)	9,0 - 9,6
	Propane (G31)	10,0 - 10,6
ADVANCE 18OV	Natural (G20)	9,1 - 9,7
	Propane (G31)	10,1 - 10,7
ADVANCE 24OV	Natural (G20)	9,0 - 9,6
	Propane (G31)	10,0 - 10,6

To adjust the CO₂ % value rotate screw ("B" - Figure 8.2) (by rotating it clockwise the CO₂ % decreases).

- 24 Press keys "G - H - I" (Figure 8.5) at the same time again to exit the "chimney sweep mode" and return to the previously set boiler status (Figure 8.10);

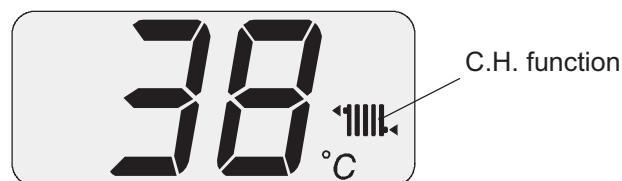


Figure 8.10

- 25 Switch off the boiler and turn off the room thermostat.

GAS VALVE

- 26 Close the air-flue sampling points.
- 27 After adjustment fit the protective brass plug ("C" - Figure 8.2).

Important: after the gas pressure checks and any adjustment operations, all of the test points must be sealed and tested with LDF.

8.4 Checks



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- ✓ Check the on-off operators coils
- 1 Remove the front panel of the case.
- 2 Disconnect the electrical connector "E" (Figure 8.2).
- 3 Measure the electrical resistance between the connector pins of the on-off operators as illustrated in Figure 8.11.

Upper on-off operator
approx. 6400 Ω^*

Lower on-off operator
approx. 920 Ω^*

*at ambient temperature.

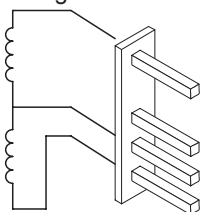


Figure 8.11

8.5 Removal of the gas valve



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove the front panel of the case as explained in the section "2.3 Control panel" on page 5, of this manual.
- 2 Disconnect the connector "K" (Figure 8.12), see also connector "E" (Figure 8.2).

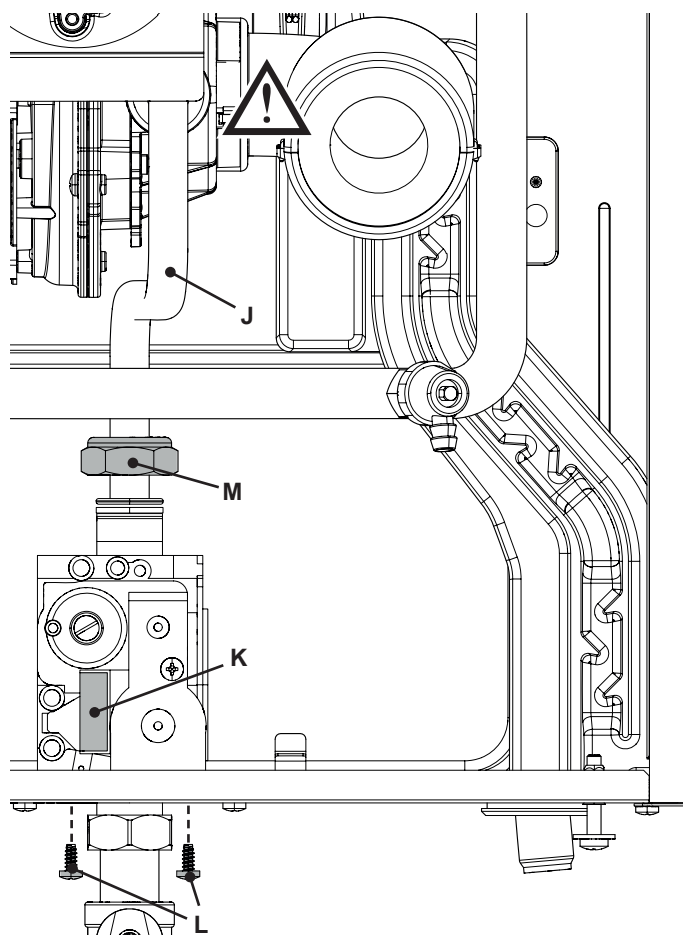


Figure 8.12

- 3 Turn off the gas supply and disconnect the gas isolation cock connector from the inlet port of the gas valve.
- 4 Unscrew the connector "M" (Figure 8.12) and remove the pipe "J".
- 5 Unscrew the screws "L" and remove the valve (Figure 8.12).
- 6 Reassemble the valve carrying out the removal operations in reverse order.



Warning: Be careful not to damage the OR gasket of the gas pipe when inserting the pipe in the air box (air/gas mixer).

Before fitting a new valve, it is advisable to preset it as follows.

- 7 Remove the brass plug and turn the plastic screw inside it fully clockwise until it stops. Do not overtight.
- 8 Turn it counter-clockwise 2 and 3/4 turns.
- 9 Adjust the gas valve using the flue analyser as described in section "8.3 Adjustment" on page 22.

After any service operation on the components of the gas circuit check all the connections for gas leaks.



Warning: After cleaning or replacement as detailed above, it is deemed necessary to undertake a combustion analysis as detailed in section "8.3 Adjustment" on page 22.

9 TEMPERATURE PROBE

9.1 Function

The Temperature probe has the function of converting the temperature of the water in the hydraulic circuit where it is installed into an electrical signal (resistance).

The relation between temperature and electrical resistance is stated in Figure 9.1.

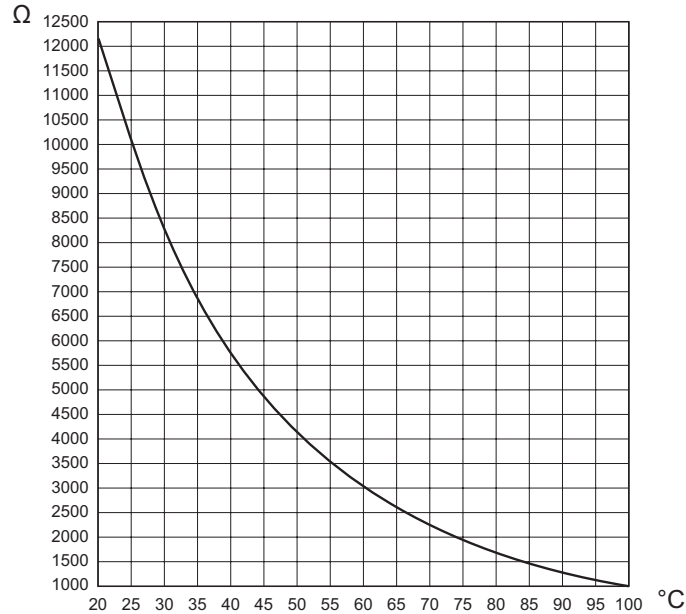


Figure 9.1

On the boiler there are two temperature probes. One on the output of the primary condensing heat exchanger (C.H. flow temperature probe) "A" in Figure 9.2 and Figure 9.3; one on the input of the primary condensing heat exchanger (C.H. return temperature probe) "B" in Figure 9.2 and Figure 9.4.

