Wall hung, fanflue, roomsealed, high efficiency gas boiler

Service manual

BASICA COND

Product name	Models	G.C. Appl. No.
BASICA COND 28S	**M275V.28 SR**	**41-583-40**

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

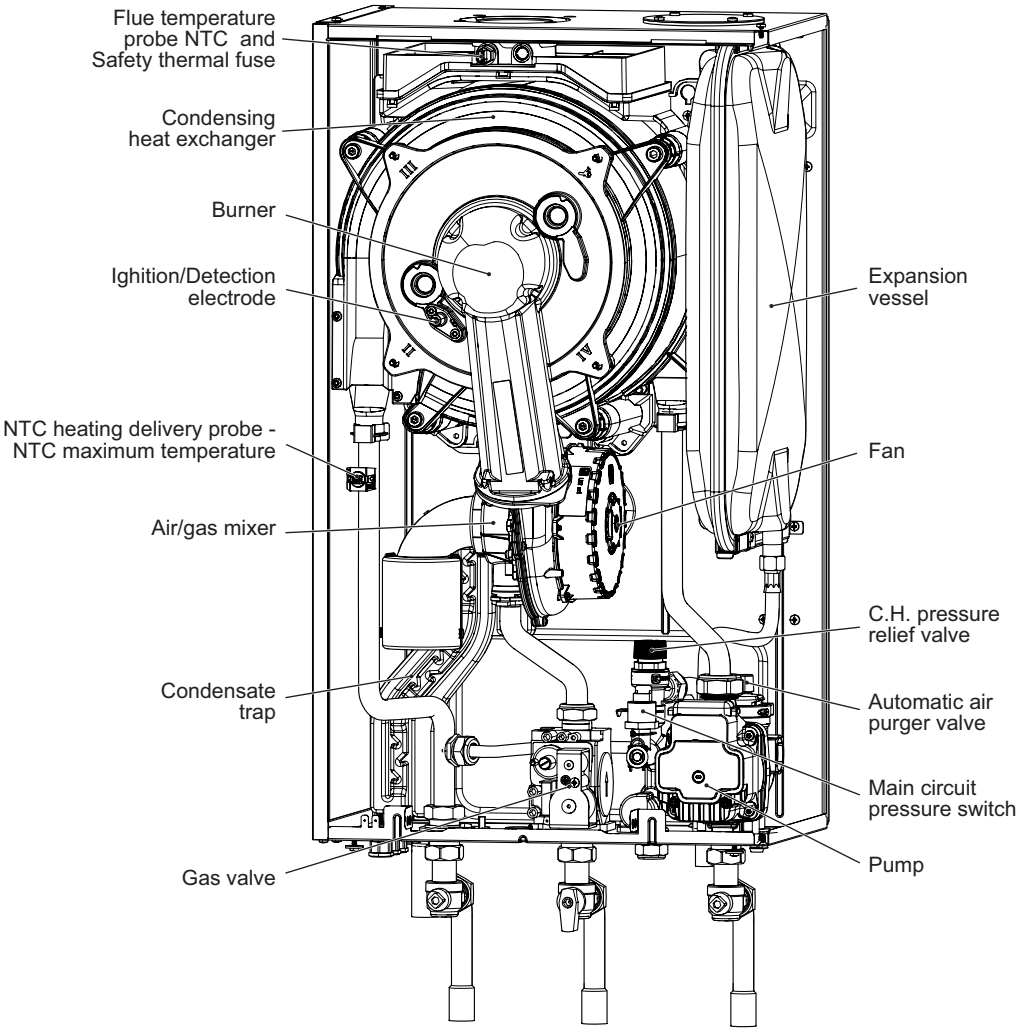


Figure 1.1

1.2 Hydraulic diagram

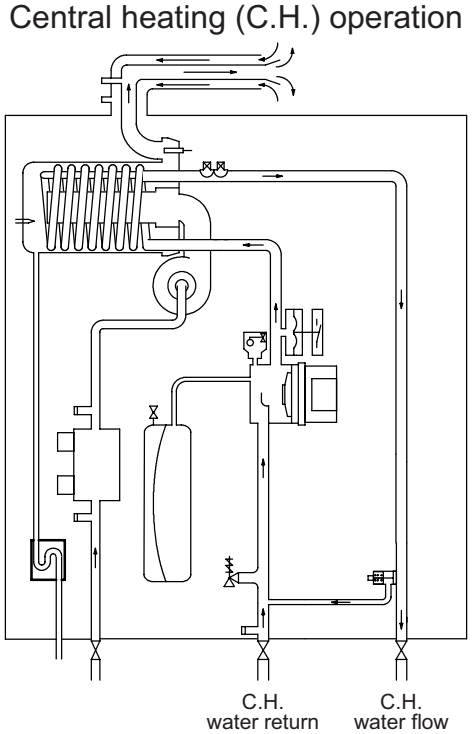


Figure 1.2

2 GENERAL ACCESS AND EMPTYING HYDRAULIC CIRCUITS

2.1 Nomenclature

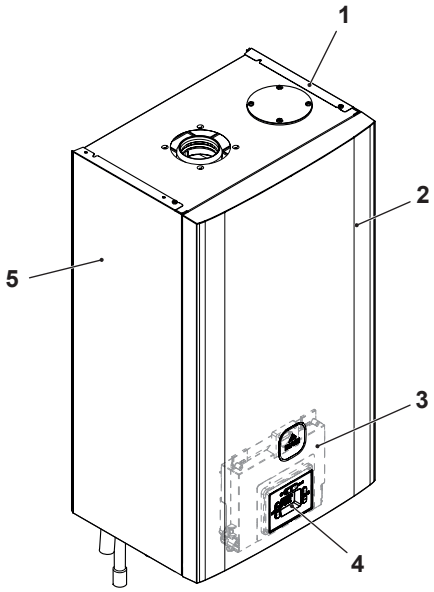


Figure 2.1

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

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 "6" (Figure 2.2), lift the panel and remove it.

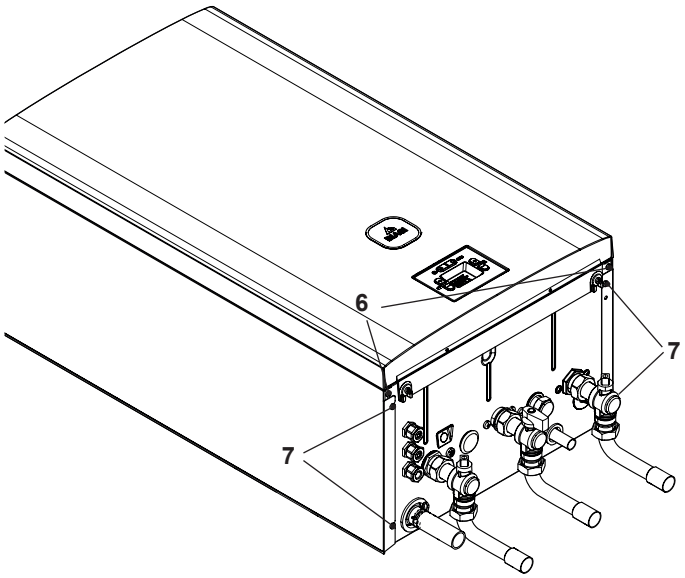


Figure 2.2 - Bottom view of the boiler

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

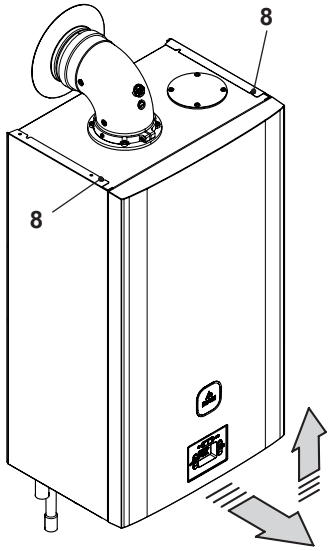


Figure 2.3

To remove the side panels loosen the screws "7" (Figure 2.2) and "8" (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.

Fit the side panels and the front panel in the reverse order to that described above.

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 "9" and turn the control panel "10" (Figure 2.4).

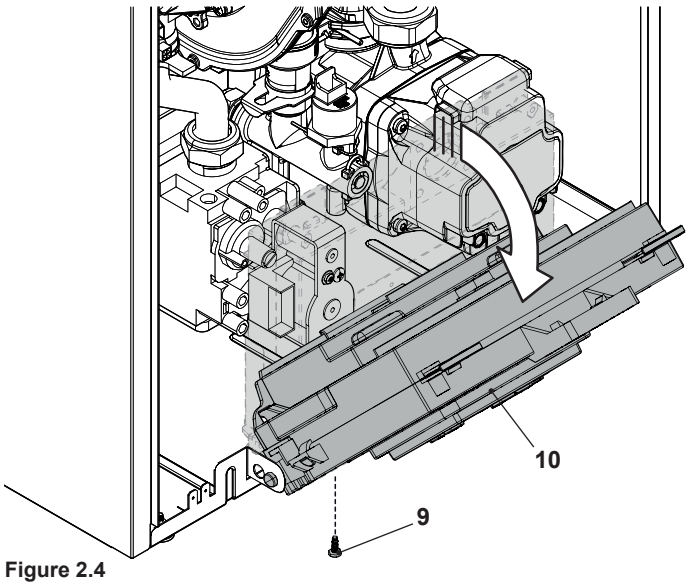


Figure 2.4

2.4 Main electronic p.c.b. box

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

Terminal block lid removal

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

1 Remove the front panel of the case.

2 Turn the control panel "11" (see section "2.3 Control panel" on page 5).

3 Unscrew the screw "12" and lift the cover "13" to access the electric power supply terminal block, remote and external sensor (Figure 2.5).

