

BAXI

LUNA SPACE

High efficiency wall-mounted gas-fired boilers

Installer's and User's Instructions

CE 0051



BAXI S.p.A., one of the leading European enterprises to produce central heating and hot water devices for domestic use (wall-mounted gas-operated boilers, floor-standing boilers, electrical water-heaters and steel heating plates) has obtained the CSQ certificate of conformity to the UNI EN ISO 9001 norms. This certificate guarantees that the Quality System applied at the **BAXI S.p.A.** factory in Bassano del Grappa, where your boiler was produced, meets the standards of the UNI EN ISO 9001 norm, which is the strictest and concerns all organization stages and operating personnel involved in the production and distribution processes.

Dear Customer,

We are sure your new boiler will comply with all your requirements.

Purchasing one of the **BAXI** products satisfies your expectations: good functioning, simplicity and ease of use.

Do not dispose of this booklet without reading it: you can find here some very useful information, which will help you to run your boiler correctly and efficiently.

Do not leave any parts of the packaging (plastic bags, polystyrene, etc.) within children's reach as they are a potential source of danger.

BAXI boilers bear the CE mark in compliance with the basic requirements as laid down in the following Directives:

- Gas Directive 90/396/CEE
- Performance Directive 92/42/CEE
- Electromagnetic Compatibility Directive 89/336/CEE
- Low Voltage Directive 73/23/CEE



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Instructions pertaining to the user

Instructions prior to installation

This boiler is designed to heat water at a lower than boiling temperature at atmospheric pressure. The boiler must be connected to a central heating system and to a domestic hot water supply system in compliance with its performances and output power.

Have the boiler installed by a Qualified Service Engineer and ensure the following operations are accomplished:

- a) accurate purging of the whole pipework in order to remove any deposits.
- b) careful checking that the boiler is fit for operation with the type of gas available. For more details see the notice on the packaging and the label on the appliance itself.
- c) careful checking that the flue terminal draft is appropriate; that the terminal is not obstructed and that no other appliance exhaust gases are expelled through the same flue duct, unless the flue is especially designed to collect the exhaust gas coming from more than one appliance, in conformity with the laws and regulations in force.
- d) careful checking that, in case the flue has been connected to pre-existing flue ducts, thorough cleaning has been carried out in that residual combustion products may come off during operation of the boiler and obstruct the flue duct.

Instructions prior to commissioning

Initial lighting of the boiler must be carried out by a licensed technician. Ensure the following operations are carried out:

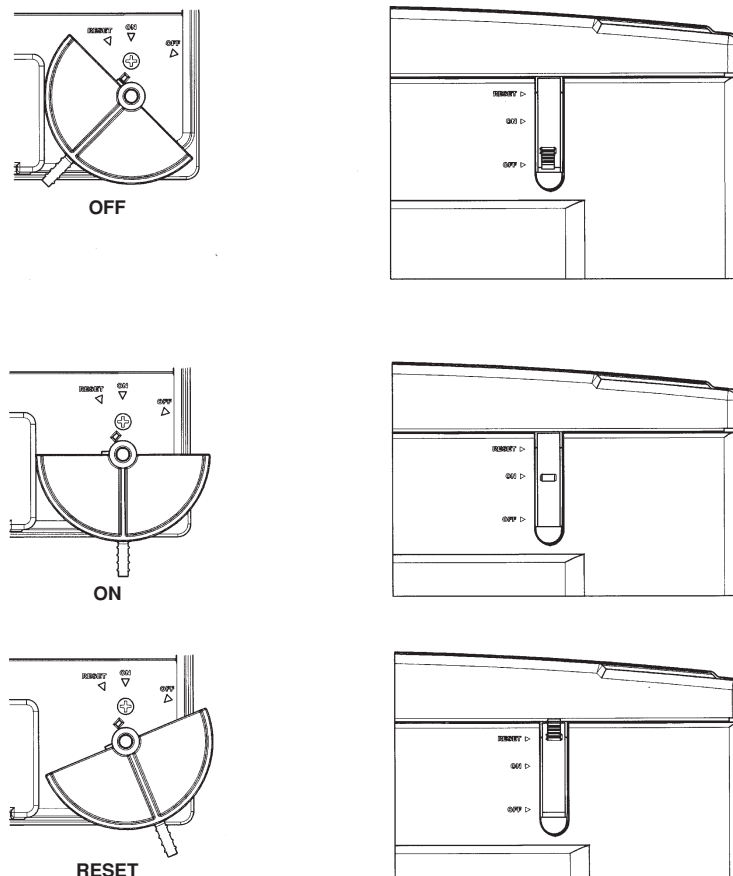
- a) compliance of boiler parameters with (electricity, water, gas) supply systems settings.
- b) compliance of installation with the laws and regulations in force.
- c) appropriate connection to the power supply and grounding of the appliance.

Failure to observe the above will render the guarantee null and void.

Commissioning of the boiler

To correctly light the burner proceed as follows:

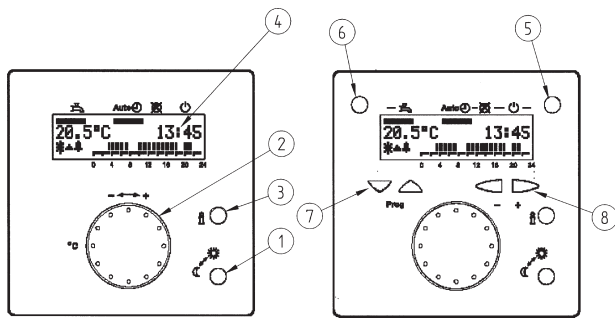
- 1) provide power supply to the boiler;
- 2) open the gas cock;
- 3) turn the selector in figure 1, on the lower part of the boiler, to the ON position.
- 4) follow the instructions, supplied with the apparatus, regarding the regulation and programming to be carried out on the SIEMENS environment probe model QAA73 also supplied with this apparatus.



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Figure 1

AMBIENT PROBE QAA73



oce_020110_0100

KEY

- 1 presence key
- 2 nominal room temperature regulation knob
- 3 information key
- 4 display
- 5 key for the selection of heating function methods: inactive, manual or automatic
- 6 key for the selection of domestic hot water function methods: active or inactive function
- 7 keys for the selection of the parameter to be set: up and down
- 8 keys for the modification of the displayed parameter: - and +

Figure 2

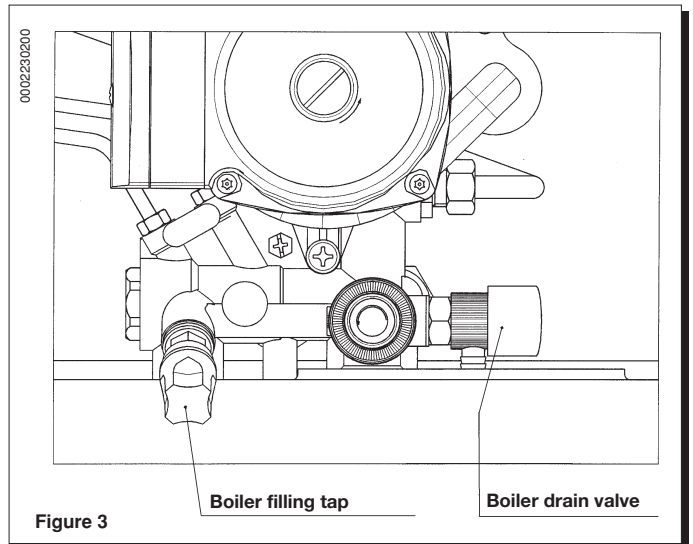



Figure 3

The boiler is supplied with a hydraulic differential pressure sensor, which blocks the boiler in case water is lacking or the pump is blocked.

Anomaly, rearmament signals

The flashing  signal is displayed on the QAA73 environment probe display in the case of an anomaly.

By pressing the information key (i) it is possible to display the error code and the description of the anomaly.

In the case of the presence of one of the following anomalies it is possible to rearm the apparatus by momentarily turning the selector in figure 1 to the RESET position:

Code	Display	Anomaly Description
110	Boiler STB	Safety thermostat intervention
133	No flame	Lack of gas

If the error codes are displayed frequently, seek advice from an authorised Technical assistance centre.

In the event that an error code different from those indicated is displayed, contact an authorised technical assistance centre.

Filling the boiler

Important: Regularly check that the pressure displayed by the pressure gauge is 0.5 to 1 bar, with boiler not operating. In case of overpressure, open the boiler drain valve.

In case the pressure is lower open the boiler filling tap (Figure 3).

We recommend you open the tap very slowly in order to let off the air. At the end of this operation, it might be necessary to set selector in figure 1 briefly to position OFF to reset equipment operation.

In case pressure drops occur frequently have the boiler checked by a Qualified Service Engineer.

Turning off the boiler

To turn off the boiler turn the selector switch in figure 1 is not on OFF; you will thus isolate the electrical supply to the boiler.

Prolonged standstill of the system. Frost protection

We recommend you avoid draining the whole system as water replacements engender purposeless and harmful limestone deposits inside the boiler and on the heating elements.

In case the boiler is not operated during wintertime and is therefore exposed to danger of frost we suggest you add some specific-purpose anti-freeze to the water contained in the system (e.g.: propylene glycole coupled with corrosion and scaling inhibitors).

The electronic management of the boiler is provided for by an “anti-freeze” function protecting the heating and domestic hot water circuit.

The frost protection function is enabled if:

- * electrical supply to the boiler is on;
- * the selector switch in figure 1 is not on OFF;
- * the gas service cock is open;
- * the system pressure is as required;
- * the boiler is not blocked.

Gas change

These boilers produced for natural gas can be converted to work with LPG.

Any gas change must be effected by a Qualified Service Engineer.

Servicing instructions

To maintain efficient and safe operation of your boiler have it checked by a Qualified Service Engineer at the end of every operating period. Careful servicing will ensure economical operation of the system.

Do not clean the outer casing of the appliance with abrasive, aggressive and/or easily flammable cleaners (i.e.: gasoline, alcohol, and so on). Always isolate the electrical supply to the appliance before cleaning it (see section Turning off the boiler).

Instructions pertaining to the installer

General information

The following remarks and instructions are addressed to Service Engineers to help them carry out a faultless installation. Instructions regarding lighting and operation of the boiler are contained in the 'Instructions pertaining to the user' section.

Note that installation, maintenance and operation of the domestic gas appliances must be performed exclusively by qualified personnel in compliance with current standards.

Please note the following:

- * This boiler can be connected to any type of double- or single feeding pipe convector plates, radiators, thermoconvectors. Design the system sections as usual though taking into account the available output / pump head performances, as shown on page 20.
- * Do not leave any packaging components (plastic bags, polystyrene, etc.) within children's reach as they are a potential source of danger.
- * Initial lighting of the boiler must be effected by a Qualified Service Engineer.

Failure to observe the above will render the guarantee null and void.

Instructions prior to installation

This boiler is designed to heat water at a lower than boiling temperature at atmospheric pressure. The boiler must be connected to a central heating system and, on models with this option, to a domestic hot water supply system in compliance with its performances and output power.

Before connecting the boiler have the following operations effected:

-
- a) accurate purging of the whole pipework in order to remove any pipe-threading, soldering or solvent deposits which may be contained in the different sections of the central heating system.
-
- b) careful checking that the boiler is fit for operation with the type of gas available. For more details see the notice on the packaging and the label on the appliance itself.
-
- c) careful checking that the flue terminal draft is appropriate; that the terminal is not obstructed and that no other appliance exhaust gases are expelled through the same flue duct, unless the flue is especially designed to collect the exhaust gase coming from more than one appliance, in conformity with the laws and regulations in force
-
- d) careful checking that, in case the flue has been connected to pre-existing flue ducts, thorough cleaning has been carried out in that residual combustion products may come off during operation of the boiler and obstruct the flue duct.

