



Lamborghini
CALORECLIMA

AZIENDA CERTIFICATA ISO 9001



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CALDAIA MURALE A GAS A CONDENSAZIONE CON BOLLITORE AD ACCUMULO
WALL-HUNG WITH STEEL WATER-HEATER CONDENSING BOILER
CALDERA MURAL A GAS CON CONDENSACIÓN CON ACUMULADOR
CALDEIRA DE PAREDE A GÁS DE CONDENSAÇÃO COM FERVEDOR PARA ACUMULAÇÃO



Futura L 24-28 MB W TOP /IT

MANUALE DI
INSTALLAZIONE E
MANUTENZIONE

INSTALLATION
AND MAINTENANCE
MANUAL

MANUAL PARA
LA INSTALACIÓN Y
EL MANTENIMIENTO

MANUAL DE
INSTALAÇÃO E
MANUTENÇÃO



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Congratulations...

...on an excellent choice.

We thank you for the preference accorded to our products.

LAMBORGHINI CALORECLIMA has been actively present in Italy and throughout the world since 1959 with a widespread network of agents and concessionary agents to constantly guarantee the presence of our product on the market. Alongside this is the support of a technical service, "LAMBORGHINI SERVICE", which is entrusted with the qualified servicing of the product.

For the installation and positioning of the boiler:
CAREFULLY OBSERVE THE LOCAL REGULATIONS IN FORCE



GENERAL INSTRUCTIONS

- This booklet constitutes an integral and essential part of the product. Read carefully the instructions contained in this booklet as they provide important directions regarding the safety of installation, use and maintenance. Preserve this booklet with care for any further consultation. The installation of the boiler must be carried out in compliance with current regulations, according to the instructions of the manufacturer and by qualified personnel. An incorrect installation can cause injury or damage to persons, animals and objects, for which the manufacturer cannot be held responsible.
- After removing the packaging materials, check the content integrity. In case of doubt, do not use the unit and contact the supplier. The packaging material (wooden crates, nails, clips, plastic bags, foam, etc.) must not be left within reach of children as they are potential sources of danger.
- This boiler is designed to heat water to a temperature below boiling (atmospheric pressure). It must be connected to a heating system compatible with its performances and output.
- This appliance should be destined only for the use for which it has been expressly envisaged. Any other use is to be considered improper and therefore dangerous. The manufacturer cannot be considered responsible for any damages caused from improper, erroneous or unreasonable use.

ALL INSTALLATION, MAINTENANCE AND GAS CONVERSION OPERATIONS MUST BE CARRIED OUT BY AUTHORISED SKILLED TECHNICIANS.

TO ENSURE THAT BOILER IS INSTALLED CORRECTLY AND THAT IT FUNCTIONS PROPERLY, WE RECOMMEND THAT ONLY LAMBORGHINI ACCESSORIES AND SPARE PARTS BE USED.

ON NOTICING THE SMELL OF GAS DO NOT TOUCH ANY ELECTRIC SWITCH. OPEN DOORS AND WINDOWS. SHUT OFF THE GAS COCKS.

INSTALL THE BOILER ON WALLS WHICH ARE AS WIDE AS OR WIDER THAN THE BOILER ITSELF.



DESCRIPTION

FUTURIA L 24-28 MB

Perfectly air-tight with respect to its surroundings, this unit is suitable for heating water to temperatures below boiling point at atmospheric pressure. Fully automatic, the FUTURIA L boiler is governed by an electronic microprocessor-operated control box.

Continuous power modulation is effected both on the heating circuit and the hot water circuit, by means of an electronic board controlling fan r.p.m.

Combustion analysis (to be measured at the flue base on the appropriate points) allows adjustment of gas delivery so that the right air/gas mix is always obtained. Each variation in fan r.p.m. (and the resulting air-flow) corresponds to a variation in the gas delivery rate.

This operation ensures a constant air-gas ratio whatever the flame intensity, thus guaranteeing maximum combustion efficiency and hygiene under all working conditions.

The electronic board also provides:

- 3-way valve and circulation pump efficiency test; this prevents the lock-out that might otherwise occur when the boiler remains idle for a prolonged period (the valve and pump are operated for a set time every 24 hours).
- Anti-freeze device: when the heating water temperature falls below 10°C the circulation pump comes on. If temperature continues to fall the burner will ignite at 3°C, burning at minimum. It will be switched off when the water is reheated to 10°C. **This is why the boiler must be left connected to the power supply even when it is not in use.**
- Board memory: The control box microprocessor will memorise and signal any anomalies. This information is stored on the memory even when the power is off and can be recalled by connecting up to a PC.
- **Temperature-adjustable** operation with external temperature compensation function (where installed).



INSTALLATION

To be carried out by qualified personnel.

The system must be installed in an area free from corrosive vapours and must comply with the legal standards in force regarding evacuation of combustion by-products. It is especially recommended that standards concerning safety, construction and flue positioning be strictly observed.

SYSTEM START-UP

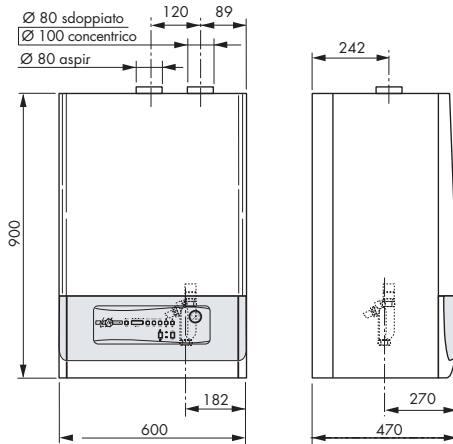
- Open windows and doors and do not light any naked flames.
- Bleed the air
- Check that there are no gas leaks (use soapy water or an equivalent product).

Before installing the boiler it is important to remove any impurities from the water supply pipes; use air or inert gas.

Make sure that the boiler is suitable for the type of gas available to the user.



DIMENSIONS mm.



TECHNICAL FEATURES

MODEL FUTURIA	Thermal capacity						Min. thermal capacity						Hot water supply			Operating pressure		Expansion tanks		Weight
	Input		Output 50/30°C		Output 80/60°C		Input		Output 50/30°C		Output 80/60°C		Supply Δ30°C	Peak output in first 10 minutes	Water-heater capacity	Heating circuit max.	Hot water circuit	Heating circ.	Hot water circ.	
	kW	kcal/h	kW	kcal/h	kW	kcal/h	kW	kcal/h	kW	kcal/h	kW	kcal/h	l/h	l	l	bar	bar	l	l	kg
L 24 MB	25,0	21.500	25,75	22.145	24,5	21.070	8,8	7.568	9,33	8.022	8,98	7.719	702	167	50	3	6	8	2	95
L 28 MB	29,0	24.940	29,8	25.634	28,4	24.390	10	8.600	10,66	9.168	10,09	8.677	766	178	50	3	6	8	2	95

Boiler version: mod. C type C13-C33-C43-C53
Category: II 2H3B/P

Max. water temperature 90°C
Rated gas pressure: Natural gas 20 mbars
B 30 mbar
P 37 mbar

CIRCULATING PUMP FEATURES

Delivery/pressure available at the system





HYDRAULIC CONNECTION

Fit the supporting hooks and attach the assembly template, moving it up to the wall; fit all the pipes, starting with the end pipe fittings already mounted on the template: system supply, system return, cold water, hot water, any gas pipes and electric mains leads with room thermostat.

Once the pipes have been fitted, the end pipe fittings can be removed and ordinary caps fitted, ready for hydraulic tests to be carried out. The template can be removed or, if left in place, will be embedded in the wall once finishing operations have been completed (plaster and tiles); only the two supporting hooks will protrude from the wall, as well as an opening for the connections. Attach the boiler to the hooks through the holes at the back of the frame, push it up against the finished wall and fit the two lock nuts onto the hooks.

