



Installation, use and maintenance manual

Next-G

Condensing gas unit heaters
for use in industrial and commercial installations

Powered by natural gas/LPG

H₂
HYDROGEN
READY 20%



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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I INTRODUCTION



Installation, use and maintenance manual

This Manual is an integral part of the Next-G appliance and must be handed to the end user together with the appliance.

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

I.1 RECIPIENTS

This Manual is intended for:

I.2 CONTROL DEVICE

In order to work, the Next-G appliance requires a control device to be connected by the installer.

II SYMBOLS AND DEFINITIONS

II.1 KEY TO SYMBOLS



DANGER



WARNING



NOTE



PROCEDURE



REFERENCE (to other document)

II.2 TERMS AND DEFINITIONS

Appliance / Unit = equivalent terms, both used to refer to the gas unit heater.

TAC = Technical Assistance Centre authorised by Robur.

OCDS012 1-key basic control = control device that signals warnings or errors in the appliance and allows its resetting.

OCDS016 2-key basic control = control device that

signals warnings or errors in the appliance and allows its resetting and also allows selecting winter operation (space heating), summer operation (ventilation) or switch off.

Remote control OCDS015 = Robur control device that integrates the functions of room temperature control, remote control and report of any anomalies of one or more Next-G gas unit heaters, also divided over several zones.

External request = generic control device (e.g. thermostat, timer or any other system) equipped with a voltage-free NO contact and used as control to start/stop the unit.

OCDS008 digital chronothermostat = device that integrates the functions of room temperature control and remote control of one or more Next-G gas unit heaters, when connected to the OTRG005 thermoregulator.

First start-up = appliance commissioning operation which may only and exclusively be carried out by a TAC.

OSWR000 Genius software for remote management = software that allows, through the OTRG005 thermoregulators, to centralize the management of up to 100 Next-G gas unit heaters.

OTRG005 thermoregulator = control device that allows to manage settings and operation of one Next-G gas unit heater.

III WARNINGS

III.1 GENERAL AND SAFETY WARNINGS



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.

workmanlike conformity declaration, according to national/local regulations in force and the manufacturer's instructions/provisions.



Declaration of conformity

Upon completing installation, the installing firm shall issue to the owner/client the appliance's



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 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.



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.



Aggressive substances in the air

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



Acid flue gas condensate

Discharge the acid condensate of combustion flue gas in compliance with current exhaust regulations.



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. 54) 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 COMPLIANCE

III.2.1 EU directives and standards

The Next-G series gas unit heaters are certified in accordance with European regulation GAR 2016/426/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.
- ▶ 2281/2016/EU "Ecodesign requirements for air heating products" as amended and added.

Furthermore, they comply with the requirements of the following standards:

- ▶ EN 17082 Domestic and non-domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 300 kW.

III.2.2 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 Available range

Next-G gas unit heaters are available in three versions:

- ▶ with horizontal flow, with fixed speed axial fan (Next-G series)
- ▶ with horizontal flow, with axial fan with brushless variable speed motor (Next-G EC series)
- ▶ with horizontal flow, ductables, with centrifugal fan (Next-G C series)

1.1.2 Operation

The Next-G series gas unit heater is an independent heating appliance with airtight combustion circuit and forced air draft.

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

The combustion circuit is room sealed and meets the requirements for type C appliances: combustion air supply and flue gas exhaust discharge take place outdoors and are ensured by the functioning of a blower inserted in the combustion circuit.

The appliance is also approved for type B for installations where it is allowed to take the combustion air directly from the room to be heated.

The operation of the gas unit heater is controlled by a control device (not supplied).

The gas unit heater can operate at two heat output levels or modulating heat output, at fixed or modulating fan speed.

The standard operation of the gas unit heater is in modulation, thanks to the presence of the supplied room probe. A blower upline of the burner mixes the air and gas and expels the combustion fumes.

