



caring for the environment

Installation, use and maintenance manual

Calorio M

Independent direct exchange gas-fired convectors with automatic modulation to heat small and medium-sized rooms

Fired by natural gas/LPG



DISPOSAL

The appliance and all its accessories must be disposed of separately in accordance with the regulations in force.



Use of the WEEE symbol (Waste Electrical and Electronic Equipment) indicates that this product cannot be disposed of as household waste. Proper disposal of this product helps to prevent potential negative consequences for the environment and human health.

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INTRODUCTION L

Installation, use and maintenance manual

This Manual is an integral part of the Calorio M appliance and must be handed to the end user together with the appliance.

SYMBOLS AND DEFINITIONS П

II.1 KEY TO SYMBOLS

DANGER WARNING))))))) NOTE PROCEDURE

WARNINGS ш

GENERAL AND SAFETY WARNINGS III.1

Installer's qualifications

Installation must exclusively be performed by a qualified firm and by skilled personnel, with specific knowledge on heating, electrical systems and gas appliances, in compliance with the laws in force in the Country of installation.

Declaration of conformity

Upon completing installation, the installing firm shall issue to the owner/client the appliance's workmanlike conformity declaration, according to national/local regulations in force and the manufacturer's instructions/provisions.

Misuse

The appliance must only be used for the purposes for which it has been designed. Any other use is deemed hazardous. Incorrect use may affect operation, duration and safety of the appliance. Adhere to the manufacturer's instructions.

Use of the appliance by children

The appliance can be used by children over 8 years old, and by people with reduced physical, sensory or mental capabilities, or lack of experience or

1.1 RECIPIENTS

This Manual is intended for:

- ▶ End user, for appropriate and safe use of the appliance.
- ► <u>Qualified installer</u>, for correct appliance installation.
- ▶ <u>Planner</u>, for specific information on the appliance.



REFERENCE (to other document)

TERMS AND DEFINITIONS II.2

Appliance/Unit = equivalent terms, both used to refer to the independent direct exchange gas-fired convector. **TAC** = Technical Assistance Centre authorised by Robur. **First start-up** = appliance commissioning operation which may only and exclusively be carried out by a TAC.

> knowledge, only if they are under surveillance or after they have received instructions regarding safe use of the appliance and understanding the dangers inherent in it. Children should not play with the appliance.



Hazardous situations

- Do not start the appliance in hazardous conditions, such as: gas smell, problems with the electrical/gas system, parts of the appliance under water or damaged, malfunctioning, disabling or bypassing control and safety devices.
- In case of danger, request intervention by qualified personnel.
- In case of danger, switch off the electrical power and gas supplies only if this can be done in total safety.
- Do not entrust children, persons with physical, sensory or mental disabilities or persons with poor knowledge and experience with use of the appliance.

Gas component tightness

- Before performing any operation on gas ducting components, close the gas valve.
- Upon completing any procedure, perform the tightness test according to regulations in force.



Gas smell

If you smell gas:

- Do not use electrical devices such as telephones, multimeters or other equipment that may cause sparks next to the appliance.
- Shut off the gas supply by turning the valve off.
- Open immediately doors and windows to create a cross-current of air to ventilate the room.
- Switch off the power supply via the external disconnect switch in the power supply electrical panel.
- Use a telephone away from the appliance to ask for intervention from qualified personnel.

Poisoning

- Ensure the flue gas ducts are tight and compliant with the regulations in force.
- Upon completing any procedure, ensure the tightness of the components.



Moving parts

The appliance contains moving parts.

Do not remove guards during operation, and in any case prior to disconnecting the power supply.

Burn hazard

The appliance contains very hot parts.

- Do not open the appliance and do not touch internal components before the appliance has cooled down.
- Do not touch the flue gas exhaust before it has cooled down.

Electrocution hazard

- Disconnect the electrical power supply before any operation on appliance components.
- For electrical connections exclusively use compliant components and according to the specifications provided by the manufacturer.
- Ensure the appliance cannot be accidentally switched back on.

Earthing

Electrical safety depends on effective earthing system, correctly connected to the appliance and installed according to the regulations in force.

Air flow

Do not obstruct the fan intake or the warm air outlet.



Distance from combustible or flammable materials

- Do not deposit flammable materials (paper, diluents, paints, etc.) near the appliance.
- Comply with current regulations.

1) Aggressive substances in the air

The air of the installation site must be free from aggressive substances.

Switching the appliance off

Disconnecting the power supply while the appliance is running may cause permanent damage to internal components.

Except in the event of danger, do not disconnect the power supply to switch off the appliance, but always and exclusively act through the provided control device.

In the event of failure

Operations on internal components and repairs may exclusively be carried out by a TAC, using only original spare parts.

In the event of failure of the appliance and/or breakage of any component, do not attempt to repair and/or restore and immediately contact the TAC.

Routine maintenance

Proper maintenance assures the efficiency and good operation of the appliance over time.

- Maintenance must be performed according to the manufacturer's instructions (see Chapter 7 p. 27) and in compliance with current regulations.
- Appliance maintenance and repairs may only be entrusted to firms legally authorised to work on gas appliances and systems.
- Enter into a maintenance contract with an authorised specialised firm for routine maintenance and for servicing in case of need.
- Use only original parts.

Keep the Manual

This Installation, use and maintenance manual must always accompany the appliance and must be handed to the new owner or installer in the event of sale or removal.

III.2 CONFORMITY

EU directives and standards

The Calorio M series gas-fired convectors are certified in accordance with European regulation GAR 426/2016/ EU and meet the essential requirements of the following Directives:

- 2016/426/EU "Gas Appliances Regulation" as amended and added.
- 2014/30/EC "Electromagnetic Compatibility Directive" as amended and added.
- 2014/35/EC "Low Voltage Directive" as amended and added.

- 2006/42/EC "Machine Directive" as amended and added.
- 2015/1186/EU "Energy labelling of local space heaters regulation" as amended and added.
- 2015/1188/EU "Ecodesign requirements for local space heaters regulation" as amended and added.
 Furthermore, they comply with the requirements of the
- following standards:
 EN 1266 Independent gas-fired convection heaters incorporating a fan to assist transportation of combustion air and/or flue gases

Other applicable provisions and standards

The design, installation, operation and maintenance of the systems shall be carried out in compliance with current applicable regulations, depending on the Country and location, and in accordance with the manufacturer's instructions. In particular, regulations regarding the following shall be complied with:

- Gas systems and equipment.
- Electrical systems and equipment.
- Heating systems.
- Environmental protection and combustion products exhaust.
- ► Fire safety and prevention.
- ► Any other applicable law, standard and regulation.

III.3 EXCLUSIONS OF LIABILITY AND WARRANTY

Any contractual or extra-contractual liability of the manufacturer for any damage caused by incorrect installation and/or improper use and/or failure to comply with regulations and with the manufacturer's directions/instructions shall be disclaimed.

In particular, the warranty on the appliance may be rendered void by the following conditions:

- Incorrect installation.
- Misuse.
- Failure to comply with the manufacturer's indications on installation, use and maintenance.
- Alteration or modification of the product or any part thereof.
- Extreme operational conditions or however outside of the operational ranges set forth by the manufacturer.
- Damages caused by external agents such as salts, chlorine, sulphur or other chemical substances present in the air of the installation site.
- Abnormal actions transmitted to the appliance by the system or installation (mechanical stresses, pressure, vibrations, thermal expansion, electrical surges...).
- Accidental damages or due to force majeure.



1 FEATURES AND TECHNICAL DATA

1.1 FEATURES

1

1.1.1 Operation

The Calorio M gas-fired convector is an independent modulating heating appliance with sealed combustion chamber and forced draught.

It has been designed to be installed inside the room to be heated.

It is suitable for operation with natural gas (G20) and LPG (G30/G31) (gas-fired convector belonging to category II_{2H3+} according to EN 1266).

The combustion air intake and the exhaust of flue gases take place outside via two coaxial pipes and are ensured by the operation of a blower placed in the combustion circuit. Therefore, the gas-fired convector must be installed on an external perimetral wall or close to it, depending on the maximum extension of the pipes (see Paragraph 3.4 *p. 13*).

The operation principle of the Calorio M gas-fired convector is based on a convective motion of room air that passes through the gas-fired convector from bottom to top, is heated and diffused into the room through the upper grille. The recirculation of the room air is facilitated by the presence of a modulating fan placed in the lower part of the gas-fired convector.

For this reason, do not place clothes, newspapers or any other object that could obstruct the air outlet directly on the grille. Also make sure that curtains, backs of chairs or furniture are not placed at a distance of less than 30 cm from the gas-fired convector.