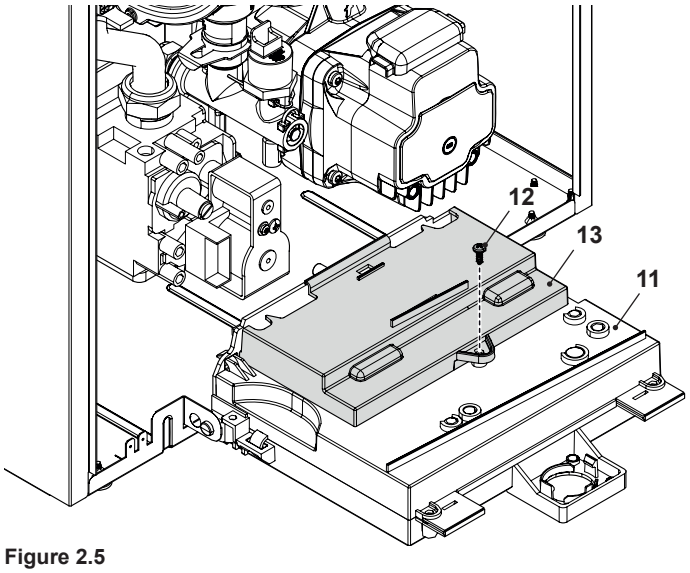


Figure 2.5

4 Rotate the lid (Figure 2.6).

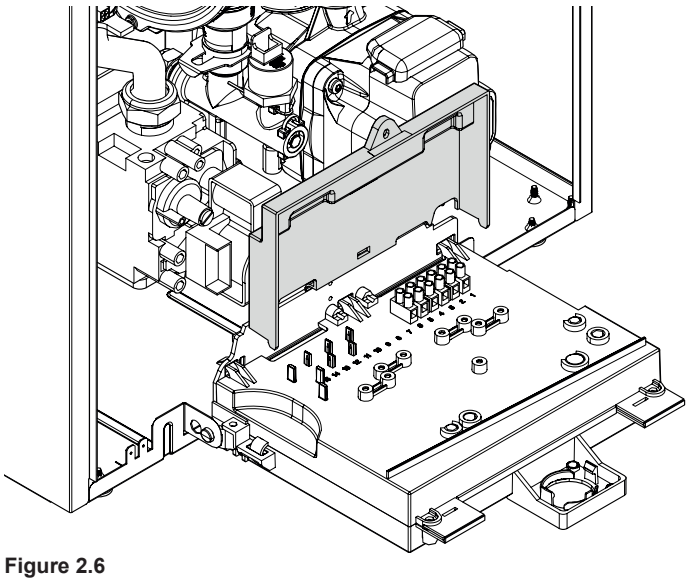


Figure 2.6

Main electronic p.c.b. lid removal

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

5 Unscrew the screw "14" (Figure 2.7).

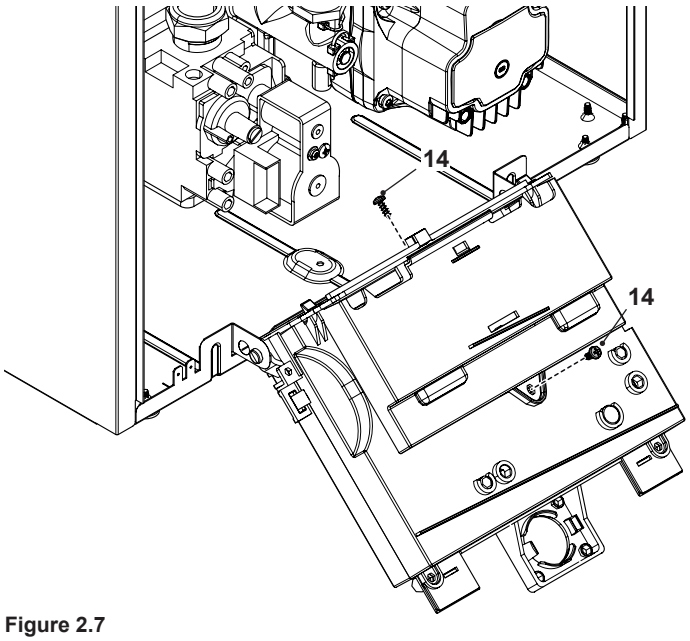


Figure 2.7

6 Free the hooks indicated and rotate the cover "16" and the lids "15" (Figure 2.8).

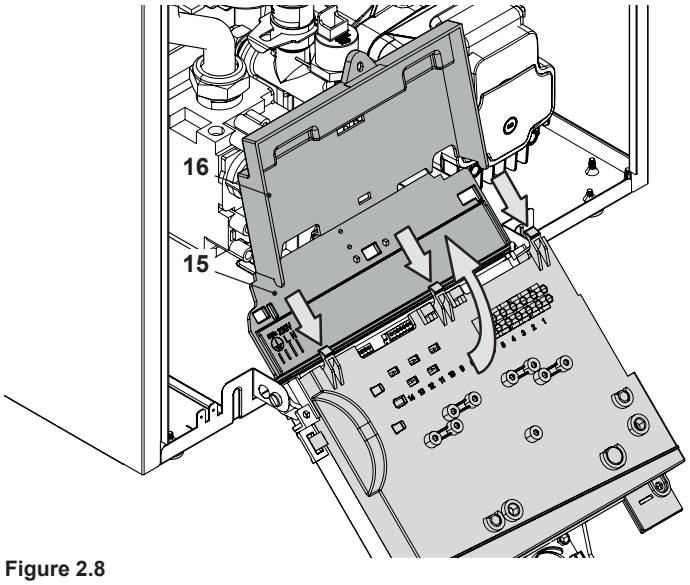


Figure 2.8

7 Free the hooks indicated and rotate the cover "17" (Figure 2.9).

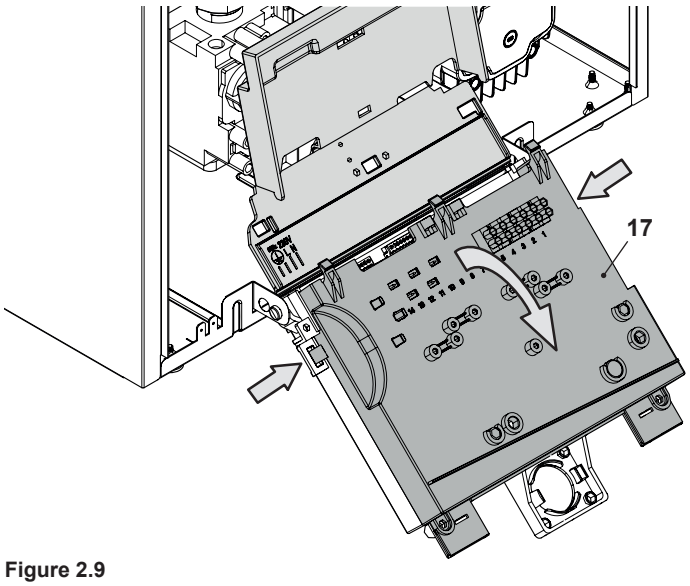


Figure 2.9

2.5 Emptying the primary circuit

1 Close the C.H. circuit flow and return cocks "18" (Figure 2.10).

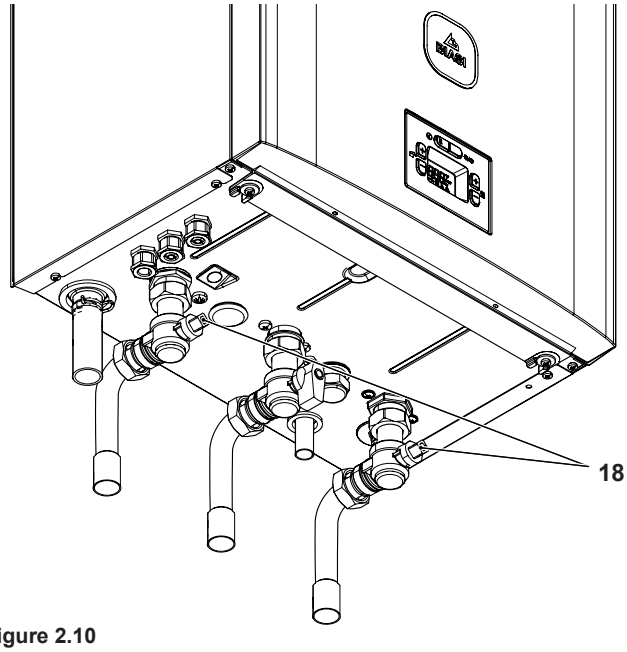


Figure 2.10

2 Remove the front and right panels of the boiler.

3 Loosen the central heating drain cock "19" (Figure 2.11) until the boiler is completely emptied.

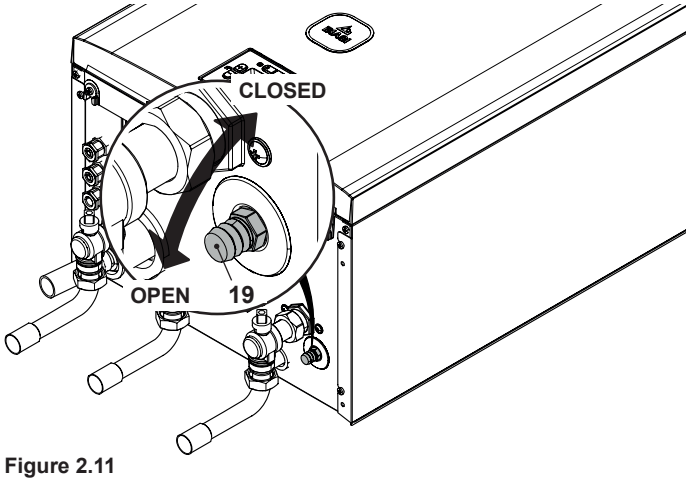


Figure 2.11

4 To make draining easier, lift the plug "20" of the automatic relief valve in Figure 2.12.

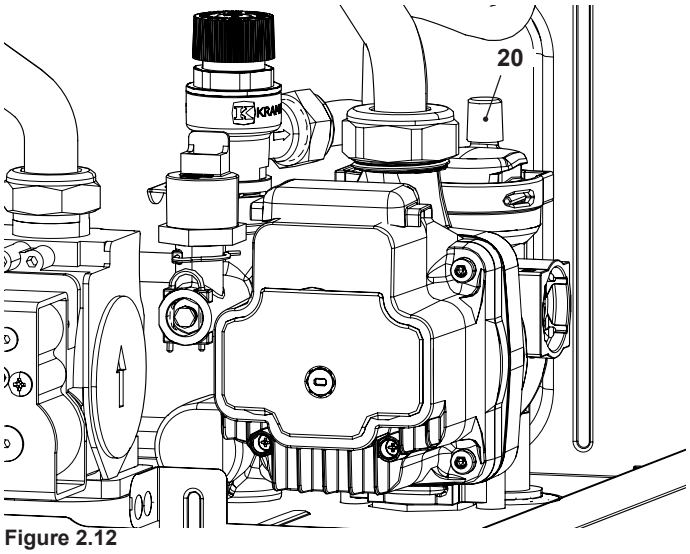
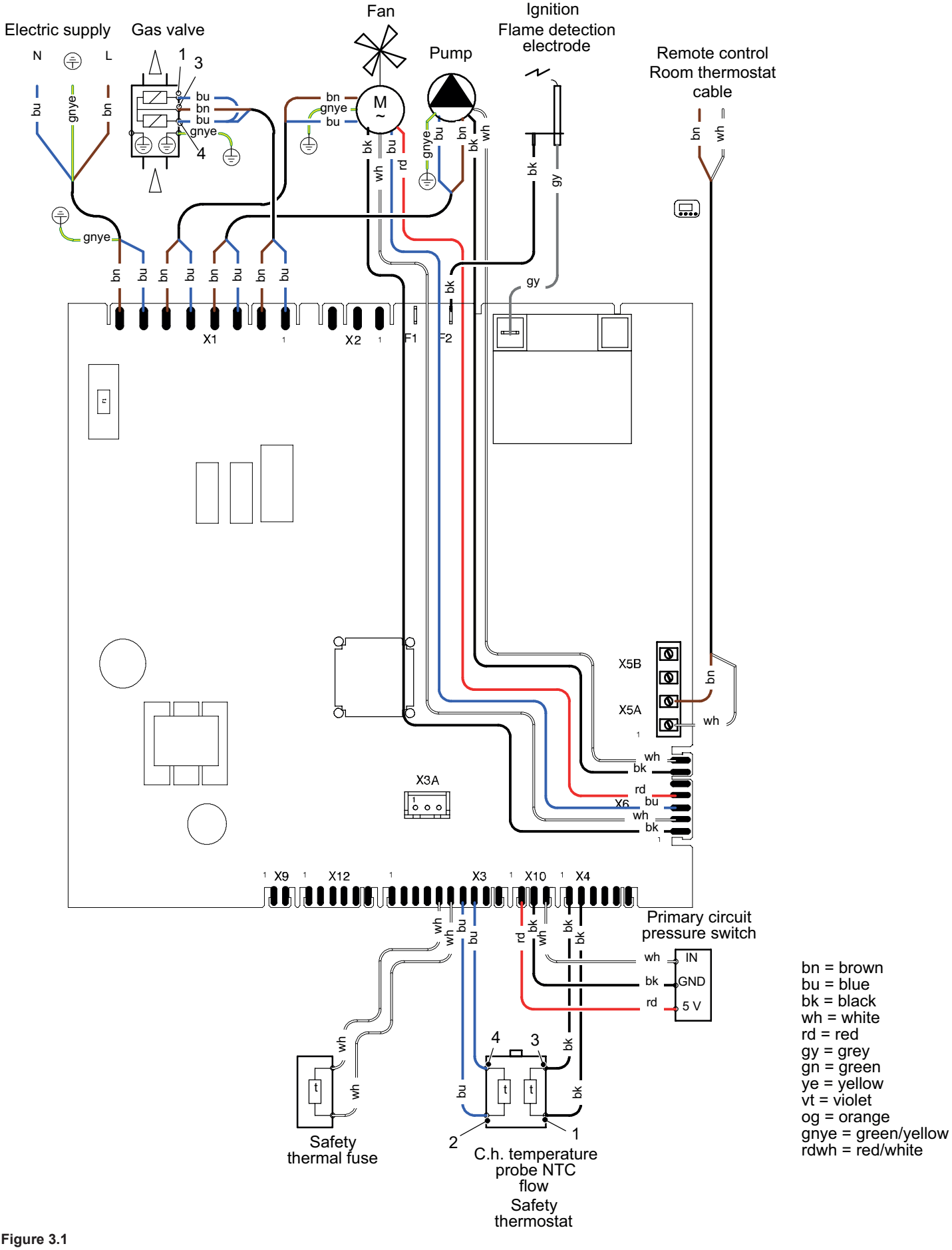


Figure 2.12

3 DIAGRAMS

3.1 Wiring diagram M275V SM



bn = brown
bu = blue
bk = black
wh = white
rd = red
gy = grey
gn = green
ye = yellow
vt = violet
og = orange
gnye = green/yellow
rdwh = red/white

Figure 3.1

3.2 Circuit voltages

Electrical voltages or frequency with burner on ——— only during c.h. operation only

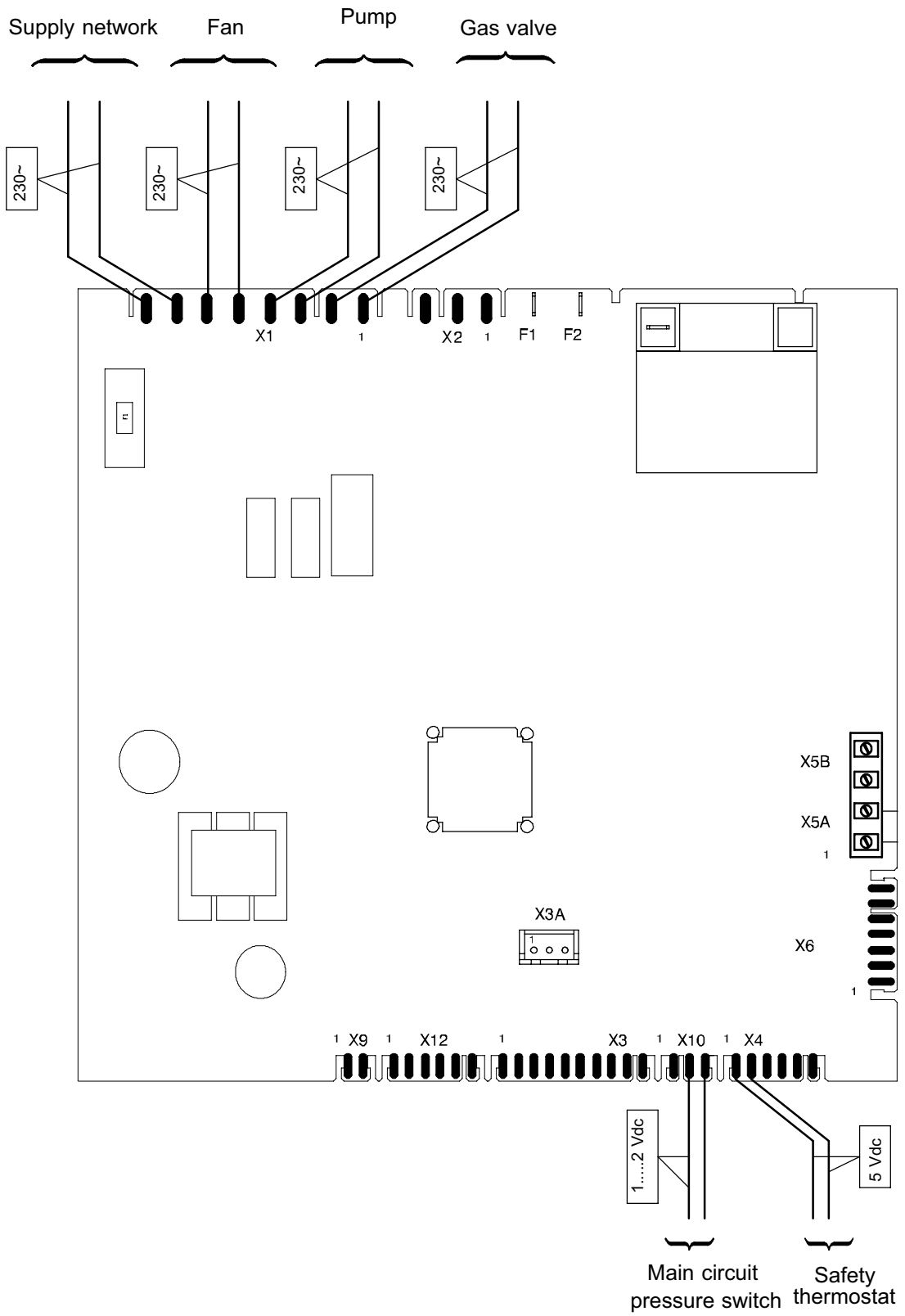


Figure 3.2

FAULT FINDING

FAULT FINDING

		Components to check																								
Section of the manual → (note ref. in brackets)		– (1)	– (2)	– (3)	21.1	– (4)	5	7.2	9.5			10	11.4	12.2	15.2	16	17	18.4	19.2	19.2	20.1	– (7)	–	–	–
Appliance lock–out (*)	Defect ↓	Power supply line	Gas supply line	Flue pipes	Cond. drain pipe and trap	C.H. circuit	Condensing heat exchanger	Pump	Fuses (Electronic p.c.b.)	Main electronic p.c.b.	Boiler settings	Control panel electr. p.c.b.	Gas valve	Main circuit pressure switch	Main circuit temp. probe	By–pass valve	Fan / air restrictor	Ignition / Detection electrode	Safety thermostat	Gas restrictor	Flue temp. probe NTC	Expansion vessel	Safety valve	Pressure gauge	External temp. probe
Display indicates "E"	**E01** + ***RESET***		**A**		**B**								**D**					**C**							
	E02 + ***RESET***						**C**							**A**					**B**						
	E03 + ***RESET***									**A**															
	E04 + ⚠							**B**																**A**	
	E05 + ⚠																**A**								
	E06 + ⚠														**A**										
	E08 + ⚠																								**A**
	E09 + ⚠			**A**																	**B**				
	E10 + ⚠			**A**																	**B**				
	E11 + ***RESET***									**C**								**B**							
	E14 + ⚠					**A**		**B**																	
	E22 + ***RESET***					**A**	**C**	**B**																	
	E25 + ⚠																								
	E26 + ***RESET***									**A**			**B**												
	E28 + ⚠																								
	E50 + ⚠									**A**															
	E52 + ***RESET***																								
	E54 + ***RESET***																								
	E58 + ***RESET***																								

The letter in the cells indicates the possible fault cause.
A.....Z indicates the most probably (**A**) to less probably (**....Z**)

		Components to check																							
Section of the manual → (note ref. in brackets)		– (1)	– (2)	– (3)	21.1	– (4)	5	7.2	9.5			10	11.4	12.2	15.2	16	17	18.4	19.2	19.2	20.1	– (7)	–	–	–
Appliance lock–out (*)	Defect ↓	Power supply line	Gas supply line	Flue pipes	Cond. drain pipe and trap	C.H. circuit	Condensing heat exchanger	Pump	Fuses (Electronic p.c.b.)	Main electronic p.c.b.	Boiler settings	Control panel electr. p.c.b.	Gas valve	Main circuit pressure switch	Main circuit temp. probe	By–pass valve	Fan / air restrictor	Ignition electrode / Detection electrode	Safety thermostat	Gas restrictor	Flue temp. probe NTC	Expansion vessel	Safety valve	Pressure gauge	External temp. probe
No "E" indication on display	The boiler does not start either in C.H. mode. The control panel display OFF Fan still.	●							●	●		●													
	On C.H. mode the temperature of the main circuit reaches 90°C and the C.H. system does not heat.									●															
	Incorrect modulation.									●					●		●								
	Noisy bolier.		●	●				●					●			●	●								
	Poor C.H. temperature (8).		●	●						●							●				●				
I	Water leaks from the safety valve during operation on C.H.					●																●	●	●	●
I	Water leaks from the safety valve when the boiler is off.																						●	●	●

* Lock out is indicated as "**E**" 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 CO_2 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.

8 The boiler doesn't reach the nominal heat input.

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 reson for the fault.