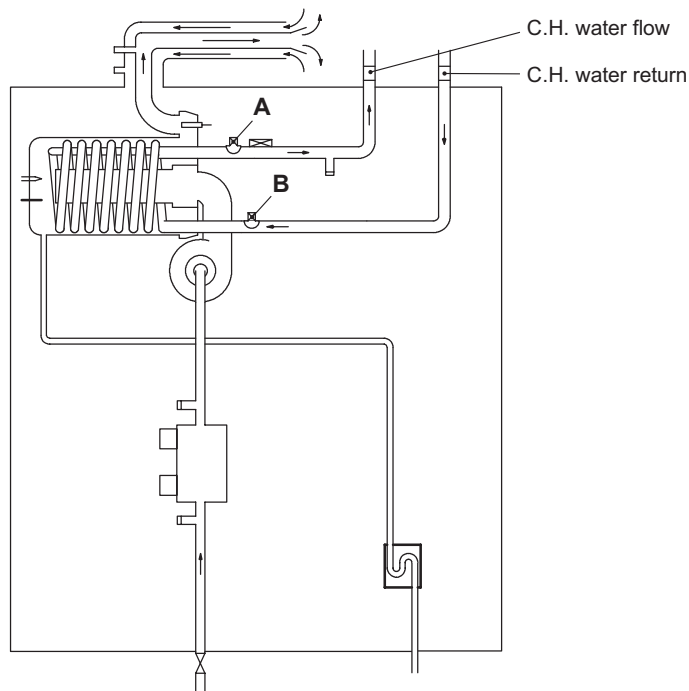


Figure 9.2

9.2 Checks

✓ Temperature-resistance relationship



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

Disconnect the cable from the Temperature probe.

Measure the temperature of the pipe "D" (only C.H. flow temperature probe) where the Temperature probe is located and check the electrical resistance according to the graph in Figure 9.1.

9.3 Removal of the C.H. flow temperature probe



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove all the case panels and the sealed chamber lid.
- 2 Empty the primary circuit of the boiler.
- 3 Remove the electric connector "C" and unscrew the C.H. flow temperature probes "A" (Figure 9.3).
- 4 Reassemble the C.H. flow temperature probes carrying out the removal operations in reverse order.

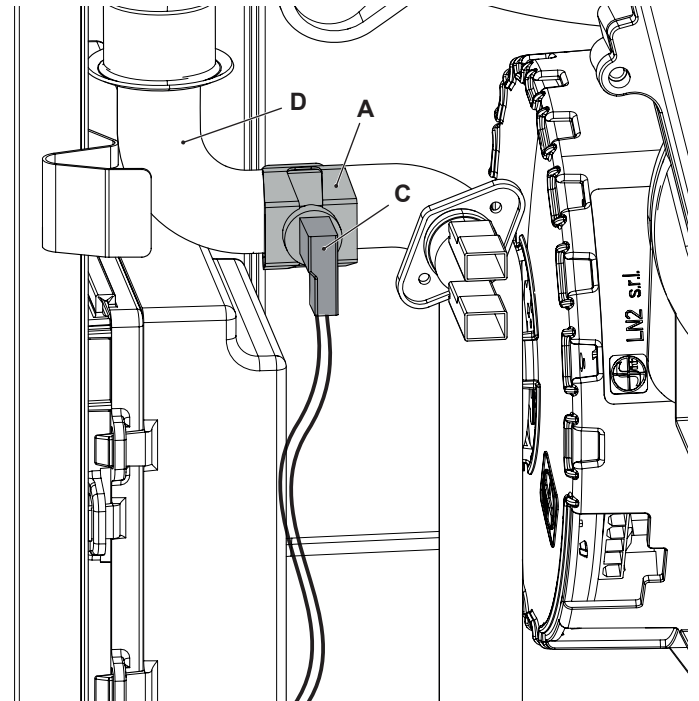


Figure 9.3

9.4 Removal of the C.H. return temperature probe



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove all the case panels and the sealed chamber lid.
- 2 Empty the primary circuit of the boiler.
- 3 Remove the electric connector "E" and unscrew the C.H. return temperature probes "F" (Figure 9.4)
- 4 Reassemble the C.H. return temperature probes carrying out the removal operations in reverse order.

TEMPERATURE PROBE

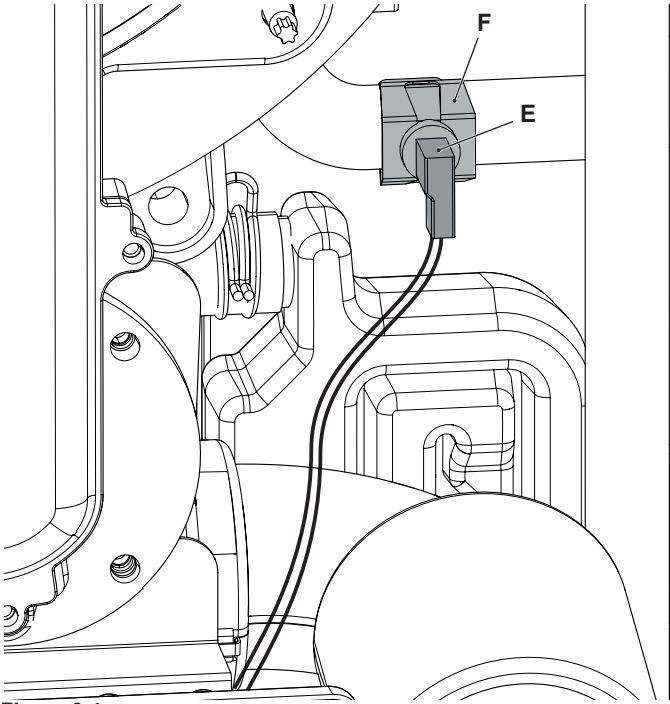


Figure 9.4

10 FAN AND AIR BOX

10.1 Function

The function of the Fan "A" (Figure 10.1) is to force the mixture of air and gas into the burner.

The function of the Air box "B" is to mix the gas and the air in the right proportion.

The flow rate of the air-gas mixture and consequently the input power of the boiler is proportional to the speed of the fan that is controlled by the electronic control p.c.b.