The operation of the gas-fired convector is made very simple and fully automatic by the control board and control panel with digital display, fitted as standard; in fact, the only operations required of the user are to start the gasfired convector, select the required temperature and the periods of operation.

In heating mode, the heat output and airflow rate

modulate according to the room temperature measured by the temperature probe.

The sealed combustion chamber is the best guarantee of safety for the environment in which the gas-fired convector is installed: there is no possibility of the products of combustion leak, nor is the oxygen necessary for combustion taken from the environment. The appliance, once installed in accordance with the installation standards, does not require any ventilation openings in the room.

A flame detection device using an ionisation probe interrupts the gas supply in the event of an accidental shutdown.

The presence of the fan also allows summer operation: only the fan will work causing a pleasant air flow within the room.

1.1.2 Mechanical components

- ► Sealed combustion chamber.
- ► High-efficiency tubular steel heat exchanger.
- ► Centrifugal fan with modulating operation.
- Ø 49/35 mm coaxial combustion air intake and flue gas exhaust pipes.
- External windproof terminal in aluminium alloy (patented).
- Casing in epoxy powder-coated sheet metal.
- Support bracket for wall mounting.

1.1.3 Control and safety devices

- Electronic management board providing the following functions:
 - burner ignition
 - flame monitoring and modulation
 - blower management and control
 - fan speed control
 - heat exchanger temperature probe control
- Manual reset limit thermostat.
- Prelimit temperature probe.
- ► Room air temperature probe.
- ► Flue gas exhaust blower.
- ► Gas solenoid valve.
- ► User interface board with backlit digital display.

1.2 DIMENSIONS







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1.3 ELECTRICAL WIRING DIAGRAM

Figure 1.2 Electrical wiring diagram



1.4 CONTROLS

1.4.1 Control device

The appliance operation is controlled by the supplied control panel.

For further information please refer to Paragraph 6.2 *p. 23*.

1.5 TECHNICAL DATA

Table 1.1 Technical data

		42M	52M		
Heating mode					
Hestinnut	nominal (1013 mbar - 15 °C) (1)	kW	3,6	5,2	
neat input	minimum (1)	kW	2,5	3,6	
Uest output	nominal	kW	3,3	4,7	
neat output	minimum	kW	2,3	3,2	
Efficiency	nominal heat input	%	90),0	
Electrical specifications					
	voltage	V	23	30	
Power supply	type	-	single	phase	
	frequency	Hz	5	0	
Electrical power absorption	nominal	kW	0,05	0,09	
Installation data					
	G20 natural gas (nominal)	m³/h	0,38	0,55	
	G20 natural gas (min)	m³/h	0,27	0,38	
Cos concumption	G30 (nominal)	kg/h	0,29	0,41	
das consumption	G30 (min)	kg/h	0,20	0,28	
	G31 (nominal)	kg/h	0,30	0,40	
	G31 (min)	kg/h	0,20	0,28	
Cas connection	type	-	Μ		
das connección	thread	Ш	1/2		
	diameter (Ø)	mm	50		
Flue gas exhaust	type of installation	-	C13, C33, C63		
	residual head	Pa	30	35	
maximum equivalent length o	f coaxial exhaust duct	m			
sound power L _w (max)		dB(A)	50,5	56,5	
sound power L _w (min)		dB(A)	47,5	52,5	
sound pressure L _p at 5 metres ((max)	dB(A)	31,5	37,5	
sound pressure L _p at 5 metres ((min)	dB(A)	28,5	33,5	
	width	mm	55	53	
Dimensions	height	mm	7	15	
	depth	mm	20)8	
Weight	in operation	kg	25	26	

(1) Relative to NCV (net calorific value).

2 TRANSPORT AND POSITIONING

2.1 WARNINGS

1 Damage from transport or installation

The manufacturer shall not be liable for any damage during appliance transport and installation.

1) On-site inspection

- Upon arrival at the site, ensure there is no transport damage on packing.
- After removing the packing materials, ensure the appliance is intact and complete.

Nacking

- Only remove the packing after placing the appliance on site.
- Do not leave parts of the packing within the reach

of children (plastic, polystyrene, nails...) since they are potentially dangerous.

Weight

The lifting equipment must be suitable for the load.Lift up the unit and secure it to its support bracket

(Paragraph 3.5.1 *p. 15*).

2.2 HANDLING

2.2.1 Handling and lifting

- Always handle the appliance in its packing, as delivered by the factory.
- ► Comply with safety regulations at the installation site.

2.3 APPLIANCE POSITIONING

The appliance must be installed in the room to be heated.



2.3.1 Where to install the appliance

- ► The gas-fired convector must be installed on or near an external perimeter wall, respecting the distances indicated in Figure 1.1 p. 8.
- Avoid placement on walls or combustible materials without a suitable heat shield.
- ► Do not install the gas-fired convector over electrical boxes/switches or distribution cabinets that require periodic inspection.

Installation must not be made on walls with poor strength that do not guarantee adequate resistance to the stresses produced by the appliance. The manufacturer assumes no responsibility if the appliance is installed on surfaces or walls that are not suitable to support its weight.

The appliance's flue gas exhaust must not be immediately close to openings or air intakes of buildings, and must comply with safety and environmental regulations.

The flue gas exhaust terminal is accident-preventing and requires no protection.

HEATING ENGINEER 3

3.1 WARNINGS

3.1.1 General warnings

Read the warnings in Chapter III.1 p. 4, providing important information on regulations and on safety.



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Compliance with installation standards

Installation must comply with applicable regulations in force, based on the installation Country and site, in matters of safety, design, implementation and maintenance of:

- heating systems
- gas systems
- flue gas exhaust

Installation must also comply with the manufacturer's provisions.

3.2 SUPPLIED MATERIAL

- Installation jig in cardboard.
- ► Wall support bracket.
- Air duct Ø 49 mm, length 500 mm.
- ► Flue gas duct Ø 35 mm, length 500 mm.

2.4 MINIMUM CLEARANCE DISTANCES

Distances from combustible or flammable 2.4.1 materials

► Keep the appliance away from combustible or flammable materials or components, in compliance with applicable regulations.

2.4.2 Clearances around the appliance

- i The minimum clearance distances are required for safety, operation and maintenance.
- ► The minimum recommended distance from the gasfired convector to the floor is 5 cm (Figure 1.1 p. 8) and possibly not more than 35 cm, as higher heights would result in uneven heat distribution in the heated room
- ► Keep a minimum clearance of 10 cm from the sides of the gas-fired convector to any obstacles to allow for removal and refitting of the casing.
- ► If a shelf is to be installed above the gas-fired convector, leave a minimum clearance of 10 cm. No cover of any type may be installed over the appliance.
- ► External flue gas terminal in aluminium alloy.
- Round gasket for combustion air.
- Screws and wall plugs.
- Documentation.

FUEL GAS SUPPLY 3.3

3.3.1 Gas connection

- ► 1/2" M
- on the right, at the bottom (detail A in Figure 3.1 p. 12).
- ▶ Install an anti-vibration connection between the appliance and the gas piping.

Figure 3.1 Gas supply position



A Gas connection

The connection to the gas mains must be made using a rigid copper or steel pipe and fittings; alternatively, a flexible stainless steel pipe conforming to the regulations in force may also be used.

The connection to the gas pipe must be properly

Table 3.1 Network gas pressure

sealed to ensure tightness using a sealant that complies with EN 751-1 and EN 751-2. The connection must be made in such a way that no strain is produced in the pipe or gas-fired convector components.

3.3.2 Mandatory shut-off valve

- Provide a gas shut-off valve (manual) on the gas supply line, next to the appliance, to isolate it when required.
- Provide a three-piece pipe union.
- Perform connection in compliance with applicable regulations.

3.3.3 Gas pipes sizing

The gas pipes must not cause excessive pressure drops and, consequently, insufficient gas pressure for the appliance.

3.3.4 Supply gas pressure



This appliance is equipped for a maximum gas supply pressure of 50 mbar.

The appliance's gas supply pressure, both static and dynamic, must comply with Table 3.1 *p. 12*, with tolerance \pm 15%.



Non compliant gas pressure (Table 3.1 *p. 12*) may damage the appliance and be hazardous.

		Gas supply pressure [mbar]			
Product category	Countries of destination	G20	G30	G31	G30 ↔ G31
II _{2H3B/P}	AL, BG, CH, CZ, DK, EE, FI, HR, LT, LV, MK, RO, SE, SI, SK, TR	20	30	30	
	AT, CH	20	50	50	
II _{2H3P}	BG, EE, HR, LT, SI, SK	20		37	
II _{2H3+}	CZ, ES, GB, GR, IE, IT, PT, SK	20			28-30 ↔ 37
I ₃₊	FR, BE				28-30 ↔37
II _{2H3B/P}	HU	25	30	30	
II _{2HS3B/P}	HU	25	30	30	
	LU	20		50	
II _{2E3B/P}	PL	20	37	37	
	DE	20	50	50	
I _{2H}	LV	20			
I _{3P}	NO			30	
I _{3B/P}	MT CV		30	30	
I _{3B}	IVII, CT		30		

The appliance gas supply pressure, both static and dynamic, must comply with the values in the Table, with a tolerance of \pm 15%.