E01 + **RESET**	Safety lockout due to failed ignition.
E02 + **RESET**	Lockout due to safety thermostat.
E03 + **RESET**	Generic lockout.
E04 + ⚠	Pump circulation failure, insufficient system pressure or water pressure sensor not connected.
E05 + ⚠	Control anomaly: fan.
E06 + ⚠	NTC heating delivery probe failure.
E08 + ⚠	External NTC probe failure.
E09 + ⚠	Flue gas NTC probe failure (interruption).
E10 + ⚠	Lockout due to tripping of the flue gas probe and thermal fuse.
E11 + ⚠	Parasite flame.
E14 + ⚠	Temperature gradient circulation failure (>2K/s).
E22 + **RESET**	Heating delivery temperature between 90°C and 100°C.
E25 + ⚠	Boiler in antifreeze.
E26 + **RESET**	Gas valve fault.
E28 + ⚠	Tank NTC probe failure.
E50 + ⚠	OT communication fault.
E52 + **RESET**	Maximum number of remote unlock attempts.
E54 + **RESET**	Filling function of C.H. water completed, but pressure is lower than the minimum pressure for boiler filling.
E58 + **RESET**	Filling function of C.H. water completed, but pressure is higher than the maximum pressure for boiler filling.
SEr / 20 °C	Next maintenance period expiring. Enter the "INFO mode" to view the remaining weeks before maintenance is due

4.2 Error history (view only)

1 To enter in the "INFO mode" press the key "G" (Figure 4.1) and hold in for 5 second until the LCD display indicates the code **n02** Figure 4.2.

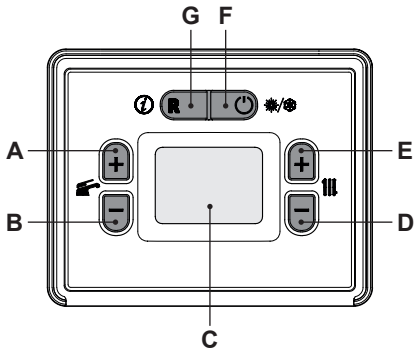


Figure 4.1

Figure 4.2

2 Scroll the various fault code using keys "A" (previous INFO) or "B" (next INFO) (Figure 4.1) until the LCD display indicates the code:

- **n21** (last error code);
- **n22** (second-to-last error code);
- **n29** (weeks remaining before the end of the programmed maintenance period).

3 To exit the parameters menu.

- press the "F" key for 5 seconds (Figure 4.1) (return to previous level).

4.3 Programming the maintenance period

1 To enter in the parameters setting mode press at the same time the 2 keys "F" and "G" (Figure 4.3) and hold in for 5 second until the display shows the code **P00**, indicating entry into “parameter P00” (Figure 4.4).

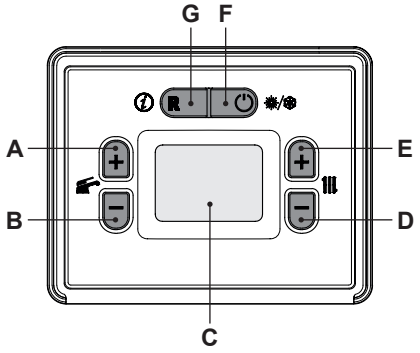


Figure 4.3

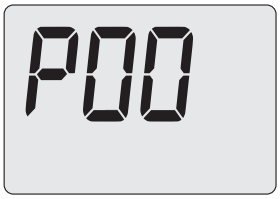


Figure 4.4

2 Scroll the various menus using keys "A" or "B" (Figure 4.3) until the LCD display indicates the letters **Cod** (Figure 4.5) and then displays three dashes "**- - -**".

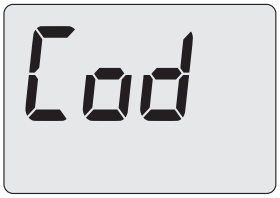


Figure 4.5

3 Press the "E" key to set "**1 -** -", e sucthen press "A" to confirm the 1 and go to the next segment.

4 Press the "E" key to set "**1 9** -", then press "A" to confirm the 9 and go to the next segment.

5 Press the "E" key to set "**1 9 8**", then press "A" to confirm the 8 and go back to the list of parameters

6 Press "A" and hold until the LCD display shows the code **A51**, indicating entry into “parameter A51” (Figure 4.6).

Figure 4.6

7 By using keys "D" or "E" (Figure 4.3) it is possible to modify the value of parameter A51 from **1** to **52** weeks (**52** = 1 year).

8 Press "A" or "B" (Figure 4.3) to confirm the value entered and return to the list of parameters (Figure 4.6).

9 Press "B" and hold until the LCD display shows the code **A50**, indicating entry into “parameter A50” (Figure 4.7).

Figure 4.7

10 By using keys "D" or "E" (Figure 4.3) it is possible to modify the value of parameter A50:

00 = Maintenance period not activated
01 = Maintenance period activated

11 Press "A" or "B" (Figure 4.3) to confirm the value entered and return to the list of parameters (Figure 4.7).

12 Press the "F" key (Figure 4.3) to exit “programming mode”.

5 CONDENSING HEAT EXCHANGER

5.1 Function

The Condensing heat exchanger "1" 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.

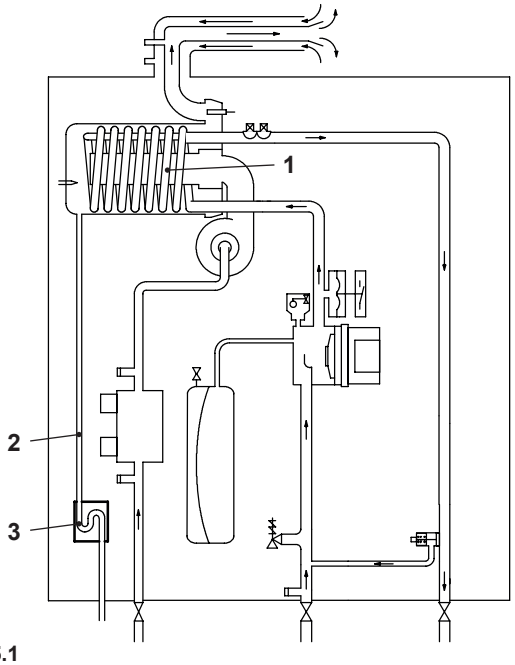


Figure 5.1

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 "3" and the draining pipe "2".

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 "14.2 Removal of the Air box and the Fan" on page 33.

3 Disconnect the detection / ignition electrode connector "4".

4 Disconnect the fan connector "5" by pressing the plastic hook placed on the side of the connector (Figure 5.2).

5 Unscrew the nuts "6" (Figure 5.2).

6 Remove the fan-burner group "7".

7 Empty the primary circuit of the boiler.

8 Remove the clips "8" (Figure 5.2).

9 Loosen the connection "9" and slightly move the pipe "10" upwards, turn it towards left (Figure 5.2) and then move the pipe downwards freeing it from the Condensing heat exchanger.

10 Loosen the connections "11" and slightly move the pipe "12" upwards, turn it towards left (Figure 5.2) and then move the pipe downwards freeing it from the Condensing heat exchanger.

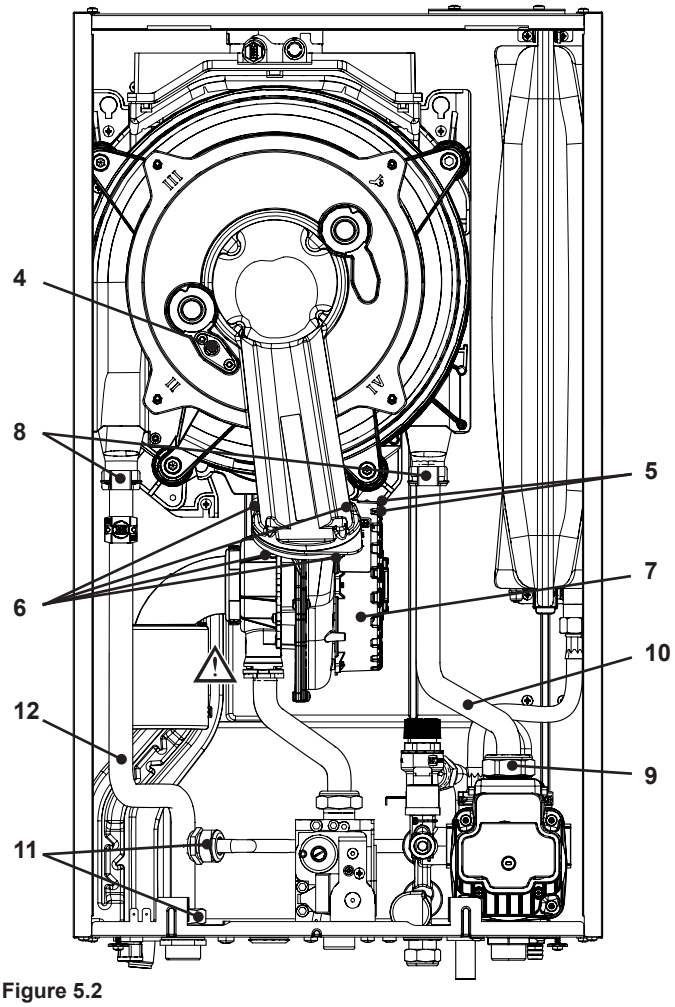


Figure 5.2

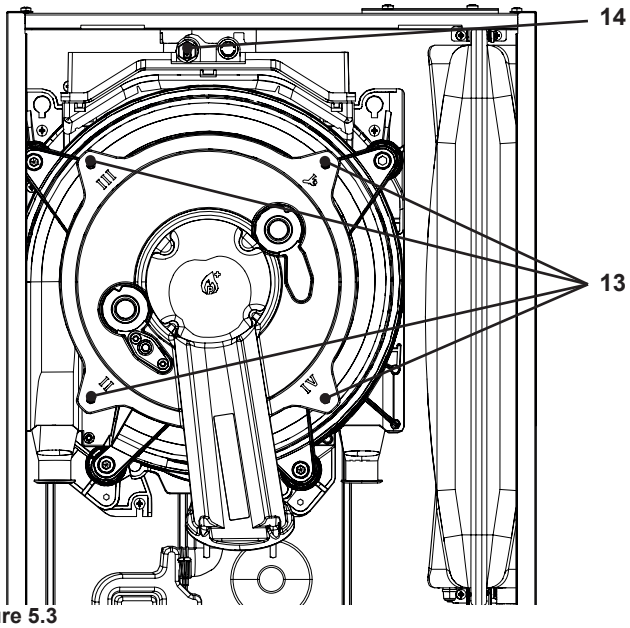


Figure 5.3

11 Unscrew the screws "13" and remove the clamps (Figure 5.3).

12 Disconnect the connector "14" 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.

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

Ensure to tighten the nuts "6" - 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 "9.3 Adjustment - Chimney Sweep Function" on page 25.

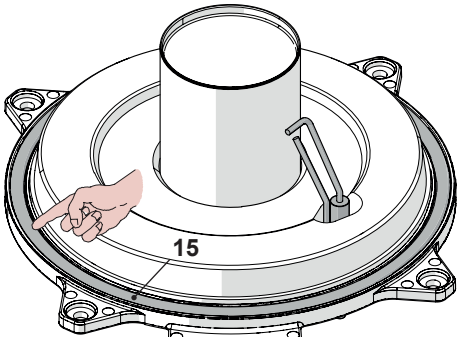


Figure 5.4

Caution:
After any periodical servicing or disturbance the combustion chamber silicon seal "15" Figure 5.4 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.

6 PUMP

6.1 Function

The pump "1" in Figure 6.1 and Figure 6.2 has the function of making the water in the main circuit circulate through the main condensing heat exchanger and therefore through the C.H. system (during the C.H. function).

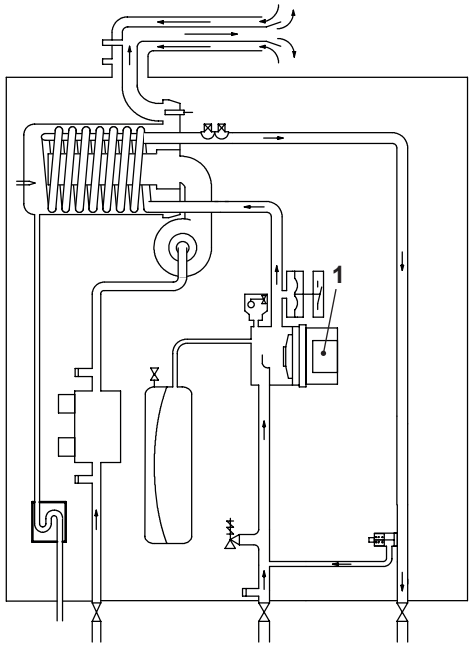


Figure 6.1

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

- Check that the pump is not seized and that the movement of the rotor is not subject to mechanical impediments.

With the boiler off, remove the front panel. Remove the air release plug of the pump and turn the rotor with a screwdriver.

- Check that the impeller is correctly connected to the rotor shaft and that the rotor moves freely.

With the boiler off remove the front and right hand side case panels, lower the control panel and empty the primary circuit.
Remove the pump head by undoing the screws which hold it to the pump body and check that the impeller is firmly joined to the rotor.

6.2 Removal pump head

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

1 Remove the front case panel.
2 Empty the primary circuit of the boiler.
3 Disconnect the connector "2" (Figure 6.2).
4 Unscrew the four screws "3" and remove the pump head "1".

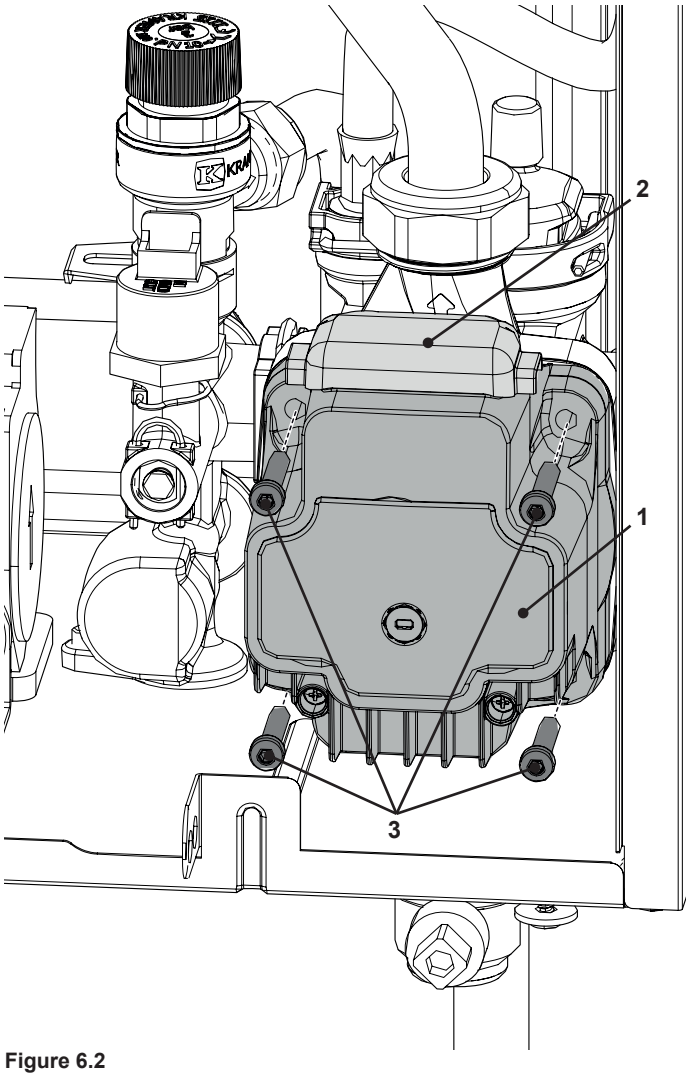


Figure 6.2

Reassemble the pump head carrying out the removal operations in the reverse order. When reassembling the pump head, check the correct position of the gasket and tighten the screws "3" proceeding diagonally around the pump.