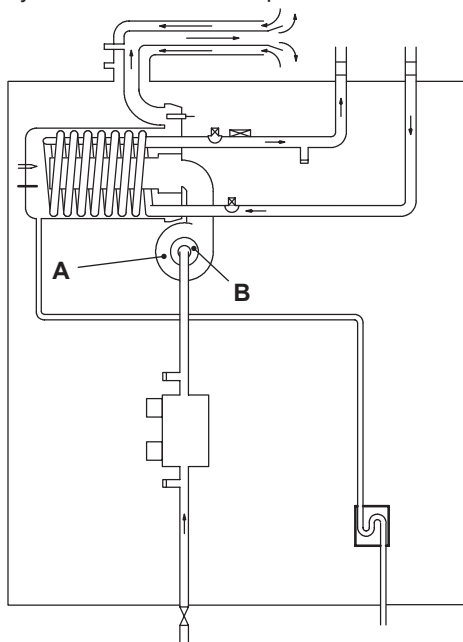


Figure 10.1

- 3 Disconnect the air manifold "E" (Figure 10.2).
- 4 Unscrew the gas connector "F" and remove the gas pipe "G".
- 5 Disconnect the connector "C".
- 6 Disconnect the fan connector "D" by pressing the plastic hook placed on the side of the connector.
- 7 Unscrew the screws "H".
- 8 Remove the fan "A" with the air box "B".
- 9 Assemble the Fan carrying out the removal operations in reverse sequence.

Before reassembling ensure the fan gasket (Figure 10.2) is correctly mounted.



Warning: Place the seal on the pipe and offer the pipe with O'ring pre fitted into the manifold rather than inserting the O'ring into the manifold and offering the pipe into it.

After any service operation on the components of the gas circuit check all the connections for gas leaks.



Warning: After cleaning or replacement as detailed above, it is deemed necessary to undertake a combustion analysis as detailed in section "8.3 Adjustment" on page 22.

10.2 Removal of the Air box and the Fan



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Turn off the gas supply.
- 2 Remove all the case panels (see section "2 General access and emptying hydraulic circuits" on page 4).

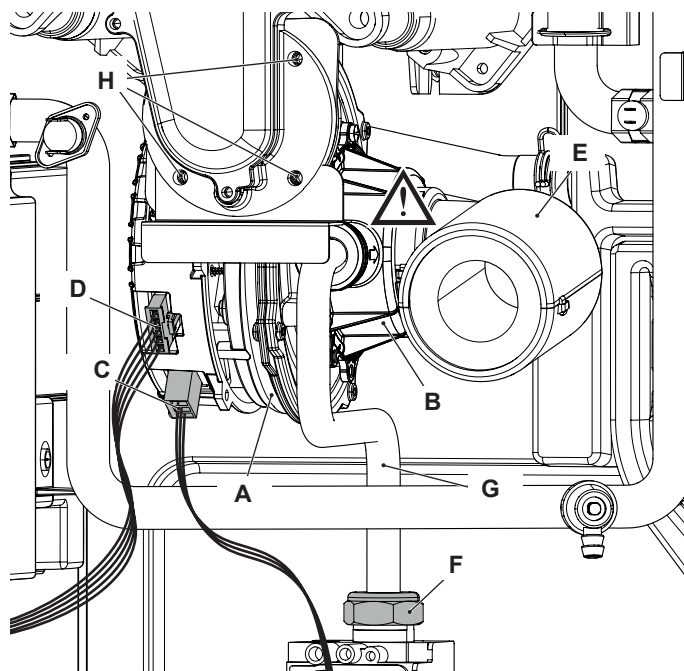


Figure 10.2

IGNITION AND DETECTION ELECTRODES

11 IGNITION, DETECTION ELECTRODES AND BURNER

11.1 Function

Three electrodes are fitted on the fan-burner group. Two of them, fitted on the right side of the fan-burner group "A", are the ignition electrodes "B". On the left side is the detection electrode "C" and it detects the presence of the flame.

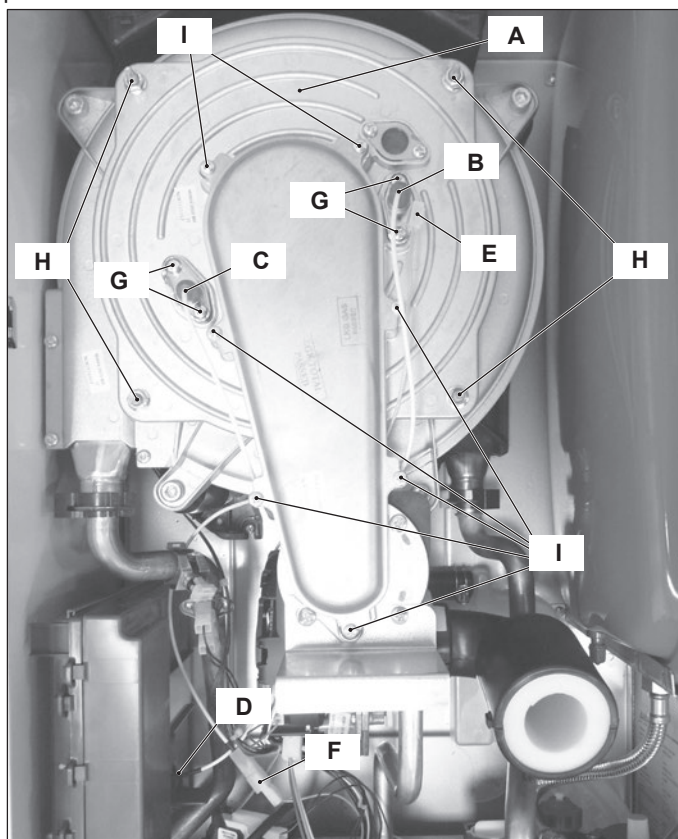


Figure 11.1

The burner "J" is fitted on the rear of the fan-burner group "A".

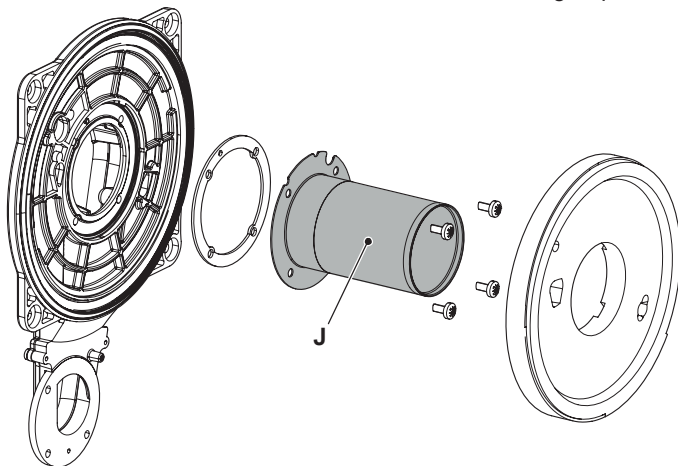


Figure 11.2

11.2 Removal of the Ignition and detection electrodes



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove all the case panels (see section "2 General access and emptying hydraulic circuits" on page 4).