Products of gas combustion (natural gas or LPG) flow internally through the heat exchangers, which are invested externally by the air current produced by the fan, delivering warm air flow into the room.

The fan starts automatically only when the heat exchangers are hot, in order to prevent cold air from being introduced into the room, and will turn off when the exchangers are cold.

The air flow direction is adjustable vertically by means of the revolving louvres of the grille.

If heat exchangers overheat due to malfunction, the temperature probe cuts off the power supply to the gas valve

and drives the blower and the fan at maximum speed.

In the event of obstructions in the intake or exhaust duct, or in the event of malfunction of the blower, the electronic board will automatically modulate the gas unit heater heat output.

In the event of obstructions or malfunction beyond the permitted range, the gas valve stops and the gas unit heater is switched off.

In summer it is possible to operate the fan only in order to provide a pleasant air flow within the room.

1.1.3 Mechanical components

- ▶ Premix stainless steel burner.
- ▶ High head blower, with rotation speed modulation.
- ▶ Cylindrical stainless steel combustion chamber.
- ▶ Robur patented heat exchangers, made out of a special aluminium die-cast alloy, with horizontal finning on the air side and vertical finning on the flue gas exhaust side, with a very high heat exchange capacity.
- ▶ Corrugated stainless steel heat recovery exchangers with very large exchange surface.
- ▶ External steel panelling with epoxy powder enamel finish.
- ▶ Axial fan(s) with high air flow, with rotation speed variation (for Next-G EC series).
- ▶ Axial fan(s) with high air flow, with fixed speed (for Next-G series).
- ▶ Centrifugal fan (for the Next-G C series).

1.1.4 Control and safety devices

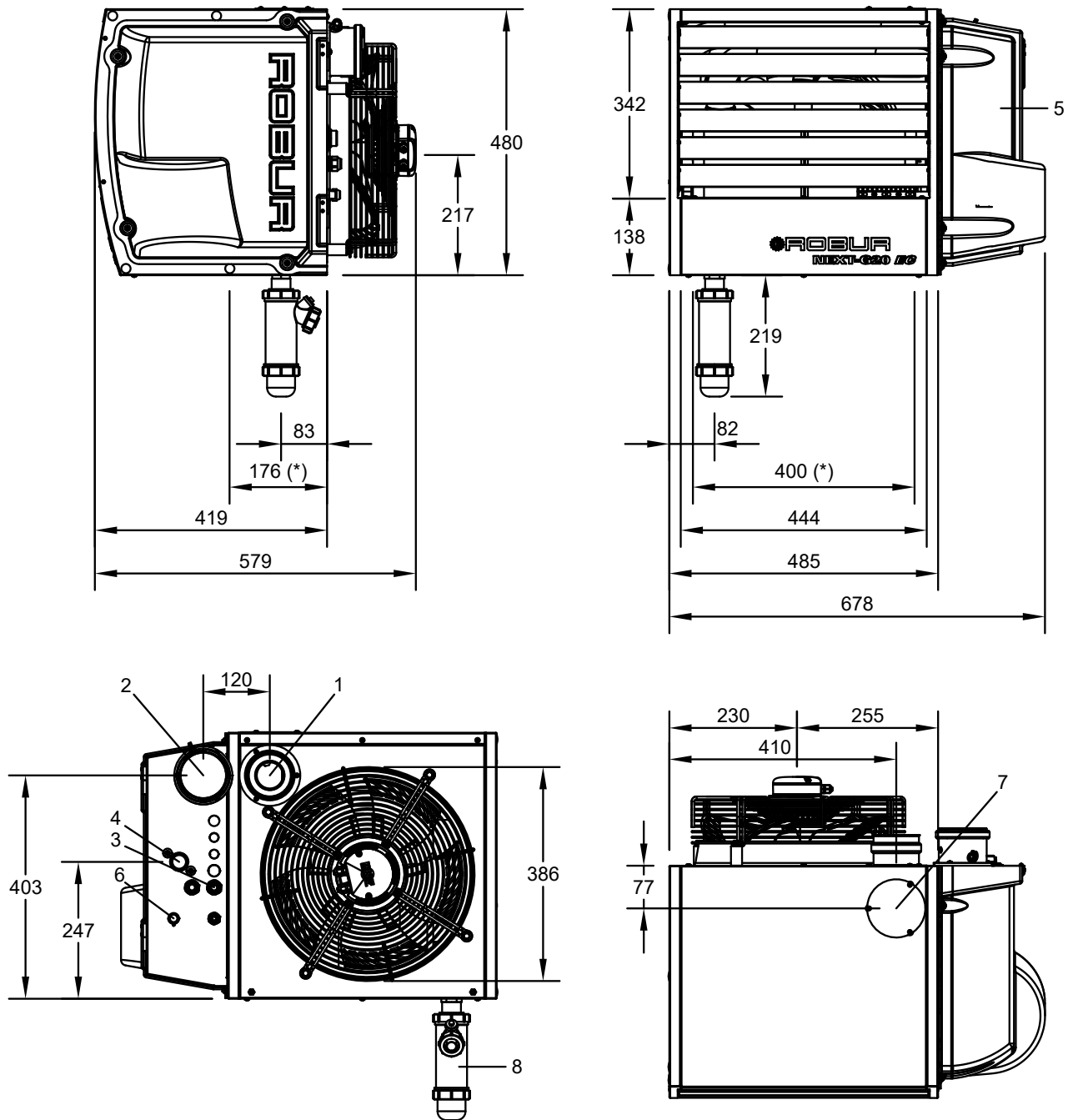
- ▶ GEN10 control board with microprocessor, display and selection keys, providing the following functions:
 - burner ignition
 - flame monitoring and modulation
 - blower management and blower speed control
 - fan speed control
 - heat exchanger temperature probe control
 - minimum flue gas temperature probe control
 - room temperature control with supplied probe
 - control of destratifier function with optional probe
 - predictive start-up function control with optional probe
 - Modbus communication
- ▶ Limit thermostat with manual reset against heat exchangers overheating.
- ▶ Gas solenoid valve.