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

7.1 Function

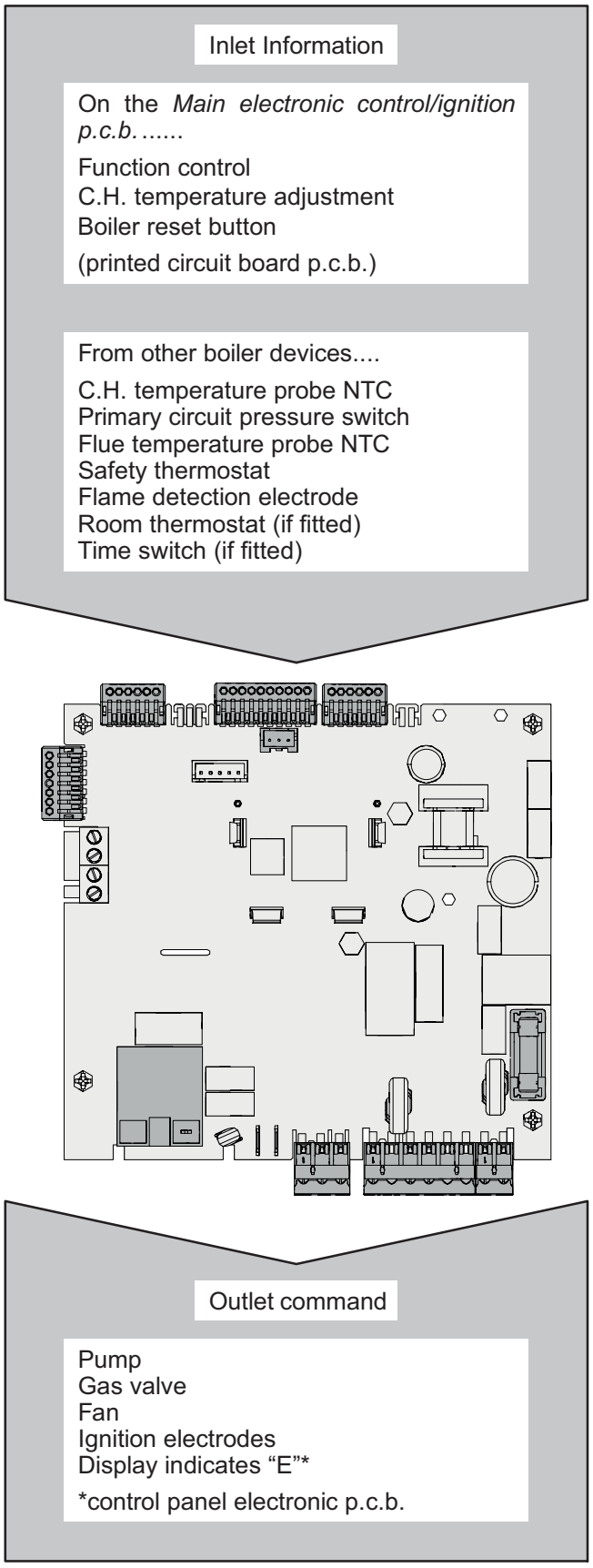


Figure 7.1

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 7.1).
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 "8.1 Function" on page 23).

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.*.

Other components like the primary circuit pressure switch can temporarily stop the ignition of the burner but allow its ignition when the cause of the intervention has stopped.
Figure 7.27 show the sequence of the operations that are carried out at the start of every ignition cycle and during normal functioning.

7.2 Selection and adjustment devices

On the *Main electronic control/ignition p.c.b.* several selection, adjustment and protection devices are located. (Figure 7.2).

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.

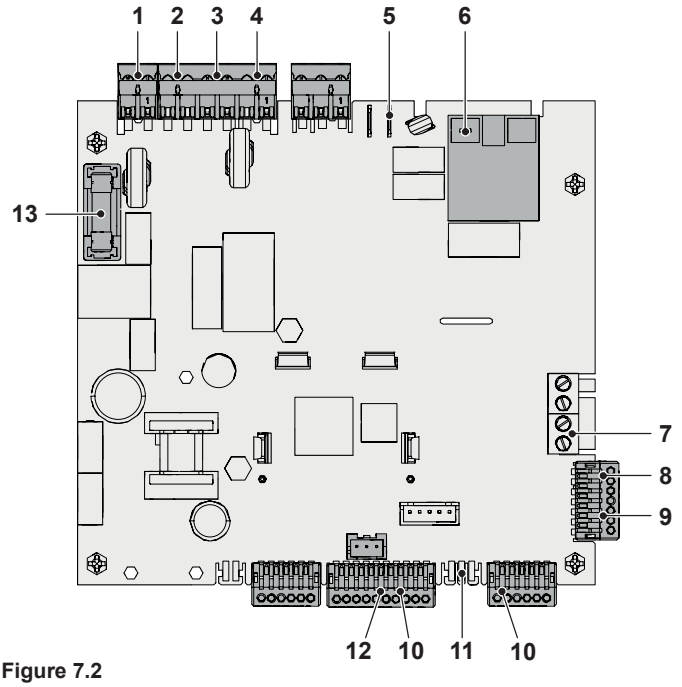


Figure 7.2

1 Connector - electric supply p.c.b.
2 Connector - fan
3 Connector - pump
4 Connector - gas valve
5 Connector - ground reference for ignition / detection electrode
6 Connector - ignition / detection electrode
7 Connector - external temperature probe and remote control (optional)
8 Connector - controller pump
9 Connector - controller fan
10 Connector - safety thermostat and C.H. temperature probe NTC
11 Connector - primary circuit pressure switch
12 Connector - safety thermal fuse
13 Fuse F1 3,15 AF

7.3 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 7.3), 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.

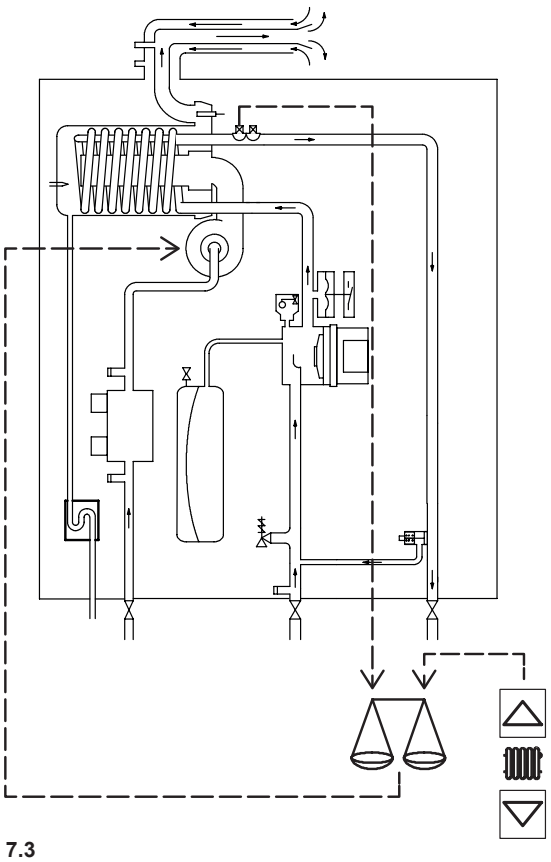


Figure 7.3

The control sequences in function ||| are illustrated in detail in section "7.7 Thermal control in the ||| mode" on page 22.

7.4 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.

1 To enter in the parameters setting mode press at the same time the 2 keys "F" and "G" (Figure 7.4) and hold in for 5 second until the display shows Figure 7.5.

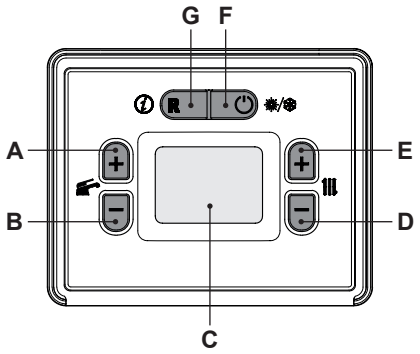


Figure 7.4

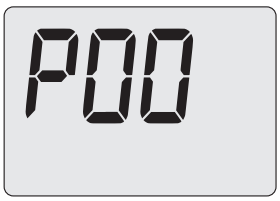


Figure 7.5

2 Scroll the various menus using keys "A" or "B" (Figure 7.4) until the LCD display indicates the letters **Cod**, indicating entry into “parameter Cod” (Figure 7.6), and then displays three

dashes "**- - -**".

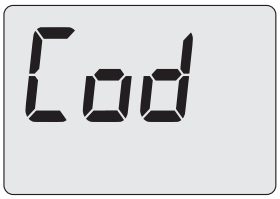


Figure 7.6

3 To enter the selected menu:
- Press the "E" button to set "**2 - -**", then press "A" to confirm the 2 and go to the next segment.
- Press the "E" button to set "**2 7 -**", then press "A" to confirm the 7 and go to the next segment.
- Press the "E" button to set "**2 7 5**", then press "A" to confirm the 5 and go back to the list of parameters.

- The code **P10** appears on the display, indicating entry into "parameter P10" (Figure 7.7).

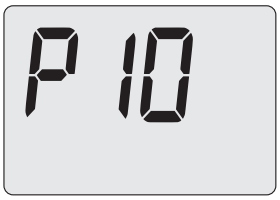


Figure 7.7

4 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter P10 (Figure 7.8).
05 = M275V.28 SR

Figure 7.8

5 Press "A" or "B" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.7).

6 Press "A" or "B" until the LCD display shows the code **P02**, indicating entry into "parameter P02" (Figure 7.9).

Figure 7.9

7 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter P02 (Figure 7.10).
78 = Default
83 = Correct

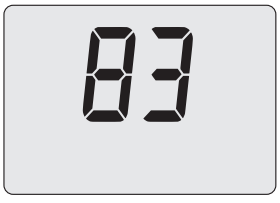


Figure 7.10

8 Press "A" and hold until the LCD display shows the code **P09**, indicating entry into "parameter P09" (Figure 7.11).

Figure 7.11

9 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter P09 (Figure 7.12).
03 = Default
01 = Correct

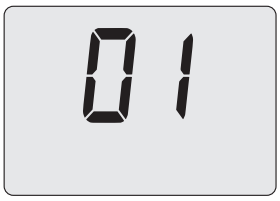


Figure 7.12

10 Press "A" or "B" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.11).

11 Press "A" and hold until the LCD display shows the code **A00**, indicating entry into "parameter A00" (Figure 7.13).

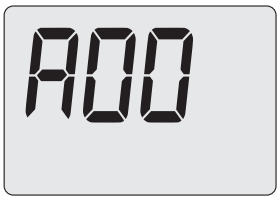


Figure 7.13

12 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter A00 (Figure 7.14).
00 = D.H.W./C.H. (factory setting)
01 = Storage tank
02 = Only C.H. (correct)

Figure 7.14

13 Press "A" or "B" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.13).

14 Press "A" and hold until the LCD display shows the code **A01**, indicating entry into "parameter A01" (Figure 7.15).

Figure 7.15

15 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter A01 (Figure 7.16).
00 = Natural gas (G20)
01 = Propane gas - LPG (G31)

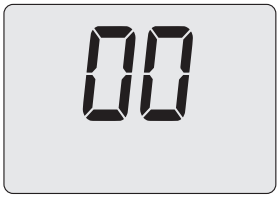


Figure 7.16

16 Press "A" or "B" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.15).

17 Press "A" and hold until the LCD display shows the code **A02**, indicating entry into “parameter A02” (Figure 7.17).

Figure 7.17

18 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter A02.
01 = High temperature (50/80°C)
02 = Low temperature (25/55°C)
03 = Full temperature set (25/85°C) (factory setting)

19 Press "A" or "B" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.17).

20 Press "A" and hold until the LCD display shows the code **A12**, indicating entry into “parameter A12” (Figure 7.18).

Figure 7.18

21 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter A12 (Figure 7.19).
03 = Default
04 = Correct

Figure 7.19

22 Press "A" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.18).

23 Press "A" and hold until the LCD display shows the code **A21**, indicating entry into “parameter A21” (Figure 7.20).

Figure 7.20

24 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter A21 (Figure 7.21).
00 = Room thermostat
01 = Remote control

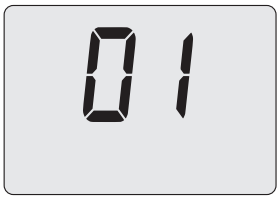


Figure 7.21

25 Press "A" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.20).

26 Press "A" and hold until the LCD display shows the code **A38**, indicating entry into “parameter A38” (Figure 7.22).

Figure 7.22

27 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter A38 (Figure 7.23).
60 = Default
10 = Correct

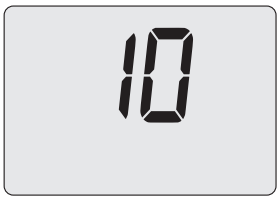


Figure 7.23

28 Press "A" or "B" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.22).

29 Press "A" and hold until the LCD display shows the code **A50**, indicating entry into “parameter A50” (Figure 7.24).

Figure 7.24

30 By using buttons "D" or "E" (Figure 7.4) it is possible to modify the value of parameter A50 (Figure 7.25).
00 = Maintenance period not activated
01 = Maintenance period activated

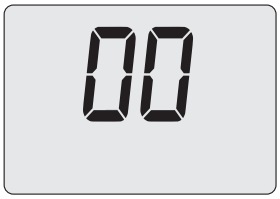


Figure 7.25

31 Press "A" or "B" (Figure 7.4) to confirm the value entered and return to the list of parameters (Figure 7.24).

32 Press "F" (Figure 7.4) to exit “programming mode”.

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.

7.5 Checks

Check that the fuses are complete

If the Main electronic control/ignition p.c.b. does not supply any device (pump, fan, etc.) check that the fuses 13 (Figure 7.2) 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.

7.6 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 "7.4 Setting the boiler control function modes" on page 18).

1 Remove all the body panels (see section "2.2 Case panels" on page 5).

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 6 of this manual.

3 Unscrew the screws "1" (Figure 7.26).

4 Remove all the wiring connected to the *Main electronic control/ignition p.c.b*.

5 Remove the *Main electronic control/ignition p.c.b*.

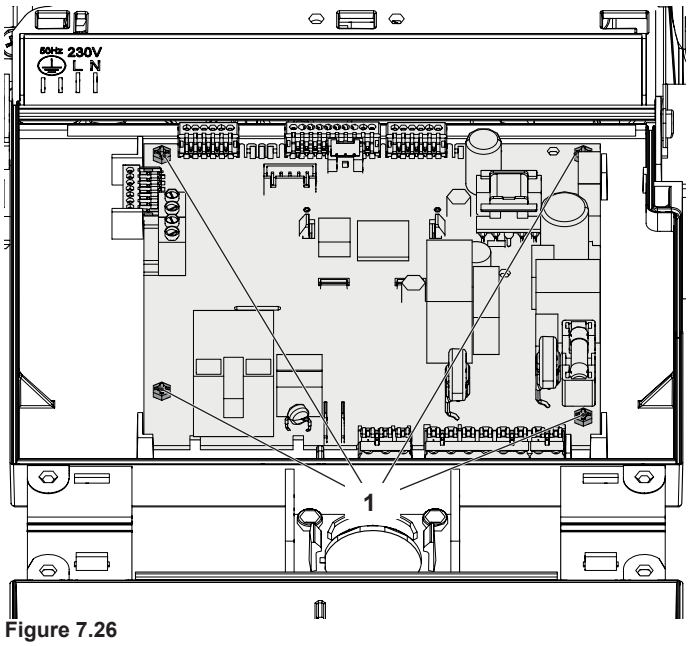


Figure 7.26

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 "9.3 Adjustment - Chimney Sweep Function" on page 25.