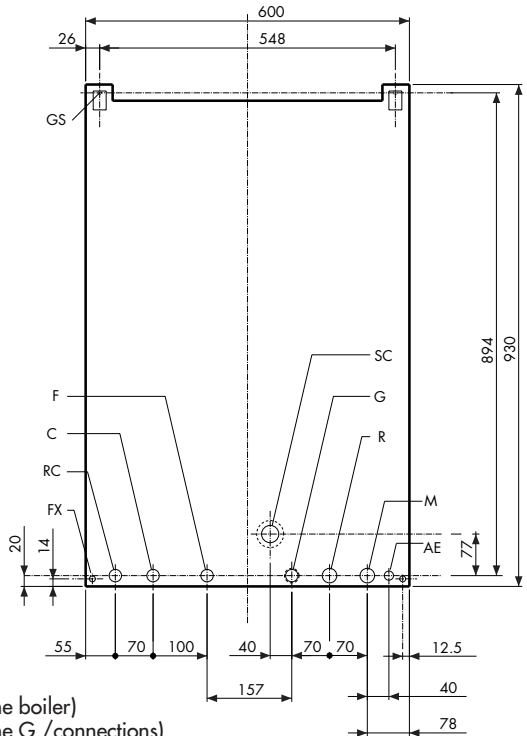
Make the necessary hydraulic connections using the pipes/tubes supplied, cutting them to the right length, depending on the distance between the fittings on the boiler and those on the template embedded in the wall.

CONDENSATE DISCHARGE

The condensate which forms inside the boiler is must be discharged. The boiler is therefore fitted with a water trap. The water trap fitting must be connected to a outlet in PVC. It is advisable to insert another water trap on the discharge line before entry into the waste water system.

Important: should the condensate discharge pipe (supplied with the boiler) be replaced, always use a pipe with an internal diameter of at least 13 mm.

The cool condensate unloading in endowment is of Ø 25 mm external.



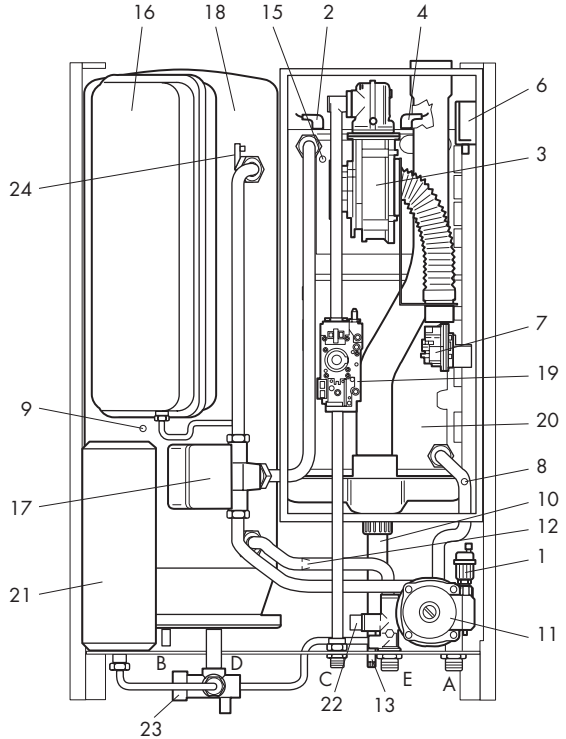
LEGEND

- | | |
|-------------------------------------|--------------------------------|
| C Hot water | Ø 1/2" |
| G Gas | Ø 3/4" (in the boiler) |
| | Ø 1/2" (in the G./connections) |
| | Ø 1/2" (cold) |
| F Boiler water supply | Ø 3/4" |
| AE Electrical supply | Ø 3/4" |
| M System delivery | Ø 10 mm. |
| R System return | Ø 80 mm. |
| GS Holding hooks | Ø 11 mm. |
| SC Condensate discharge duct | |
| FX Holes extra implantation | |

NOTE: Preview hydraulic female connections.

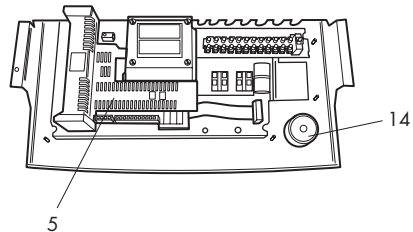


MAIN COMPONENTS



LEGEND

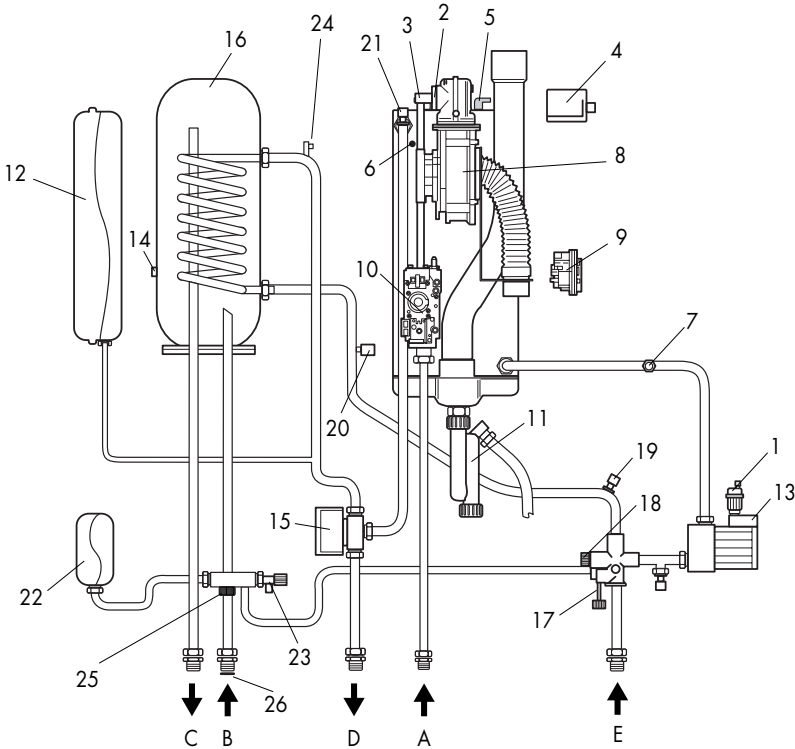
- 1 Air bleed valve
- 2 Control electrode
- 3 Fan
- 4 Ignition electrodes
- 5 Control box
- 6 Ignition transformer
- 7 Fume pressure switch
- 8 NTC 2 return sensor
- 9 NTC 3 hot water sensor
- 10 Water trap for condensate discharge
- 11 Circulating pump
- 12 Lack of water pressure switch
- 13 Filling cock
- 14 Hydrometer
- 15 NTC 1 delivery sensor
- 16 Expansion tank
- 17 3-way valve
- 18 Water-heater
- 19 Gas valve
- 20 Aluminium boiler body
- 21 Hot water expansion tank
- 22 Heating safety valve
- 23 6 bar safety valve
- 24 Air release



- A 3/4" Ø system delivery
- B 1/2" Ø hot water outlet
- C 3/4" Ø gas inlet
- D 1/2" Ø cold water inlet
- E 3/4" Ø system return



HYDRAULIC CIRCUIT



LEGEND

- | | | | |
|-----------|-------------------------------------|-----------|-------------------------------|
| A | Gas | 12 | Heating expansion tank |
| B | Cold water inlet | 13 | Circulating pump |
| C | Hot water outlet | 14 | Hot water sensor |
| D | System delivery | 15 | 3-way valve |
| E | System return | 16 | Water-heater |
| 1 | Air bleed valve | 17 | Filling cock |
| 2 | Control electrode | 18 | Safety valve 3 bar |
| 3 | Nozzle connection | 19 | Drain tap |
| 4 | Ignition transformer | 20 | Lock of water pressure switch |
| 5 | Ignition electrodes | 21 | Air bleed tap bar |
| 6 | System delivery control sensor | 22 | Hot water expansion tank |
| 7 | System return control sensor | 23 | Safety valve 6 bar |
| 8 | Fan | 24 | Air release |
| 9 | Air pressure switch | 25 | Water flow-rate regulator |
| 10 | Gas valve | 26 | Water inlet filter |
| 11 | Water trap for condensate discharge | | |



ELECTRICAL CONNECTIONS - WIRING DIAGRAMS

The boiler must be connected to an earthed, single-phase 230V-50 Hz mains supply by means of a three-wire cable, ensuring that connections to the LINE and NEUTRAL terminals are made correctly.

A bipolar switch must be used with contacts opening to at least 3 mm.