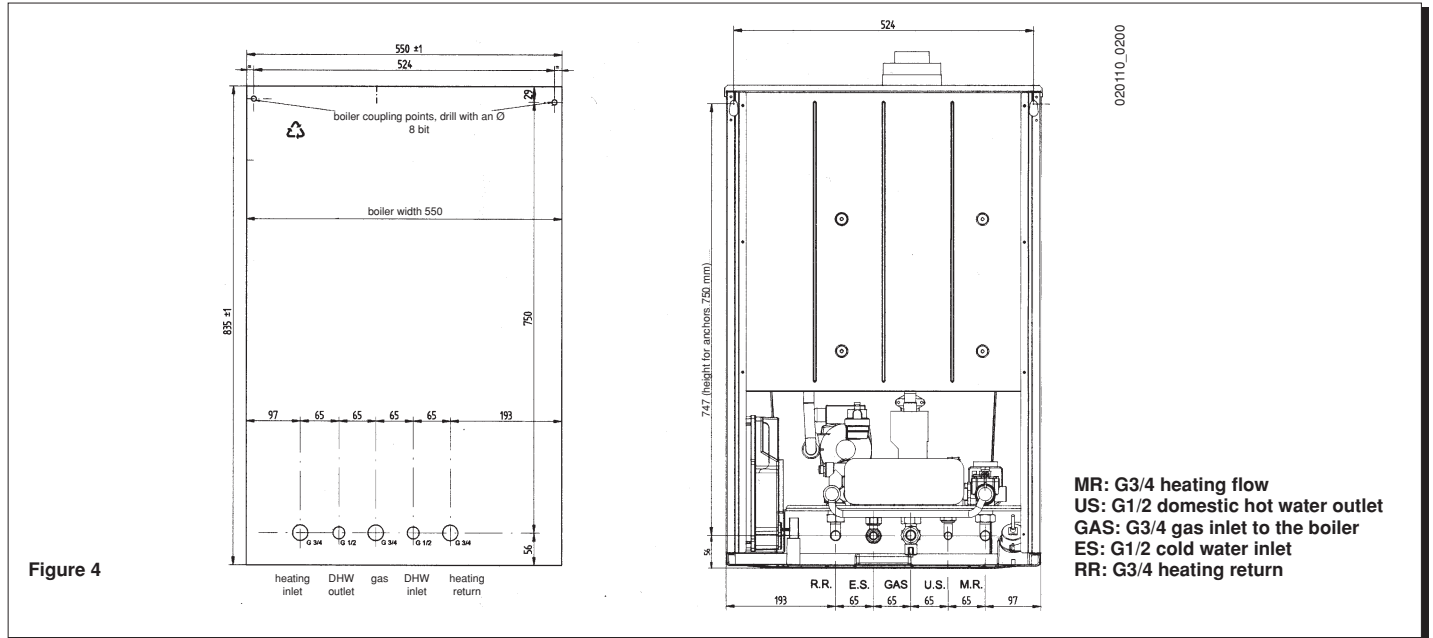
The template to fix the boiler on the wall

Decide upon the boiler location, then tape the template on the wall. Connect the pipework to the gas and water inlets prearranged on the template lower bar.

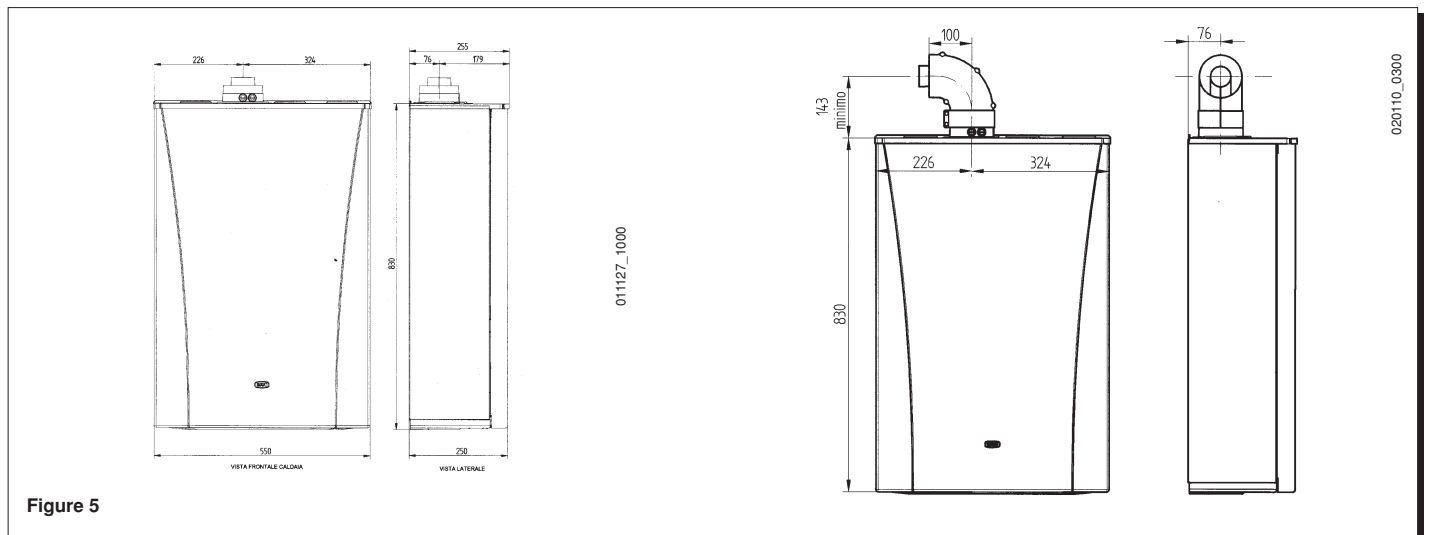
We suggest you fit two G3/4 stop cocks (available on demand) on the central heating system flow and return pipework; the cocks will allow to carry out important operations on the system without draining it completely.

If you are either installing the boiler on a pre-existent system or substituting it, we suggest you also fit settling tanks on the system return pipework and under the boiler to collect the deposits and scaling which may remain and be circulated in the system after the purge.

When the boiler is fixed on the template connect the flue and air ducts (fittings supplied by the manufacturer) according to the instructions given in the following sections.

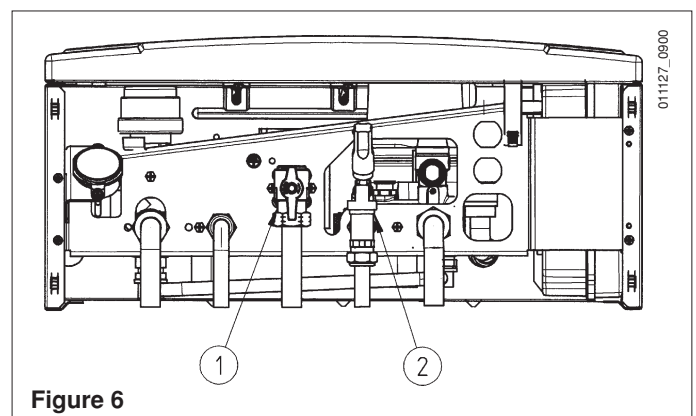


Boiler size



Fittings present in the packaging

- ambient probe QAA73
- gas cock (1)
- inlet water tap (2)
- washers
- telescopic tubes



Installation of flue and air ducts

We guarantee ease and flexibility of installation for a gas-fired forced draft boiler thanks to the fittings and fixtures supplied (described below). The boiler is especially designed for connection to an exhaust flue / air ducting, with either coaxial, vertical or horizontal terminal. By means of a splitting kit a two-pipe system may also be installed.

Exclusively install fittings supplied by the manufacturer.

Type of ducts	Max. length of flue duct		Each 90° bend reduces the duct max. length by	Each 45° bend reduces the duct max. length by	Flue terminal diameter	Outer duct diameter
	240 Fi	310 Fi				
coaxial type C12	5 m	4 m	1 m	0,5 m	100 mm	100 mm
separate type C52	30 m	25 m	0,5 m	0,25 m	133 mm	80 mm
single type B22	21 m	21 m	0,5 m	0,25 m	-	80 mm

...coaxial flue - air duct (concentric)

This type of duct allows to disengage exhaust gases and to draw combustion air both outside the building and in case a LAS flue is fitted. The 90° coaxial bend allows to connect the boiler to a flue-air duct in any direction as it can rotate by 360°. It can moreover be used as a supplementary bend and be coupled with a coaxial duct or a 45° bend.

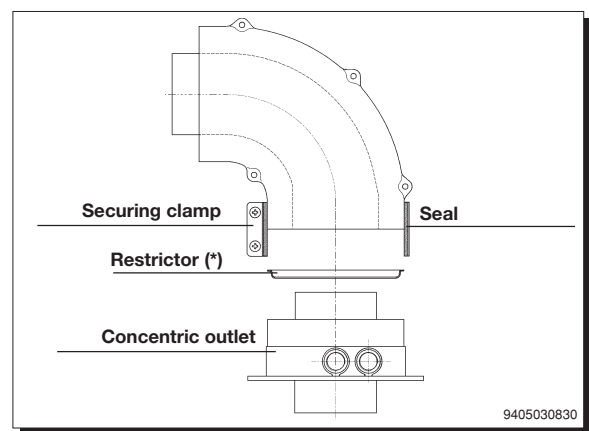
(*) The restrictor must be removed in case the flue duct length exceeds 1,5 m.

If the flue outlet is placed outside, the flue-air ducting must protrude at least 18mm out of the wall to allow alluminium weathering tile to be fitted and sealed to avoid water leakages.

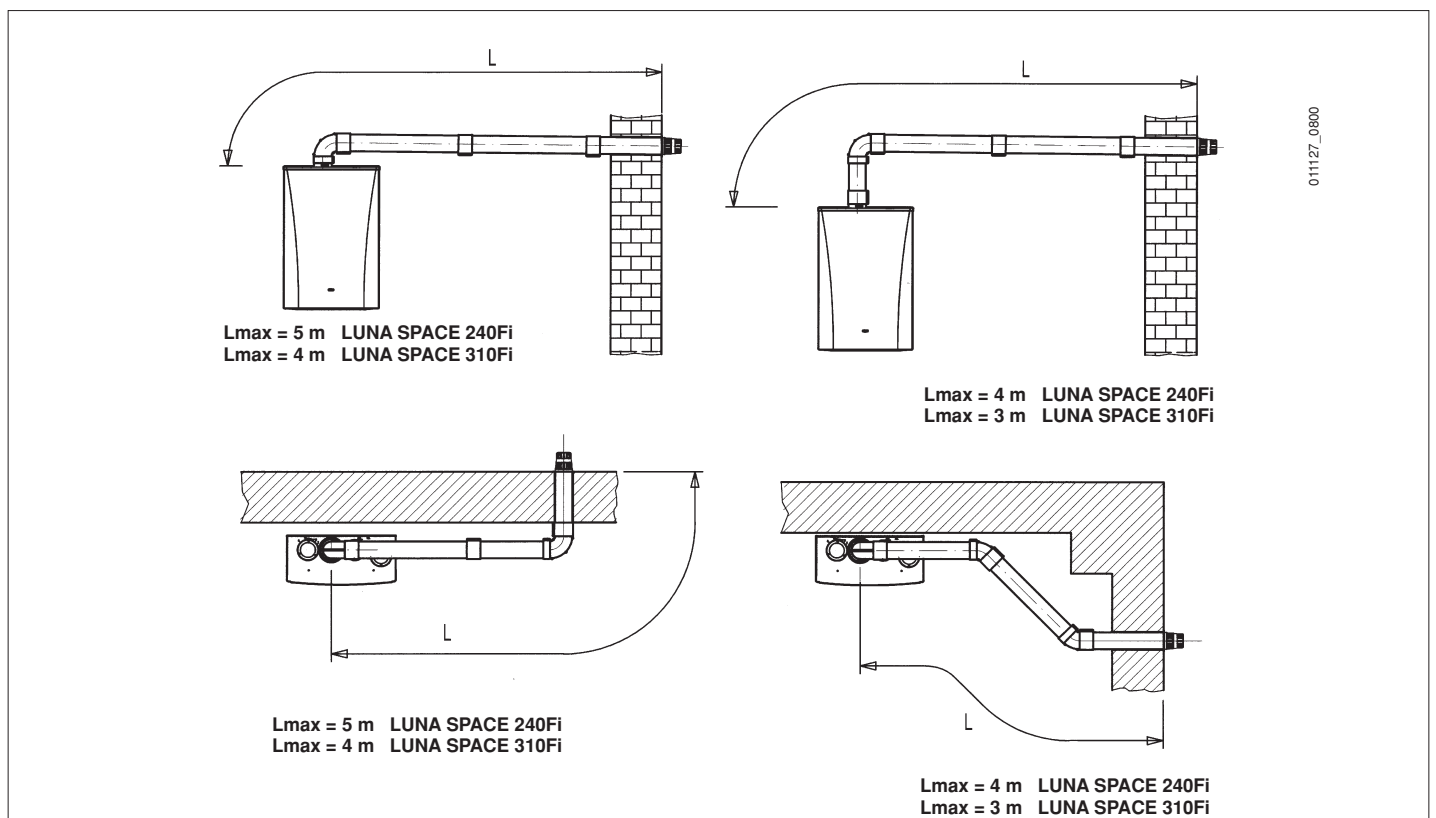
Ensure a minimum downward slope of 1 cm towards the outside per each metre of duct length.