7.7 Thermal control in the mode

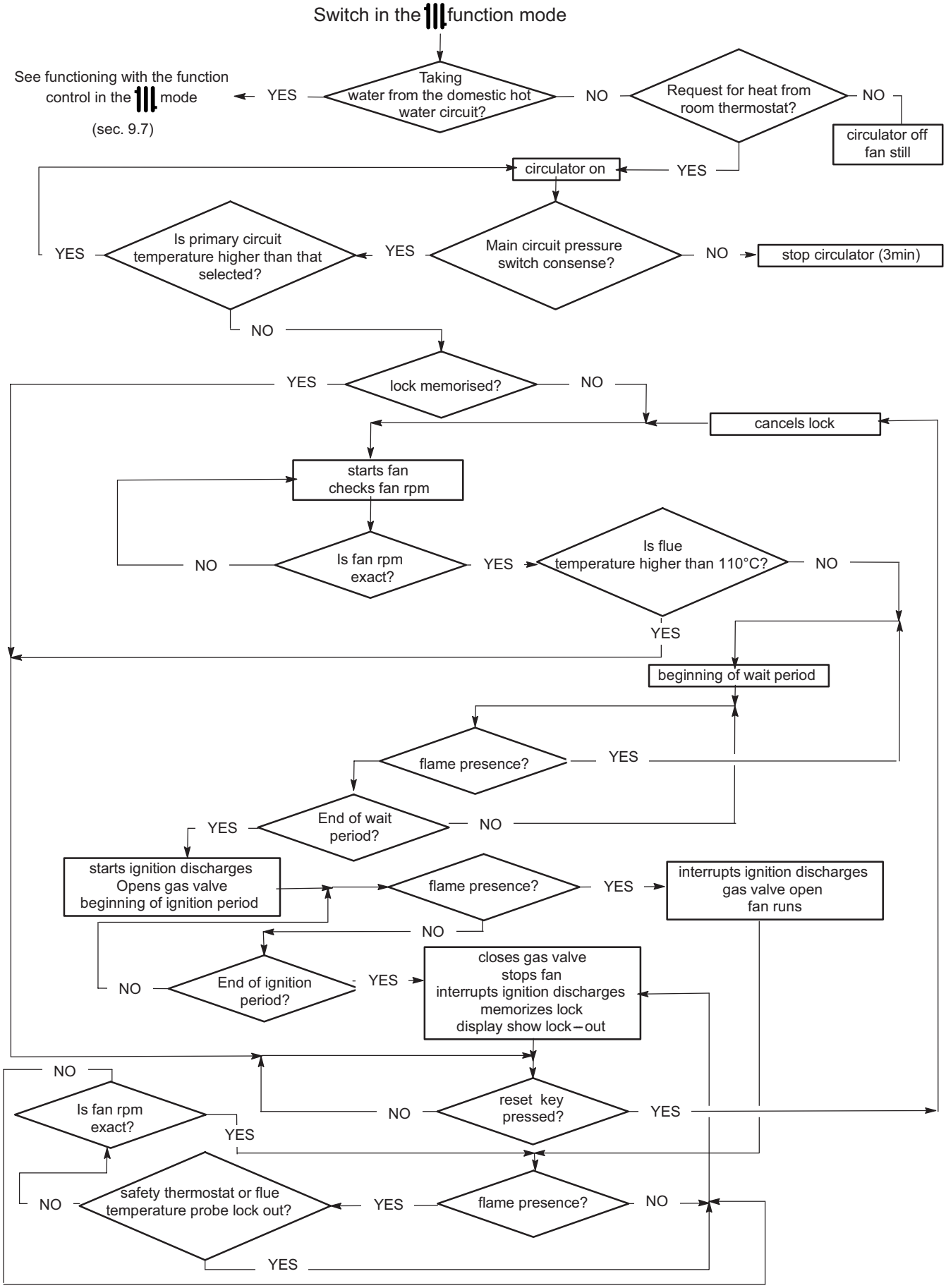


Figure 7.27

8 CONTROL PANEL ELECTRONIC P.C.B.

8.1 Function

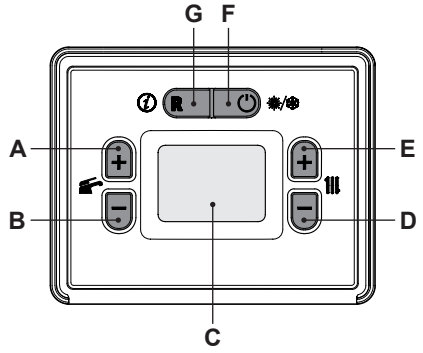


Figure 8.1

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

The Control panel electronic p.c.b. can give to the service 3 levels of informations:
- Normally information
- Info modality
- Function modes setting modality

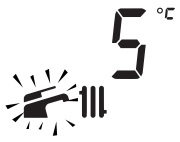
8.2 Normally information

KEY

E04 ⚠	The symbol indicates a volatile error. The boiler is reactivated automatically once the fault has been resolved
E02 ⚠ RESET	The symbol indicates that the boiler can be restarted directly by the user by pressing the reset button
SEr 20	Next maintenance period expiring. Enter the "INFO mode" to view the remaining weeks before maintenance is due
	All symbols with lines radiating from them indicate that the symbol is flashing

SIGNAL DISPLAYED BY THE LCD

LCD	FUNCTION
E01 + RESET	Safety lockout due to failed ignition
E02 + RESET	Lockout due to safety thermostat
E03 + RESET	EEPROM error
E04 + ⚠	Pump circulation failure or insufficient system pressure
E05 + ⚠	Fan control anomaly
E06 + ⚠	Heating NTC probe failure
E07 + ⚠	DHW NTC probe failure
E08 + ⚠	External NTC probe failure
E09 + ⚠	Flue gas NTC probe failure (interruption)
E10 + ⚠	Lockout due to tripping of the flue gas probe
E11 + ⚠	Parasite flame
E12 + ⚠	Return NTC probe failure
E13 + ⚠	Central Heating pressure high
E14 + ⚠	Temperature gradient circulation failure (>2K/s)
E22 + RESET	Heating delivery temperature between 90°C and 100°C
E25 + ⚠	Boiler in antifreeze
E26 + RESET	Gas valve fault
E28 + ⚠	Tank NTC probe failure
E50 + ⚠	Communication with remote control lost
E52 + RESET	Maximum number of remote unlock attempts
E54 + RESET	Filling function of C.H. water completed, but pressure is lower than the minimum pressure for boiler filling
E58 + RESET	Filling function of C.H. water completed, but pressure is higher than the maximum pressure for boiler filling
SEr 20	Next maintenance period expiring. Enter the "INFO mode" to view the remaining weeks before maintenance is due
OFF	Boiler off, (antifreeze protection active)
	Boiler in winter (heating/DHW) and stand-by
	Boiler in summer (DHW only) and stand-by
45 °C	Boiler with DHW power request. The DHW temperature is displayed.
65 °C	Boiler with heating power request. The temperature of the primary heating circuit is displayed.
	Burner ignition (discharge)

LCD	FUNCTION
	Flame detected (burner ignited)
	Boiler in DHW anti-freeze phase (the symbol flashes)
	Boiler in heating anti-freeze phase (the symbol flashes)
	Heating set temperature (all other symbols are disabled)
	DHW set temperature (all other symbols are disabled)
	Boiler in chimney sweep function. To activate the chimney sweep function, set “parameter P06≠0”. 1 = minimum power 2 = maximum power During the chimney sweep function, the and/or symbols do not flash.

9 GAS VALVE

9.1 Function

The gas valve "1" in Figure 9.1 controls the gas inflow to the boiler burner.

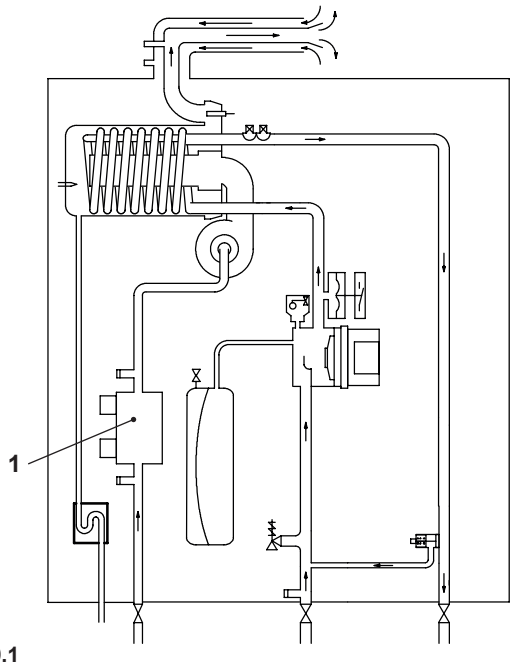


Figure 9.1

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.

9.2 Description of the parts

(Figure 9.2)

2 On-off operators electric connector
3 Gas valve inlet pressure test point
4 On-off operators
5 Minimum boiler power adjustment
6 Maximum boiler power adjustment

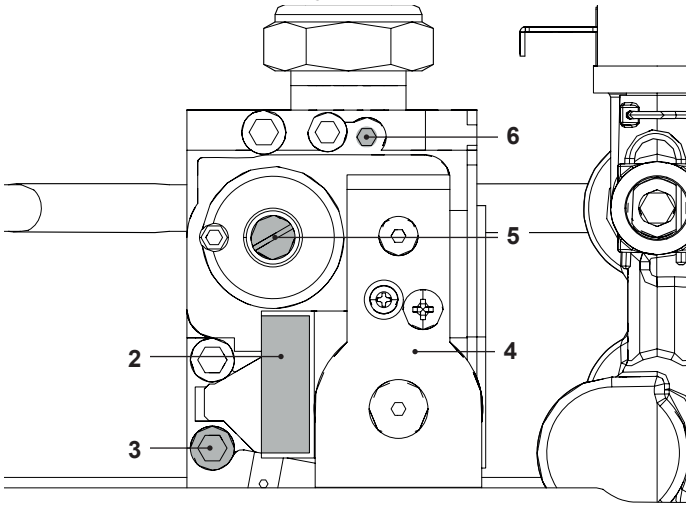


Figure 9.2

9.3 Adjustment - Chimney Sweep Function

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

Each time after measuring the gas pressure, fully close all tapping points that were used.
After each gas adjustment, the valve adjustment components must be sealed.

Warning: risk of electrocution.
The boiler is live during the operations described in this section.
Never touch any electrical parts.

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 5 and "2.3 Control panel" on page 5).
3 Loosen the internal screw on the Inlet Pressure Test Point "3" (Figure 9.2) of the Gas valve and connect a pressure gauge using a suitable hose.
4 Open the gas inlet valve.
5 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.
6 Switch off the boiler **close the gas inlet valve**.
7 Disconnect the pressure gauge and close the Inlet Pressure Test Point "3" (Figure 9.2).

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.

8 Fit the probe of the flue analyser in the flue exhaust sampling point located on the exhaust pipes of the boiler (Figure 9.3).

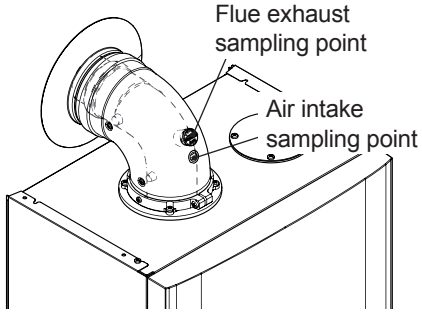


Figure 9.3

9 Turn on the boiler, switching on the fused spur isolation switch.
10 Open the gas inlet valve.
11 Turn on the boiler and operate for 2 minuets to pre-heat the flue, before commencing any adjustments.
12 Make sure that the room thermostat is in the "heat request" position.

13 Open at least one hot water tap fully.

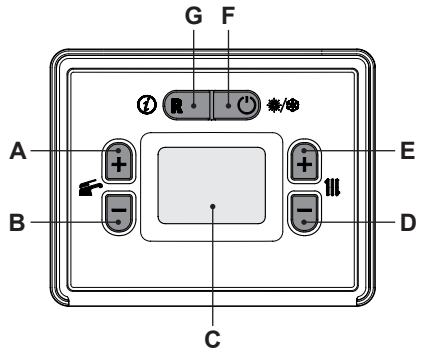


Figure 9.4

14 To enter in the “programming mode” press at the same time the 2 keys "F" and "G" (Figure 9.4) and hold in for 5 second until the code **P00** appears on the display, indicating entry into “parameter P00” (Figure 9.5).

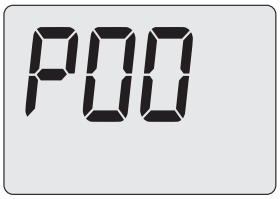


Figure 9.5

15 Scroll the various parameters using keys "A" or "B" (Figure 9.4) until the LCD display shows the code **P06**, indicating entry into “parameter P06” (Figure 9.6).

Figure 9.6

16 Press key "E" (Figure 9.4) to show the value of parameter P06 on the LCD display (Figure 9.7).

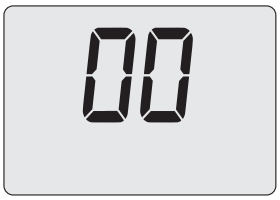


Figure 9.7

17 Press E and the LCD display shows the number **01**, indicating activation of the “chimney sweep function” at minimum output (Figure 9.8).

18 Press A (Figure 9.4) to confirm the value entered and activate the function.

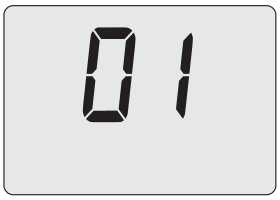


Figure 9.8

19 Press F (Figure 9.4) to exit “programming mode” (Figure 9.9).

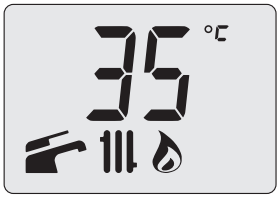


Figure 9.9

20 Allow the analyser to give a stable reading.

21 Read the CO_2 % value. It should be between:

Model BASICA	Type gas	CO_2 % value (range)
COND 28S	Natural (G20)	8,2 - 8,8
	Propane (G31)	9,4 - 10,0

If the boiler starts up as expected, it is already within the limits indicated; move on to checking the maximum pressure.
Otherwise, follow the instructions below.

22 To calibrate the boiler **CO_2** (gas pressure at the burner) unscrew the protective brass cap "5" completely and turn the underlying Ø 4 mm hex head socket screw Figure 9.2. Turn it clockwise to increase the **CO_2**.

Checking the maximum gas valve setting

23 To enter in the “programming mode” press at the same time the 2 keys "F" and "G" (Figure 9.4) and hold in for 5 second until the code **P00** appears on the display, indicating entry into “parameter P00” (Figure 9.10).

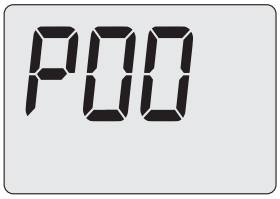


Figure 9.10

24 Scroll the various parameters using keys "A" or "B" (Figure 9.4) until the LCD display shows the code **P06**, indicating entry into “parameter P06” (Figure 9.11).

Figure 9.11

25 Press key "E" (Figure 9.4) to show the value of parameter P06 on the LCD display (Figure 9.12).

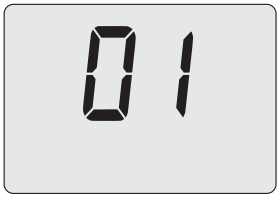


Figure 9.12

26 Press E and the LCD display shows the number **02**, indicating activation of the “chimney sweep function” at maximum DHW output (Figure 9.13).

27 Press A (Figure 9.4) to confirm the value entered and activate the function.

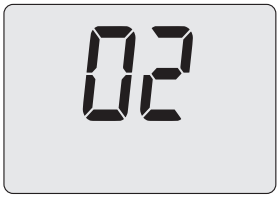


Figure 9.13

28 Press F (Figure 9.4) to exit “programming mode” (Figure 9.14).

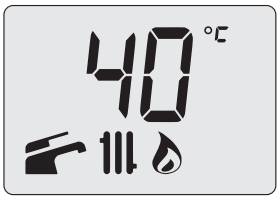


Figure 9.14

29 Allow the analyser to give a stable reading.

30 Read the CO_2 % value. It should be between:

Model BASICA	Type gas	CO_2 % value (range)
COND 28S	Natural (G20)	9,0 - 9,6
	Propane (G31)	10,2 - 10,8

If the two values do not coincide, turn the RQ maximum adjustment screw (6 in Figure 9.2) for the gas valve and calibrate the **CO_2** to the same value specified in the table above.

After setting the CO_2 to the maximum (CO_2 at Q.nom.), CO_2 at the minimum (CO_2 at Q.min.) must be checked.

31 To exit the chimney sweeper, reset parameter **P06** to **00** or wait 15 minutes with the boiler off (**OFF**).

32 Close the domestic hot water cocks.

33 Turn the boiler off by pressing "F" (Figure 9.4) until the message **OFF** appears on the LCD display (Figure 9.15).

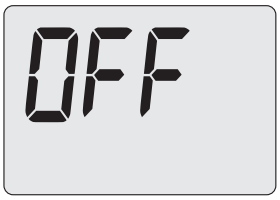


Figure 9.15

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

9.4 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 "2" (Figure 9.2).

3 Measure the electrical resistance between the connector pins of the on-off operators as illustrated in Figure 9.16.

Upper on-off operator approx. 6400 Ω*

Lower on-off operator approx. 920 Ω*

*at ambient temperature.

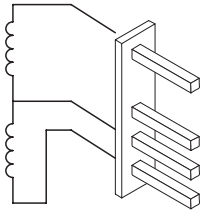


Figure 9.16

9.5 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 "8" (Figure 9.17), see also connector "2" (Figure 9.2).