The power lead must only be replaced by another with the following characteristics: "HAR H05 vv-F" 3x1.00 mm². **(Only LAMBORGHINI accessories and spare parts be used).**

**Installation must be made in compliance with safety REGULATIONS IN FORCE.
Make a good earth connection.**

Voltage	Frequency	Absorbed power	Protection index	Noise level
V	Hz	W	IP	dB (A)
230	50	150	X 4D	<50

To gain access to the electrical panel which houses the power supply terminal block and any connection to an ambient temperature thermostat, proceed as follows:

- Disconnect the boiler power supply.
- Undo the screws 1 of the plastic front panel (Fig. A).

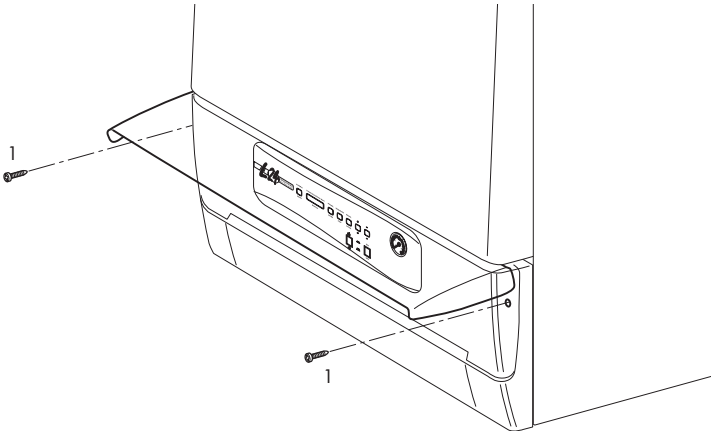


Fig. A



- Remove the plastic front panel attached to the sides by small bolts (Fig. B).

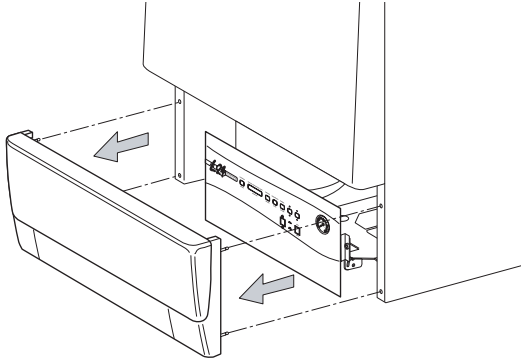


Fig. B

- Undo the screws 2 fixing the panel to the sides (Fig. C), the panel will open by about 20° and will stop in this position (Fig. D).

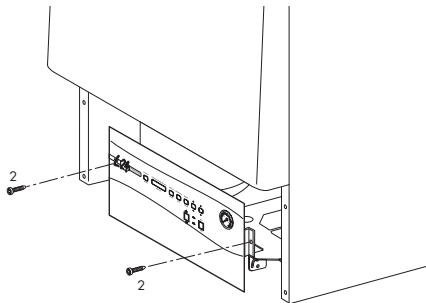


Fig. C

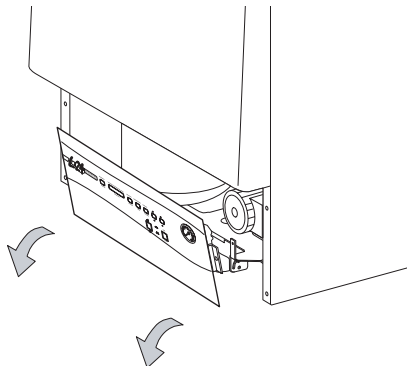


Fig. D



- To lower completely the panel it is first necessary to move it up and then lower it until the locking point is reached (Fig. E).

1st Move it up

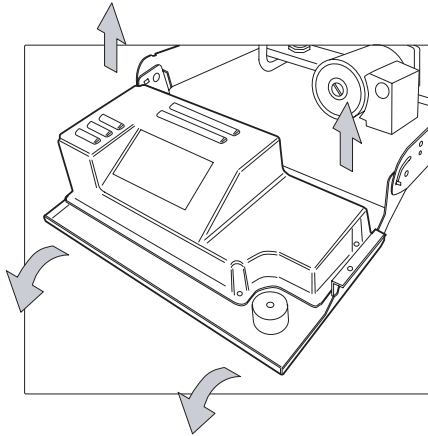


Fig. E

2nd Lower

- To remove the cover from the panel unscrew the bolts 3 (Fig. F).

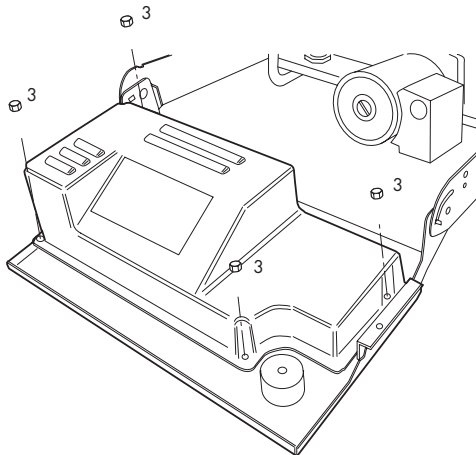


Fig. F



- It is now possible to have access to the terminal board (M) for maintenance or for possible connections (see wiring diagram page 52) of room thermostat or outdoor sensor (Fig. G).

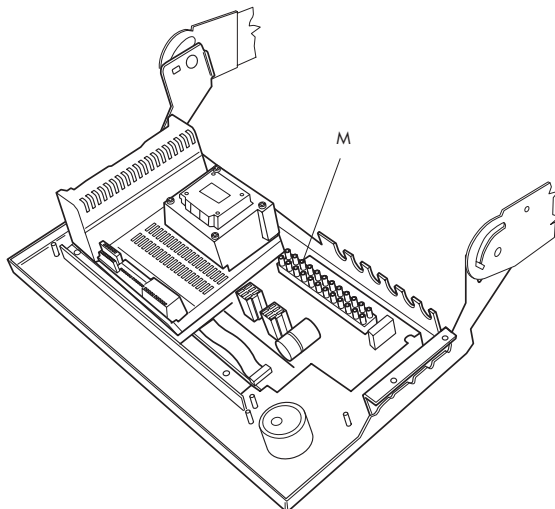


Fig. G

- To gain access to the display or for maintenance, it is possible to remove the holder (P), to which all electrical components are connected, by unscrewing the bolts 5 (Fig. H).

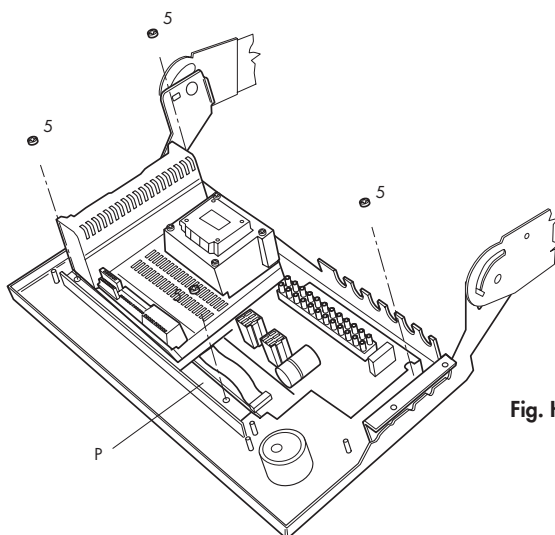
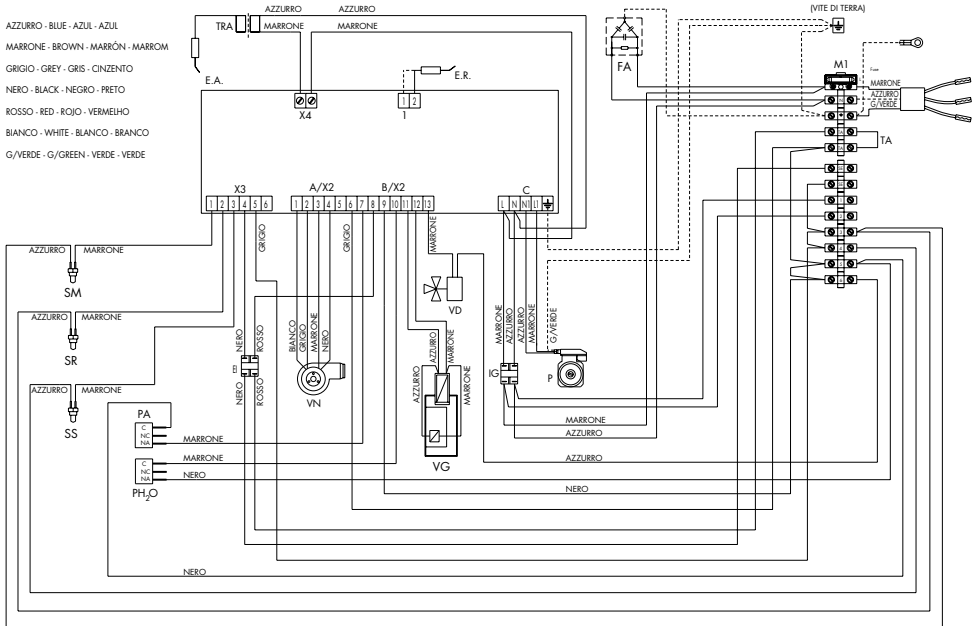