A 90° bend reduces the total duct length by 1 metre.

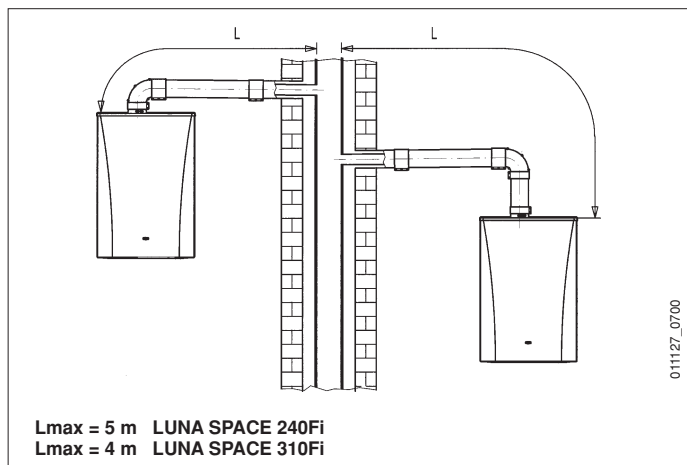
A 45° bend reduces the total duct length by 0.5 metre.



Type C12 horizontal flue terminal installation options

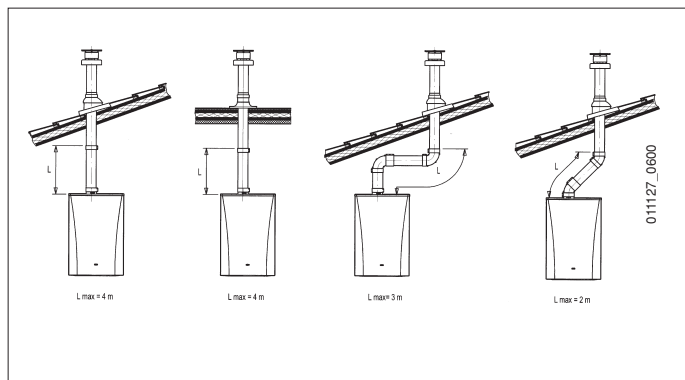


Type C42 LAS flue duct installation options



Type C32 vertical flue terminal installation options

This type of installation can be carried out both on a flat or pitched roof by fitting a terminal, an appropriate weathering tile and sleeve, (supplementary fittings supplied on demand).



For detailed instructions concerning the installation of fittings refer to the technical data accompanying the fittings.

... separated flue-air ducting

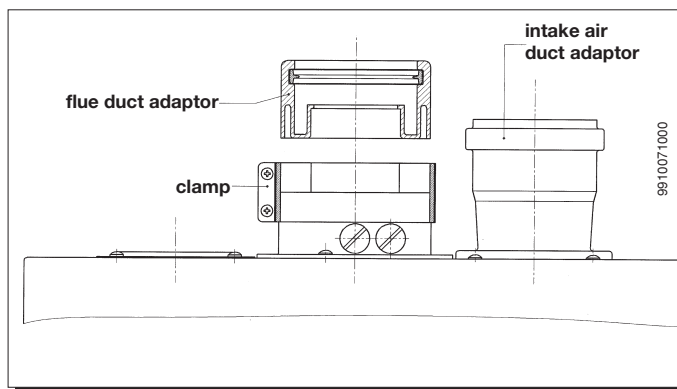
This type of ducting allows to disengage exhaust flue gases both outside the building and into single flue ducts.

Comburent air may be drawn in at a different site from where the flue terminal is located.

The splitting kit consists of a flue duct adaptor (100/80) and of an air duct adaptor; the latter may be placed either on the left or on the right of the flue terminal according to installation requirements.

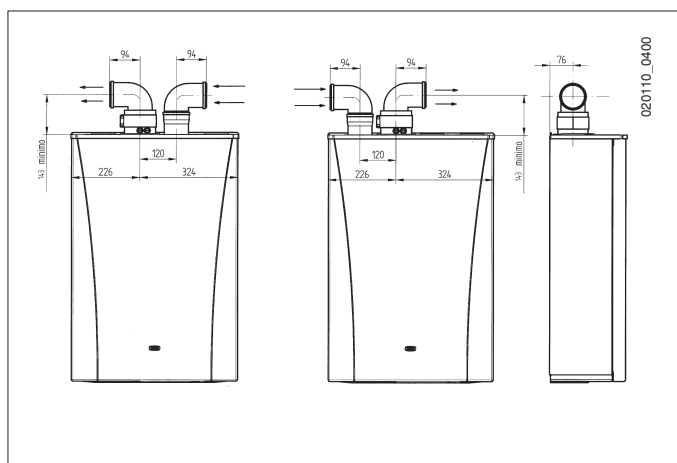
For the air duct adaptor fit the screws and seals previously removed from the cap.

The restrictor must be removed in case you install separated flue and air duct terminals.



The 90° bend allows to connect the boiler to flue-air ducting regardless of direction as it can be rotated by 360°. It can moreover be used as a supplementary bend to be coupled with the duct or with a 45° bend.

A 90° bend reduces the total duct length by 0.5 metre.
A 45° bend reduces the total duct length by 0.25 metre.



In the case of installation outside the building, or opportunely aired room, it is possible not to connect the suction duct (type B22).

In this case assemble the air purification connection, as described in the following chapters, and in addition a 90° curve and a terminal supplied as accessories.

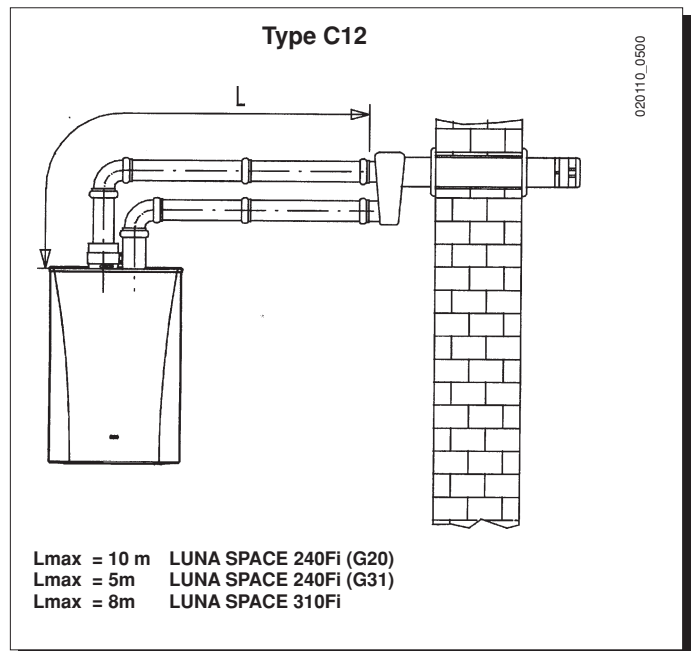
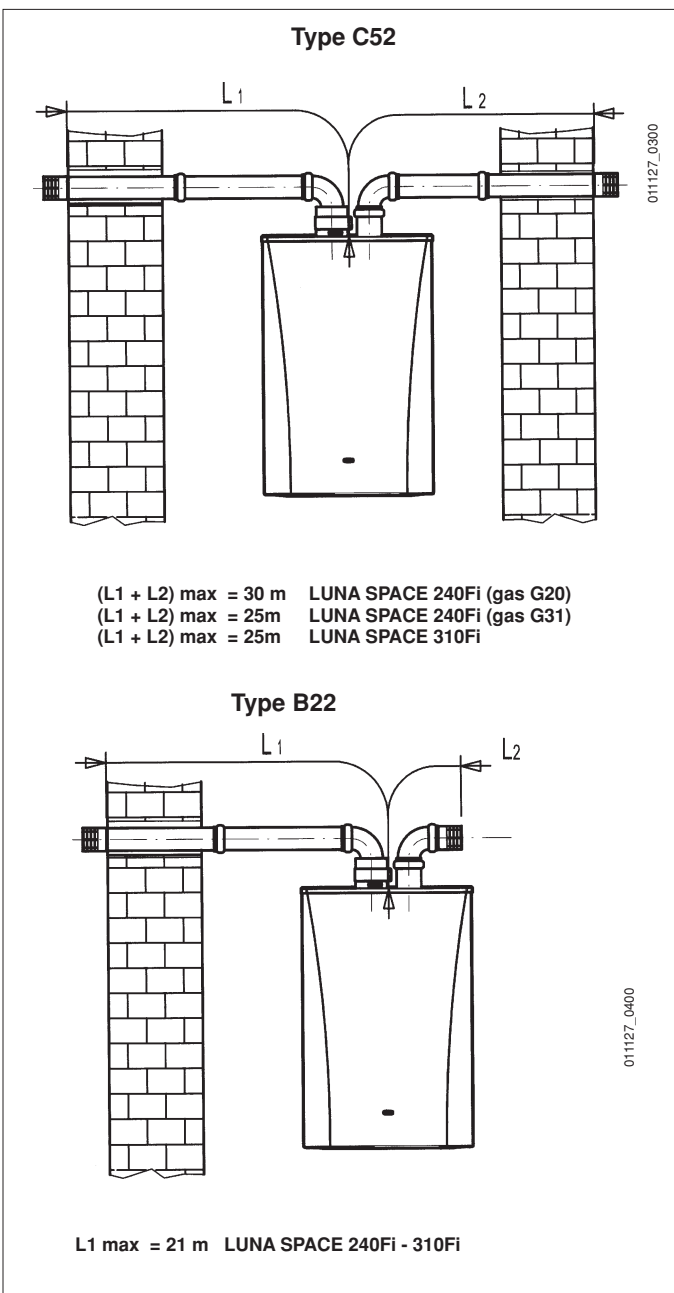
The maximum length of the suction duct must be:

	L ₂ max	
	GAS G20	GAS G31
LUNA SPACE 240 Fi	10m	6m
LUNA SPACE 310 Fi	10m	10m

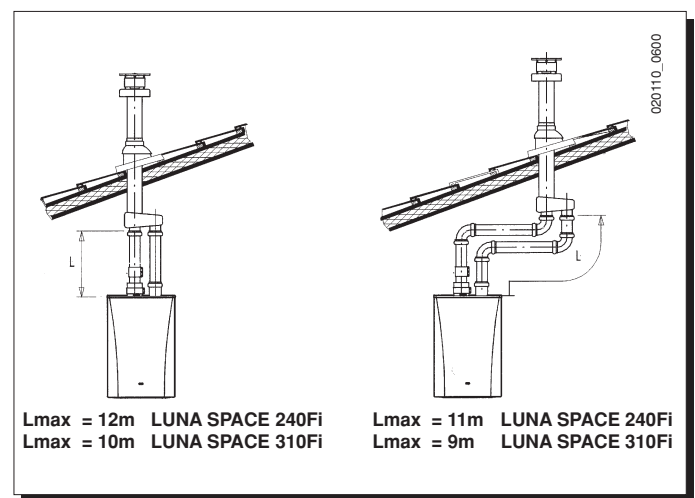
If the flue duct exceeds 6 m, the condensate collection kit (supplied as an accessory) must be fitted close to the boiler.