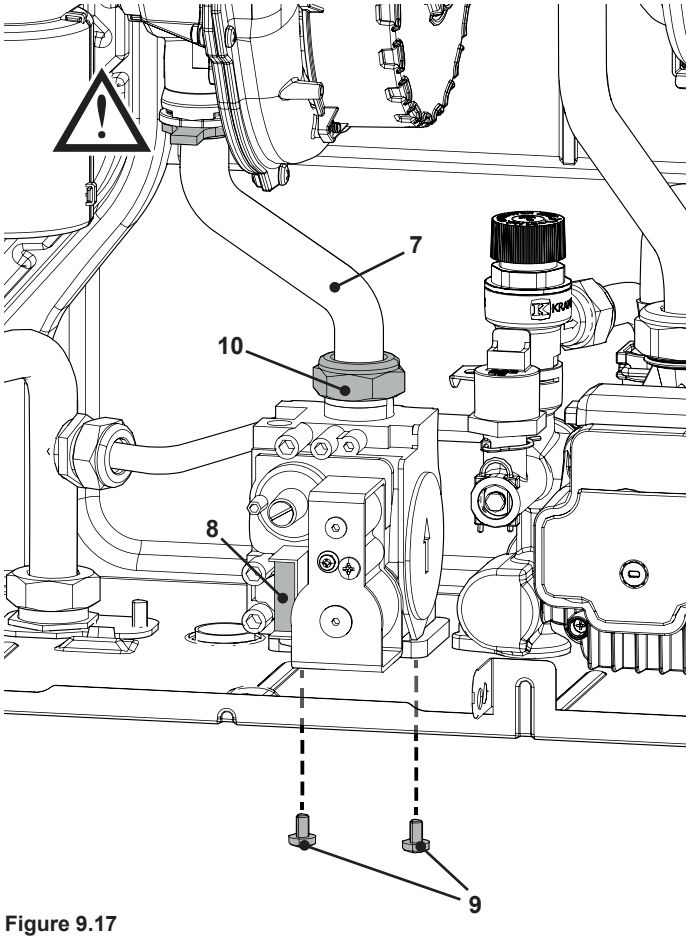


Figure 9.17

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 "10" (Figure 9.17) and remove the pipe "7".

5 Unscrew the screws "9" and remove the valve (Figure 9.17).

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 fol-

lows.

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 "9.3 Adjustment - Chimney Sweep Function" on page 25.

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 "9.3 Adjustment - Chimney Sweep Function" on page 25.

10 PRIMARY CIRCUIT PRESSURE SWITCH

10.1 Function

The Primary circuit pressure switch ("1" in Figure 10.1) function is to check the presence of water in the primary hydraulic circuit and that the pressure is above the minimum.

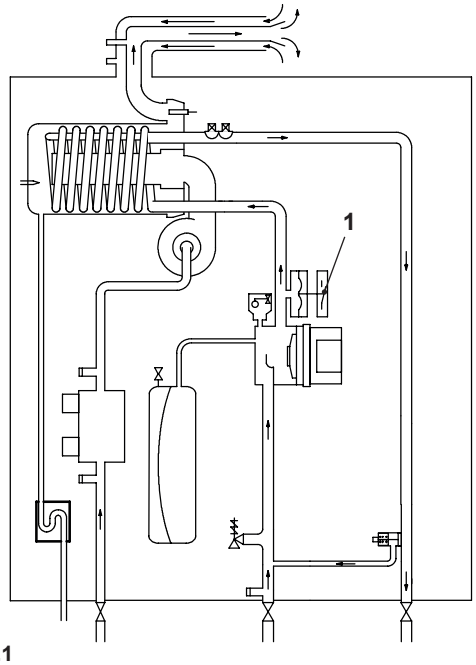


Figure 10.1

This device is connected to the main electronic control p.c.b. and if, it does not activate the control board will indicate that a fault condition (see section "4.1 Display diagnostic" on page 12 of this manual) has occurred.

10.2 Removal

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

1 Remove the front and right hand side panels of the case, turn off the flow and return isolation valves and empty the primary circuit.

2 Remove the fixing spring "3" (Figure 10.2) and remove the primary circuit pressure switch "4".

3 Disconnect the connector "2" (Figure 10.2).

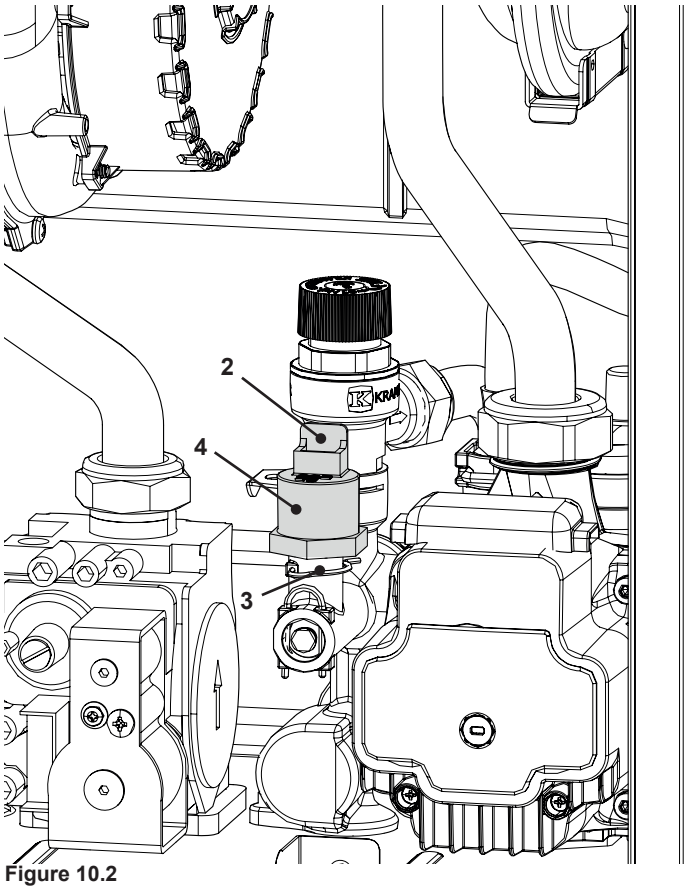


Figure 10.2

4 Reassemble the primary circuit pressure switch in reverse order of removal.

Warning: to lubricate the O-ring gaskets exclusively use a silicone base grease compatible to be in contact with foods and approved by the local water Authorities.

11 EXPANSION VESSEL AND PRESSURE GAUGE

11.1 Function

The Expansion vessel ("1" in Figure 11.1) function is to allow for the volume expansion of the C.H. circuit water due to the temperature rise.

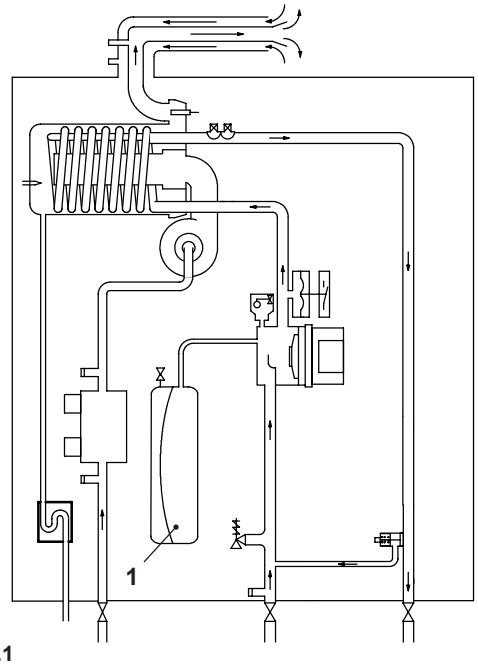


Figure 11.1

11.2 Checks

1 Turn off the flow and return isolation valves and empty the primary circuit of the boiler.

2 Remove the protective cap "2" in Figure 11.2 from the valve on the top of the expansion vessel and connect a suitable air pressure gauge.

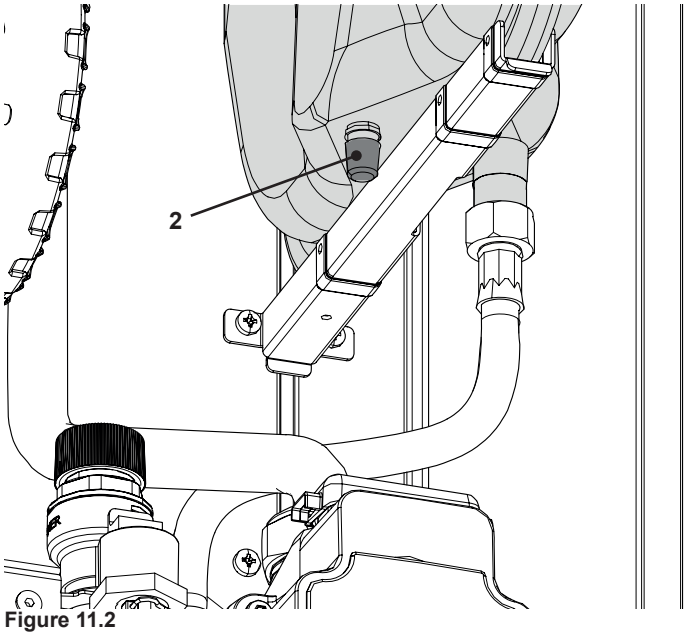


Figure 11.2

3 Check the pre-load pressure and refer to the section *Expansion vessel* in the *User manual and installation instructions* for the correct value.

11.3 Removal of the expansion vessel

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

1 Remove the front and right hand side panels of the case, turn off the flow and return isolation valves and empty the primary circuit.

2 Completely unscrew the connection "5" (Figure 11.3).

3 Unscrew the screws "4" and "3" (Figure 11.3).

4 Remove the expansion vessel from the front of the boiler.

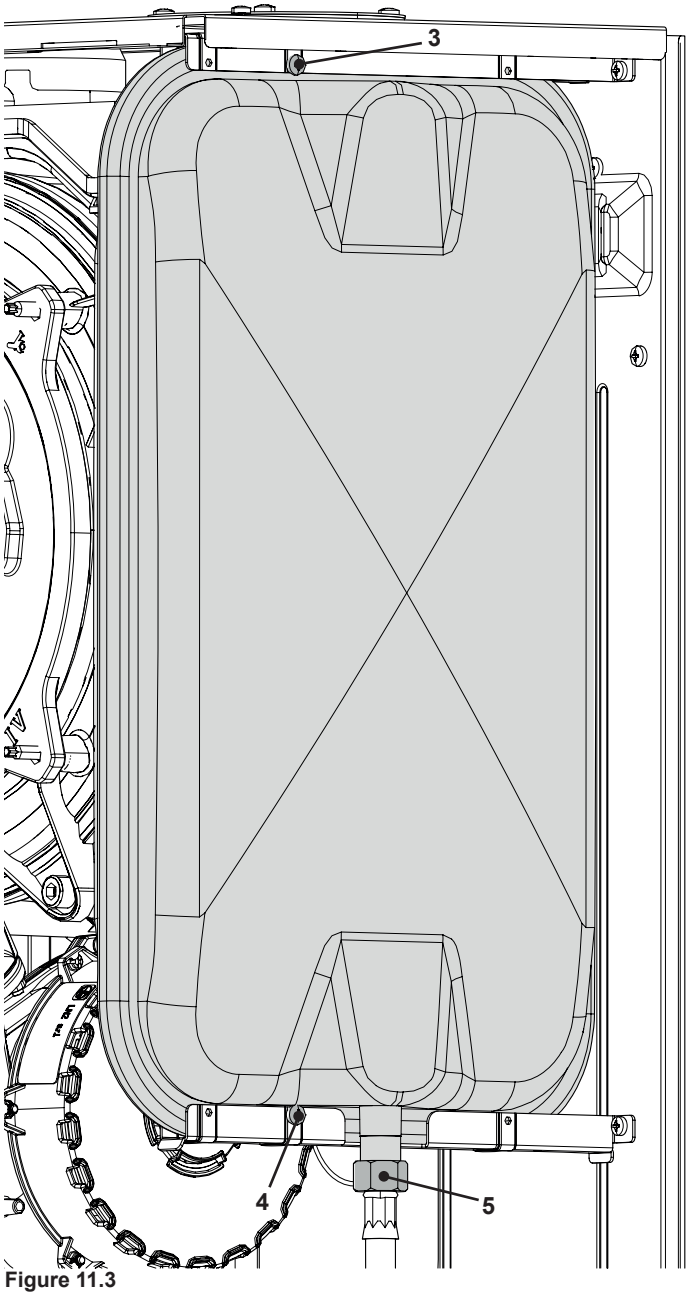


Figure 11.3

5 Re-assemble the parts in reverse order of removal.

12 NTC HEATING DELIVERY PROBE - NTC MAXIMUM TEMPERATURE

12.1 Function

The NTC 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 12.1.

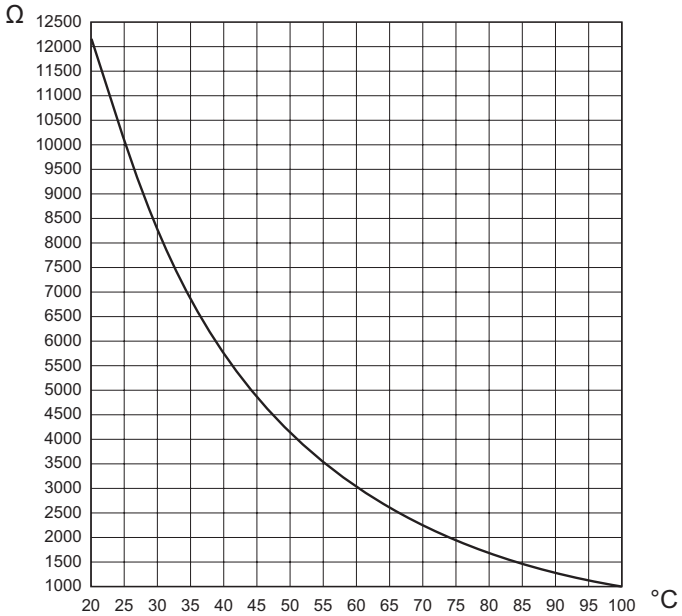


Figure 12.1

On the boiler there are two temperature probes. One on the output of the primary condensing heat exchanger (NTC heating delivery probe - NTC maximum temperature) "1" in Figure 12.2 and Figure 12.3.

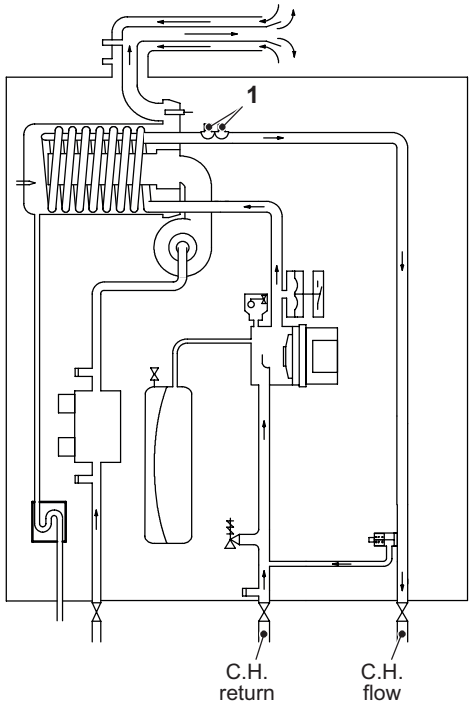


Figure 12.2

12.2 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 "2" (only NTC heating delivery probe - NTC maximum temperature) where the Temperature probe is located and check the electrical resistance according to the graph in Figure 12.1.

12.3 Removal of the NTC heating delivery probe - NTC maximum temperature

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 Remove the electric connector "3" and the NTC probe "1" (Figure 12.3).
3 Reassemble the NTC probe carrying out the removal operations in reverse order.