- 2 Disconnect the ignition electrodes connector "D" and the earth wire "E" (Figure 11.1) and disconnect the detection electrode connector "F".
- 3 Unscrew the screws "G" and remove the ignition electrodes "B" and the detection electrode "C".
- 4 Assemble the Ignition and detection electrodes carrying out the removal operation in reverse order.



Warning: A new sealing gasket must be used during refitting of the electrodes on all occasions of removal.

11.3 Removal of the air-gas duct gasket

See warning note at the end of this chapter before to remove this part.

- 1 Unscrew the screws "I" (Figure 11.1 - Figure 11.3) and remove the Air-gas duct lid.
- 2 Assemble the new front insulation carrying out the removal operation in reverse order. When fitting the new panel ensure that the electrodes holes coincide with the holes of the combustion chamber.

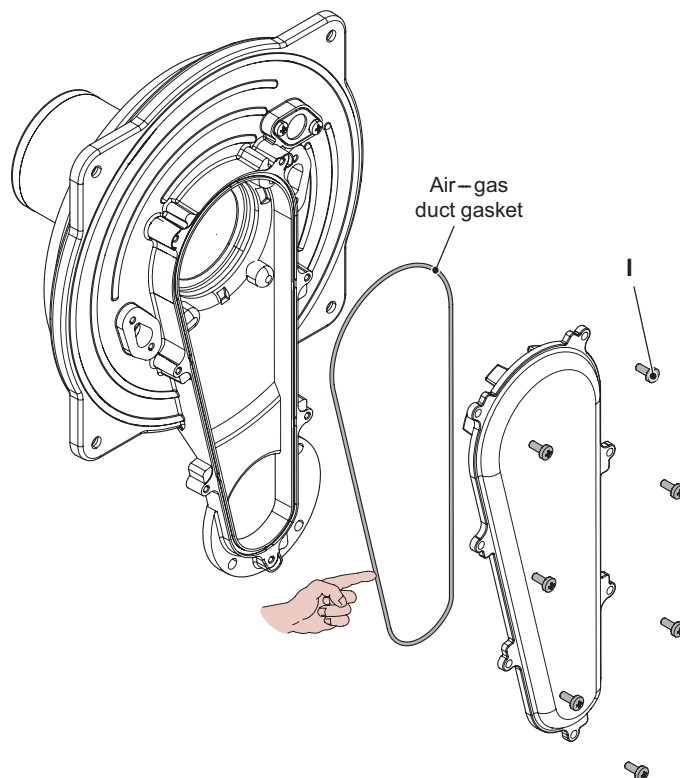


Figure 11.3

Caution:

After any periodical servicing or disturbance the combustion chamber silicon seal (Figure 11.4) and the Air-gas duct gasket (Figure 11.3) must be fully inspected and replaced at the discretion of the service engineer.

After any disturbance to the chamber door seal the appliance must undergo a full analytical combustion performance check.

11.4 Removal of the front insulation panel

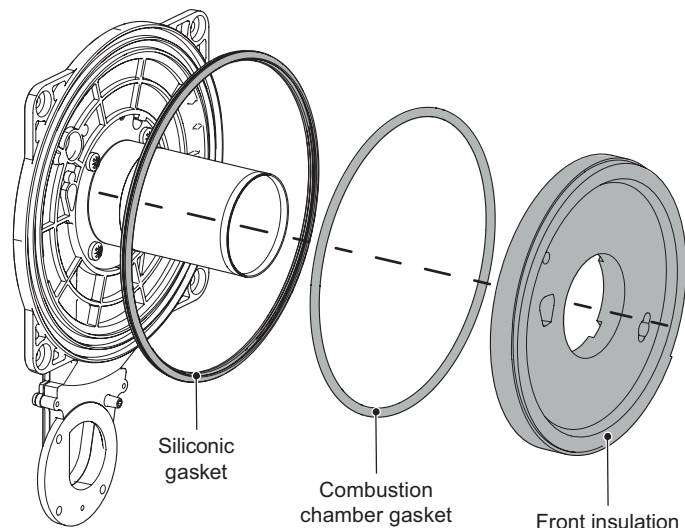
See warning note at the end of this chapter before to remove this part.

- 1 Remove the Ignition and detection electrodes (see section "11.2 Removal of the Ignition and detection electrodes" on

IGNITION AND DETECTION ELECTRODES

page 28).

- 2 Remove the front insulation panel by sliding it forward (Figure 11.4).
- 3 Assemble the new front insulation carrying out the removal operation in reverse order. When fitting the new panel ensure that the electrodes holes coincide with the holes of the combustion chamber.



Caution:

After any periodical servicing or disturbance the combustion chamber silicon seal (Figure 11.4) and the Air-gas duct gasket (Figure 11.3) must be fully inspected and replaced at the discretion of the service engineer.

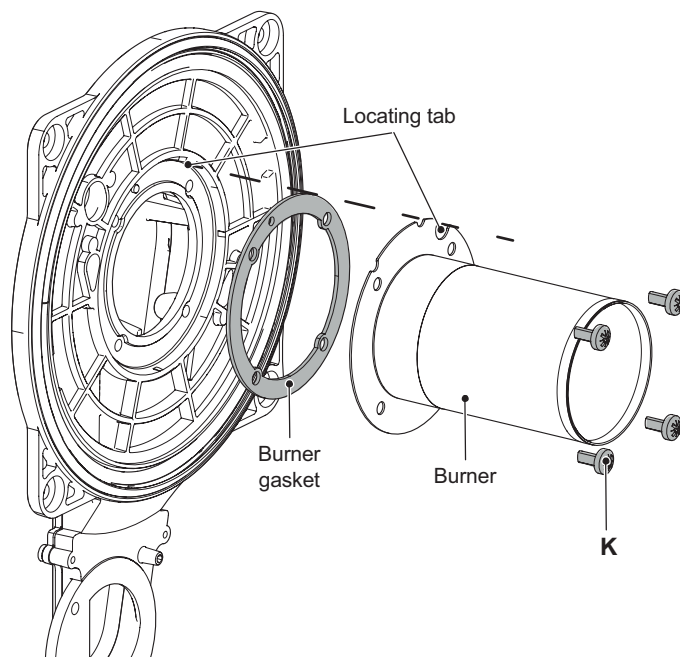
After any disturbance to the chamber door seal the appliance must undergo a full analytical combustion performance check.

11.5 Removal of the burner



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove the air box and the fan (see section "10.2 Removal of the Air box and the Fan" on page 27).
- 2 Remove the Ignition and detection electrodes (see section "11.2 Removal of the Ignition and detection electrodes" on page 28).
- 3 Unscrew the screws "H" (Figure 11.1) and remove the cover of the combustion chamber.
- 4 Remove the front insulation panel (see section "11.4 Removal of the front insulation panel" on page 28).
- 5 Unscrew the screws "K" (Figure 11.5) and remove the burner.
- 6 Assemble the burner carrying out the removal operation in reverse order. Ensure the burner is correctly located by lining up the locating tab (Figure 11.5).