Separated horizontal flue terminals installation options

IMPORTANT: Ensure a minimum downward slope of 1 cm toward the outside per each metre of duct length
In the event of installation of the condensate collection kit, the angle of the drain duct must be directed towards the boiler.



Type C32 separated vertical flue terminals installation options



NB: For C52 types, terminals for combustion air suction and combustion product extraction must never be fitted on opposite walls of the building.

Important: if fitting a single exhaust flue duct, ensure it is adequately insulated (e.g.: with glass wool) wherever the duct passes through building walls.
For detailed instructions concerning the installation of fittings refer to the technical data accompanying the fittings.

Split flue air control adjustment

The adjustment of this control is required to optimise performance and combustion parameters. The air suction coupling which may be mounted on the left or right of the flue duct can be rotated to adjust excess air according to the total length of the flue and intake ducts for the combustion air.

Rotate this regulator towards the (-) sign in order to diminish the excess combustible agent air and vice versa to increase it.

To improve optimisation a combustion product analyser can be used to measure the CO₂ contents of the flue at maximum heat output, gradually adjusting air to obtain the CO₂ reading in the table below, if the analysis shows a lower value.

To properly install this device, also refer to the technical data accompanying the fitting.

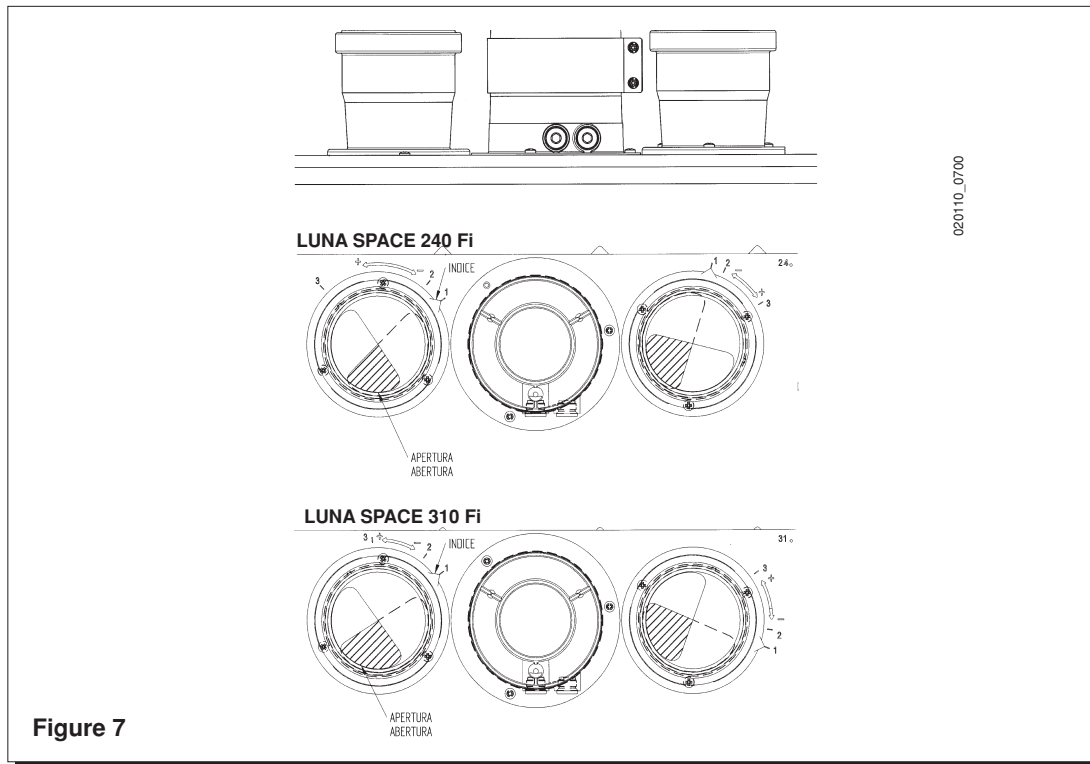


Figure 7

LUNA SPACE 240 Fi

Type	(L1+L2) MAX		AIR REGULATOR POSITION	CO2%	
	G20	G31		G.20	G.31
C12	0÷10 m	0÷10 m	1	6	7
	10÷20 m	-	2		
C32	0÷10 m	0÷10 m	1	6	7
	10÷20 m	-	2		
	20÷24m	10÷24m	3		
C52	0÷10 m	0÷10 m	1	6	7
	10÷20 m	10÷20 m	2		
	20÷30m	20÷25 m	3		
B22	0÷10 m	0÷10 m	1	6	7
	10÷21 m	10÷21 m	2		

LUNA SPACE 310 Fi

Type	(L1+L2) MAX		AIR REGULATOR POSITION	CO2%	
	G20	G31		G.20	G.31
C12	0÷4 m	0÷4 m	1	7,2	8,2
	4÷12 m	4÷12 m	2		
	12÷16 m	12÷16 m	3		
C32	0÷4 m	0÷4 m	1	7,2	8,2
	4÷12 m	4÷12 m	2		
	12÷20 m	12÷20 m	3		
C52	0÷4 m	0÷4 m	1	7,2	8,2
	4÷12 m	4÷12 m	2		
	12÷25 m	12÷25 m	3		
B22	0÷5 m	0÷5 m	1	7,2	8,2
	5÷10 m	5÷10 m	2		
	10÷21 m	10÷21 m	3		

Connecting the mains supply

Electrical safety of the appliance is only guaranteed by correct grounding, in compliance with the applicable laws and regulations.

Connect the boiler to a 220-230V monophasic + ground power supply by means of the three-pin cable supplied with it and make sure you connect polarities correctly.

Use a double-pole switch with a contact separation of at least 3mm in both poles.

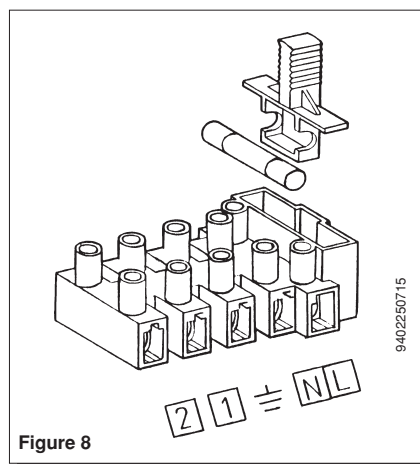
In case you replace the power supply cable fit a HAR H05 VV-F' 3x0.75mm² cable with an 8mm diameter max.

...access to the power supply terminal block

- isolate the electrical supply to the boiler by the double-pole switch;
- rotate the control board;
- unscrew the lid and gain access to the wiring (Figure 8).

A 2A fast-blowing fuse is incorporated in the power supply terminal block (to check or replace the fuse, pull out the black fuse carrier).

- (L) = Live brown
 (N) = Neutral blue
 (⊕) = Ground yellow/green
 (1) (2) = room thermostat terminal

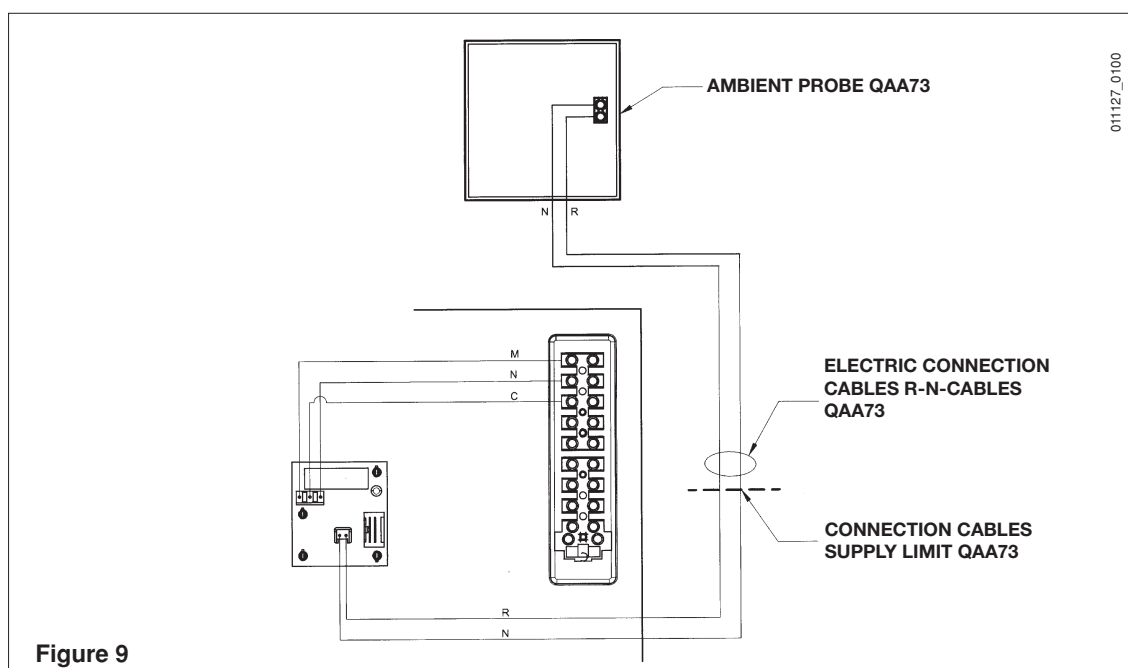


Connection of the environment probe QAA73 and anomaly signals


The apparatus is prepared for connection to a remote control unit able to manage and display the following functions from a distance:

- A) distance control: off-summer-winter commutation; water and domestic hot water heating temperature selection;
 B) environment chrono-thermostat on 2 levels: comfort and reduced room temperature selection.

The electronic connection to the boiler should be carried out using two conductors with a minimum section of 0.5 mm (see connection outline in figure 9).

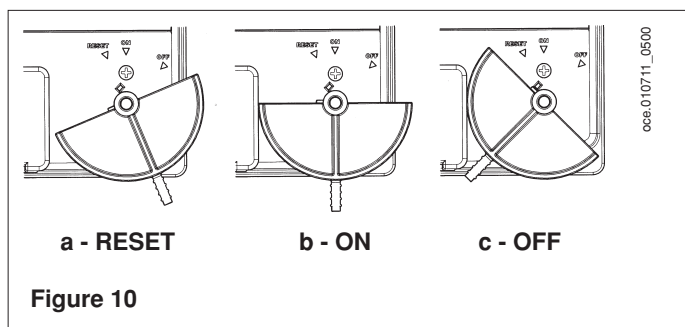


- fault messages

In the event of fault, the display panel on the QAA73 shows the flashing symbol . Press the information key (i) to display the error code and a description of the fault, as shown in the following table.

Code	Display	Fault description
10	Outside Sens	External probe sensor fault or parameter 75 has been deactivated
20	Boiler Sensor	NTC delivery sensor fault
50	DHW Sensor	DHW NTC sensor fault
60	Room Sensor	QAA73 fault
110	STL boiler	Safety or flue thermostat tripping
133	No flame	Gas is low
151	BMU	Error in boiler board Shut off electric power to boiler for 10 seconds
162	Air pressure switch	Lack of air pressure switch consensus
164	HE Flow/Press	No permissive water differential pressure switch

In the lower part of the boiler there is a lever connection to a selector. Through this device it is possible to remove the supply to the boiler (fig. 10c) or rearm the apparatus following a safety block (fig. 10a).



Parameters that can be set by the installer (service)

By pressing the two PROG keys at the same time for at least three seconds it is possible to see a list of the displayable parameters and/or that can be set by the installer.

Press one of these two keys to change the parameter to be displayed or modified.

Press the key [+] or [-] in order to change the displayed value.

Press one of the PROG keys again to memorize the change.

Press the information key (i) to exit programming.