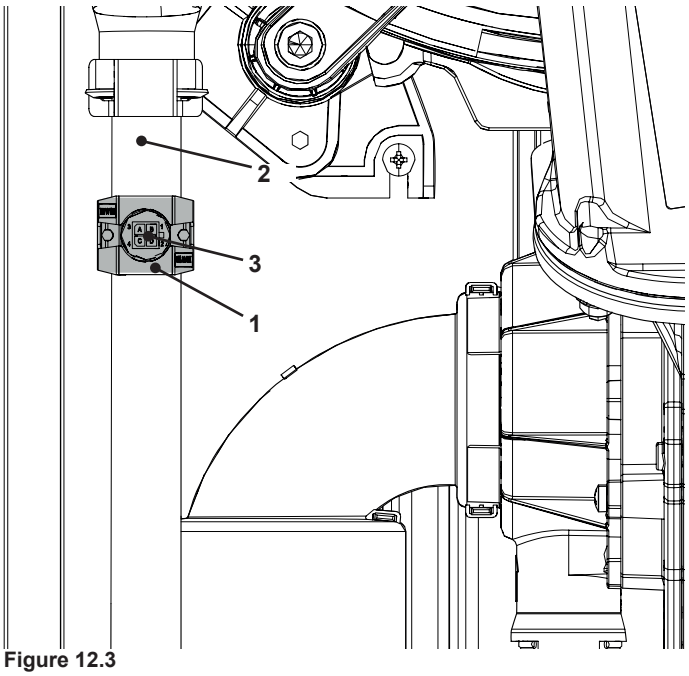


Figure 12.3

13 BY-PASS VALVE

13.1 Function

The By-pass valve "1" in Figure 13.1 is located between the C.H. water flow and return and its function is that of guaranteeing a minimum flow across the primary heat exchanger if the circulation across the C.H. system is completely closed.
The By-pass valve is fitted on the rear side of the diverter group.

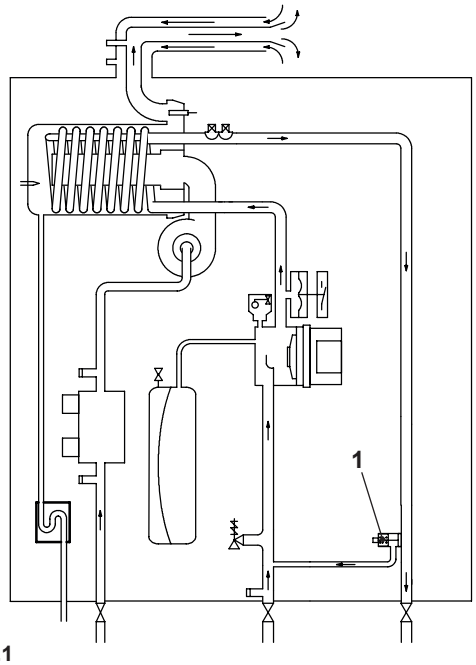


Figure 13.1

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 Empty the primary circuit of the boiler.
3 Unscrew the connector "2", rotate the pipe "3" and pull the by-pass valve "1" (Figure 13.2).

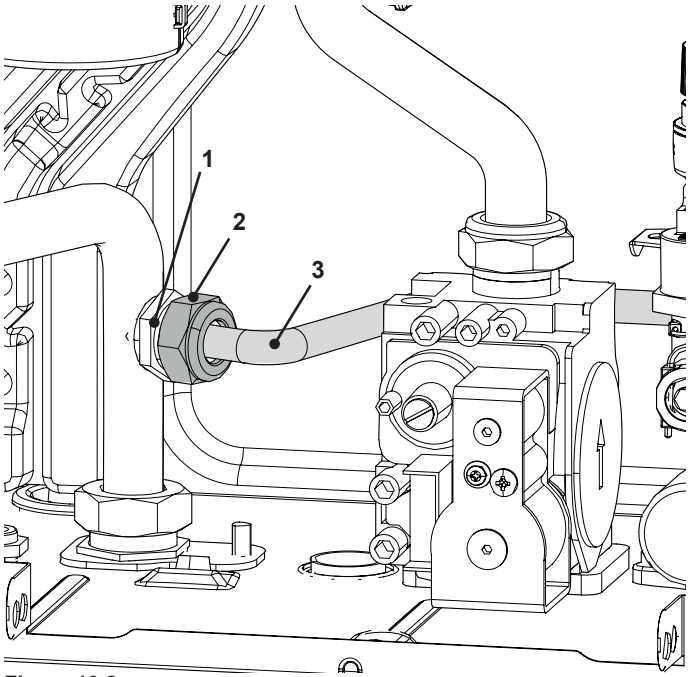


Figure 13.2

4 Reassemble the by-pass valve as illustrated in Figure 13.2 reversing the order of removal.

Warning: to lubricate the O-ring gaskets exclusively use a silicone base grease compatible to be in contact with foods and approved by the local water Authorities.

14 FAN AND AIR BOX

14.1 Function

The function of the Fan "1" (Figure 14.1) is to force the mixture of air and gas into the burner.
The function of the Air box "2" 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.

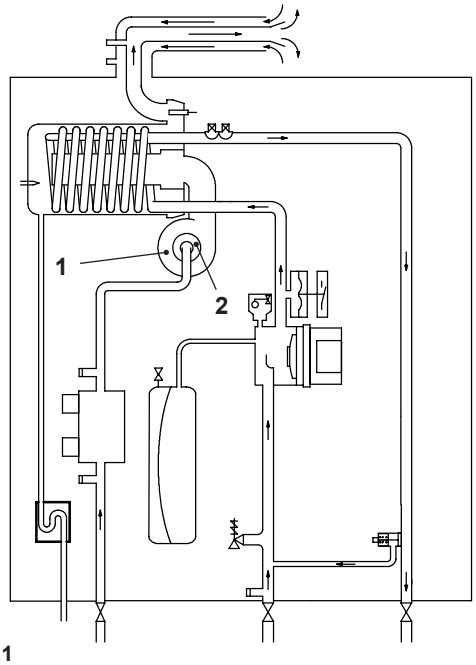


Figure 14.1

14.2 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 5).
3 Unscrew the gas connector "3" and remove the gas pipe "4" (Figure 14.2).
4 Disconnect the connectors "6".
5 Unscrew the nuts "5".
6 Remove the fan "1" with the air box "2".

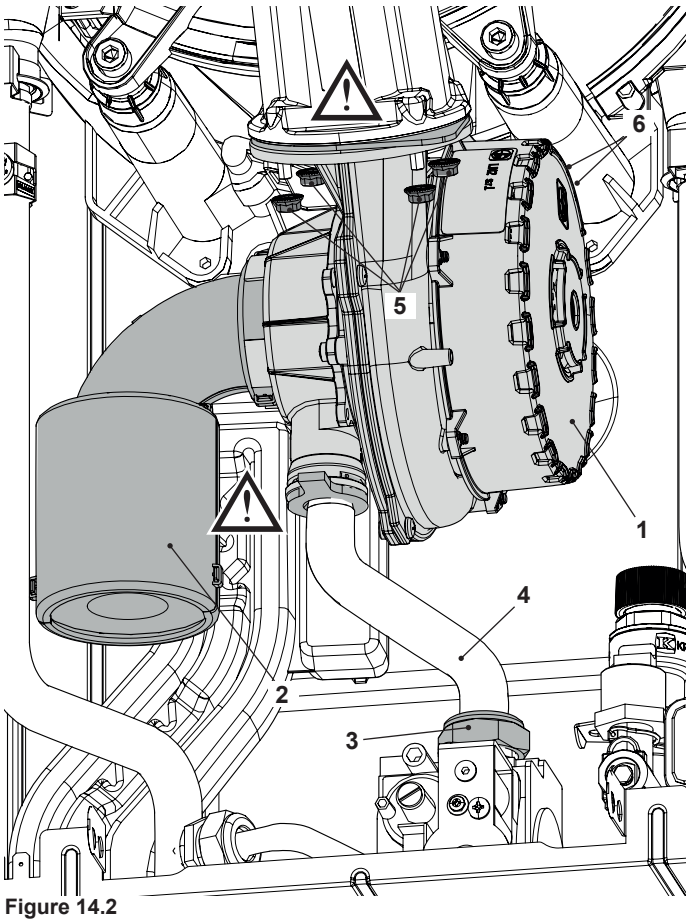


Figure 14.2

7 Assemble the Fan carrying out the removal operations in reverse sequence.

Before reassembling ensure the fan gasket (Figure 14.2) 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 "9.3 Adjustment - Chimney Sweep Function" on page 25.

15 IGNITION / DETECTION ELECTRODE AND BURNER

Electrodes disclaimer.
Note to service engineers: It is required that the burner seal, lip seal and mixing chamber seal along with the flame detection electrode are inspected every year and replaced every 24 months. Failure to inspect the flame detection probe, seals and replace as required may render the guarantee void.

15.1 Function

The ignition / detection electrode "1" is fitted on the left side of the fan-burner group "4".

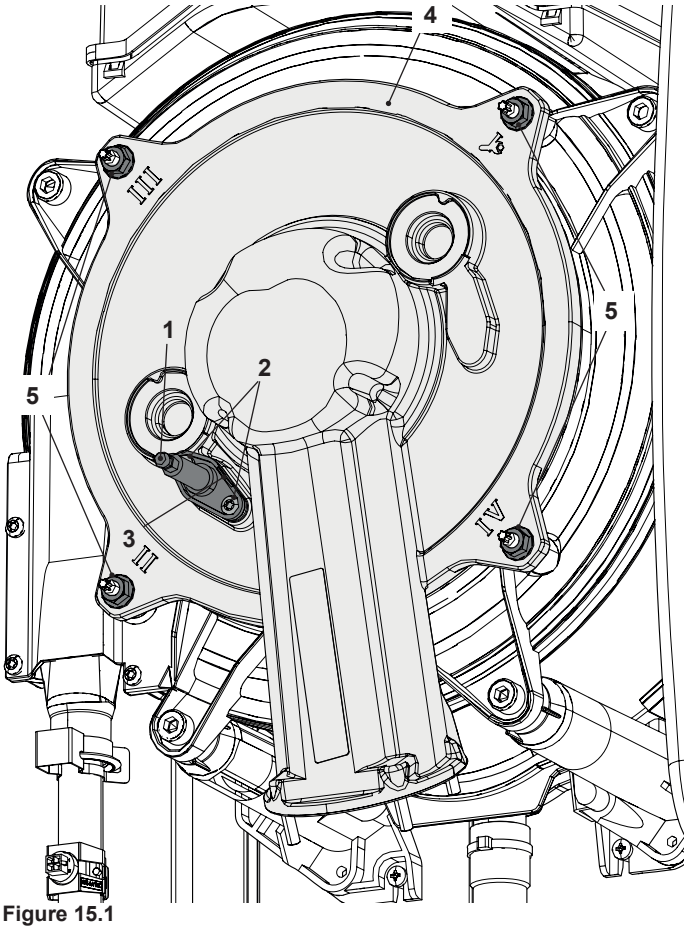


Figure 15.1

The burner "6" is fitted on the rear of the fan-burner group "4".

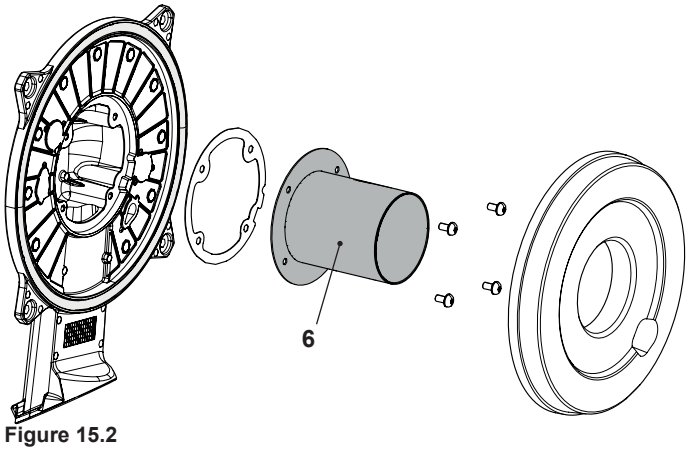


Figure 15.2

15.2 Removal of the ignition / detection electrode

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 5).
2 Disconnect the electrode connector "1" and the earth wire "3" (Figure 15.1).
3 Unscrew the screws "2" and remove the electrode "1".
4 Assemble the ignition / detection electrode 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.

15.3 Removal of the front insulation panel

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

1 Remove the ignition / detection electrode (see section "15.2 Removal of the ignition / detection electrode" on page 34).
2 Remove the front insulation panel by sliding it forward (Figure 15.3).
3 Assemble the new front insulation carrying out the removal operation in reverse order. When fitting the new panel ensure that the electrode hole coincide with the hole of the combustion chamber.

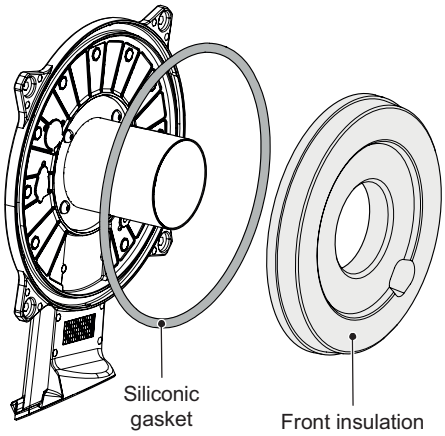


Figure 15.3

Caution:
After any periodical servicing or disturbance the combustion chamber silicon seal (Figure 15.3) 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.

15.4 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 "14.2 Removal of the Air box and the Fan" on page 33).
2 Remove the Ignition and detection electrodes (see section "15.2 Removal of the ignition / detection electrode" on page 34).

3 Unscrew the nuts "5" (Figure 15.1) and remove the cover of the combustion chamber.

4 Remove the front insulation panel (see section "15.3 Removal of the front insulation panel" on page 34).

5 Unscrew the screws "7" (Figure 15.4) 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 15.4).

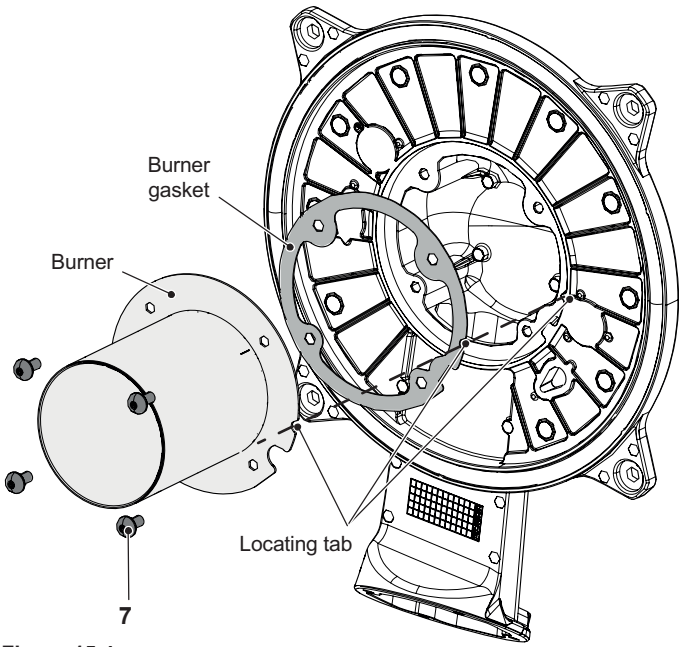


Figure 15.4

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 "9.3 Adjustment - Chimney Sweep Function" on page 25).

15.5 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 "15.4 Removal of the burner" on page 34 from step 1 to step 3.

2 Remove the insulation "8" by pulling it towards the boiler front (Hung it with a screwdriver tip) (Figure 15.5).

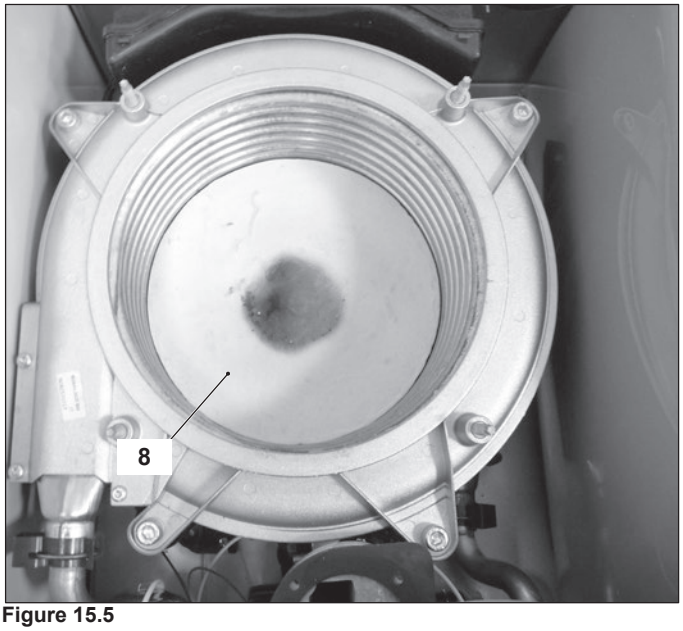


Figure 15.5

15.6 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 on the main PCB. It would be advisable to replace the Main PCB to rectify 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 Check for the correct distance between the metallic edge of the electrode and burner (see Figure 15.6).