Fig. H



WIRING DIAGRAM



LEGEND

- | | | | |
|------------------------|----------------------------|-------------|----------------------|
| P | System circulating pump | SR | Return sensor |
| PSG | Safety gas press. switch | SS | Hot water sensor |
| PA | Air pressure switch | SM | Delivery sensor |
| PH₂O | Water pressure switch | M1 | Terminal board |
| E.A. | Ignition electrode | VD | 3 way valve |
| E.R. | Control electrode | EI | Summer/Winter switch |
| TRA | Transformer | VN | Fan |
| IG | Main switch | A/X2 | 5 poles connector |
| VG | Gas valve | B/X2 | 8 poles connector |
| FA | Anti interference filter | X3 | 6 poles connector |
| TA | Room thermostat (optional) | X4 | 2 poles connector |
| SE | External sensor (optional) | C | Connector |

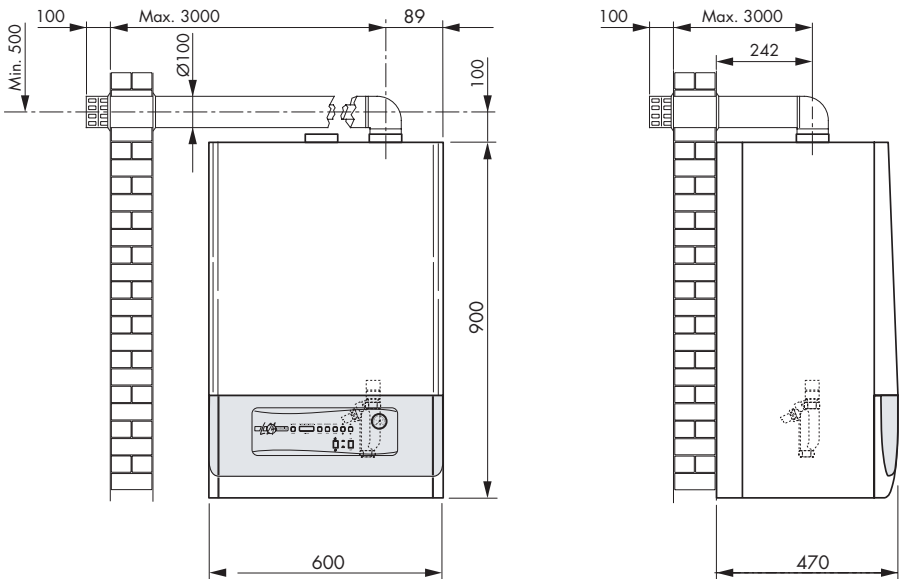


FLUE EXHAUST INSTALLATION

CONCENTRIC FLUE EXHAUST PIPE - STANDARD APPLICATIONS

Flue exhaust pipe lengths are referred to the electric fan pre-calibration, i.e. 5500 rpm with concentric flue pipe $\varnothing 100/60$.

FLUE EXHAUST PIPE FROM A WALL



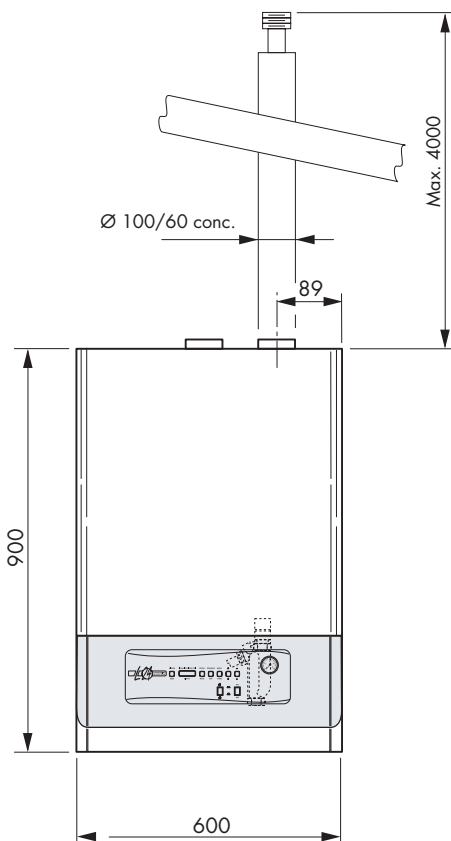
Elbow fitted at 90°: 1 m. length reduction
Elbow fitted at 45°: 0.5 m. length reduction

WARNING:

- Do not calibrate fan speed (rpm) higher than what is necessary.
- Use only air intake/flue exhaust kits produced by Lamborghini Caloreclima.



CONCENTRIC FLUE EXHAUST PIPE FROM THE ROOF



Elbow fitted at 90°: 1 m. length reduction

Elbow fitted at 45°: 0.5 length reduction

WARNING:

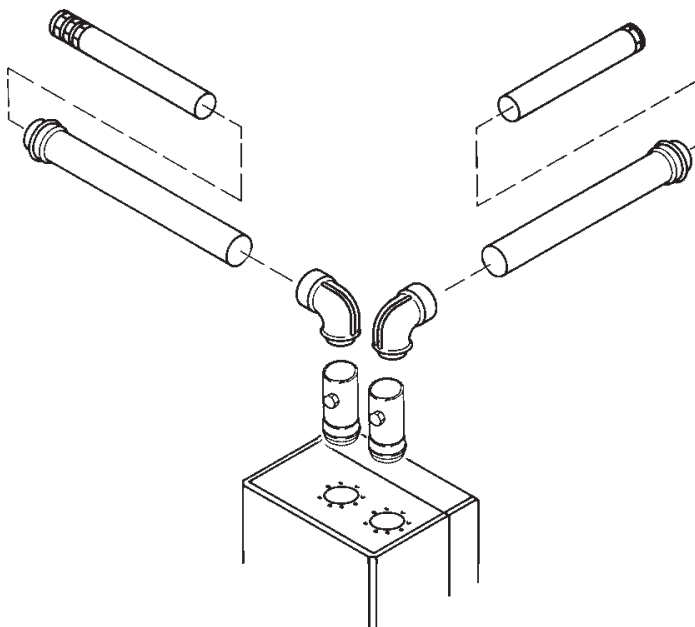
- Do not calibrate fan speed (rpm) higher than what is necessary.
- Use only air intake/flue exhaust kits produced by Lamborghini Caloreclima.



DOUBLE FLUE PIPE

The flue exhaust pipe should slope slightly upward (about 3%), to allow possible condensation to be collected in the boiler.

Flue exhaust pipe length (see table) is referred to the electric fan speed of 5500 rpm with pipe diameter $\varnothing 80$ or $\varnothing 60$.



	Max.length Intake + Exhaust	Elbow fitted at 90°
Pipe diameter $\varnothing 80$ mm	50 mt.	0,6 mt.
Pipe diameter $\varnothing 60$ mm	20 mt.	2 mt.

WARNING:

- Do not calibrate fan speed (rpm) higher than what is necessary.
- Use only air intake/flue exhaust kits produced by Lamborghini Caloreclima.