A summary of the commonly used parameters follows:

Line no.	Parameter	range	Default value
70	Slope HC1	2,5...40	15
72	Flow max HC1	25...85	85
74	Building Construct	Heavy, Light	Light
75	Room Influence	On HC1 On HC2 On HC1+HC2 None	on HC1
77	Adaptation	Off-On	On
78	Opt Start Max	0...360 min	0
79	Opt Stop Max	0...360 min	0
90	DHW Red Setp	35...65	35
91	DHW program	24 h/day TSP HC-1h TSP HC TSP DHW	24 h/day
93	DHW button	Without ECO With ECO	Without ECO

Brief description of parameters mentioned:

Line no.	Parameter
70	Choice of the gradient of the heating curve
72	Max flow temperature in C.H.
74	Setting the type of insulation for the building
75	Turning the influence of the ambient temperature on/off. If turned off, there has to be the outside sensor.
77	Automatic adjustment of the heating curve according to the room temperature
78	Maximum advance, compared to the time program, for igniting the boiler to optimize the room temperature
79	Maximum advance, compared to the time program, for switching off the boiler to optimize the room temperature
90	ECO function - Domestic water temperature in the OFF phase of the programming as per parameter 91
91	Choosing the type of time program for the domestic water. Selecting PROG DHW involves defining the program with parameters 30+36.
93	Turning on the ECO function. Set parameter 90 as well

Gas change modalities

A Qualified Service Engineer may adapt this boiler to operate with natural gas (G20) or with liquid gas (G30, G31).

The procedure for calibrating the pressure regulator may vary according to the type of gas valve fitted (HONEYWELL or SIT; see figure 11).

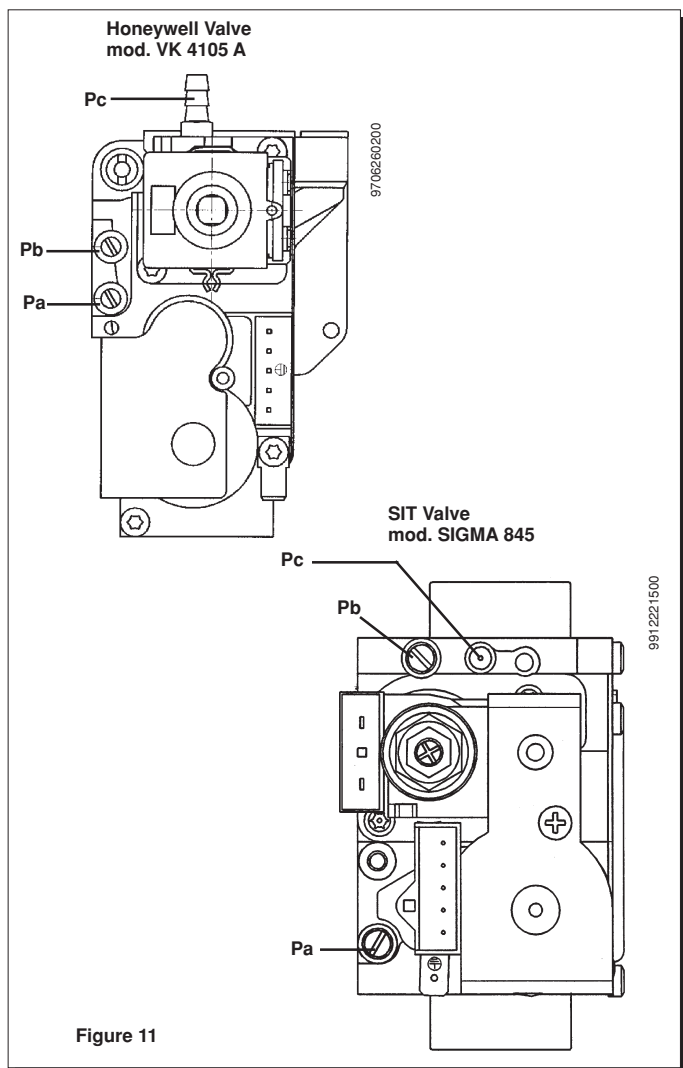


Figure 11

Carry out the following operations in the given sequence:

- A) substitute the main burner injectors;
- B) replace the pressure adjusting device spring (only for HONEYWELL gas valve);
- C) change the modulator voltage;
- D) proceed with a new max. and min. setting of the pressure adjusting device.

A) Substitute the main burner injectors

- carefully pull the main burner off its seat;
- substitute the main burner injectors and make sure you tighten them fast to avoid leakage. The nozzle diameters are specified in table 2 on page 15.

B) Replace the pressure adjusting device spring (only for HONEYWELL gas valve)

- remove the modulator anchor clamps securing it to the tube;
- pull off the modulator;
- release the lock nut and completely unscrew the tube;
- replace the spring and secure it into place correctly (Figure 12);
- fit the tube again and proceed with a new setting of the pressure adjusting device as described in D).

C) Change the modulator voltage

- rotate the control panel;
- set the jumper or the switch, according to the type of gas used, as described in the chapter on page 17.

D) Pressure adjusting device setting

- connect the positive pressure test point of a differential (possibly water-operated) manometer to the gas valve pressure test point (Pb) (Figure 11); connect, for sealed chamber models only, the negative pressure test point of the manometer to a “T” fitting in order to join the boiler adjusting outlet, the gas valve adjusting outlet (Pc) and the manometer. (The same measurement can be carried out by connecting the manometer to the pressure test point (Pb) after removing the sealed chamber front panel);
- If you measure the pressure of burners by different means you may obtain an altered result in that the low pressure created in the sealed chamber by the fan would not be taken into account.

D1) Adjustment to rated output (for HONEYWELL gas valve)

- without exceeding fasten the black screw (a) onto the tube (b) (Figure 12);
- slightly screw the tube (b) onto the pressure adjusting device;
- open the gas tap and rotate knob (1) to set the boiler to the Winter setting;
- open a hot water tap to reach a minimum 10 l/minute flow rate or ensure that maximum heating requirements are set;
- slowly screw the tube (b) onto the pressure adjusting device in order to obtain the pressure settings given at table 1 on page 15;
- check that boiler feeding dynamic pressure, as measured at the inlet gas valve pressure test point (Pa) (Figure 12) is correct (30 mbar for G30, 37 mbar for G31, 20 mbar for natural gas);
- fix the lock nut and seal the fixing screw.

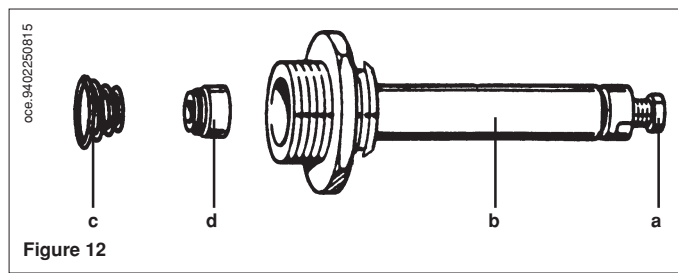


Figure 12

D2) Adjustment to reduced heat output (for HONEYWELL gas valve)

- unscrew the black screw (a) shown on figure 12 to obtain the pressure settings corresponding to reduced heat output (see table 1 on page 15).
- fit the modulator and fix it by means of its anchor clamps.

D1.1) Adjustment to rated output (for SIT valve):

- open the gas tap and prepare the boiler in the winter position through the remote control;
- open a hot water tap to reach a minimum 10 l/minute flow rate or ensure that maximum heating requirements are set;
- remove the modulator cover;
- adjust the tube brass screw to obtain the pressure settings shown at table 1 on page 15;
- check that boiler feeding dynamic pressure, as measured at the inlet gas valve pressure test point (Pa) (Figure 12) is correct (30 mbar for G30, 37 mbar for G31, 20 mbar for natural gas);

D2.1) Adjustment to reduced heat output (for SIT valve):

- detach the modulator feeding cable and unscrew the red screw to reach the pressure setting corresponding to reduced heat output (see table 1 on page 15);
- connect the cable again;
- fit the modulator cover and seal the fixing screw.

D3) Final checks

- apply the additional dataplate, specifying the type of gas and settings applied;

Table of burner pressures - heat output

LUNA SPACE 240 Fi

mbar G20	mbar G31	kW	kcal/h
2,2	5,9	9,3	8.000
2,6	7,1	10,5	9.000
3,2	8,5	11,6	10.000
3,7	10,3	12,8	11.000
4,1	12,3	14,0	12.000
4,9	14,4	15,1	13.000
5,6	16,7	16,3	14.000
6,5	19,2	17,4	15.000
7,4	21,8	18,6	16.000
8,3	24,7	19,8	17.000
9,3	27,6	20,9	18.000
10,4	30,8	22,1	19.000
11,5	32,6	23,3	20.000
12,3	34,3	24,0	20.600

1 mbar = 10,197 mmH₂O

Table 1

LUNA SPACE 310 Fi

mbar G20	mbar G31	kW	kcal/h
1,8	4,9	10,4	8.900
2,1	5,5	11,6	10.000
2,7	7,2	14,0	12.000
3,7	9,8	16,3	14.000
4,8	12,9	18,6	16.000
6,1	16,3	20,9	18.000
7,5	20,1	23,3	20.000
9,1	24,3	25,6	22.000
10,8	28,9	27,9	24.000
13,1	35,8	31,0	26.700

1 mbar = 10,197 mmH₂O

Table 1

Consumption table - burner injectors

boiler model	LUNA SPACE 240 Fi		LUNA SPACE 310 Fi	
	G20	G31	G20	G31
Gas used	1,28	0,77	1,28	0,77
injectors diameter (mm)	12	12	15	15
no. of injectors	12	12	15	15

Table 2

boiler model	LUNA SPACE 240 Fi		LUNA SPACE 310 Fi	
	G20	G31	G20	G31
Consumption 15 °C - 1013 mbar	2,78 m ³ /h	2,04 kg/h	3,63 MJ/m ³	2,76 kg/h
Rated heat output	1,12 m ³ /h	0,82 kg/h	1,26 MJ/m ³	0,92 kg/h
Reduced heat output	34,02 MJ/m ³	46,3 MJ/kg	34,02 MJ/m ³	46,3 MJ/kg
p.c.i.				

Table 3

Control and operation devices

The boiler has been designed in full compliance with European reference standards and in particular is equipped with the following:

- Air pressure switch for forced draft models
This switch allows the main burner to switch on provided the exhaust flue duct efficiency is perfect.
In the event of one of the following faults:
 - the flue terminal is obstructed
 - the venturi is obstructed
 - the fan is blocked
 - the connection between the venturi and the air pressure switch is not activethe boiler will stay on stand-by.
- Overheat thermostat
Thanks to a sensor placed on the heating flow, this thermostat interrupts the gas flow to the main burner in case the water contained in the primary system has overheated. Under such conditions the boiler is blocked and relighting (briefly rotating selector in figure 10 to RESET position) will only be possible after the cause of the anomaly has been removed.

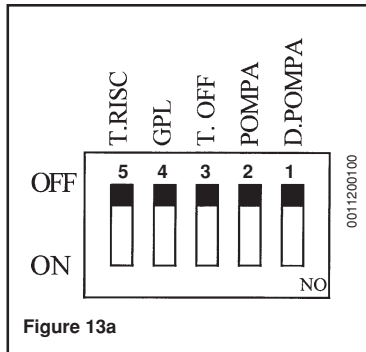
It is forbidden to disenable this safety device

- Flame ionization detector
The flame sensing electrode, placed on the right of the burner, guarantees safety of operation in case of gas failure or incomplete interlighting of the main burner. Under such conditions the boiler is blocked. Rotate selector in figure 10 briefly to RESET position to restore normal operating conditions.
- Hydraulic differential pressure sensor
This pressure sensor, fitted on the hydraulic assembly, allows the main burner to light provided the pump head is as required and protects the flue-water exchanger from possible lacks of water or blockings of the pump.
- Supplementary running of the pump
The electronically-controlled supplementary running of the pump lasts 3 minutes, when the boiler is in the central heating mode, after the burner has switched off due to a room thermostat or intervention.
- Frost protection device (central heating system)
Boilers electronic management includes a “frost protection” function in the central heating system which operates the burner to reach a heating flow temperature of 30°C when the system heating flow temperature drops below 5 °C.
This function is operative when the boiler is powered, the selector switch (figure 10) is not in the OFF position, there is gas supply and system pressure is as required by specifications.
- Anti-block pump function
In the event that no heat is required (during heating and/or sanitary mode), the pump will automatically start up and operate for one minute during the following 24 hours.
This function is operative when the boiler is powered and the selector switch (figure 10) is not in the OFF position.
- Three-way anti-blockage valve
In the case of no heat request for a period of 24 hours the three-way valve carries out a complete commutation.
This function is operational if the boiler is electrically fed.
- Hydraulic safety valve (heating circuit)
This device is set to 3 bar and is used for the heating circuit.