3.3.5 Vertical pipes and condensate

- Vertical gas pipes must be fitted with siphon and discharge of the condensate that may form inside the pipe.
- ► If needed, insulate the piping.

3.3.6 LPG pressure reducers

With LPG the following must be installed:

► A first stage pressure reducer, close to the liquid gas

- tank.
- A second stage pressure reducer, close to the appliance.



Pressure reducers must always be installed outside the building.



3.4 COMBUSTION PRODUCTS EXHAUST

i **Compliance with standards**

The appliance is approved for connection to a combustion products exhaust duct for the types shown in Table 1.1 *p. 10*.

3.4.1 Flue gas exhaust and combustion air intake connection

▶ Ø 50 mm on the rear (Figure 1.1 *p. 8*)

3.4.2 Installation types

The flue gas exhaust/combustion air intake of the Calorio M gas-fired convectors can be realised in one of the following ways:

► With coaxial pipes with outlet on the installation



wall (maximum pipe length: 1 metre) (see Figure 3.2 p. 13).

- With coaxial pipes with 90° outlet (max pipe length: 1 metre) (see Figure 3.3 p. 14). In this case, it is necessary to use the 90° casing for coaxial pipes, available as OCFF004 optional.
- ▶ With separate pipes (see Figure 3.4 p. 14) . In this case, it is necessary to use the separate exhaust casing available as OCFF002 optional.

Warnings i

- The installation of pipes with a vertical downward outlet is prohibited (leads to recirculation of flue gas with lock-out of the appliance).
- It is forbidden to install coaxial pipes with a vertical outlet upwards (due to rain, water, objects infiltration with consequent lock out of the appliance).

Air pipe Ø 49 mm А В D Flue gas pipe Ø 35 mm G С Adhesive gasket D Support bracket B) Wall terminal Ø 35 mm Δ F Έ E (θ) 6 6 M14044

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Figure 3.3 Installation with coaxial pipes with 90° outlet



Figure 3.4 Installation with wall separate ducts



А	Air/flue gas pipe Ø 35 mm
В	Elbow 90° M/F Ø 35 mm

Adhesive gasket

С

- Support bracket
- Wall terminal Ø 35 mm Ε
 - F 90° casing for separate exhaust
- Condensate discharge Ø 35 mm

For further information on the installation of the flue gas exhaust/air intake duct, please refer to the installation guide for the flue gas exhaust/air intake ducts D-GPP001, available on the Robur website.

3.4.2.1 Installation with separate ducts

If the appliance is installed with separate pipes, suitable pipes and components, available as optional, must be used.

At the design stage, it must be verified that the sum of the pressure drop of all components used does not exceed the value of the available residual head (Table 3.2 p. 14).

Table 3.2 Separate exhaust pressure drop table

Description	Code		42M	52M
residual head		Pa	30	35
Air pipe internal Ø 33 mm	OPRL000	Pa/m	2,0	3,0
Horizontal flue gas pipe internal Ø 33 mm	OPRL000	Pa/m	2,0	3,6
Vertical flue gas pipe internal Ø 33 mm	OPRL000	Pa/m	0,7	2,0
90° elbow on air pipe	OCRV000	Pa	2,0	3,0



Description	Code		42M	52M
90° elbow on flue gas pipe	OCRV000	Pa	1,8	3,6
Casing complete with internal elbow for flue gas exhaust	OCFF002	Pa	2,5	5,0
Casing without internal elbow for flue gas exhaust	OCFF002	Pa	1,8	3,0
Roof terminal Ø 35 mm	OTRM002	Pa	0,0	0,0
Wall terminal	JTRM000B	Pa	0,0	0,0
Condensate discharge Ø 35 mm	OSCR003	Pa	0,0	0,0

If the flue gas pipe is longer than 1,5 metres, a condensate drain (available as OSCR003 optional) must be installed on the pipe as close as possible to the appliance. To limit the formation of condensate, it is in any case advisable to insulate the flue gas pipe with a material resistant to high temperatures.

Due to the high temperatures that the flue gas pipe can reach, it is still advisable to insulate it from the wall and from potential contact with things and people, for example by using rock wool or glass wool.

The flue gas exhaust terminal, if used only for flue gas exhaust, must also be protected against accidental contact with people and things, due to the high temperatures it can reach.

3.5 INSTALLATION PROCEDURES

In accordance with the installation project, prepare the gas and electrical supply lines, as well as the holes for the flue gas outlet and combustion air intake.

3.5.1 Install the gas-fired convector on the wall

- 1. Check the packaging for visible signs of damage, otherwise, notify the carrier immediately.
- 2. Remove the gas-fired convector from its packaging by first removing the air intake and flue gas exhaust pipes. Do not damage or discard the cardboard jig with the drilling template required for installing the gas-fired convector.
- **3.** Fix the jig to the wall where the gas-fired convector is to be installed, making sure it is perpendicular to the floor.
- **4.** Drill the hole (Ø 50 mm) to house the larger pipe and holes A (Figure 3.6 *p. 16*) to fix the support bracket (drill 6 mm holes to insert the provided wall plugs). The Ø 50 mm hole for the duct can be made with a suitable core drill or by means of a succession of smaller holes made with a simple drill on the perimeter to be removed.
- **5.** Adjust the length of the pipes (air intake and flue gas exhaust) to the actual thickness of the wall by cutting off the excess length: to determine the exact length see diagram Figure 3.5 *p. 15*.

The coaxial duct must in any case not be less than 20 cm in length (flue gas pipe 200 + 33 mm, air intake pipe 200 + 2 mm).

In the Ø 49 pipe, do not cut the side with the edging, which will later be used to secure the pipe.

In the Ø 35 pipe, do not cut off the side with a skirted end that will be used to fit the pipe to the gasfired convector.

6. Remove the jig from the wall.



3

Figure 3.6 Support bracket positioning and holes drilling

- A Bracket fixing holes
- B Support bracket
- C Adhesive gasket
- D Air pipe

- 7. Position the support bracket and the air intake pipe Ø 49, making sure that the pipe edge perfectly enters the matching hole in the bracket (see Figure 3.6 *p. 16*).
- **8.** Fix the support bracket with the screws and position the round adhesive gasket around the hole in the bracket (see Figure 3.6 *p. 16*).
- **9.** Position the self-adhesive foam gasket strip on the support frame (at the rear of the gas-fired convector) as shown in Figure 3.7 *p. 16.* Try to avoid repositioning which could be difficult.
- **10.**Fit the end of the flue gas exhaust pipe (Ø 35 mm) onto the gas-fired convector outlet socket (Figure 3.8 *p. 16*).
- **11.**Mount the gas-fired convector to the wall by resting slot C on the lower edge of the frame on the support bracket, as shown in Figure 3.9 *p. 16*.





1 Self-adhesive gasket

Figure 3.8 Positioning the flue gas exhaust pipe



1 Flue gas pipe Ø 35 mm

Figure 3.9 Attachment to the support bracket



- A Bracket end for hooking to the gas-fired convector
- B Lateral eyelets for fixing to the bracket
- C Lower eyelet for fixing to the bracket
- D Holes for securing the gas-fired convector to the wall
- b Thores for securing the gas med convector to the wait

12.Fit the slots B to the ends A of the support bracket and push the gas-fired convector towards the wall so





that it seats against the support bracket (see Figure 3.10 *p. 17*).

- **13.**Secure the gas-fired convector to the support bracket by means of the two side screws as shown in Figure 3.10 *p. 17*.
- Figure 3.10 Attachment detail



A Bracket end for hooking to the gas-fired convector

B Lateral eyelets for fixing to the bracket

3.5.2 Install the windproof terminal

- 1. When the appliance is installed, place the aluminium windproof terminal to the outdoor wall so that it engages with the end of the flue gas pipe and mark the position of the three holes for the expansion plugs (see Figure 3.11 *p. 17*). The terminal must be fitted with the flue outlet grille arranged vertically.
- **2.** Remove the terminal and drill the fixing holes (6 mm Ø for the supplied wall plugs).
- **3.** Reassemble the terminal and secure it with the screws using the relevant plugs (see Figure 3.11 *p. 17*).