FLUE EXHAUST PIPE INSTALLATION - SPECIAL APPLICATIONS

If types of flue exhaust different from the standard ones previously described are necessary, it is possible to increase the concentric exhaust length \varnothing 100/60 or the double pipe exhaust length \varnothing 60, by adjusting the electric fan speed (see paragraph "Parameters modification", page 69). The maximum obtainable fan speed is 5800 rpm, while the maximum exhaust length is referred to the following table:

	Fan speed 5800 rpm
Concentric flue exhaust pipe \varnothing 100/60 mm	Concentric pipe max. length 10 mt
Double pipe \varnothing 60 mm	Intake + exhaust max. length 35 mt

NOTE: For \varnothing 80 mm double pipe, only standard application is applied.



OPERATION

When the unit is switched on (or when it is reset), and where no heat has been requested, the system runs through the following procedure:

- 5 second safety pause
- 3-way valve activated for 15 seconds
- circulator activated for 60 seconds
- circulator and 3-way valve switched off

This cycle is run every 24 hours and 24 hours after the last heat request. The above operations ensure that the components are put in motion at least once a day.

HEATING

The heating start-up cycle, after a period of inactivity, is as follows:

- 3-way valve activated for 15 seconds
- pump activated
- air pressure switch contacts checked (they must be closed)
- fan switched on
- when heat is requested pre-ventilation begins
- ignition transformer switched on and gas valve opened
- if flame detection reveals normal operation the fan runs for a few seconds at maximum power and then modulation begins

When heat is no longer requested the burner is switched off while the pump continues to run for 3 minutes (post-circulation time). The 3-way valve is then deactivated.

If the flame is not detected the pre-ventilation/ignition cycle is repeated after a set safety period has elapsed (repeated up to 3 times, after which the unit is shut down).

HOT WATER PRODUCTION

When hot water is requested the 3-way valve switches immediately to the hot water circuit. When the burner is switched off the pump continues running for another two minutes after which it shuts down. The hot water request is detected by a temperature sensor placed on the hot water storage exchanger, which activates the boiler operation for hot water supply when the measured temperature is lower than the figure set for phase n°. 1.

Modulation takes place immediately and proceeds as a function of boiler water return temperature.

When producing hot water, the burner goes out when the sensor-detected temperature exceeds set temperature.

DUAL FUNCTION (HOT WATER + HEATING)

If there is a request for hot water when heating is in progress, the 3-way valve diverts the water flow towards the hot water heat exchanger (hot water has precedence over heating). When hot water is no longer required the burner goes out and the pump continues running for another two minutes, then stops. The three-way valve then diverts the water flow back to the heating circuit.

The pump is then restarted and the heating function put back into operation.



IGNITION

SYSTEM FILLING

Bring the 3-way valve into the manual position. Open the inlet valve slowly until the system reaches a working pressure (indicated on the hydrometer) of approximately 1 bar, then close it.

Verify that the automatic air bleed valves have their cap loosened, run the circulator to eliminate the any air in the circuit, proceeding as follows:

press the ON button on the control panel (the display lights up) and activate the heating function (Summer/Winter switch set to Winter) to start the circulator. Press the OFF button to stop the circulator; repeat the procedure until all the air had been vented.

Reset the 3-way valve to the "automatic" position.

IGNITION

Open the gas cock, press the ON button. The burner will ignite automatically (the heating and hot water functions are set by the manufacturers).

Should the unit fail to ignite there will be another three ignition attempts after which there will be a shutdown (the display will flash **2 - 02**). Press RESET: if the unit still fails to ignite contact the technical assistance service.

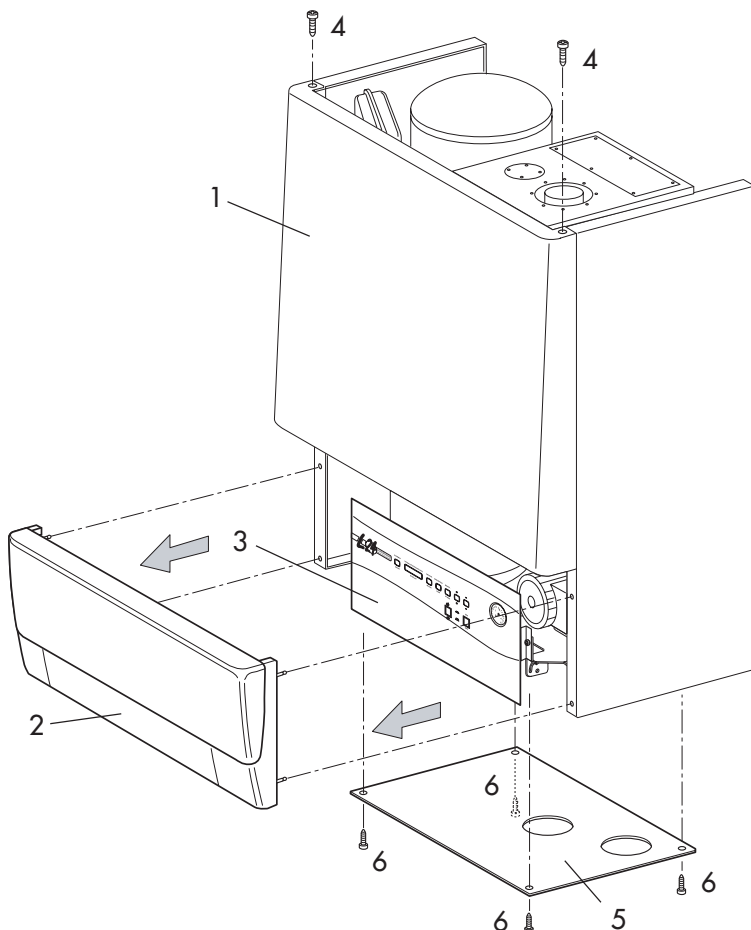


MAINTENANCE

To remove the casing front panel (1) and access to the internal components, it is first necessary to remove the plastic front panel (2)* and open the control board (3)*.

Undo the screws (4) and remove the casing panel (1) fixed to the sides by four small pins.

If the lower closing panel (5) is to be removed, it is necessary to undo the four screws (6), doing this with care as the screws hold the lower closing panel.



NOTE: To remove the plastic front panel and open the control board see paragraph "Wiring diagrams", page 48.



IGNITION AND CONTROL ELECTRODES INSPECTION

To gain access to ignition and control electrodes, remove the inspection cover on the sealed chamber (Fig. A).

- Undo the screws (1) and remove the inspection cover (C).
- The electrodes can be removed by undoing the screws (2).

EC Control electrode
EA Ignition electrode

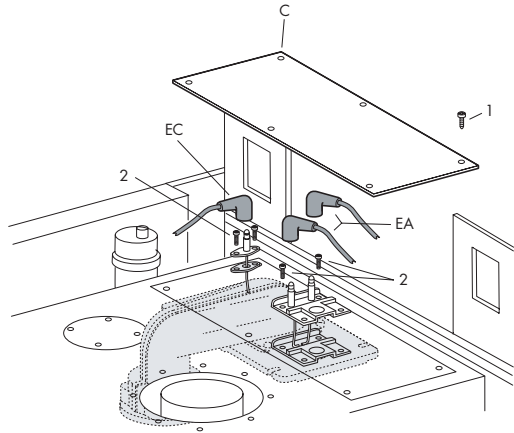


Fig. A

INSPECTION OF THE RETARDERS INSIDE THE COMBUSTION CHAMBER

To inspect the retarders situated inside the sealed chamber, it is first necessary to unfit the lower gas pipe (Fig. B).

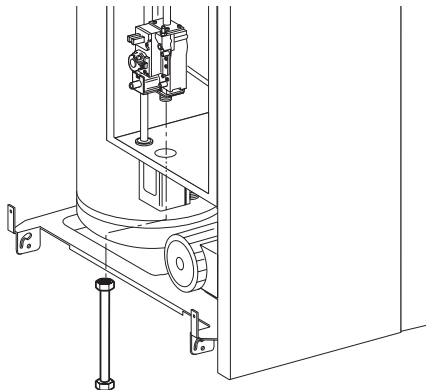


Fig. B



Extract syphon (S) and unscrew the syphon holder (CS), sealed by an O-ring, from the fume tank (Fig. C).