Before reassembling ensure the burner gasket is correctly located.



Warning: After cleaning or replacement as detailed above, it is deemed necessary to undertake a combustion analysis as detailed in section "8.3 Adjustment" on page 22).

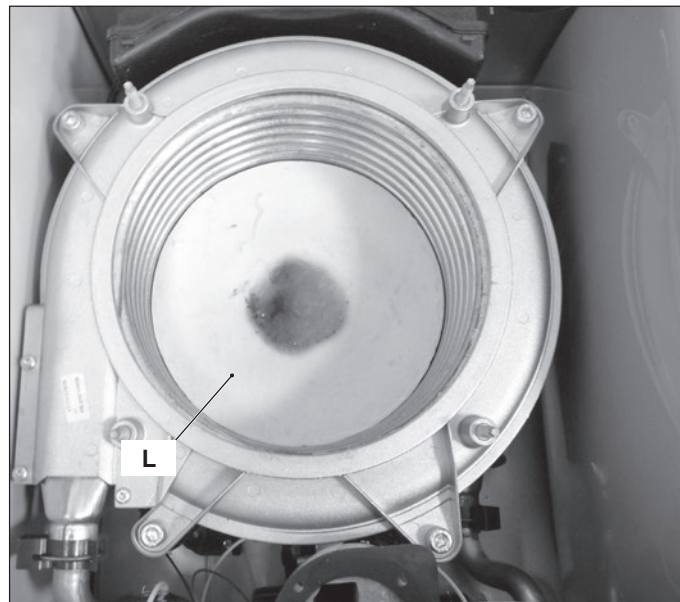
11.6 Removal of the rear insulation

See warning note at the end of this chapter before to remove this part.



Attention: Cover the inner of the condensing heat exchanger to avoid that dirt and debris fall in the coil.

- 1 Do the operations of section "11.5 Removal of the burner" on page 29 from step 1 to step 3.
- 2 Remove the insulation "L" by pulling it towards the boiler front (Hung it with a screwdriver tip) (Figure 11.6).



IGNITION AND DETECTION ELECTRODES

11.7 Checks

- ✓ Check of the spark generator



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

There is not a significant way to verify the integrity of the spark generator. When the fan turns but the burner does not light a possible cause is a faulty spark generator and it is advisable to replace it to locate the fault.

- ✓ Check the position of the electrode edges



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove the ignition electrodes (see section "11.2 Removal of the Ignition and detection electrodes" on page 28).
- 2 Check for the correct distance between the metallic edges of the ignition electrode (see Figure 11.7 - Figure 11.8).

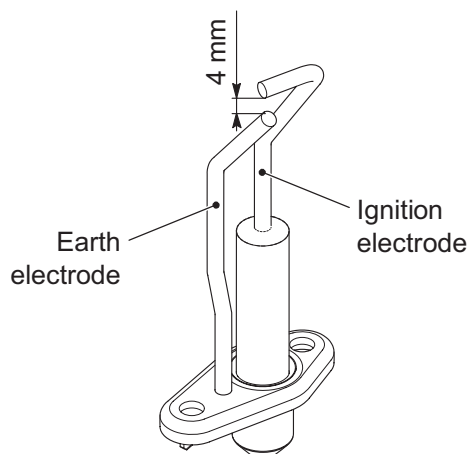


Figure 11.7

- ✓ Check the connection wires



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

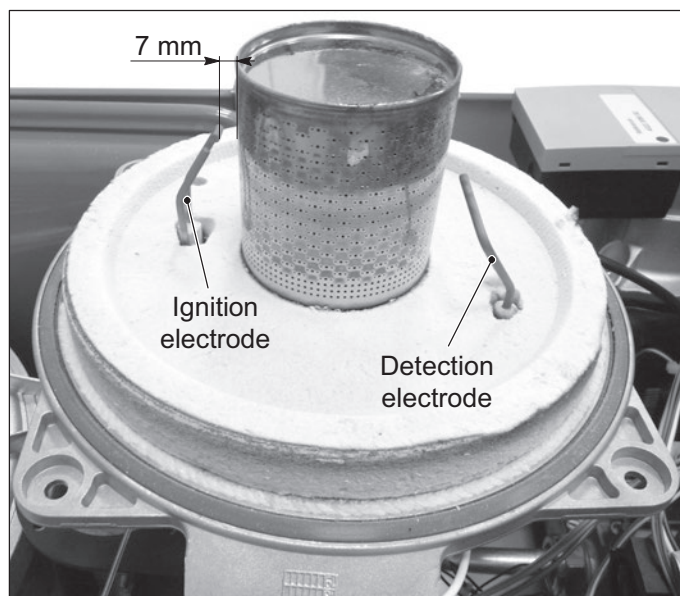


Figure 11.8

- 1 Remove all the case panels and the sealed chamber lid.
- 2 Check for the integrity of the insulation of wires which connect the electrodes to the spark generator and to the control/ignition p.c.b.

- ✓ Check of the detection electrode.



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

The detection electrode in Figure 11.8 also functions as a sensor for the correct drainage of the condensate.

Should the mentioned electrode come into contact with the condensate water present within the combustion chamber it sends the boiler into safety lockout.

Therefore, should the insulation be wet or deteriorated, they should be replaced.

Remove any encrustations and dirt from the detection electrode or replace it if damaged.

Warning - Insulation panels material handling care

Mineral fibres are used in this appliance for the insulation panels of the combustion chamber

Excessive exposure to these materials may cause temporary irritation to eyes, skin and respiratory tract.

Known hazards - Some people can suffer reddening and itching of the skin. Fibre entry into the eye will cause foreign body irritation, which can cause severe irritation to people wearing contact lenses. Irritation to respiratory tract.

Precautions - Dust goggles will protect eyes. People with a history of skin complaints may be particularly susceptible to irritation. High dust levels are only likely to arise following harsh abrasion. In general, normal handling and use will not present high risk, follow good hygiene practices, wash hands before, touching eyes, consuming food, drinking or using the toilet.

First aid - Medical attention must be sought following eye contact or prolonged reddening of the skin.

12 SAFETY THERMOSTAT

12.1 Function

The safety thermostat "A" in Figure 12.1 is a device that senses the temperature of the primary circuit water which flows in the outlet pipe of the condensing heat exchanger.

If the temperature control system of the boiler fails and the temperature of the primary circuit reaches a dangerous temperature, the safety thermostat opens the electric circuit that supplies the on-off operators of the gas valve.

Consequently, the full sequence ignition device attempts to light the burner and, at the end, locks the boiler and lights the lock-out on the display.