The safety valve should be connected to a siphoned drain. Use as a means of draining the heating circuit is strictly prohibited.

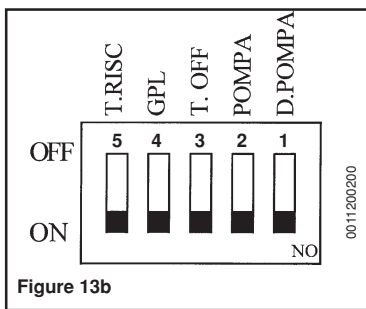
Electronic board calibration

When the jumper or the switch is in the OFF position:



- T.RISC. boiler heating temperature range $30 \pm 85^{\circ}\text{C}$
- GPL operation of system with NATURAL gas
- T-off 3-minute heating stand-by time
- POMPA pump post-circulation time (in heating) of 3 minutes after ambient thermostat cut-in
- D. POMPA the switch must always remain in the OFF position

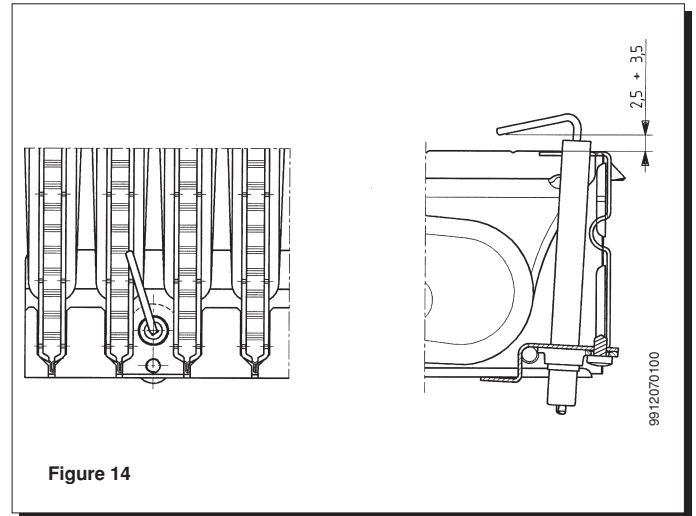
When the jumper or the switch is in the ON position:



- T.RISC. boiler heating temperature range $30 \pm 45^{\circ}\text{C}$
- GPL operation of system with LPG
- T-off 10-seconds heating stand-by time
- POMPA pump post-circulation time (in heating) of 4 hours after ambient thermostat cut-in
- D. POMPA a position not foreseen for this boiler model

NB Make sure that electrical power supply has been disconnected before making settings.

Positioning of the ignition and flame sensing electrode



Check of combustion parameters

To measure combustion performance and hygiene levels of combustion products, the forced draught boiler models are equipped with two test points on the tapered coupling specifically designed for this purpose. One of the two test points is connected to the exhaust flue duct to allow measurements of the combustion products hygienic standards and combustion efficiency. The second test point is connected to the comburant air inlet duct to check possible combustion products circulation in case of coaxial ducts. The exhaust flue duct test point allows measurements of the following:

- combustion products temperature;
- concentration of oxygen (O_2) or, alternatively, of carbon dioxide (CO_2);
- concentration of carbon monoxide (CO).

The comburant air temperature must be measured at the test point connected to the air inlet duct.

How to disassemble the DHW heat exchanger

The stainless steel plate-type DHW heat exchanger is easily disassembled with a screwdriver by operating as described below:

- drain, if possible, only the boiler system, **through the drain tap**;
- drain the DHW system from water;
- remove the two screws (right in front of you) securing the DHW heat exchanger and pull it off its seat (Figure 15).

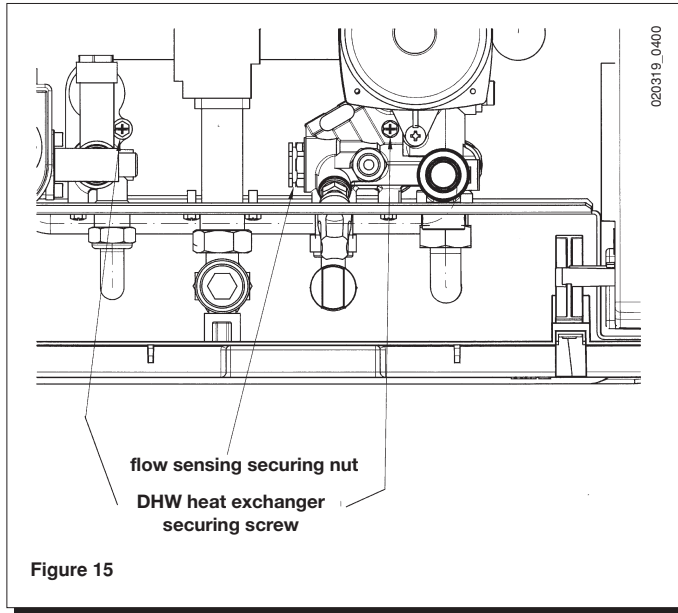


Figure 15

For cleaning the interchange and/ or the domestic hot water circuit we recommend the use of Cillit FFW-AL or Benckiser HF-AL.

For particular zones of use, where the characteristics of water hardness surpass the values of 20°F (1°F = 10mg of calcium carbonate per litre of water), we recommend the installation of a polyphosphates dose giver or equivalent systems in keeping with current regulations.

Boiler schematic

LUNA SPACE 240 Fi - 310 Fi

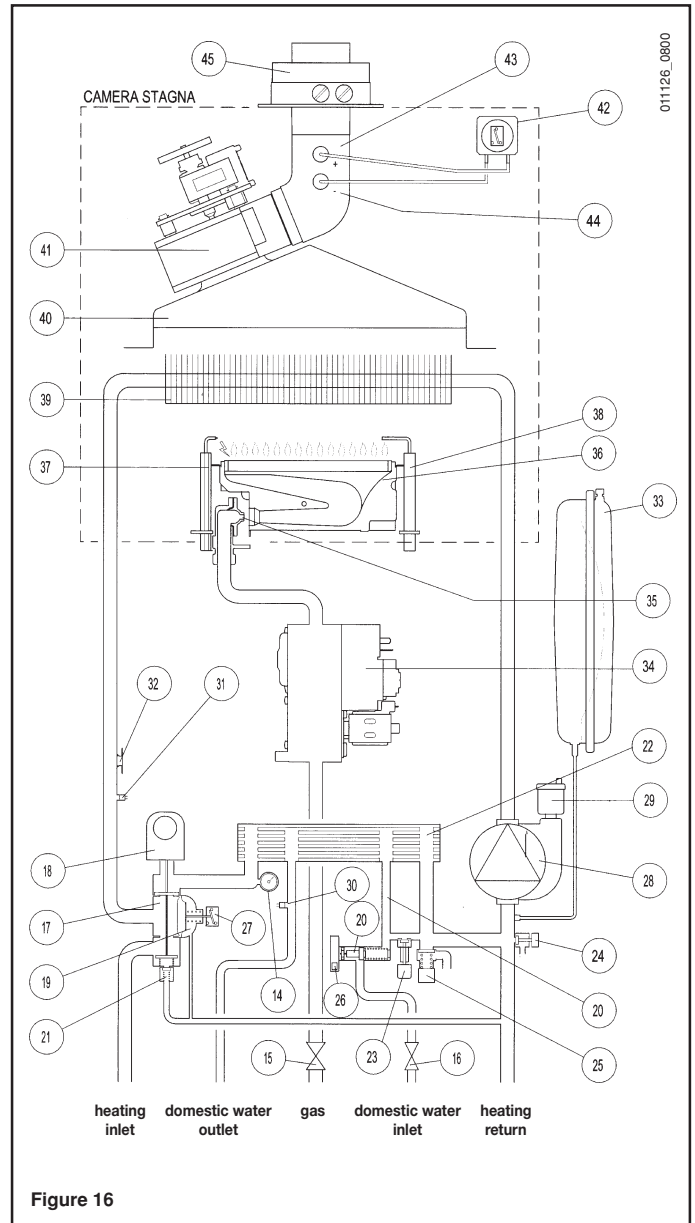


Figure 16

Cleaning the cold water filter

The boiler is equipped with a cold water filter placed on the hydraulic assembly. To clean it do the following:

- drain the DHW system from water;
- unscrew the nut on the flow sensing assembly (Figure 15);
- pull out the flow sensing device and its filter;
- remove the impurities.

Important: in the event of replacements and/or cleaning of the O-rings on the hydraulic unit, do not use oil or grease as lubricant but exclusively Molykote 111.

Key:

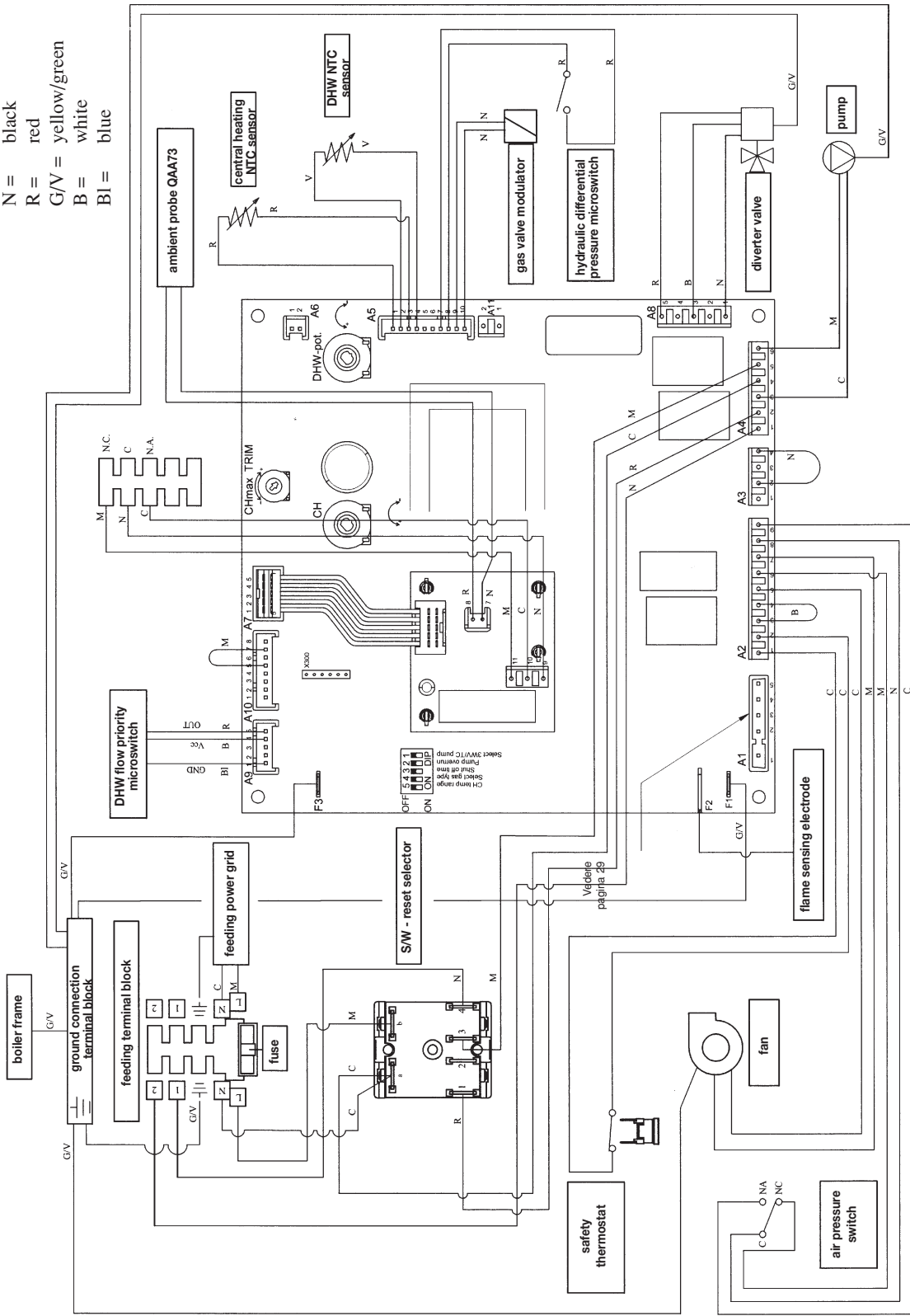
- 14 pressure gauge
- 15 gas service cock
- 16 cold water inlet on/off valve and filter
- 17 diverter valve assembly
- 18 diverter valve motor
- 19 hydraulic differential pressure sensor
- 20 flow sensor with filter
- 21 automatic by-pass
- 22 plate-type DHW heat exchanger
- 23 boiler filling tap
- 24 boiler drain point
- 25 pressure relief valve
- 26 DHW flow priority microswitch
- 27 hydraulic differential pressure sensor microswitch
- 28 pump and air separator
- 29 automatic air vent
- 30 DHW NTC sensor / water heater NTC sensor
- 31 central heating NTC sensor
- 32 overheat thermostat
- 33 expansion vessel
- 34 gas valve
- 35 burner injector
- 36 main burner
- 37 ignition electrode
- 38 flame sensing electrode
- 39 flue-water exchanger
- 40 flue hood
- 41 fan
- 42 air pressure switch
- 43 positive pressure point
- 44 negative pressure point