1.2 DIMENSIONS

1.2.1 Axial gas unit heaters

1.2.1.1 G 20 EC

Figure 1.1 Unit dimensions

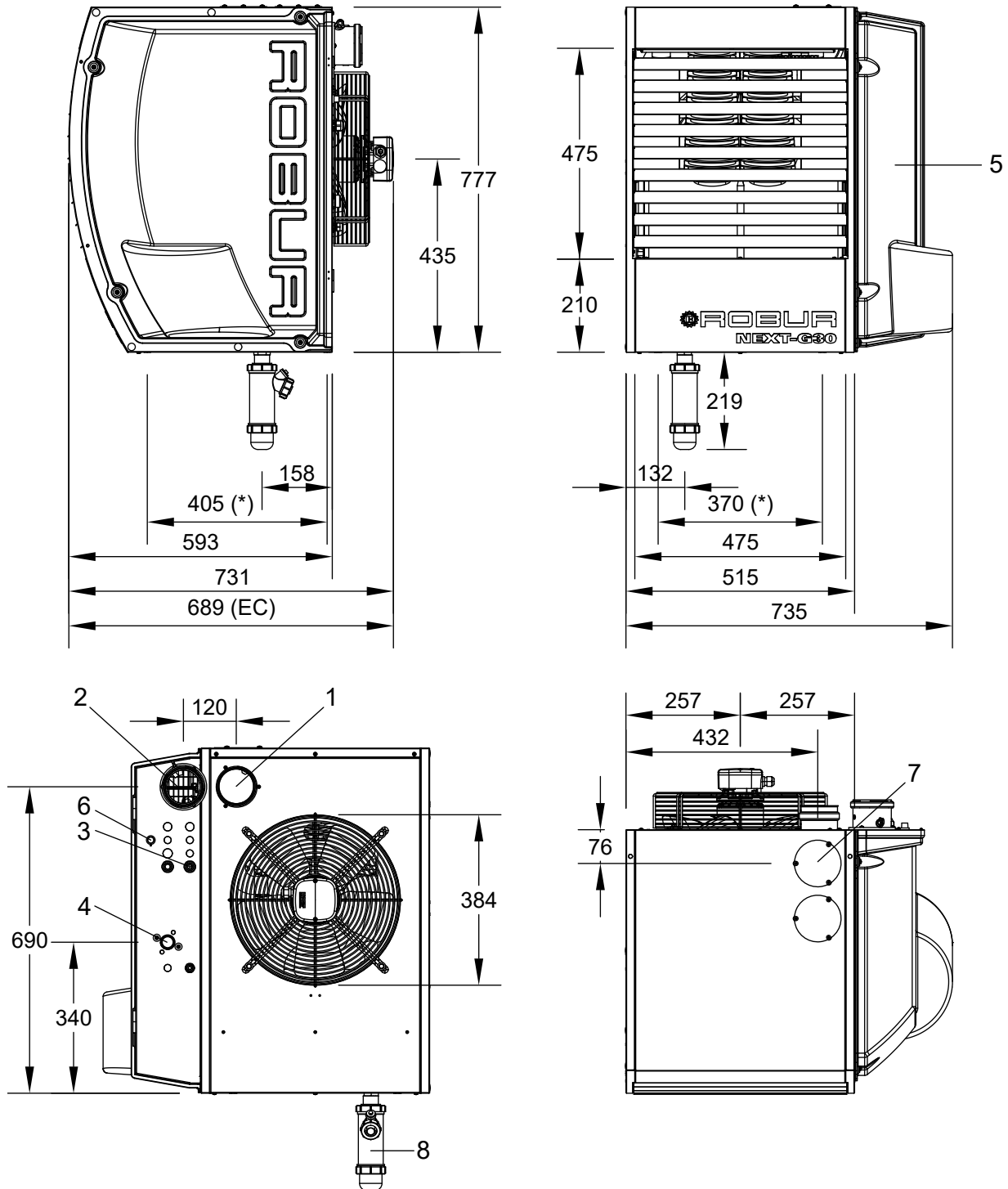


- 1 Ø 80mm flue gas exhaust
- 2 Combustion air inlet Ø 80 mm
- 3 Power supply cables input
- 4 Gas connection 3/4" M
- 5 Thermoformed door

- 6 Limit thermostat
- 7 Flue gas exhaust blind cover, alternative to the rear one (1)
- 8 Condensate drain kit
- (*) Holes for fixing to the support bracket