Figure 3.11 Windproof terminal fixing



4 ELECTRICAL INSTALLER

4.1 WARNINGS

General warnings

Read the warnings in Chapter III *p. 4*, providing important information on regulations and on safety.



Compliance with installation standards

Installation must comply with applicable regulations in force, based on the installation Country and site, in matters of safety, design, implementation and maintenance of electrical systems.

Installation must also comply with the manufacturer's provisions.



Live components

After placing the appliance in the final position, and prior to making electrical connections, ensure not to work on live components.



Earthing

The appliance must be connected to an effective earthing system, installed in compliance with regulations in force. It is forbidden to use gas pipes as earthing.

Cable segregation

Keep power cables physically separate from signal ones.



Do not use the power supply switch to turn the appliance on/off

- Never use the power supply switch to turn the appliance on and off, since it may be damaged in the long run (occasional blackouts are tolerated).
- To turn the appliance on and off, exclusively use the suitably provided control device.

4.2 ELECTRICAL POWER SUPPLY

Provide (by the installer) a protected single-phase line (230 V 1-N 50 Hz).



How to connect the power supply

- 1. To connect the gas-fired convector to the mains power supply, simply wire the supplied 3-pole plug as shown in Figure 4.1 *p. 18* using 3x0,75 mm² cable.
- **2.** Insert the previously wired 3-pole plug into the socket located on the lower right of the gas-fired convector frame.



If required, the electrical socket on the frame can be rotated 180° to allow the electrical cable to exit to the left instead of the right.

- 1 Blue cable
- 2 Yellow/green cable
- 3 Brown or black cable
- 4 Cable type 3x0,75 mm²

4.3 ELECTRICAL CONNECTION OF TWO APPLIANCES





Figure 4.3 Wiring diagram for 2 appliances



5 FIRST START-UP

First start-up entails checking/setting up the combustion parameters and may exclusively be carried out by a Robur TAC. NEITHER the user NOR the installation technician is authorised to perform such operations, under penalty of voiding the warranty.

The installer is obliged to carry out preliminary checks described in Paragraph 5.1 *p. 19.*

5.1 PRELIMINARY CHECKS

Paragraph dedicated to the installer.

5.1.1 Preliminary checks for first start-up

Upon completing installation, before contacting the TAC the installer must check:

- Electrical and gas systems suitable for the required capacities and equipped with all safety and control devices required by the regulations in force.
- ► Absence of leaks in the gas system.
- Type of gas for which the appliance is designed (natural gas, LPG or other gas).
- ► Supply gas pressure complying with the values of Table 3.1 *p. 12*, with max tolerance ±15%.
- Correct operation of the flue exhaust duct.
- Combustion air intake and flue gas exhaust correctly carried out according to the regulations in force.

- Power supply mains complying with the appliance's rating plate data.
- Appliance correctly installed, according to the manufacturer's provisions.
- System installed in a workmanlike manner, according to national and local regulations.

5.1.2 Abnormal or hazardous installation situations

Should any abnormal or hazardous installation situations be found, the TAC shall not perform first start-up and the appliance shall not be commissioned.

These situations may be:

- ► Failed compliance with minimum clearances.
- ► Insufficient distance from combustible materials.
- Conditions that do not warrant access and maintenance in safety.
- Appliance defects or faults caused during transport or installation.
- Gas smell.
- Non-compliant mains gas pressure.
- ► Non-compliant flue gas exhaust.
- All situations that may involve operation abnormalities or are potentially hazardous.

5.1.3 Non-compliant system and corrective actions

Should the TAC find any non conformities, the user/installer is bound to perform any corrective procedures required

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by the TAC.

After performing the remedial actions (the installer's responsibility), if the TAC deems that safety and conformity conditions are in place, first start-up may be effected.

5.2 CHECKING BURNER GAS PRESSURE



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Paragraph reserved exclusively to TACs.

The gas supply circuit is equipped with a gas solenoid valve with double safety shutter and pressure regulator to control the gas flow. All models are factory-set to operate with natural gas and can be converted to LPG (see Paragraph 5.3 *p. 21*). Each gas-fired convector is calibrated during factory testing for operation with natural gas. After installation, check that the gas pressure at the burner complies with indications in Paragraph 5.3.1 *p. 21*.

5.2.1 Natural gas supply



- 1. Remove the casing.
- **2.** Connect a pressure gauge to the pressure intake A, after removing its sealing screw.
- **3.** To adjust the gas pressure, the gas-fired convector must be switched off, then access the "advanced settings menu" and the submenu "transparent control parameters" as described in the relevant Paragraph 5.4.2 *p. 22*.
- Activate the function "valve calibration" by turning the knob until the parameter P002 is displayed; then, using the knob (press – rotate – press), change the parameter value to 15: previous valve settings will be deleted.
- **5.** Wait until the value 20 appears on the display (the gasfired convector will turn on).
- **6.** Turn the knob to display the parameter P03 "gas pressure calibration at maximum power".
- 7. Press the knob and increase the displayed value by 1 to 5 points at a time (this operation may be repeated several times), until the pressure gauge reads 8 mbar; then proceed in small increments (+1) up to the required maximum pressure value (Table 5.1 *p. 20*).

Be careful not exceed the required gas pressure! If this happens, you must repeat the calibration procedure (starting from step 4).

- **8.** Turn the knob to display the parameter P04 "gas pressure calibration at minimum power".
- 9. Press the knob and change the displayed value, starting with minimal decrements (-1); press the knob to confirm and wait for the pressure gauge reading. Proceed in this way (with minimal decrements) down to the required minimum pressure value (Table

5.1 *p. 20*).

- **10.**Save the new parameter settings by turning the knob to display parameter P002 and then pressing it to confirm.
- 11.Deactivate the "valve calibration" function by turning the knob and pressing it to set parameter P002 to "0": the gas-fired convector will switch off.

After the adjustment, stop and start the appliance and check that burner pressure has stabilised. If necessary perform the adjustment again.

- **12.**Disconnect the pressure gauge and refit the sealing screw.
- 13.Replace the casing.

Figure 5.1 Pressure intake



A Pressure intake

Table 5.1 Burner gas pressure

				42M	52M		
Installation data							
	Neminal	G20	mbar	10,5	9,0		
	heat input	G30	mbar	28,8	28,0		
Burner gas		G31	mbar	36,7	35,5		
pressure	Minimal heat input	G20	mbar	6,0	5,0		
		G30	mbar	14,0	14,7		
		G31	mbar	18,0	19,7		

5.2.2 LPG supply

For LPG supply, the gas-fired convector must be converted from natural gas to LPG by using the supplied gas change kit and following the instructions in Paragraph 5.3 *p. 21*. When operating with LPG gas, the maximum operating pressure depends only on the network pressure, which must be as indicated in Table 3.1 *p. 12*.

The reduction of the pressure in the network is possible following the instructions in Paragraph 3.3.6 *p. 12.*



To adjust the gas-fired convector for operation with LPG, proceed as described below.



- **1.** Remove the casing.
- **2.** Connect a pressure gauge to the pressure intake A, after removing its sealing screw.
- **3.** To adjust the gas pressure, the gas-fired convector must be switched off, then access the "advanced settings menu" and the submenu "transparent control parameters" as described in the relevant Paragraph 5.4.2 *p. 22*.
- **4.** Turn the knob until the parameter P002 is displayed; then, using the knob (press rotate press), change the parameter value to 15: this activates the "valve calibration" function (previous valve settings will be deleted).
- **5.** Wait until the value 20 appears on the display (the gasfired convector will turn on).
- **6.** Turn the knob to display the parameter P03 "gas pressure calibration at maximum power".
- 7. Press the knob and increase the displayed value by 1 to 5 points at a time (this operation may be repeated several times), until the pressure gauge reads 25 mbar; then proceed in small increments (+1) up to the required maximum pressure value (Table 5.1 *p. 20*).

Be careful not exceed the required gas pressure! If this happens, you must repeat the calibration procedure (starting from step 4).

8. Turn the knob to display the parameter P04 "gas

pressure calibration at minimum power".

- **9.** Press the knob and change the displayed value, starting with minimal decrements (-1); press the knob to confirm and wait for the pressure gauge reading. Proceed in this way (with minimal decrements) down to the required minimum pressure value (Table 5.1 *p. 20*).
- **10.**Turn the knob until parameter P002 is displayed and press it; this saves the new calibration settings.
- **11.**Turn the knob and press it to set parameter P002 to the value "0": the "valve calibration" function is deactivated (the gas-fired convector will switch off).
- After the adjustment, stop and start the appliance and check that burner pressure has stabilised. If necessary perform the adjustment again.
- **12.**Disconnect the pressure gauge and refit the sealing screw.