Illustrated wiring diagram

LUNA SPACE 240 Fi - 310 Fi

CABLE COLOURS

- C = light blue
- M = brown
- N = black
- R = red
- G/V = yellow/green
- B = white
- BI = blue



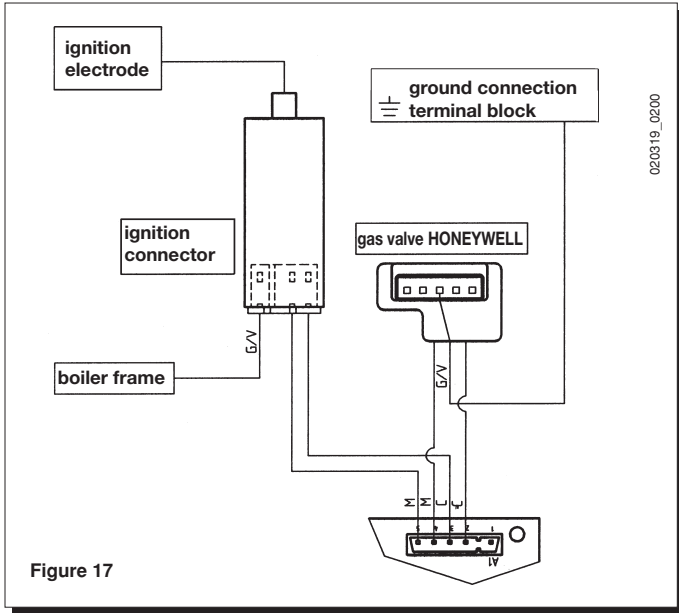
- KEY**
- A3 = Programming control connector
 - RISC.= Central heating potentiometer
 - SAN. = DHW potentiometer
 - MAX R. = Heating power regulation

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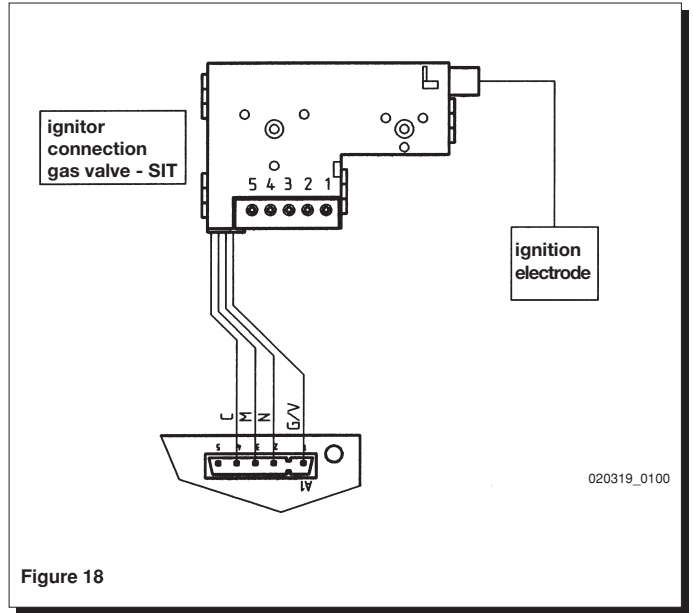
Connection diagram of gas valve and electric igniter

The boiler is prearranged for fitting two types of gas valves with their relative electric igniters:

— HONEYWELL gas valve use

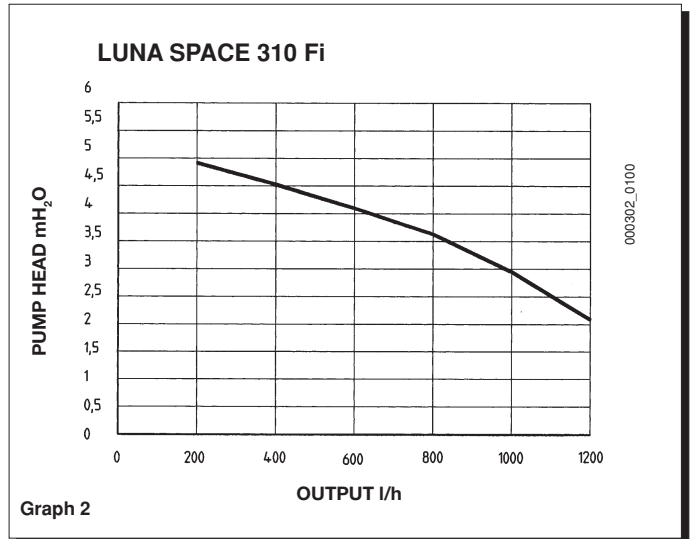
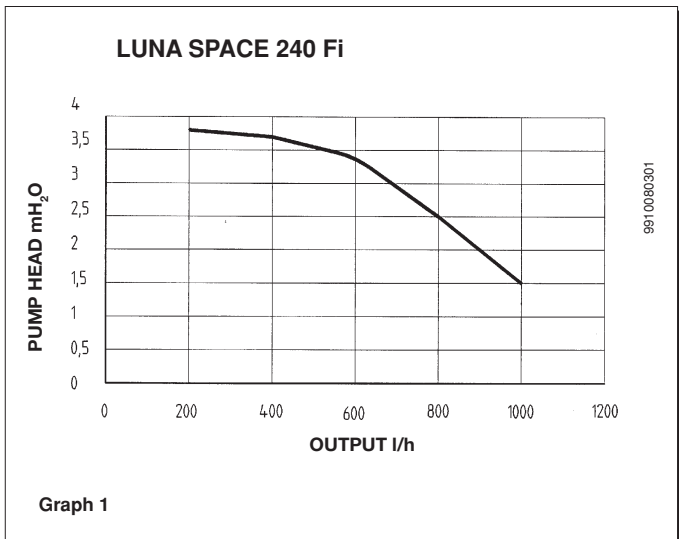


— SIT gas valve use



Output / pump head performances

This is a high static head pump fit for installation on any type of single or double-pipe heating systems. The air vent valve incorporated in the pump allows quick venting of the heating system.



Electric connection to a zone system

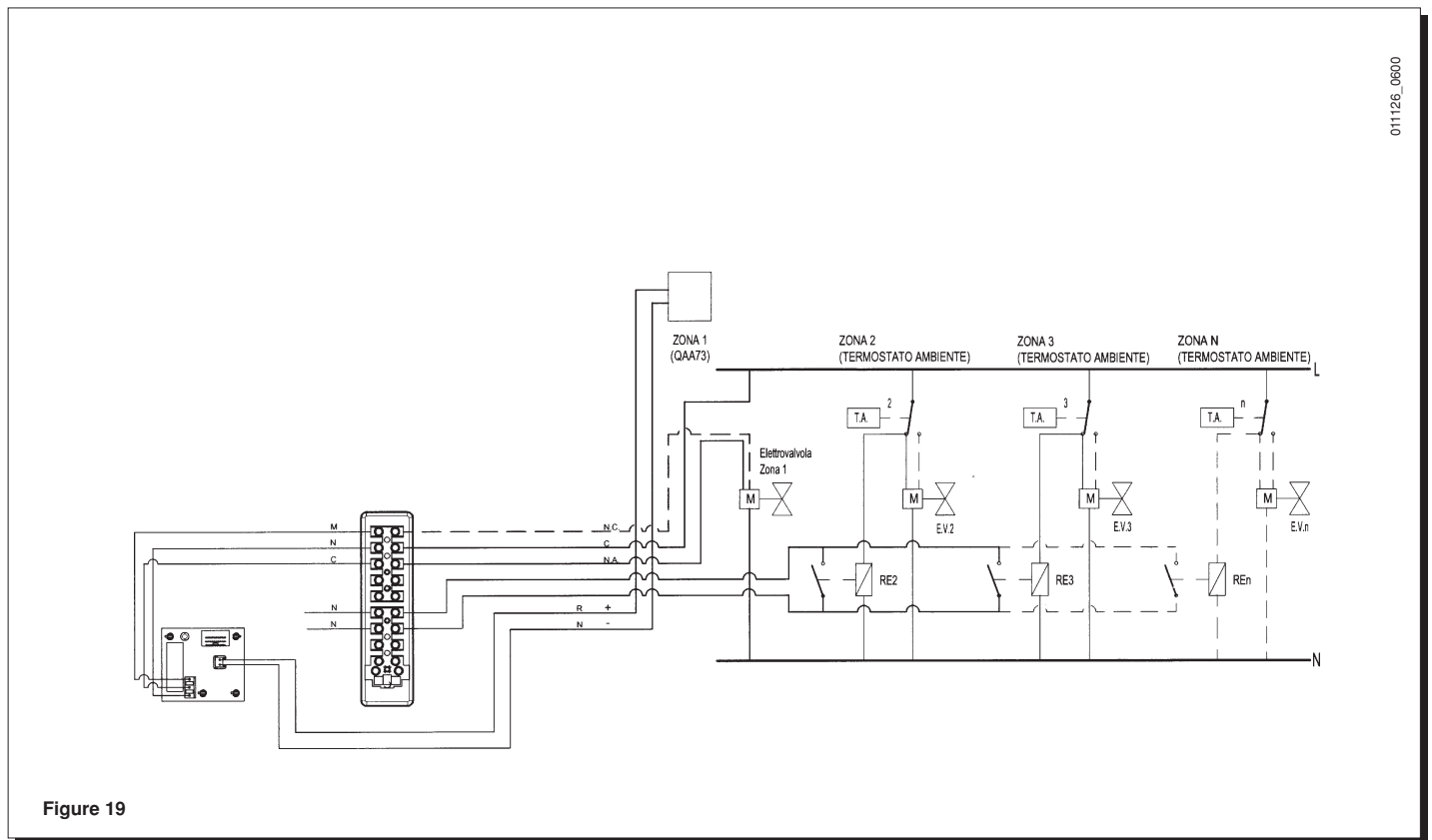
The apparatus is prepared for electric connection to a zone system. The environment probe QAA73 can be used as an environment thermostat for a single zone, while it is possible to use normal thermostats for controlling the remaining zones.

The connection outline is represented in figure 19.

The environment probe QAA73 develops the heating lot temperature in the case of a heat request from the zone where the environment probe itself is foreseen.

The heating lot temperature in the remaining zones must be set through the heating potentiometer in the command box (fig. 20).

In the case of a contemporary request on the part of the environment probe QAA73 and one or more zones the electronic boiler management will make provisions for supplying a temperature equivalent to a higher of those elaborated by the two systems.