1.2.1.2 G 30, G 30 EC

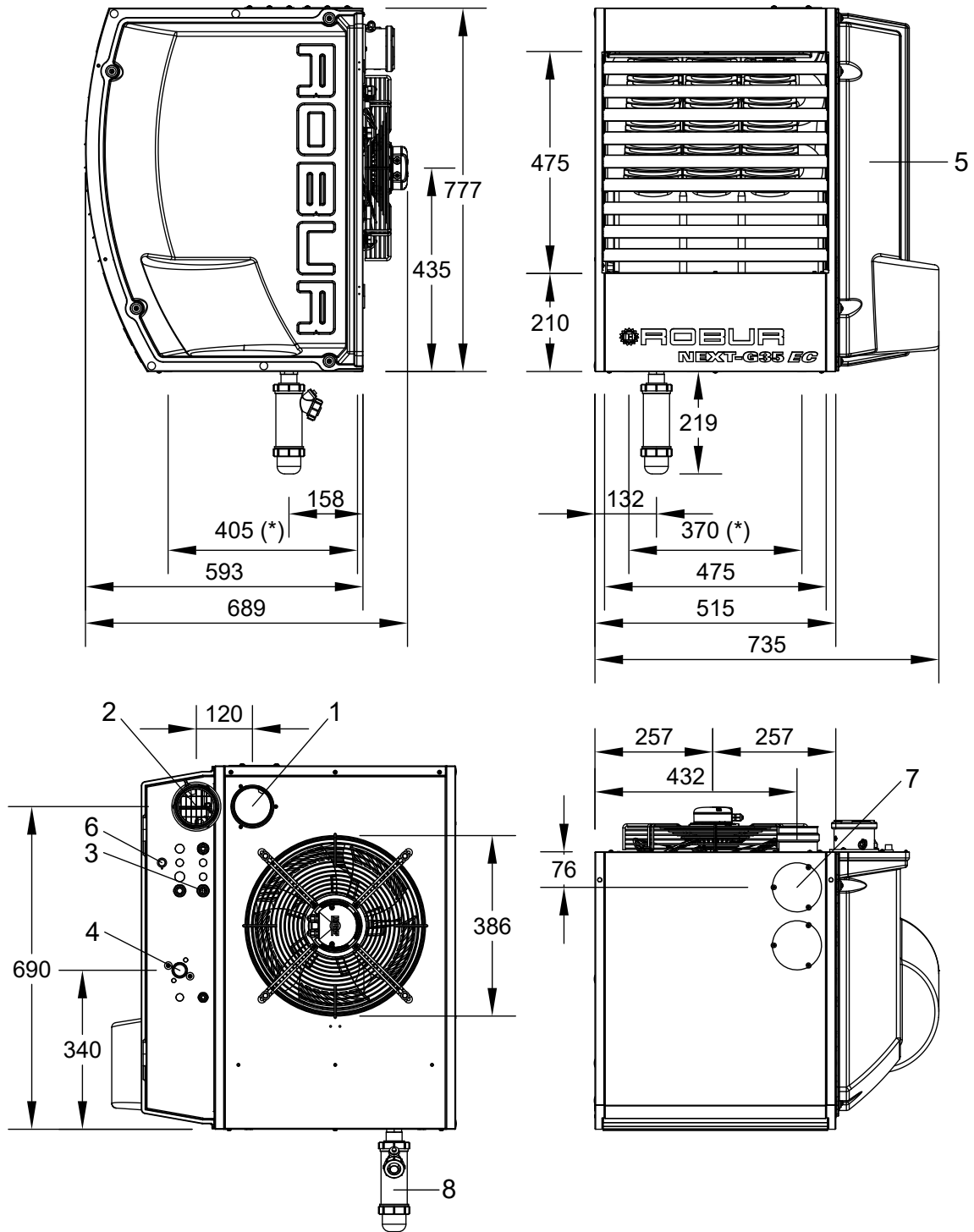
Figure 1.2 Unit dimensions



- | | | | |
|---|------------------------------|-----|---|
| 1 | Ø 80mm flue gas exhaust | 6 | Limit thermostat |
| 2 | Combustion air inlet Ø 80 mm | 7 | Flue gas exhaust blind cover, alternative to the rear one (1) |
| 3 | Power supply cables input | 8 | Condensate drain kit |
| 4 | Gas connection 3/4" M | (*) | Holes for fixing to the support bracket |
| 5 | Thermoformed door | | |