13. Replace the casing.

5.3 GAS CHANGEOVER

Paragraph reserved exclusively to TACs.

After the gas changeover, check the combustion parameters as described in Paragraph 5.2 *p. 20*.



Figure 5.2 Detail of burner assembly and detail of the nozzle holder and calibrated nozzle



5.3.1 Conversion from natural gas to LPG

💦 Figure 5.2 *p. 21*

1. Cut off electric power and gas supply.



- **2.** Remove the casing from the frame and disconnect the casing grounding cable.
- **3.** Unscrew the B plug with a no. 19 wrench.

Nozzle

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4. Using a no.10 socket wrench introduced in the opening, unscrew the nozzle holder A.

- **5.** Unscrew the calibrated nozzle C from the nozzle holder A and replace it (Table 5.2 *p. 22*).
- **6.** Screw the nozzle support and nozzle assembly back on to the burner.
- 7. Reassemble the plug B.
- **8.** Restore the power supply and access the "advanced settings menu" as described in the relevant Paragraph 5.4 *p. 22*.
- **9.** Turn the knob until the parameter P001 is displayed (gas type selection); set the parameter value to "1" (LPG).
- **10.**Turn on the gas-fired convector and check the gas tightness of plug B.
- **11.**Check the gas pressure at the burner as described in Paragraph 5.2.2 *p. 20*.
- **12.**Remove the "NATURAL GAS" adhesive label and replace it with the "LPG" adhesive label.
- **13.**Connect the grounding cable of the casing and reassemble the casing.

				42M	52M		
Installation data							
	Diamo	G20	mm	1,85	2,30		
	ter (Ø)	G30	mm	0,95/1,25	1,20/1,35		
North		G31	mm	0,95/1,25	1,20/1,35		
NOZZIE	Code	G20	-	55	57		
		G30	-	59	61		
		G31	-	59	61		

Table 5.2 Natural gas and LPG nozzles

5.3.2 Conversion from LPG to natural gas

Figure 5.2 *p. 21*

- 1. Cut off electric power and gas supply.
- **2.** Remove the casing from the frame and disconnect the casing grounding cable.
- **3.** Unscrew the B plug with a no. 19 wrench.
- **4.** Using a no.10 socket wrench introduced in the opening, unscrew the nozzle holder A.
- **5.** Unscrew the calibrated nozzle C from the nozzle holder A and replace it (Table 5.2 *p. 22*).
- **6.** Screw the nozzle support and nozzle assembly back on to the burner.
- 7. Reassemble the plug B.
- **8.** Restore the power supply and access the "advanced settings menu" as described in the relevant Paragraph 5.4 *p. 22*.
- **9.** Turn the knob until the parameter P001 is displayed (gas type selection); set the parameter value to "0" (natural gas).

10. Turn on the gas-fired convector and check the gas

6 NORMAL OPERATION

This section is for the end user.

tightness of plug B.

- **11.**Check the gas pressure at the burner as described in Paragraph 5.2.1 *p. 20*.
- **12.**Remove the "LPG" adhesive label and replace it with the "NATURAL GAS" adhesive label.
- **13.**Connect the grounding cable of the casing and reassemble the casing.

5.4 ACCESS TO THE ADVANCED SETTING MENU (INST)

The gas-fired convector electronics allow for a range of advanced settings and functions that can only be enabled by the TAC.

The advanced settings menu (INST) is protected by an access code; to access the menu, proceed as follows:

- Press button B MENU efformore than 5 seconds; release it and press the MENU button again for another 5 seconds: the display will show "CODE".
- **2.** Turn the knob counterclockwise until the code "987" is displayed: press the knob to confirm the code.
- The first displayed submenu is the "fault history"; briefly press the MENU button to access the second submenu "transparent control parameters".
- Access to the "transparent control parameters" submenu and any modification of them are the exclusive responsibility of the TAC.

5.4.1 "Fault history" submenu

Accessing this menu, the display shows the letter "H" at the top, followed by a progressive number (from H001) and the error code in the centre (see Table 7.1 *p. 29*). The display shows the errors codes that have occurred on the gas-fired convector from the most recent (H001) to the least recent (H010).

To scroll through the faults, turn the knob. Up to 10 faults can be displayed.

5.4.2 "Transparent control parameters" submenu

On accessing this menu the display shows at the top the parameter number (e.g. P001) and in the centre the associated value.

The various parameters can be displayed by turning the knob.

To change the value of a parameter, use the knob (press – rotate to change the value – press to confirm the value).

To learn about and possibly enable other advanced functions, see Paragraph 8.1 *p. 30*.

The operation of the Calorio M gas-fired convector is controlled by the supplied control panel.



6.1 WARNINGS

General warnings

Prior to using the appliance <u>carefully read</u> the warnings in Chapter III.1 *p. 4*, providing important information on regulations and on safety.

First startup by TAC

First start-up may exclusively be carried out by a Robur TAC (Chapter 7 *p. 27*).

Never power the appliance off while it is running

NEVER power the appliance off while it is running (except in the event of danger, Chapter III.1 *p. 4*), since the appliance or system might be damaged.

Do not obstruct the fan intake or the outlet grille.

Do not obstruct the air intake and flue gas exhaust ducts located outside the room.

6.2 CONTROL PANEL

6.2.1 Buttons function

► <u>Button A</u> (on/off):

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to turn on the gas-fired convector press this button for 2 seconds (the display will show on, the room temperature, the time, the day of the week and the function symbols);

to turn off the gas-fired convector press the button for 2 seconds (the display will show off; the time and the day of the week and the red LED E will light up).

- <u>Button B</u> (Manual/Automatic/MENU): used to select manual operation (hand icon) or automatic operation (clock icon). Press for more than 5 seconds to access the user settings menu (Paragraph 6.5 *p. 25*).
- Button C (Heating/Ventilation/RESET): used to select heating mode (radiator icon) or summer mode (fan icon) and to reset the gas-fired convector in the event of lock-out.

Pressing button A () for at least 2 seconds is intended to prevent unwanted switching on and/or off by unintentional pressing of the button.

Figure 6.1 Buttons function

C RESET NSWE

- On/off button
- Manual/Automatic/MENU button
- Heating/Ventilation/RESET button
- D Knob

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В

С

E Red LED (light up when the gas-fired convector is off)

6.2.2 Meaning display icons

Table 6.1 Meaning display icons

lcon	Description	Meaning
	off	The gas-fired convector is off
Ð	hand	The operation is manual
Ð	clock	The operation is automatic
	lock	The keypad lock function is active
Ъ́с	sun	Winter mode (maintaining comfort temperature)
C	moon	Winter mode (maintaining economy tempera- ture)
	alarm	Operating fault (Table 7.1 <i>p. 29</i>)
0000°	radiator	Winter operation
B	fan	Summer mode (ventilation on)
٨	flame	Burner on (double flame = max. power, single flame = reduced power)

The temperature shown on the display is the temperature of the air entering the gas-fired convector (as measured by the temperature probe located near the lower grille). It is not room temperature.

6.2.3 Knob operation

The operations that can be carried out using the knob (D) are summarised below:

- Rotate the knob clockwise or counterclockwise to select the menu items shown on the display or to change the value of a numerical field.
- Press the knob to access the selected menu or to confirm an operation.

6.3 SWITCH ON AND OFF

6.3.1 Switching on

- 1. Open the gas tap (only for heating mode operation).
- **2.** Power up the gas-fired convector by inserting the three-pole plug.
- **3.** The display will show the time, the word OFF and the red LED E will light up.
- To power on the gas-fired convector, press button A
 for at least 2 seconds: the following information will appear on the display:
- ▶ the time 12.00- and the day of the week 1 -
- the preset ambient temperature 4 -
- ► the radiator icon ^{IIIII}° at the bottom left informs the user that the gas-fired convector is in heating mode
- **5.** Set the temperature level to a value between 1 and 6 as follows:
- Turn knob D clockwise to increase or counterclockwise to reduce the required temperature level: the level value will start flashing.
- Press the knob to confirm the newly selected value and return to normal display mode.
- **6.** If the room temperature is below the set temperature level, the radiator icon will start flashing and after a few seconds the burner will ignite.
- 7. The presence of the flame is signalled by the flame icon , which consists of 2 levels: small flame indicates that the gas-fired convector is in modulation, while the double flame indicates that the gas-fired convector is at maximum heat output.
- The room fan will start automatically when the heat exchanger is hot. The ventilation speed will be proportional to the heat output of the burner (maximum or modulated).
- **9.** In the event of a failure to switch on, the control board locks out the gas-fired convector: the fault is highlighted by the alternating flashing of the display backlight, the switching on of the red LED E and of the alarm icon and the message "r001 Err" on the display.
 - To reset the error, press the reset button C 🕮. The disappearance of the error code on the display confirms that the reset command has been accepted.
- After 3 consecutive flame lock-outs "r001 Err", the error "r091 Err" will be displayed. The gas-fired convector can be reset by power cycling it or by waiting at least 1 hour after the most recent flame lock-out.
- **10.**Select the desired operating mode among those described in the relevant paragraph (see Paragraph 6.4 *p. 24*).