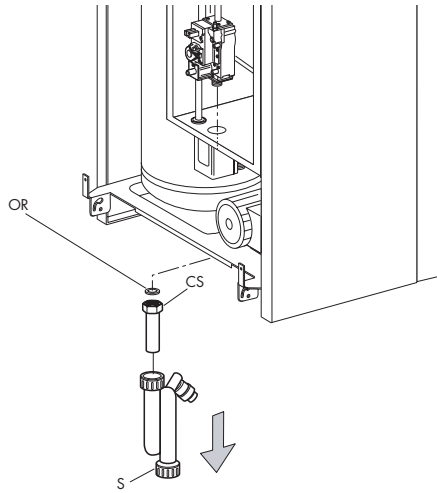


Fig. C

Then remove the lower cover of the sealed chamber (CC) by undoing the screws (1) and pull it outward (Fig. D).

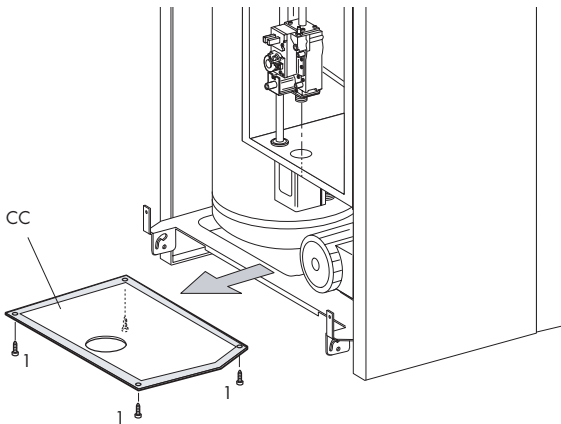


Fig. D



Unscrew fixing nuts(D) from the fume tank (VS). Then, rotating the fume tank as indicated in figure E, it can be disconnected from the fume pipe and extracted from the sealed chamber.

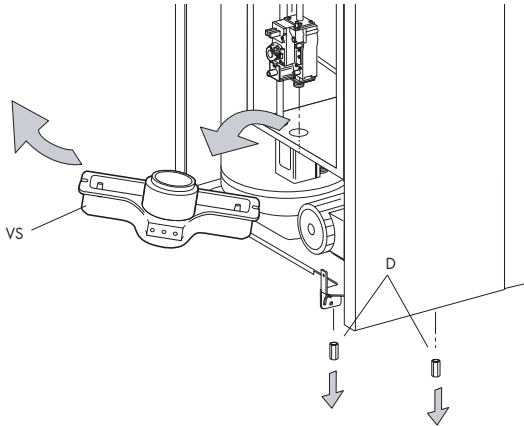


Fig. E

It is now possible to inspect the retarders from the inside of the combustion chamber for maintenance (Fig. F).

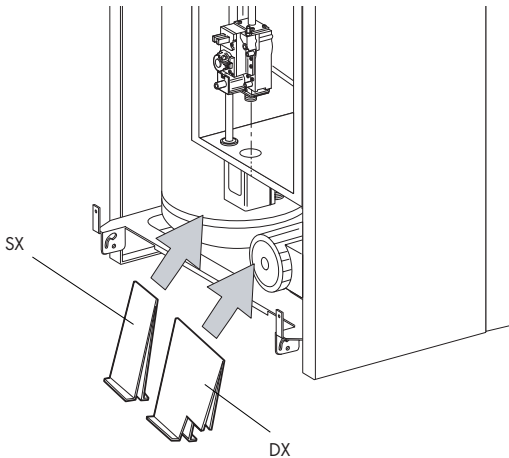
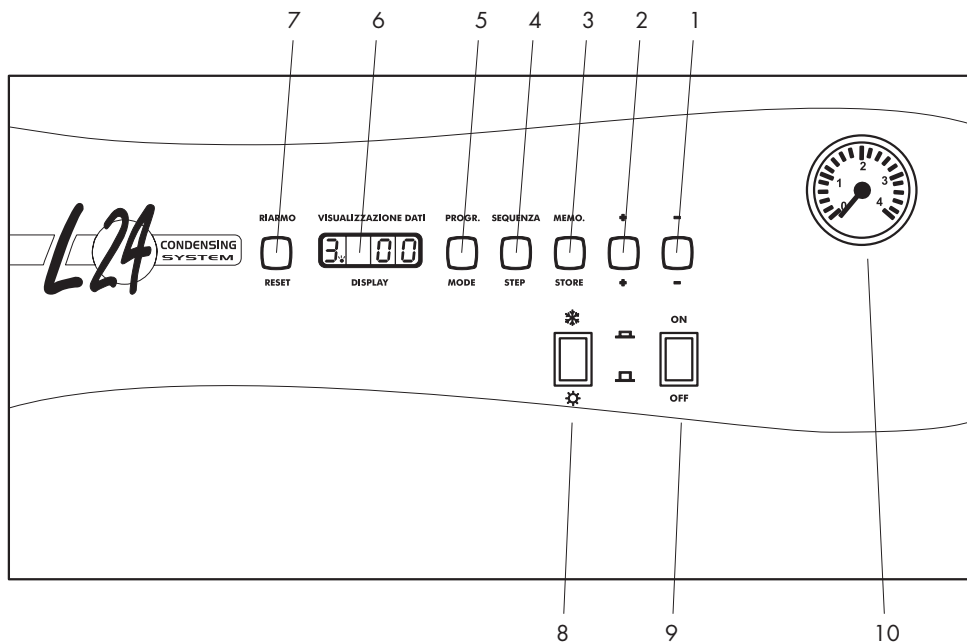


Fig. F

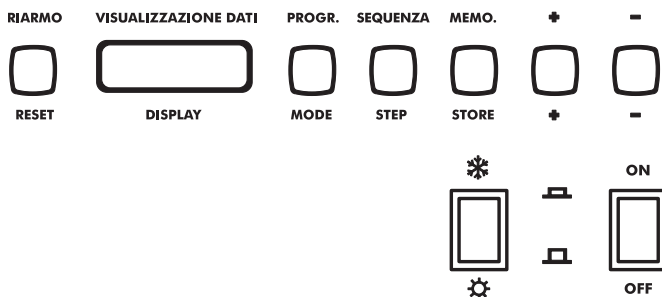


CONTROL PANEL



LEGEND

- 1 "-" key to reduce settings
- 2 "+" key to increase settings
- 3 "memo" key to save data
- 4 "sequence" key to select parameters to be displayed
- 5 "program" key to select the program
- 6 Data display
- 7 Boiler "reset" key
- 8 Summer/winter selector
- 9 Main switch
- 10 Hydrometer



Button	Function
ON/OFF * *	ON/OFF SWITCH SUMMER/WINTER SWITCH
RIARMO/RESET	BOILER RESET
PROG./MODE	PROGRAM SELECTOR (DISPLAY)

Button	Function
SEQUENZA/STEP	SELECTS PARAMETERS TO BE DISPLAYED
MEMO/STORE	ENTERS DATA
+	INCREASES SETTING
-	DECREASES SETTING

ADJUSTMENTS

ADJUSTING HOT WATER TEMPERATURE

- 1) Open a hot water tap (temporarily).
- 2) Press **(MODE)**. An indicator light on the left-hand display comes on.
- 3) Press **(STEP)** to phase 1



- 4) Press the **(+)** **(-)** buttons to modify the hot water temperature.
- 5) Press **(STORE)** to memorise the data.
- 6) Press **(MODE)** twice to enter the new temperature setting.

ADJUSTING HEATING TEMPERATURE

- 1) Press **(MODE)**. An indicator light on the left-hand display comes on.
- 2) Press **(STEP)** to phase 4

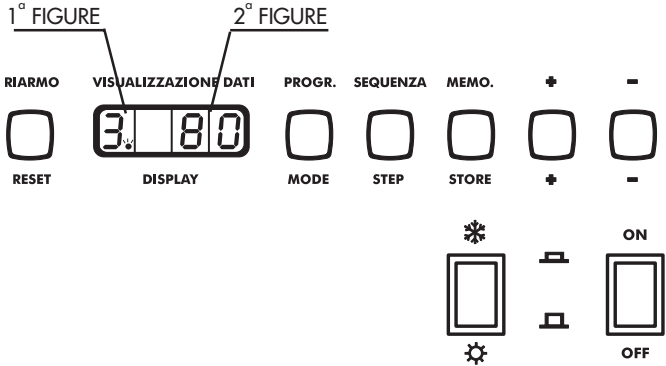


- 3) Press the **(+)** **(-)** buttons to modify the heating temperature setting.
- 4) Press **(STORE)** to memorise the data.
- 5) Press **(MODE)** twice to enter the new temperature setting.