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Figure 19

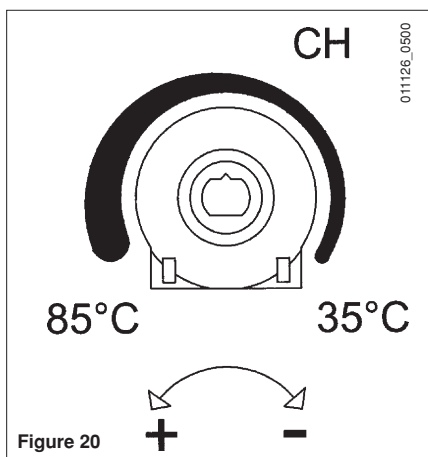


Figure 20

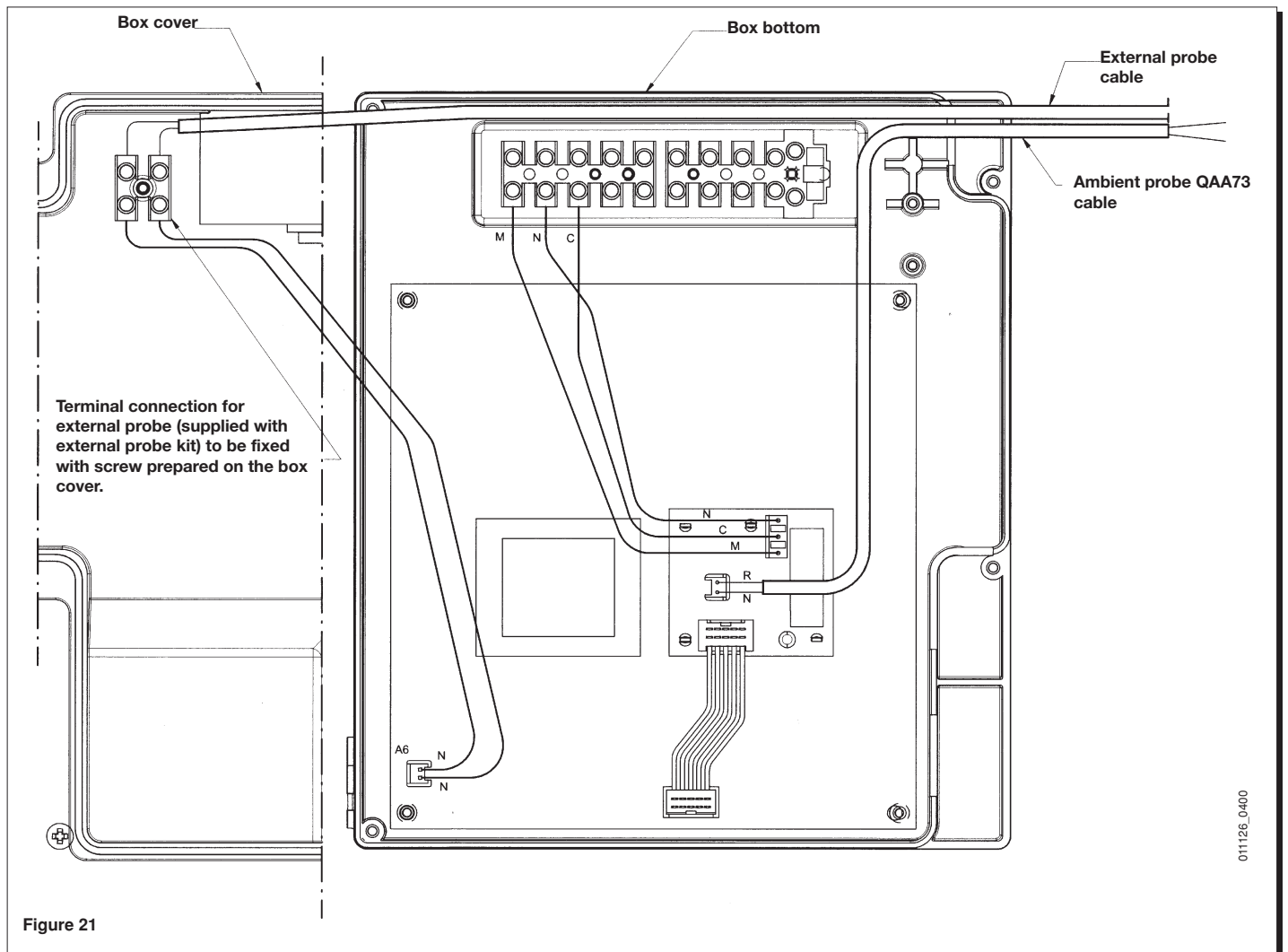
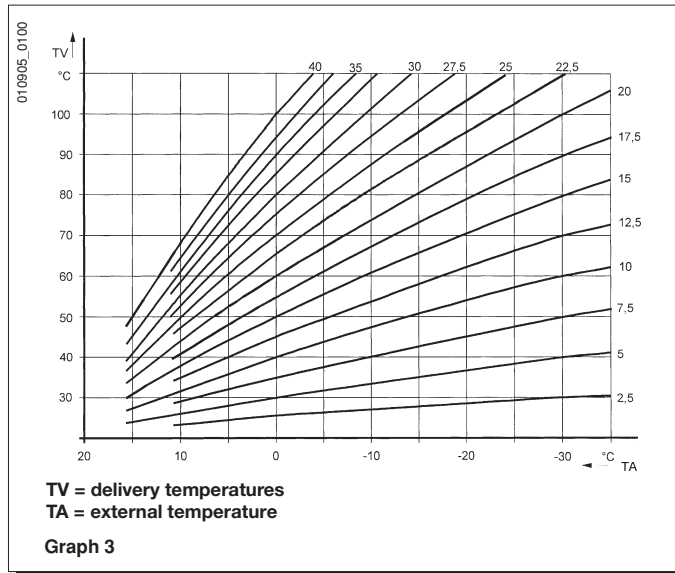
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Connection of the external probe

The boiler is prearranged for connection of an external probe (supplied as accessory).

The choice of Kt curve must be carried out through the environment probe QAA73 (parameter 70).

IMPORTANT: the value of the TM lot temperature depends on the positioning of the T.RISC switch (see the chapter on page 17). The maximum temperature that can be set can in fact be of 85 or 45°C.



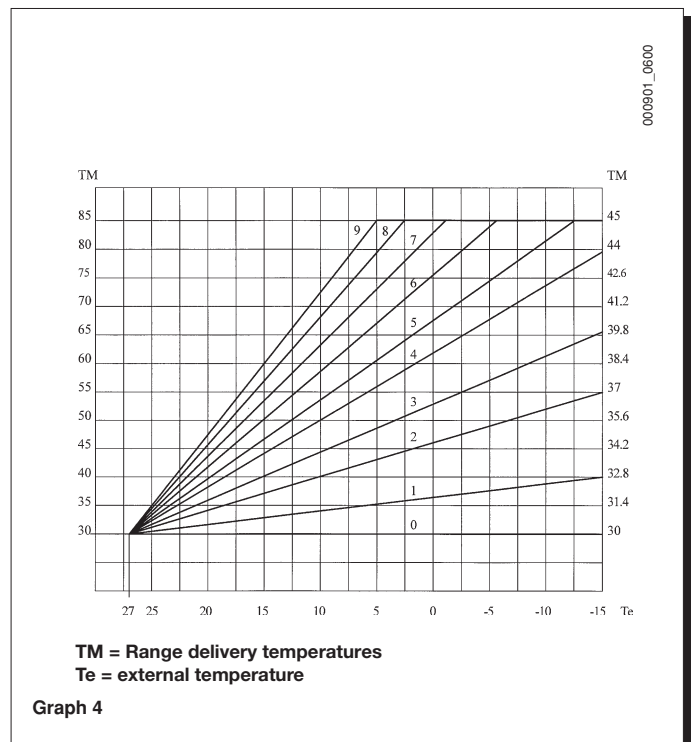
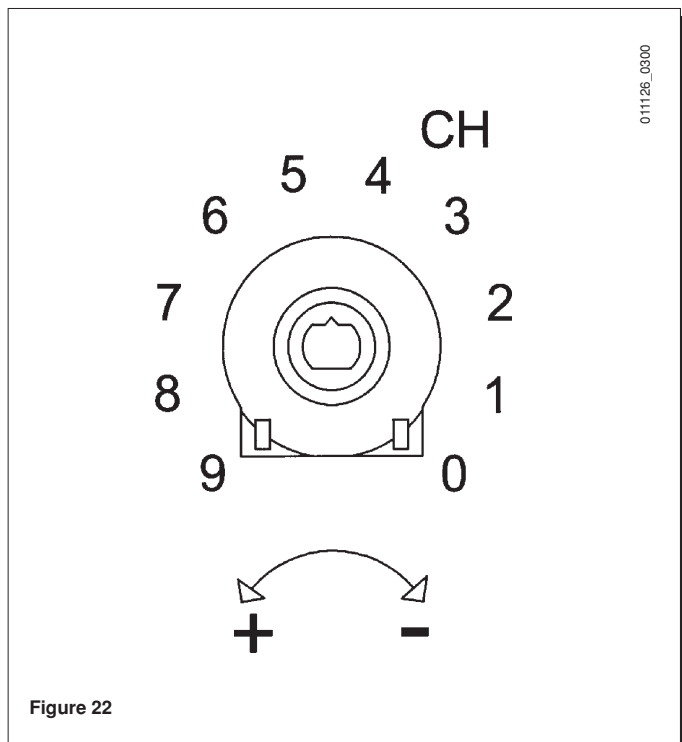
Electric connection to a zone system and an external probe

Carry out the electric connections as described in the previous chapters. The choice of Kt curve must be carried out both on the environment probe QAA73 (parameter 70) and the heating potentiometer inside the command box (figure 22 and graph 4).

The environment probe QAA73 develops the lot temperature in the case of a heat request from the zone where the environment probe itself is foreseen.

The electronic card, in the boiler, develops the lot heating temperature in the case of heating requests from one or more zones.

In the case of a contemporary request on the part of the environment probe QAA73 and one or more zones the electronic boiler management will make provisions for supplying a temperature equivalent to the higher of those elaborated by the two systems.



Technical data

Boiler model LUNA SPACE		240 Fi	310 Fi	
Rated heat input	kW	26,3	34,3	
Reduced heat input	kW	10,6	11,9	
Rated heat output	kW	24	31	
	kcal/h	20.600	26.700	
Reduced heat output	kW	9,3	10,4	
	kcal/h	8.000	8.900	
Rated direct efficiency	%	90,3	90,3	
Direct efficiency at 30% of output	%	88	88	
Central heating system max. pressure	bar	3	3	
Nominal expansion vessel capacity	l	8	8	
Pre-charge pressure of the expansion vessel	bar	0,5	0,5	
DHW system max. pressure	bar	8	8	
DHW system min. dynamic pressure	bar	0,2	0,2	
DHW system min. output	l/min	2,5	2,5	
DHW production at $\Delta T=25\text{ }^{\circ}\text{C}$	l/min	13,7	17,8	
DHW production at $\Delta T=35\text{ }^{\circ}\text{C}$	l/min	9,8	12,7	
Specific output (*)	l/min	10,5	13,7	
Concentric flue duct diameter	mm	60	60	
Concentric air duct diameter	mm	100	100	
2-pipe flue duct diameter	mm	80	80	
2-pipe air duct diameter	mm	80	80	
Max. flue mass flow rate	kg/s	0,020	0,018	
Min. flue mass flow rate	kg/s	0,017	0,019	
Max. flue temperature	$^{\circ}\text{C}$	146	160	
Min. flue temperature	$^{\circ}\text{C}$	106	120	
Type of gas used	—	G.20	G.20	
	—	G.31	G.31	
Natural gas feeding pressure	mbar	20	20	
Propane gas feeding pressure	mbar	37	37	
Power supply voltage	V	230	230	
Power supply frequency	Hz	50	50	
Rated power supply	W	170	190	
Net weight	kg	40,5	42,5	
Dimensions	height	mm	830	830
	width	mm	550	550
	depth	mm	250	250
Protection-limit against humidity and water leakages (**)	—	IP X5D	IP X5D	
Minimum operating temperature	$^{\circ}\text{C}$	-15	-15	

(*) Protection-limit against humidity

(**) according to EN 60529

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