6.3.2 Switching off

You can turn off the gas-fired convector in either of the following two ways:

▶ press button A 🖾 for at least 2 seconds: the word OFF

will appear on the display and the red LED E will light up.

I lower the required temperature level by turning the knob counter-clockwise until the value 1.0 is achieved (corresponding to a room temperature of approx. 5 °C).

The gas-fired convector can also be programmed to operate with different temperature levels (Comfort, Economy, and antifreeze). For programming instructions, refer to Paragraph 6.5.2 *p. 25*.

6.4 OPERATING MODE SELECTION

The different operating modes of the Calorio M gas-fired convector are described below.

6.4.1 Manual operation

- **1.** Press manual operation button B 🗐: the hand icon 🚇 appears on the display.
- **2.** During heating operation, the radiator icon ^(M) is shown on the display (fixed if the burner is lit or if the gas-fired convector is in stand-by, flashing if the gas-fired convector is being switched on).
- **3.** In this operating mode, the manually set room temperature level (shown on the display) will be maintained permanently; to change the room temperature level, use the knob (rotate press to confirm) until the desired value is set.
- **4.** In summer mode (ventilation) the fan icon \bigcirc is shown on the display and air circulation will be constantly ensured.

6.4.2 Automatic operation

- 1. Press automatic operation button B 🕮: the clock icon 🚇 appears on the display.
- The gas-fired convector will operate according to the programmed time schedules (see Paragraph 6.5.4 p. 25), in particular:
 - Heating operation: during operating periods (on), the set comfort temperature will be maintained (sun icon k lit), while during off periods, the economy temperature will be maintained (moon icon lit); if the economy temperature is set to off, the heating will be turned off (the antifreeze function will not work, even if enabled).
 - Summer mode (ventilation): air circulation is only guaranteed during on periods (fan icon S lit).

6.4.3 Temporary manual operation

- 1. If during automatic operation (Paragraph 6.4.2 *p. 24*) the room temperature is changed (by turning and pressing the knob), operation switches from automatic to temporary manual.
- In this operating mode, the manually set room temperature (shown on the display) will be maintained until the next automatic change of the time program or until the button B is pressed.
- 3. The display shows the fixed auto icon and the

flashing hand icon 🖑 to indicate that manual operation is only temporary.

6.5 ACCESS TO THE USER MENU

To access the user information/settings menu (USER), press the B MENU button for more than 5 seconds: the screens (submenus) will be displayed in sequence starting from the first (TIME - time/minute/day setting) to the last (BLOC - keypad lock) (see Table 6.2 *p. 25*).

To move between the submenus, turn the knob to select the desired submenu and confirm by pressing the knob.

Table 6.2 User menu

MMM

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Function	Display
Time and day setting	12:00
Day setting	1)
Comfort temperature setting	COMF 🔆
Economy temperature setting	econ 📞
Antifreeze temperature setting	nOFr
Time schedule programming	PrOG
Limiting heat output	PLim (NOT ACTIVE)
Display backlight setting	TMBL
Temperature level display type	°C
Keypad lock function	BLOC

6.5.1 Setting the time and the day of yhe week

- Press button B MENU for 5 seconds and use the knob (press - turn - press) to set the desired hours and minutes.
- Select the day of the week using the knob: 1 = Monday...7 = Sunday.

The default setting is 12:00 for the time and 1 (Monday) for the day.

6.5.2 Setting the comfort/economy temperature (for automatic operation)

Press for 5 seconds button B MENU and turn the knob until the display shows COMF and the sun icon ;; using the knob (press - turn - press), set the desired comfort temperature (the default setting is level 4.0 or 20 °C). The comfort temperature is the temperature that the gas-fired convector will maintain during the on periods of automatic operation.

The comfort temperature must be higher than the economy temperature.

Press button B MENU and turn the knob until the display shows ECON and the moon icon ; using the knob (press - turn - press), set the desired economy temperature (the default setting is level 2.0 or 10 °C).

The economy temperature is the temperature that the gas-fired convector will maintain during the off periods of automatic operation.

If the economy temperature is set to off, the heating will be switched off (any antifreeze will not work either, even if it is enabled).

6.5.3 Antifreeze temperature setting

 Press for 5 seconds button B MENU and turn the knob until the display shows "nOFr" (antifreeze) using the knob (press - turn - press), set the desired antifreeze temperature (the default setting is level 1.0 or 5 °C).

The antifreeze temperature can be set from off to level 2.0 (10 $^{\circ}$ C).

To disable the antifreeze function set the value to off.

6.5.4 Heating/ventilation hourly time schedule

- 1. Press button B MENU 🕮 for 5 seconds and turn the knob until the display shows "PrOG".
- Using the knob, select the day (1 = Monday, ..., 7 = Sunday) or blocks of days (1-5 from Monday to Friday; 6 and 7 Saturday and Sunday; 1-7 every day) for which you want to program automatic operation.
- 3. Confirm the selection by pressing the knob.
- **4.** Using the knob, select the point ON or OFF for which you want to set the start time (ON1; ON2, ON3) or stop time (OF1; OF2, OF3) for heating/ventilation.
- 5. Confirm the selection by pressing the knob.
- **6.** By turning and pressing the knob, set the ON and OFF times for the heating/ventilation.
- **7.** Confirmation by pressing the knob stores the time and moves on to the next ON/OFF point.

It is possible to set up to 3 on/off points.

6.5.5 Power/ventilation limiting function

The power/ventilation limiting function, for this version of Calorio M, is not active.

6.5.6 Display backlight function

- 1. Press button B MENU 🖤 for 5 seconds and turn the knob until the display shows "TMBL" (backlight timer).
- 2. Using the knob (press rotate press) you can set:
- ► OFF: backlight always off
- 5...240: duration in seconds of backlighting since last button press or knob rotation
- ON: backlight always on

The default setting is 60 seconds.

6.5.7 Display of temperature levels / °C

The values of the room set temperatures (manual, antifreeze, economy and comfort) can be displayed in levels (1.0 to 6.0) or in °C (5 °C to 30 °C).

The default setting is OFF (temperature displayed

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in levels). To change the factory default, proceed as follows:

- Press button B MENU If for 5 seconds and turn the knob until the display shows "°C".
- **2.** Using the knob (press rotate press) you can set:
 - OFF: temperature display in levels
 - ON: temperature display in °C

The air temperature in a room depends on the place in which it is measured.

In particular, the height of the measurement greatly influences the measured value. In rooms in thermal equilibrium, this difference can be as small as a few degrees or fractions of a degree.

In rooms in which a gas-fired convector is switched on from low temperature conditions, it is possible to record initially a temperature difference of up to ten degrees between floor and ceiling. Once a stationary operating regime is achieved, the temperature of the room will tend to uniform and to assume, as mentioned, a reduced difference in the various places of the room.

The Calorio M temperature probe, whose reading is shown on the display, is located in the lower inner part inside the gas-fired convector and therefore measures the temperature of the air entering the gas-fired convector near the floor.

The room temperature value indicated by the display should therefore not be considered as an average room temperature, but as an indicative value of the air temperature in the area where the gas-fired convector is installed. If you wish to measure the temperature in a different point of the room, we suggest positioning a wall-mounted thermostat at the desired point of measurement, connecting it to the terminal block specifically provided on the internal electrical panel of the Calorio M (a hole is provided in the lower part of the frame for the passage of the request cable). For further information see Appendix 8.1.1 *p. 30* (parameter P009).

6.5.8 Keypad lock function

This function allows you to enable the keyboard lock (buttons and knob disabled) to prevent settings from being changed by unauthorized persons or by accidental operation of the buttons.

- 1. Press button B MENU 😂 for 5 seconds and turn the knob until the display shows "BLOC".
- 2. Using the knob (press rotate press) you can set:
 - OFF: function disabled (keyboard enabled)
 - 10...240: time in seconds after which the lock will be activated (the lock icon a is shown on the display)
 - The keyboard lock can only be applied in the normal operation screen (not from the menu or other submenus).
- **3.** When the keypad lock is active, it can be deactivated by pressing the knob for 7 seconds; then, while

keeping the knob pressed, press button C 🖉.



The default setting is off (unlocked keypad).

6.6 OPERATING FAULTS

Any operating faults are displayed with the message "Err" followed by an error identification code. The display also shows the ALARM icon and the red LED E flashes.