The boiler is ready to function for heating and hot water supply.



OPERATING SEQUENCE (display only)



Button	Function	Button	Function
ON/OFF ☀️ ❄️	ON/OFF SWITCH SUMMER/WINTER SWITCH	SEQUENZA/STEP	SELECTS PARAMETERS TO BE DISPLAYED
RIARMO/RESET	BOILER RESET	MEMO/STORE	ENTERS DATA
PROG./MODE	PROGRAM SELECTOR (DISPLAY)	+	INCREASES SETTING
		-	DECREASES SETTING

During boiler operation the first figure on the digital display indicates the sequence step while the second gives the temperature of the water in the boiler.

E.g. means that the unit is heating at a delivery temperature of around 80°C.

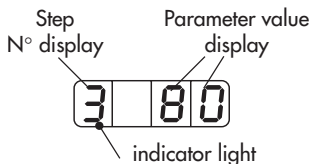
Step	Function
0	pause, no heat required
1	pre-ventilation
2	ignition
3	burner ignited (heating system mode)
4	burner ignited (hot water mode)
5	air pressure switch control
6	burner off (water temp. more than 5°C warmer than setting)
7	post-circulation pump in heating mode
8	post-circulation pump in hot water mode
9	burner off because of fault (see shutdown code)



LIST OF PARAMETERS INDICATED BY 1st FIGURE ON DISPLAY (Values can be adjusted by the user)

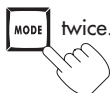
To gain access to the PHASE number press the MODE button once (an indicator light to the right of the 1st figure comes on). Press STEP to display all the available PHASES.

Example:



Phase N°	Parameter	Value range	Default settings
1	Hot water temperature	from 40 to 65 °C	55
2	Hot water system	00 = domestic hot water excluded 01 = 5°C hysteresis + pump continuously on Hot water 02 = 5°C hysteresis 03 = 10°C hysteresis 04 = 20°C hysteresis 05 = 30°C hysteresis	02
3	Heating	00 = heating disabled 01 = heating enabled 02 = heating enabled, pump running continuously	01
4	Water delivery temperature	from 20 to 90°C	80

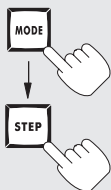
To exit the PHASE list press





DATA DISPLAY (MONITOR system)

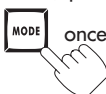
Real-time data (not modifiable) regarding unit operation can be checked on the monitor. Press MODE twice (a flashing indicator light appears to the right of the 1st figure). Press STEP to display all the available PHASES.



Phase N°	Parameter		Notes
1	Water delivery temp.	°C	
2	Return temp.	°C	
3	Hot water temp.	°C	
4	Outdoor temp. (*)	°C	
5	Fume temp.	°C	Unavailable
6	Set or calculated delivery temp.		With OPTIONAL outdoor sensor
7,8	Parameters used by the installer	—	Access code input

(*) Parameter displayed if connected to sensor (optional)

To exit the DATA DISPLAY program press





FAULT CODE (read-only display)

The boiler control box is equipped with a microprocessor that memorises and signals any faults or shutdowns. The fault type is indicated by a code. The meaning of each code is given in the table below:

1 st Figure	2 nd Figure	Fault
0	00	Flame detection circuit fault
1	01	24 V short circuit
2	02	No detection, no flame on burner
4	03	Board fault
4	04	Internal board fault (e.g. power failure)
4	05	Board fault
4	06	Board fault
4	07	Board fault
4	10	Board fault
4	11	Board fault
4	13	Board fault
4	14	Board fault
4	15	Board fault
4	16	Board fault
4	17	Board fault
4	24	NTC1/NTC2 connection switched over
4	26	Minimum gas pressure (at pressure switch)
4	30	Difference ΔT between T1 and T2 exceeded ($>35^{\circ}\text{C}$)
4	31	NTC1 short circuit
4	32	NTC2 short circuit
4	36	NTC1 open
4	37	NTC2 open
4	41	Board fault
4	42	Board fault
4	44	Board fault
4	60	Board fault
5	08	Air pressure switch failure
5	28	Fan not working, no tachometer signal
5	29	Fan continues running, erroneous tachometer signal
9	12	No-water pressure switch
9	18	TST tripped ($>98^{\circ}\text{C}$)
9	19	Return temperature T2 too high ($>88^{\circ}\text{C}$)
9	25	Temperature T1 varies too quickly (T1 = delivery temperature)

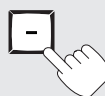
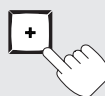
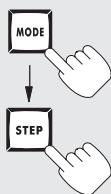


RESETTING

Should there be a fault the system will shut down and flash the fault type on the display. Check for proper operating conditions (gas cock open, proper feed pressure etc.) and press RESET. Should the fault persist contact your local **LAMBORGHINI SERVICE CENTRE**.

PARAMETER DISPLAY AND MODIFICATION (ACCESS CODE)

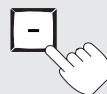
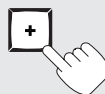
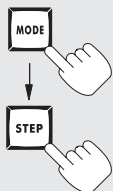
By pressing **MODE** and **STEP** simultaneously the letter **C** will appear on the display. Keeping these buttons pressed, enter the access code (62) by means of the **+** and **-** keys. Press **STORE** to memorise the code (the display will flash twice). Press **MODE** to highlight the **PHASE** number on the display. Then press **STEP** to display the list of **PHASES**.



When setting has been completed press



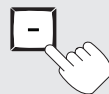
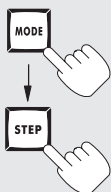
Phase N°	Parameter	Range
1	T _{set} Hot water temperature	From 40°C to 65°C
2	D.H.W. System (NTC3 present)	00 = Hot water off 01 = Hot water on + pump running continuously with hysteresis of -5°C on T _{set} (Phase 1) 02 = Hot water on with hysteresis of -5°C on T _{set} (Phase 1) 03 = Hot water on with hysteresis of -10°C on T _{set} (Phase 1) 04 = Hot water on with hysteresis of -20°C on T _{set} (Phase 1) 05 = Hot water on with hysteresis of -30°C on T _{set} (Phase 1)



When setting has been completed press



Phase N°	Parameter	Range
3	Central heating system	00 = Central heating off 01 = Central heating on 02 = Central heating on and pump in cont. mode
4	Delivery temperature (T1)	From 20°C to 90°C
5	T1 _{foot} (minimum heating temperature)	From 15°C to 25°C (recommended 15°C)
6	T4 minimum (settable outdoor sensor temperature)	From -20°C to +10°C
7	Pause temp. for heating re-ignition	From 15°C to 30°C
8	Parallel shift (with outdoor sensor and boiler timer) on-	From 0°C to 30°C (on T _{set})
9	Central heating hysteresis	From 5°C to 15°C
A	Heating re-ignition waiting time	From 0°C to 30 (x10.2 seconds)
b	Post-circulation time. Pump heating	From 3 to 99 minutes
C	PWM pump	Do not use
d	Boiler type	
	1 figure (as in heating)	0x = room thermostat 1x = NTC4 sensor (outdoor sensor)
	2 figures (as in Hot water)	x0 = 3-way valve x1 = Hot water pump - Do not use x2 = inverted 3-way valve - Do not use
E	Fan speed control	00 = modulation working From 01 to 100% manual fan speed control. Chimney-sweep function.
F	Min/max r.p.m. in heating mode	From 10 to 60 (x 100)

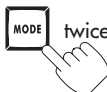


When setting has been completed press



Phase N°	Parameter	Range
G	Max r.p.m. in heating mode	from 00 to 90 (units)
H	Max r.p.m. in Hot water mode	from 10 to 60 (x 100)
I	Max r.p.m. in Hot water mode	from 00 to 99 (units)
J	Min. r.p.m.	from 05 to 60 (x 100)
L	Min. r.p.m.	from 00 to 99 (units)
n	Start r.p.m.	R.p.m. settable at start between 80 and 100% of absolute value.