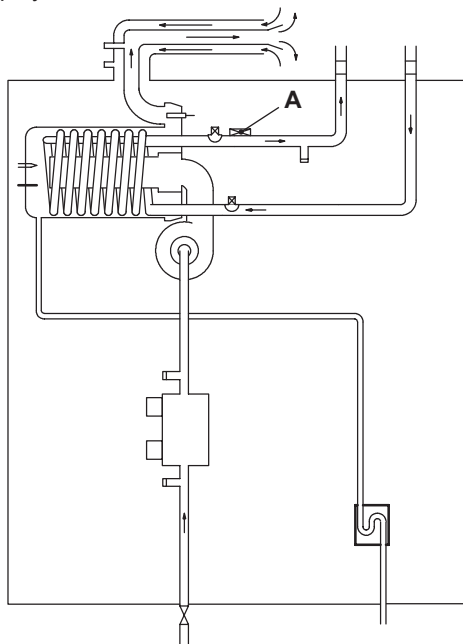


Figure 12.1

12.2 Checks

✓ Overheat temperature value

- 1 Run the boiler and set the temperature at maximum by pressing the appropriate key.
- 2 Allow the boiler to reach its maximum operating temperature (monitor the temperature gauge on the instrument panel). The boiler should maintain a temperature below that of the safety thermostat and no overheat intervention should occur.



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

✓ Electrical function

- 1 Remove all the case panels and the lid of the sealed chamber.
- 2 Disconnect the safety thermostat and check its electrical function. Normally (no intervention) the contact must be closed (electrical resistance zero Ω).

12.3 Removal



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove all the case panels.
- 2 Disconnect the wiring "B" (detail in Figure 12.2).
- 3 Unscrew the screws "C" and remove the overheat thermostat.

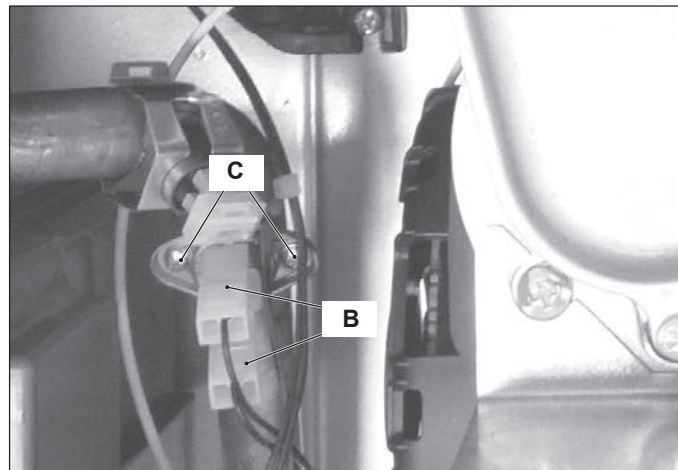


Figure 12.2

- 4 Reassemble the overheat thermostat carrying out the operations in reverse order.
- 5 Apply an adequate quantity of heat conducting compound between the pipe and the thermostat.



Warning: After cleaning or replacement as detailed above, it is deemed necessary to undertake a combustion analysis as detailed in section "8.3 Adjustment" on page 22.

FLUE TEMPERATURE PROBE NTC AND SAFETY THERMAL FUSE

13 FLUE TEMPERATURE PROBE NTC AND SAFETY THERMAL FUSE

13.1 Function

The Flue temperature probe NTC and Safety thermal fuse "A" in Figure 13.1 and Figure 13.2 senses the temperature of the combustion products that flow through the condensing heat exchanger.

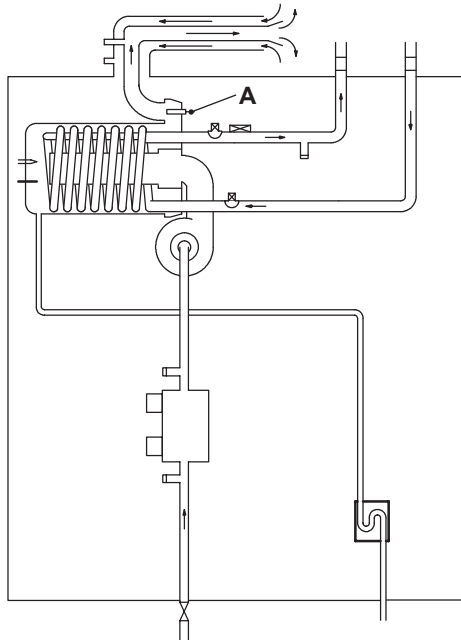


Figure 13.1

If the temperature of the combustion products circuit reaches the limit temperature, the Flue temperature probe NTC reduces the gas flow rate to the burner. The temperature of the combustion products should decrease to a safe value temperature.

In the case that the temperature of the combustion products reaches a potentially dangerous value, the Safety thermal fuse stops the boiler operation (lock-out).

This allows the use of plastic materials for the flue outlet pipes and bends.

Only authentic and original Biasi HE flue components should be used with this product.

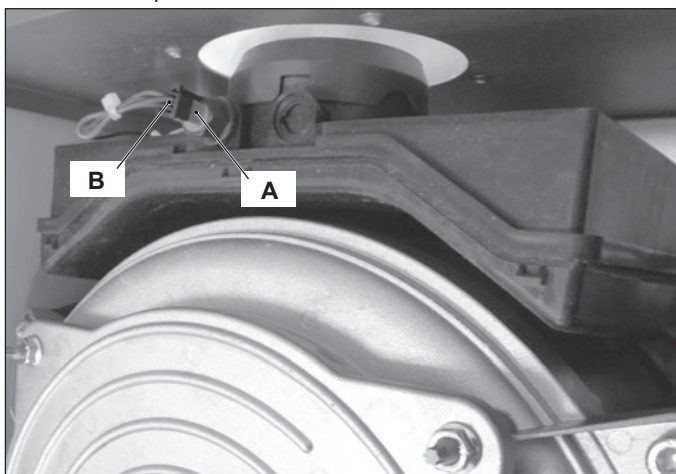


Figure 13.2

A Flue temperature probe NTC and Safety thermal fuse "A" in Figure 13.1 and Figure 13.2 is also connected in series with the Flue temperature probe NTC and acts as a safety device in extreme case of incorrect operation of the Flue temperature control system.

Reaching the breakdown temperature it opens the circuit and locks out the boiler.

In case of intervention of this safety device the heat exchanger (part shown in Figure 13.3) may be damaged.

Check that the plastic part of the heat exchanger is not damaged.