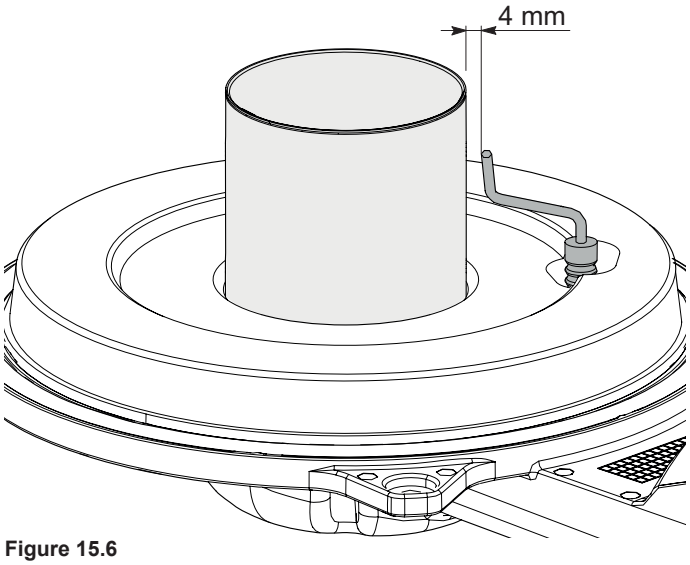


Figure 15.6

Check the connection wires

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 and the sealed chamber lid.
2 Check for the integrity of the insulation of wires which connect the electrode.

The electrode in Figure 15.6 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.

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

In any case, it must be replaced every 2 years.
The ignition/detection electrode is not under warranty because it is consumable part.

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.

16 FLUE TEMPERATURE PROBE NTC AND SAFETY THERMAL FUSE

16.1 Function

The Flue temperature probe NTC and Safety thermal fuse "1" in Figure 16.1 and Figure 16.2 senses the temperature of the combustion products that flow through the condensing heat exchanger.

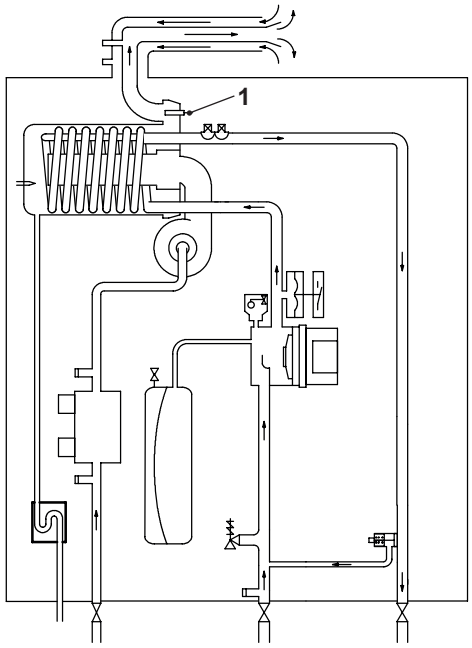


Figure 16.1

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).
The use of kits different from the original isn't however allowed, since the flue pipes are integral parts of the boiler.

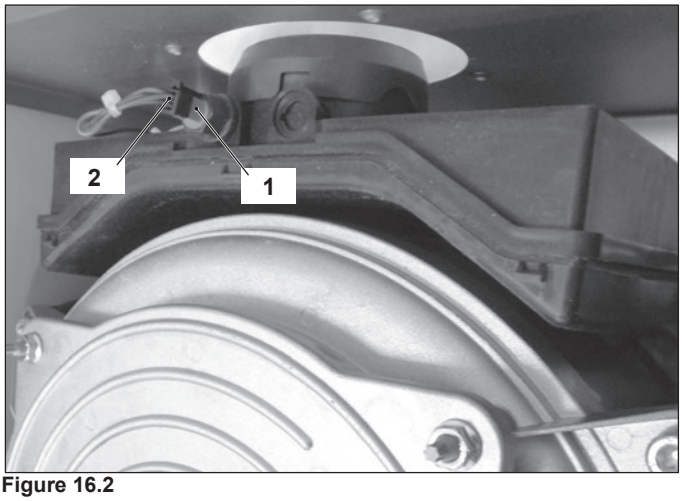


Figure 16.2

A Flue temperature probe NTC and Safety thermal fuse "1" in Figure 16.1 and Figure 16.2 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 16.3) may be damaged and must be replaced.

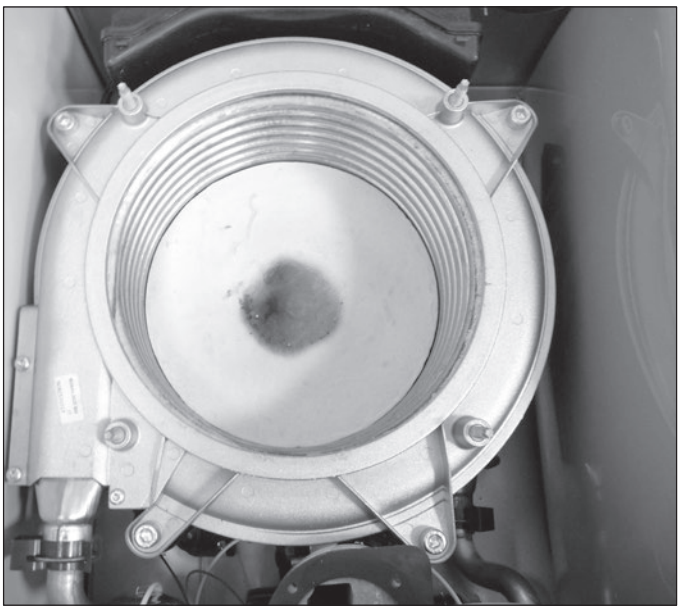


Figure 16.3

16.2 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 "2" from the Flue temperature probe NTC and Safety thermal fuse by pressing the plastic hook placed on the side of the connector (Figure 16.2).
3 Unscrew and remove the Flue temperature probe NTC and Safety thermal fuse "1" (Figure 16.2) 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.

16.3 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 "16.2 Removal" on page 37).
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 16.4).

FLUE TEMPERATURE PROBE NTC AND SAFETY THERMAL FUSE

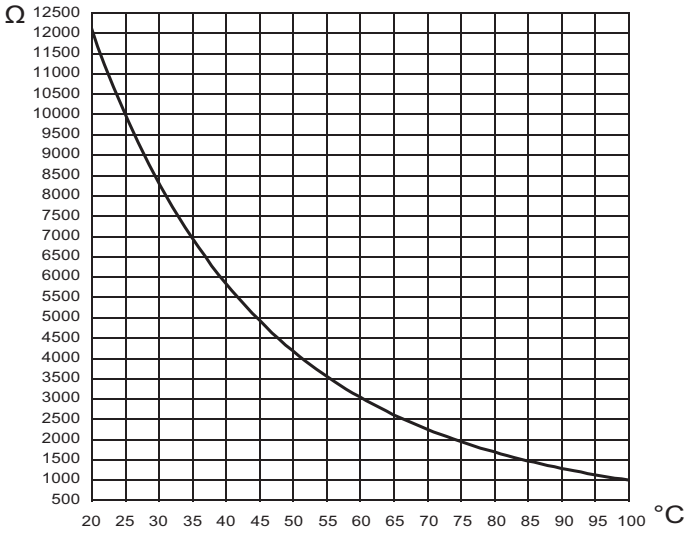


Figure 16.4

17 CONDENSATE TRAP

17.1 Function

The condensate trap "1" in Figure 17.1 and Figure 17.2 allows the discharge of the condensate via the condensate drain pipe avoiding in the mean time the escape of combustion products.
A plastic ball closes the trap outlet in case that the trap is empty.

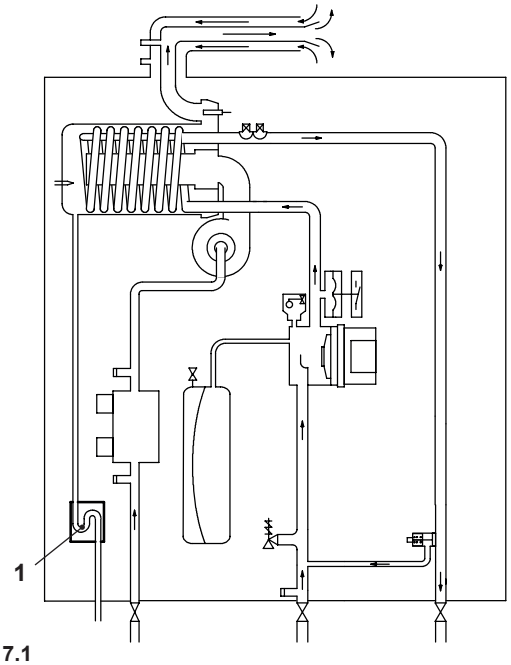


Figure 17.1

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.

17.2 Check the cleanness of the trap

The condensate drain pipe "1" (Figure 17.2) 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 "17.3 Removal" on page 39).

17.3 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 Using pliers, remove the spring "2" moving it to the left.

3 Remove the pipe "3" from the trap "1".

4 Remove the trap "1", moving it upwards; from the grommet "4".

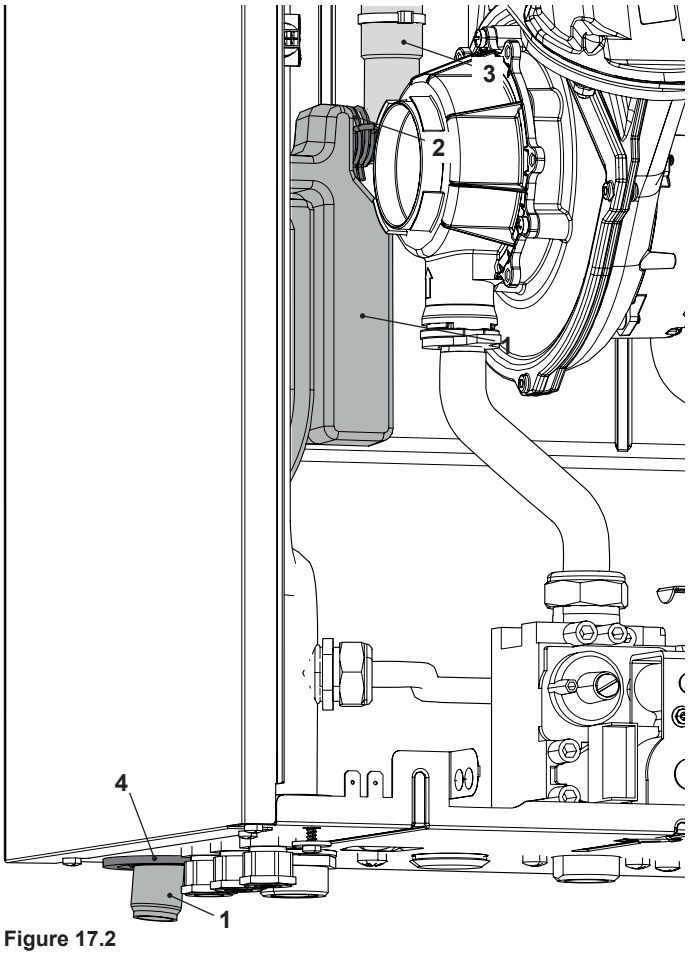


Figure 17.2

5 Reassemble carrying out the removal operations in reverse order.

18 SHORT SPARE PARTS LIST

Key	G.C. part no.	Description	Q.ty	Manufacturer part no.
1		Burner	1	BI1563 102
2		Expansion vessel	1	BI1462 100
3		Condensing heat exchanger	1	BI2112 118
4		Fan	1	BI1713 116
5		Gas valve	1	BI1313 103
6		Safety valve	1	BI1621 101
7		Main electronic control p.c.b	1	BI2605 113
8		Motor pump	1	BI2112 103
9		Pump	1	BI2112 104
10		C.H. temperature flow probe NTC - Safety Thermostat	1	BI1442 117
11		Primary circuit pressure switch	1	BI1592 115
12		Condensate trap	1	BI1782 107
13		Safety thermal fuse	1	BI1772 101
14		Fuse 3,15 AF 250VAC 5x20	1	BI2145 106
15		Ignition / detection electrode	1	BI1663 106

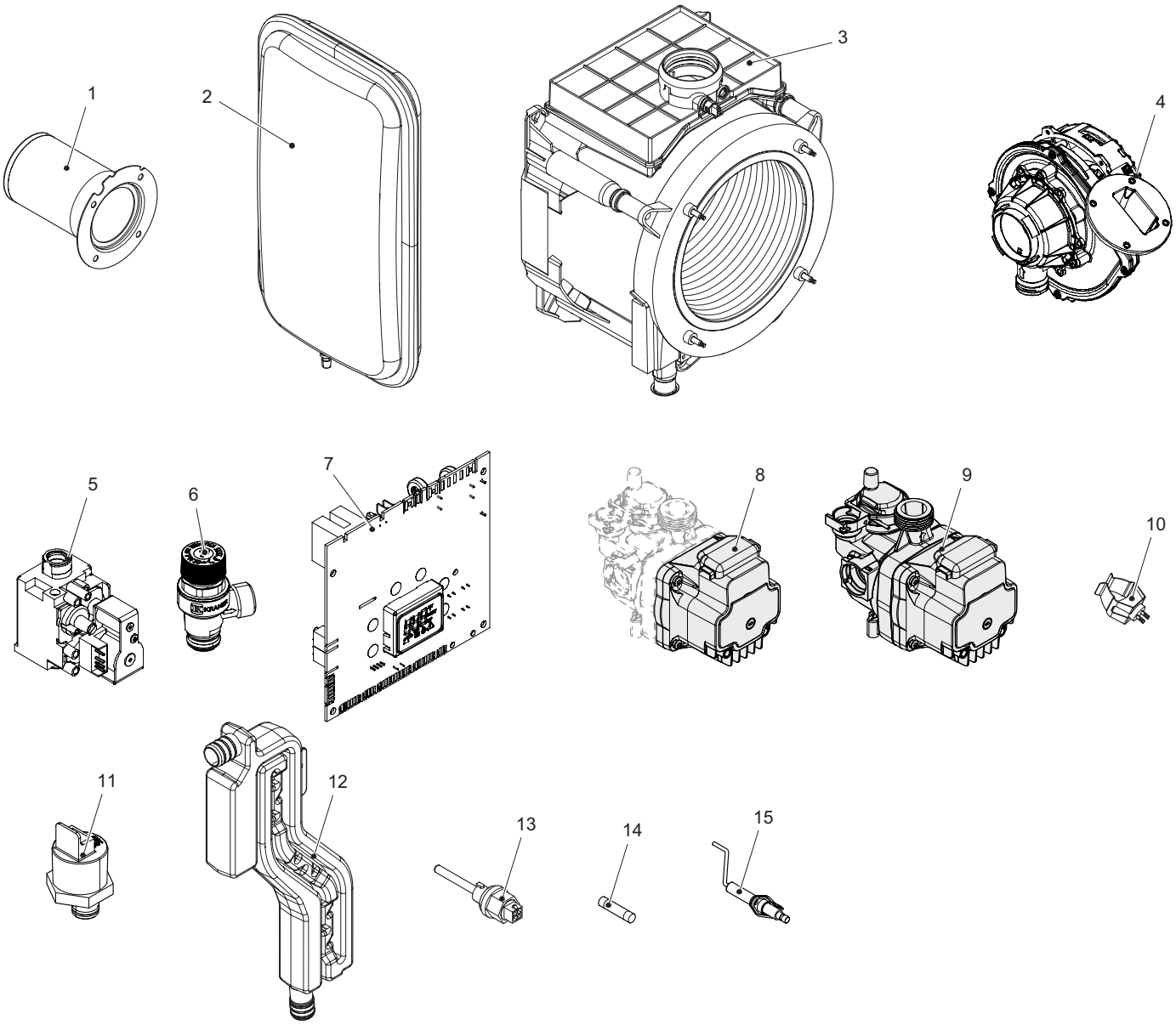


Figure 18.1

NOTE

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