To exit the program at any time just press

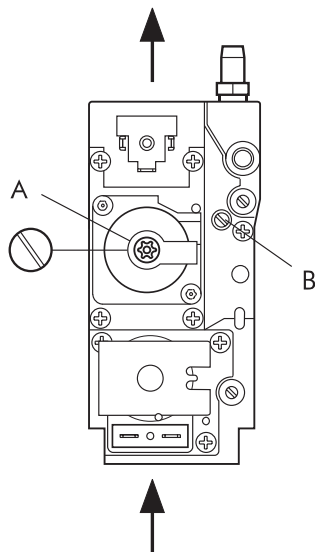




GAS VALVE ADJUSTMENT

The boilers leave the factory already set to their minimum and maximum output and therefore do not need to be set when installed.

Should the settings need to be modified to adapt them to installation requirements it will be necessary to change fan r.p.m. and reset the CO₂ value to between 8,8-9% for natural gas and 9,8÷10% for B/P.



Legend

- A** Minimum heat delivery adjustment screw
- B** Maximum heat delivery adjustment screw

In the event of gas valve replacement, proceed as follows:

- 1 Insert a combustion instrument.
- 2 Position the switch to SUMMER or WINTER and open a tap on the D.H.W. circuit.
- 3 Read the instructions for displaying and modifying the parameters (access code) on the use and maintenance manual, page 33.
- 4 Select step H and J, set fan rpm to the maximum figure.
- 5 Adjust the gas flow-rate by acting on screw B until the CO₂ value is between 8,8-9% for natural gas and 9,8÷10% for B/P.
- 6 Select step H and J, set fan rpm to the minimum figure.
- 7 Adjust the gas flow-rate by acting on screw A until the CO₂ value is between 8,8-9% for natural gas and 9,8÷10% for B/P.
- 8 Select step H, set the maximum fan rpm.
Select step J, set the minimum fan rpm.

When adjustments have been completed, press PROGRAM button to display again the standard functions.

VARYING FAN R.P.M.

- Set the access code (62) (see page 69).
- Press MODE.
- Press STEP to display the relative PHASE. N° (F-G).
- Use the +/- keys to set the desired r.p.m.
- Press STORE to enter the variation.



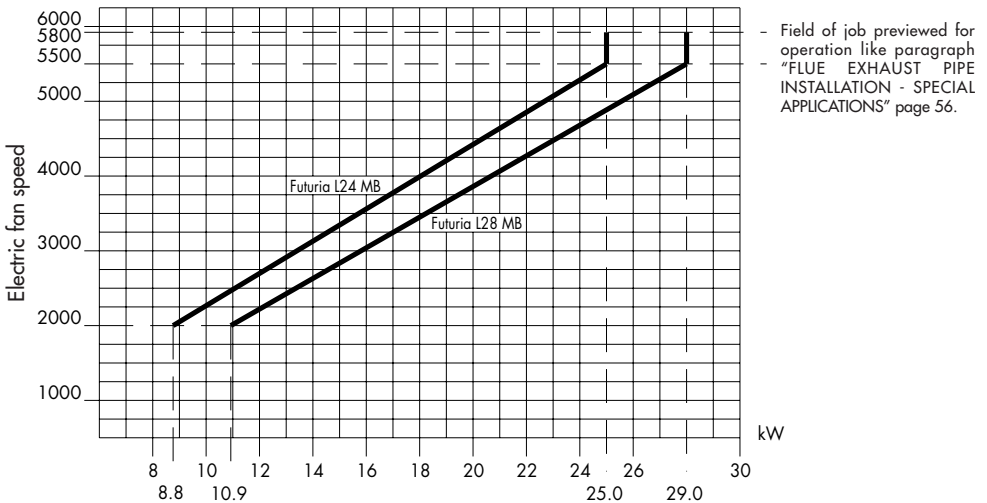
GAS - NOZZLE CALIBRATION

The boilers leave the factory calibrated and predisposed to operate with NATURAL GAS or B/P. For the pre-calibrations effected, see the related table below:

Model	Gas type	CO ₂ %		Flow-rate	Burner jet	Air diaphragm	Calorific value (*)
		Min	Max	m ³ /h	Ø mm	Ø mm	Kcal/h
L 24 MB	NATURAL GAS G20 - 20 mbar	8,8	9,0	2,62	4,9	21,0	8.550
L 28 MB				3,05			
L 24 MB	B / P G30 - 30 mbar G31 - 37 mbar	9,8	10,0	0,765 (G30)	3,8	21,0	29.330
L 28 MB				1,01 (G31)			22.360
L 24 MB	B / P G30 - 30 mbar G31 - 37 mbar	9,8	10,0	0,877 (G30)	4,2	23,5	29.330
L 28 MB				1,15 (G31)			22.360

* = at 1013 mbar, 15°C

BURNER PRESSURE CURVE - OUTPUT





HEATING WITH OUTDOOR SENSOR AND ROOM THERMOSTAT

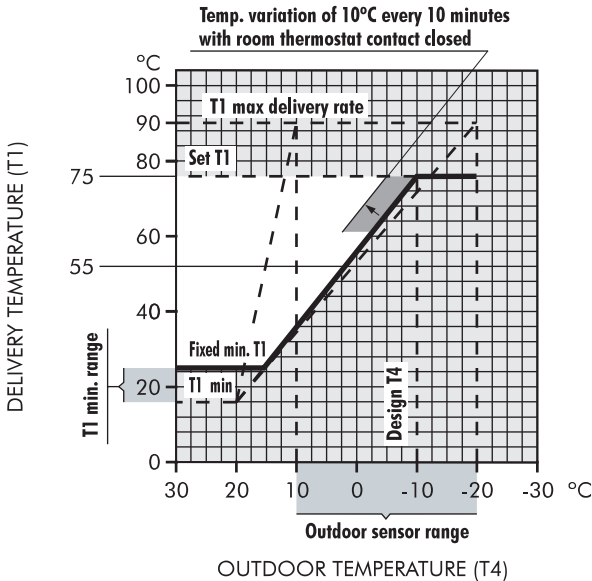
For proper use of the outdoor sensor it is compulsory to fit the room thermostat which adjusts delivery temperature T1 to ambient conditions.

For each outdoor temperature reading between the set T4 (via parameter n° 6, adjustable between -20°C and +10°C) and 30°C there corresponds a delivery temperature T1 between the T1 temperature set by the user on the boiler (phase. n° 4) and the minimum operating temperature fixed at 55°C (see boiler operation curve). The graph-illustrated example shows T4 set to -10°C and delivery temperature set to 75°C. If, for example, the outdoor sensor detects a temperature of -5°C and the room thermostat is requesting heat (contact closed) the boiler will "try" to reach a delivery temperature of 65°C. If the room thermostat continues requesting heat the delivery temperature increases by 10°C every ten minutes. Vice versa, if the thermostat contact opens the delivery temperature falls by 1°C each elapsed minute. The chapter "PARAMETER DISPLAY AND MODIFICATION" (page 69) shows admissible parameter values regarding outdoor sensor operation. The values must be adjusted as follows:

Phase N°

- 5 T1 heating minimum temperature adjustable between 15°C and 25°C.
- 6 T4 minimum outdoor temperature range -20°C to +10°C (adjusted on the basis of minimum design temperature)
- b BOILER TYPE: adjusted to 00 (fixed): adjustment valid for installation of room temperature thermostat with outdoor sensor.

BOILER OPERATION CURVE



BRUCIATORI
CALDAIE MURALI E TERRA A GAS
GRUPPI TERMICI IN GHISA E IN ACCIAIO
GENERATORI DI ARIA CALDA
TRATTAMENTO ACQUA
CONDIZIONAMENTO

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LAMBORGHINI CALOR S.p.A.
VIA STATALE, 342
44040 DOSSO (FERRARA)
ITALIA
TEL. ITALIA 0532/359811 - EXPORT 0532/359913
FAX ITALIA 0532/359952 - EXPORT 0532/359947