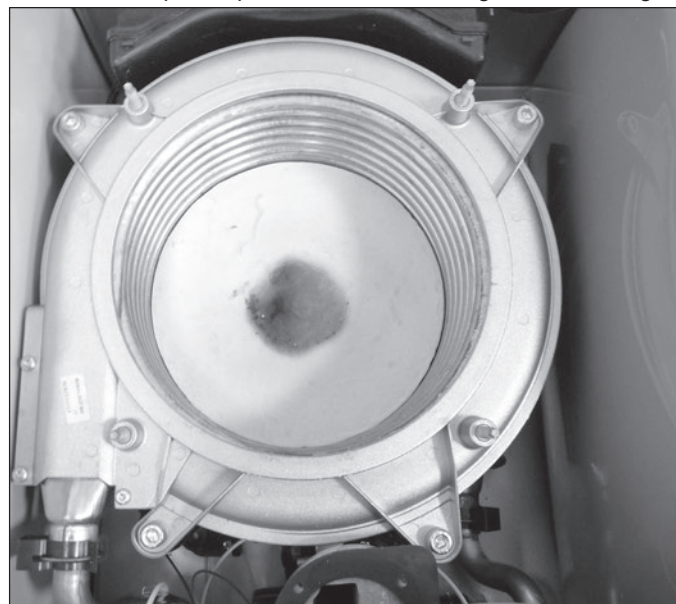


Figure 13.3

13.2 Removal



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove all the case panels.
- 2 Disconnect the connector "B" from the Flue temperature probe NTC and Safety thermal fuse by pressing the plastic hook placed on the side of the connector (Figure 13.2).
- 3 Unscrew and remove the Flue temperature probe NTC and Safety thermal fuse "A" (Figure 13.2) from the condensing heat exchanger.
- 4 Assemble the Flue temperature probe NTC and Safety thermal fuse carrying out the removal operations in reverse sequence.
- 5 Ensure the probe seal is in a good serviceable condition to avoid POC and condensate leakage.

13.3 Checks

✓ Overheat temperature value

- 1 Set the temperature control knobs to their max. position and run the boiler in C.H.
- 2 Allow the boiler to reach its maximum operating temperature (monitor the temperature gauge on the instrument panel). The boiler should maintain a temperature below that of the Flue temperature probe NTC and Safety thermal fuse and no overheat intervention should occur.

✓ Temperature-resistance relationship.

- 1 Remove the Flue temperature probe NTC and Safety thermal fuse (see section "13.2 Removal" on page 32).
- 2 Measure the Flue temperature probe NTC and Safety thermal fuse electrical resistance at the ambient temperature and check it according to the graph in (Figure 13.4).

FLUE TEMPERATURE PROBE NTC AND SAFETY THERMAL FUSE

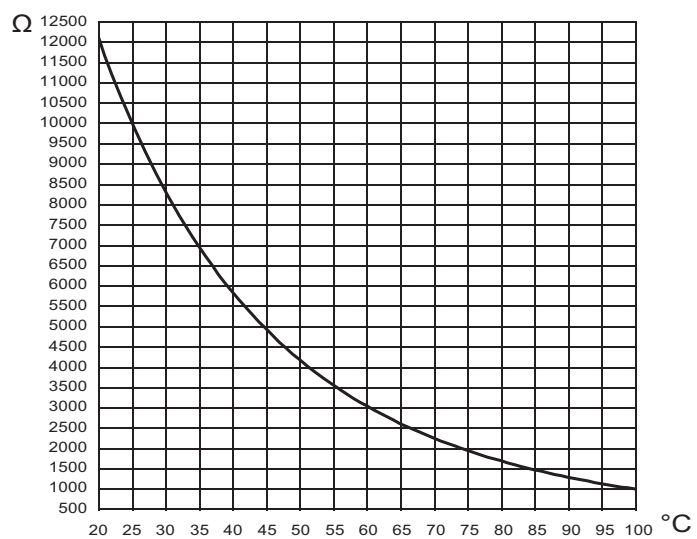


Figure 13.4

CONDENSATE TRAP

14 CONDENSATE TRAP

14.1 Function

The condensate trap "A" in Figure 14.1 and Figure 14.2 allows the discharge of the condensate via the condensate drain pipe avoiding in the mean time the escape of combustion products.

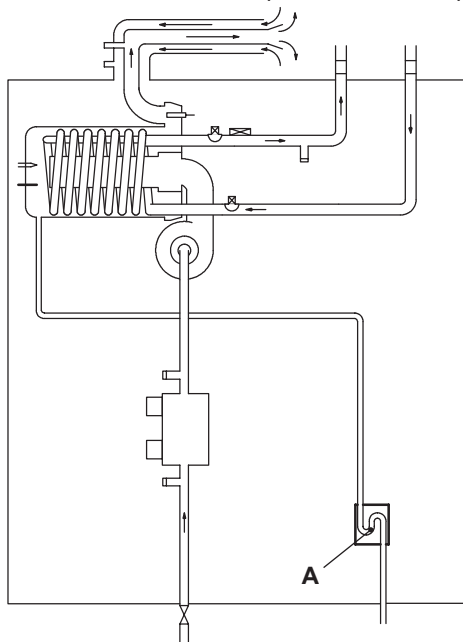


Figure 14.1

If the drain pipe becomes blocked, or condensate cannot drain, the condensate level in the trap rises until it affects the flame detection probe, this will cause the boiler lock-out.

14.2 Check the cleanness of the trap

The condensate drain pipe "A" (Figure 14.2) does not require any particular maintenance but just check:

- 1 That no solid deposits have formed, if so remove them.
- 2 That the condensate drain piping is not clogged.

To clean the inside of the siphon, remove it and turn it upside down to remove any dirt (see section "14.3 Removal" on page 34).

14.3 Removal



Warning: isolate the boiler from the mains electricity supply before removing any covering or component.

- 1 Remove the front and right case panels.
- 2 Disconnect the air manifold "B".
- 3 Using pliers, remove the spring "C" moving it to the left.
- 4 Remove the pipe "D" from the trap "A".

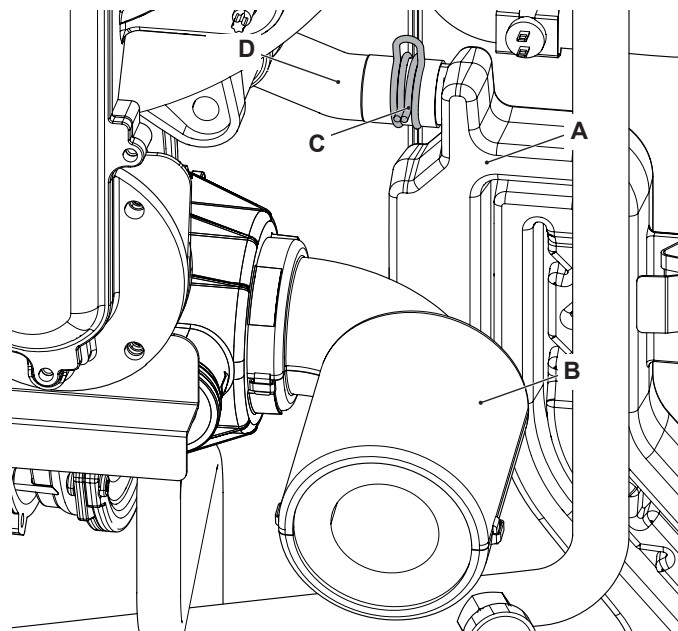


Figure 14.2

- 5 Remove the trap "A", moving it upwards; from the grommet "E".
- 6 Reassemble carrying out the removal operations in reverse order.