If the fault is resettable, the letter "r" will appear before the error code; in this case the error can be reset by a short press of reset button C 🕮: the error message will disappear from the display to indicate that the gas-fired convector has accepted the reset command.

For further information on error codes, refer to Table 7.1 *p. 29*.



7 MAINTENANCE

7.1 WARNINGS



Correct maintenance prevents problems, assures efficiency and keeps running costs low.

Any operation on internal components may exclusively be performed by the TAC.

Before performing any operation, switch off the appliance by means of the control device and wait for the end of the shutdown cycle, then disconnect power and gas supply, by acting on the electrical disconnector and gas valve.

The efficiency checks and every other "check and maintenance operation" <u>must be performed with</u> <u>a frequency according to current regulations</u> or, if more restrictive, according to the provisions set forth by the manufacturer, installer or TAC.

<u>Responsibility</u> for efficiency checks, to be carried out for the aims of restricting energy consumption, lies with the system manager.

7.2 CLEANING AND MAINTENANCE

The only operation required by this kind of gas-fired convector is the cleaning of the outer casing (which must always be carried out with the appliance cold and without the use of solvents) and the periodic removal of any dust that may accumulate on the heat exchanger and the fan. It is recommended to have a periodic (annual) check and cleaning of the gas-fired convector by contacting a TAC. With regard to periodic maintenance of the gas-fired convector, follow the regulations in force.

7.3 SAFETY DEVICES

Electricity outage

The gas-fired convector is switched off by closing the gas valve. When the power supply is restored, the gas-fired convector will automatically restart.

Gas failure or other faults that causes the flame to extinguish

The gas-fired convector will automatically attempt to restart for a period of 10 seconds, after which, if the attempt fails, the control unit will lock out the gas-fired convector and stop the blower (the alarm is shown on the display).



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Temporary overheating

If the upper or lower grille is partially obstructed during operation, causing the gas-fired convector to overheat, the prelimit temperature probe will trip automatically, forcing the gas-fired convector into modulated operation. When the heat exchanger temperature drops, the gas-fired convector automatically returns to normal operation. If the overheating caused by the obstruction of the grilles persists, the prelimit temperature probe (detail B in Figure 7.1 *p. 28*) switches the gas-fired convector, which will automatically reset as soon as the heat exchanger temperature drops.

Continued overheating

If the fan stops during operation of the gas-fired convector, the limit thermostat trips and cuts off the electrical power supply to the gas valve, thereby interrupting the flow of gas to the burner (the display will show the error r002). To restore operation, wait about ten minutes for the temperature to drop, disconnect the gas-fired convector from the power supply, remove the casing and reset the limit thermostat by pressing the reset button located on the limit thermostat itself (detail A in Figure 7.1 *p. 28*). Then reset the error by pressing button C . If the problem is repeated within a short period of time, TAC must be called in to check the causes of overheating.

Figure 7.1 *Limit thermostat and prelimit temperature probe*



- A Limit thermostat
- B Prelimit temperature probe

7.4 ANY MALFUNCTIONS OF OPERATION

Before taking any particular measures, always check that:

- There is a full electricity supply.
- The gas is supplied.
- The supply pressure at the burner is within the specified tolerance range.

Only at this point proceed with the specific troubleshooting.

Before removing the casing to gain access to the electrical panel, disconnect the gas-fired convector from the two-pole switch located upstream of the radiator, or remove the power plug.

7.4.1 Case 1: The appliance locks out during the first start-up phase

A. There is no adequate gas flow to the gas-fired convector. Check that no taps or manual valves are closed. If the appliance has not been used for a long period of time there may be air in the pipes. Therefore, try the ignition several times after the error has been reset.

If error r001 is reset more than 3 times, error r091 will appear. Power cycle the appliance for further start-up attempts.

B. One of the ignition electrodes is broken or badly positioned: replace it or reposition it.

For a correct ignition, the distance between the two ignition electrodes must be about 3-5 mm.

- **C.** The detection electrode is broken or badly positioned: replace it or reposition it.
- **D.** One of the ignition electrodes or the relevant cable is in contact with the casing or other metal parts: check by removing the casing and removing the contact.
- **E.** Failure of the ignition equipment: replace it.

7.4.2 Case 2: the appliance locks out during normal operation

- **A.** The limit thermostat has tripped (error r002) to limit overheating caused by:
 - Obstruction on upper hot air outlet: remove obstruction.
 - Fan fault: replace it.
- B. Gas valve fault: replace it.
 - When replacing the gas valve, it is necessary, as required by current regulations, to seal the nozzle holder with a sealant that complies with EN 751-1 and EN 751-2 (i.e. suitable for gas tightness). Check the pressure at the burner after replacing the gas valve.
- **C.** Bad connection of the limit thermostat: check cables and connections.

7.4.3 Case 3: Lack of communication between main board and user interface (Ncom error)

- A. Malfunction of the user interface or the main board.
 - Do not allow metal parts (tools or the casing itself) to come into contact with the circuits or programming pins on the interface PCB, which are normally protected by a plastic cover (Figure 7.2 *p. 28*).

Figure 7.2 board programming PIN



- - Restore the power supply to the appliance and, using a multimeter, check for 28 V DC on the pins of the user interface power connector.
 - The presence of voltage indicates a fault in the user interface: replace it.
 - The absence of voltage indicates a failure of the main board: replace it.



Table 7.1 Faults

Fault	Code	ACTION
Lock-out due to ignition failure	01	Manual reset
Lock-out due to temperature limit function trip	02	Manual reset
Lock-out due to generic internal error	03	Manual reset
Air pressure switch/blower fault	05	TAC intervention
Room probe fault	06	TAC intervention
Prelimit probe fault	07	TAC intervention
Gas-fired convector body overheating	10	Automatic reset
Lock-out due to parasitic flame	11	Automatic reset
Lock-out due to valve drive hardware fault	20	Automatic reset
Lock-out due to valve control relay fault	21	Automatic reset
Flame lock-out after valve shut off	22	Manual reset
Lock-out caused by wiring faults	23	Manual reset
Lock-out due to 3 or more ignition attempt failures	91	Manual reset (1)
Mains frequency synchronism error	96	TAC intervention
Low supply voltage	97	TAC intervention
Lack of communication between main board and user interface	NCOM	TAC intervention

1 Resettable after waiting 1 hour or power cycling the appliance.

8 APPENDICES

ADVANCED GAS-FIRED CONVECTOR 8.1 ADJUSTMENT AND CONTROL FUNCTIONS

The transparent control parameters are listed in the table

Table 8.1 List of transparent control parameters

Function **Default value Allowed setting User level** n 0 = natural gas0 installer 1 Gas type selection 1 = LPG0 = offActivation of gas valve calibration/fixed 1 = operation at fixed power (min) 2(1) installer power function ("chimney sweep") 4 =operation at fixed power (max) 15 = calibration function ON 3 Maximum gas pressure calibration installer 4 Minimum gas pressure calibration installer 0 = modulating5 Gas-fired convector modulation 0 1 = fixed power (max)installer 2 = fixed power (min)from 0 to 100% within the permitted 6 Gas-fired convector heat output 100 installer modulation range 7 Ambient hysteresis modulation 30 from 0 to 30 (= $0 \div 3$ K) installer 0 = disabled8 External request enable 0 installer 1 = enabled0 = disabled9 0 External room thermostat function enable installer 1 = enabled $0 \div 255$ 10(2) 0 Service parameters access code assistance from 0 to 60 °C 11 Room fan activation temperature setting 40 assistance 0 = -7.5 K12 $15 = 0 \,^{\circ}\text{C}$ Ambient temperature probe reading offset 15 assistance 30 = +7.5 K 13 Room fan start timer 60 from 0 to 240 s assistance 14 (4) 120 from 0 to 240 s Room fan stop timer assistance 15 15 from 0 to 240 s Blower post-operation timer assistance Operation with flue gas pressure switch 0 = with pressure switch 16 1 assistance enable 1 = without pressure switch 17 Start-up heat output (ramp start) 50 from 0 to 100% power assistance 18 75 from 40 to 90 °C Overheating trip level assistance 19 (3) Heat exchanger temperature assistance

below.

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After enabling calibration with parameter 2 = 15 wait until the parameter assumes the value 20, then proceed with the next calibration steps. The parameter "service parameters access code" is used as a password for access to the subsequent parameters. If not set correctly (value = 27) access to the subse-

2 quent parameters is not allowed. It remains active until power off or 24h maximum if the power supply is not disconnected.

Display only. The system allows changing the value but then returns to the read value. If the gas-fired convector remains on for more than 60 minutes, the time is doubled. 4

8.1.1 Description of advanced functions

P001 – Gas type selection

Adjusts the gas valve in accordance with the gas used (natural gas or LPG).