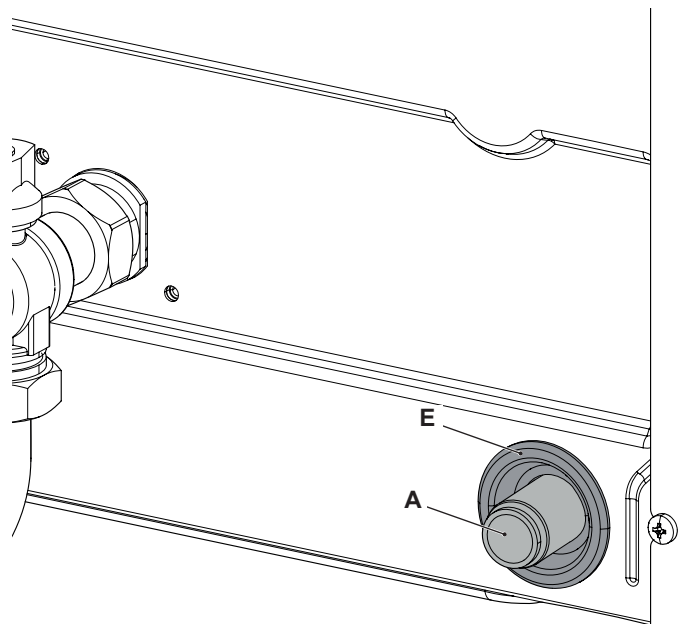


Figure 14.3

SHORT SPARE PARTS LIST

15 SHORT SPARE PARTS LIST

Key	G.C. part no.	Description	Q.ty	Manufacturer part no.	Manufacturer's reference
1		Burner (mod. ADVANCE 15OV, ADVANCE 18OV)	1	BI1563 102	
		Burner (mod. ADVANCE 24OV)	1	BI1563 103	
2		Condensing heat exchanger (mod. ADVANCE 15OV, ADVANCE 18OV)	1	BI1782 101	
		Condensing heat exchanger (mod. ADVANCE 24OV)	1	BI1782 102	
3		Fan (mod. ADVANCE 15OV, ADVANCE 18OV)	1	BI1503 109	
		Fan (mod. ADVANCE 24OV)	1	BI1563 104	
4		Gas valve	1	BI1313 103	SIT 848 Sigma 0848135
5		Main Electronic control/ignition p.c.b.	1	BI2535 101	
6		Control panel electronic p.c.b.	1	BI2445 104	
7	H74-553	Temperature probe (main circuit)	1	BI1442 106	
8		Condensate trap	1	BI1782 107	
9	E83-101	Overheat thermostat	1	BI1172 105	ELTH - type 261
10		Flue temperature probe NTC and safety thermal fuse	1	BI1782 103	
11	E23-792	Fuse 2 AF 250VAC 5x20	1	BI1165 112	
12		Detection electrode	1	BI1503 108	
13		Ignition electrode	1	BI1363 103	

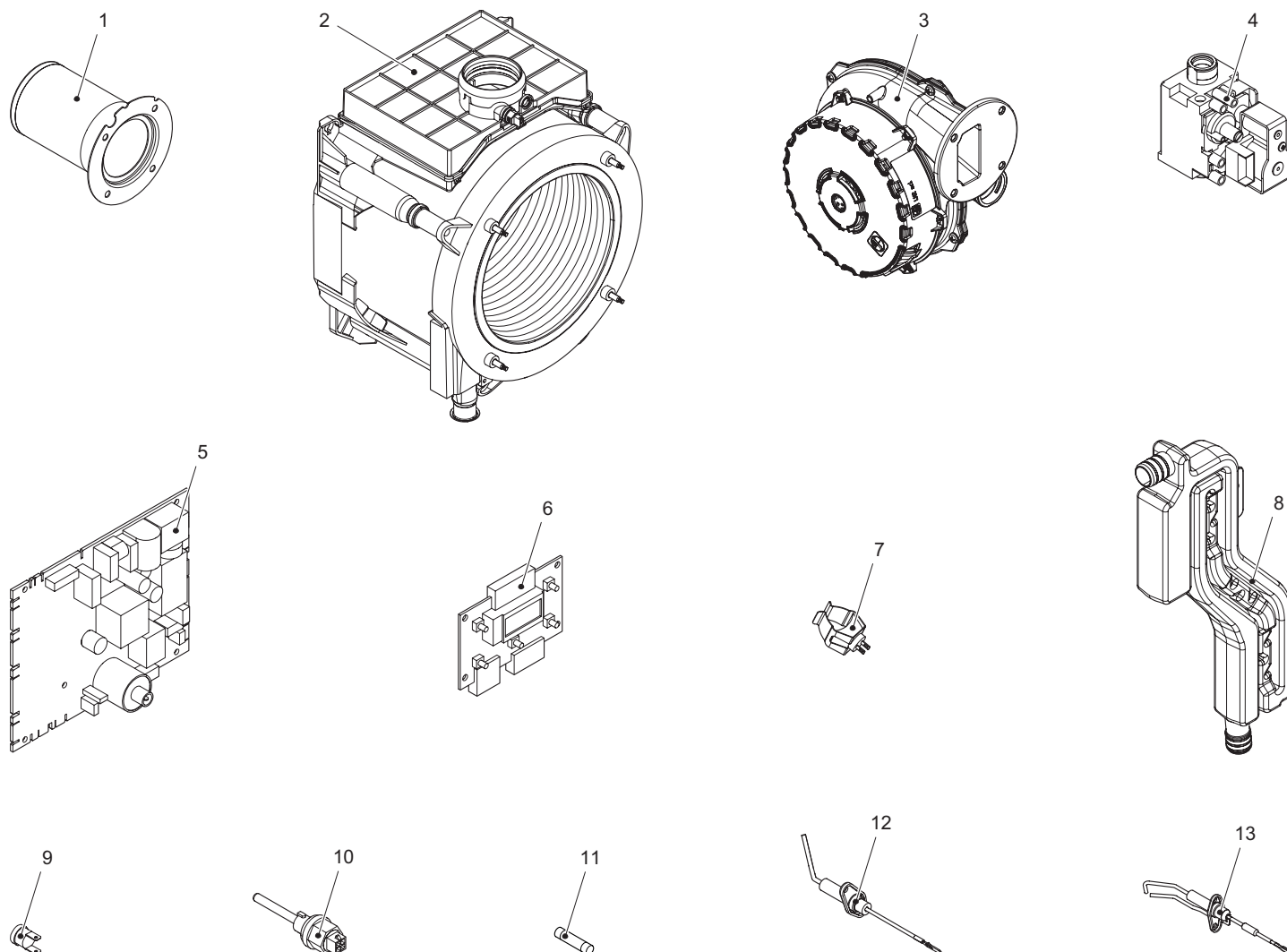


Figure 15.1



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