P002 - Activation of the gas valve calibration procedure

Allows activation of the gas valve calibration procedure at maximum and minimum operating pressure.

P003 – Maximum gas pressure calibration

Allows calibration of the maximum gas pressure.

P004 – Minimum gas pressure calibration

Allows calibration of the minimum gas pressure.

P005 - Gas-fired convector modulation

Allows operation in automatic modulation mode, or fixed at minimum or at maximum power.

P006 – Gas-fired convector heat output

Determines the maximum power output of the gas-fired convector, in case the gas-fired convector is oversized and lower heat output than the nominal one is required.

P007 – Ambient modulation hysteresis

Indicates the temperature value (rising) from which the gas-fired convector operates in modulation. The default is 10, corresponding to 1 °C. This means, for example, that if the setpoint is 20 °C, when the room temperature probe reads a value lower than 19 °C, the gas-fired convector runs at maximum speed; when it reads a value of 19 °C (1 °C lower than the setpoint), the gas-fired convector modulates (indicated by the small flame on the display).

P008 – External request enable

Allows the gas-fired convector to be controlled by an



Access to the transparent control parameters is restricted to professionally qualified personnel.



external request, such as, for example, an automatic dialer, centralised request, etc...

For activation, parameter 008 must be set to 01, and parameter 009 must be set to 00.

The external request must be connected to the free terminal block on the electrical panel inside the gas-fired convector.

In this way, the gas-fired convector will only operate when the external request closes the contact. When the contact on the terminal block is open, the burner will not start.

The gas-fired convector own ambient thermostat function will remain activated.

P009 – External room thermostat function enable

This allows the gas-fired convector to be controlled by an external room thermostat, placed in the most convenient position for the user.

For activation, parameters 008 and 009 must both be set to 01.

The external room thermostat must be connected to the free terminal block on the electrical panel inside the gas-fired convector.

In this operating mode, the room thermostat function of the gas-fired convector is overridden.

When the contact is closed the burner will start, regardless of the reading from the temperature probe mounted on the gas-fired convector.

The burner will always operate at maximum power and cannot be modulated.

When the contact on the terminal block is open, the burner will not start.

P010 – Service parameters access code

Allows access to advanced functions that are the exclusive domain of TACs

P011 - Room fan activation temperature setting

Determines the temperature (measured by the prelimit probe) at which the room fan starts. This function is parallel to that of parameter 013.

P012 – Ambient temperature probe reading offset

Allows you to adjust the ambient temperature probe reading. By setting a value lower than the default value

(15), the ambient probe reading will be shifted downwards; vice versa the reading will be shifted upwards. Gasfired convector operation will therefore follow the value corrected by the parameter and not the one actually read by the probe.

P013 - Room fan start timer

Determines the delay in seconds between burner ignition and the room fan start.

P014 – Room fan stop timer

Defines the delay in seconds between the burner switch off and the room fan stop. If the burner has been active for more than 60 minutes, the time period is doubled (e.g. if the parameter is set to 120 s, if the burner is active for more than 60 min, the fan will switch off after 240 s).

P015 – Blower post-operation timer

Determines the delay in seconds after burner shutdown and the blower stop. If the limit thermostat (error 001) or the prelimit temperature probe (error 010) trips, the blower is left in forced operation for 180 seconds.

P016 – Operation with flue gas pressure switch enable Not applicable.

P017 – Start-up heat output

Determines the power level at which the burner ignition ramp starts.

P018 – Overheating trip level

Determines the temperature at which the gas-fired convector enters forced modulation and/or is turned off.

Depending on the set temperature (e.g. 90°C), if the temperature read by the prelimit probe reaches the setpoint - 10°C (in the example: 90 - 10 = 80 °C), the gas-fired convector stays on but operates in forced modulation. If the temperature read achieves the setpoint (90 °C), the gas-fired convector is turned off and the display will show the error 010 (automatic reset error). When the probe reading is equal to the setpoint - 15°C (in the example: 90 - 15 = 75 °C), the gas-fired convector will restart automatically.

P019 - Heat exchanger temperature

Indicates the temperature value read by the prelimit probe. The value of the parameter cannot be changed.

8.2 ERP DATA SHEETS

Figure 8.1

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				Table 1				
		CON	AMISSION R	EGULATION (EU) 2015/1188				
N de el el tel e esti (ten el el e	Infor	mation requ	uirements fo	or gaseous/liquid fuel local space	heaters	Cala		
Nodel Identifier(s):	Calorio 42 M							
Direct heat output: [kW]								
Indirect heat output: [kW]		5,20						
	/]							
Fuel				Space heating emissions (*)		nissions (*)		
Select fuel type [gaseous	/liquid]			gaseous	97 [mg/kWh _{input}] (GCV		ut] (GCV)	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit	
Heat output				Useful efficiency (NCV)				
Nominal heat output	P _{nom}	3,26	kW	Useful efficiency at nominal	n	00.0	0/	
				heat output	'Ith,nom	50,0	70	
Minimum heat output			kW	Useful efficiency at				
(indicative)	P _{min}	2,26		minimum heat output	$\eta_{\text{th,min}}$	90,0	%	
((indicative)				
Auxiliary electricity cons	umption			Type of heat output/room t	emperatur	e control (se	elect one)	
At nominal heat output	el _{max}	0,045	kW	single stage heat output, no control	room temp	no		
At minimum heat output	el_{min}	0,035	kW	two or more manual stages, control	ore manual stages, no room temperature no			
In standby mode	el _{sB}	0,002	kW	with mechanic thermostat room temperature no				
				with electronic room temperature control			no	
				with electronic room temperature control plus day				
				timer			no	
				with electronic room temperature control plus				
week timer						yes		
				Other control options (multiple selections possible)				
				room temperature control				
				detection			no	
				room temperature control, with open window detection with distance control option				
							no	
							ves	
				with adaptive start control			ves	
				with working time limitation			no	
				with black bulb sensor			no	
Permanent pilot flame p	ower requi	rement						
Pilot flame power								
requirement (if	P _{pilot}	N.A.	kW					
applicable)								
Contact details	Robur SPA		I					
	Via Parigi 4	/6						
	I-24040 Zin	gonia (BG)						
(*) NO _x = nitrogen oxides	5							



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Figure 8.2

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				Table 1				
	Infor	CON motion roa	MMISSION R	EGULATION (EU) 2015/1188	hostore			
Model identifier(s):	Calc	Calorio 52 M						
Indirect heating function	Care	no						
Direct heat output: [kW]	4 71							
Indirect heat output: [kW		1,7 2						
Fuel	-				Space heating emissions (*) NO _x 121 [mg/kWh _{input}] (GCV)		nissions (*)	
Select fuel type [gaseous	/liquid]			gaseous			ut] (GCV)	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit	
Heat output				Useful efficiency (NCV)				
Nominal heat output	P _{nom}	4,71	kW	Useful efficiency at nominal heat output	$\eta_{\text{th,nom}}$	90,0	%	
Minimum hoot output				Useful efficiency at				
(indicativo)	P _{min}	3,18	kW	minimum heat output	$\eta_{\text{th,min}}$	90,0	%	
(indicative)				(indicative)				
Auxiliary electricity cons	umption			Type of heat output/room t	emperatur	e control (se	elect one)	
At nominal heat output	el_max	0,092	kW	single stage heat output, no control	room temp	erature	no	
At minimum heat	el _{min}	0,050	kW	two or more manual stages,	no room temperature no			
In standby mode	el _{sB}	0,002	kW	with mechanic thermostat re	hermostat room temperature no			
				with electronic room temperature control			no	
				with electronic room temper	no			
				with electronic room temper week timer	yes			
				Other control options (mult)			
				room temperature control, v detection	no			
				room temperature control, v detection	vith open v	vindow	no	
				with distance control option			yes	
				with adaptive start control			yes	
				with working time limitation			no	
				with black bulb sensor			no	
Permanent pilot flame p	ower requi	rement						
Pilot flame power								
requirement (if	P _{pilot}	N.A.	kW					
applicable)								
Contact details	Robur SPA Via Parigi 4	/6						
(*) NO. = nitrogen oxides	11-24040 ZIN	60111a (DG)						
, ,, introgen balles	-							

Robur mission

Robur is dedicated to dynamic progression in research, development and promotion of safe, environmentally-friendly, energy-efficiency products, through the commitment and caring of its employees and partners.





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Robur S.p.A. advanced technologies for air conditioning via Parigi 4/6 24040 Verdellino/Zingonia (BG) Italy +39 035 888111 - F +39 035 884165 www.robur.it robur@robur.it