1.2.1.3 G 35 EC

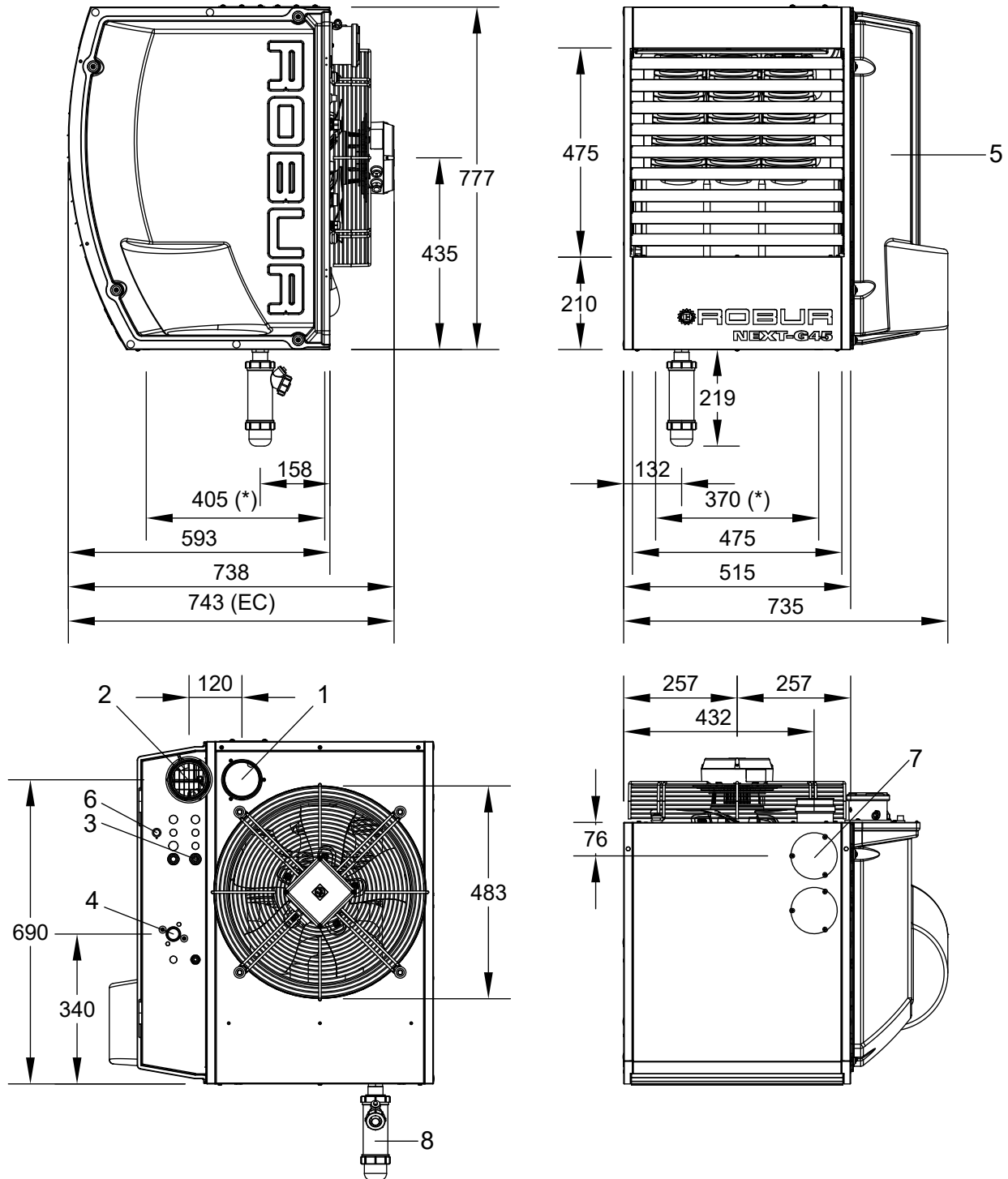
Figure 1.3 Unit dimensions



- 1 Ø 80mm flue gas exhaust
- 2 Combustion air inlet Ø 80 mm
- 3 Power supply cables input
- 4 Gas connection 3/4" M
- 5 Thermoformed door
- 6 Limit thermostat
- 7 Flue gas exhaust blind cover, alternative to the rear one (1)
- 8 Condensate drain kit
- (*) Holes for fixing to the support bracket

1.2.1.4 G 45, G 45 EC

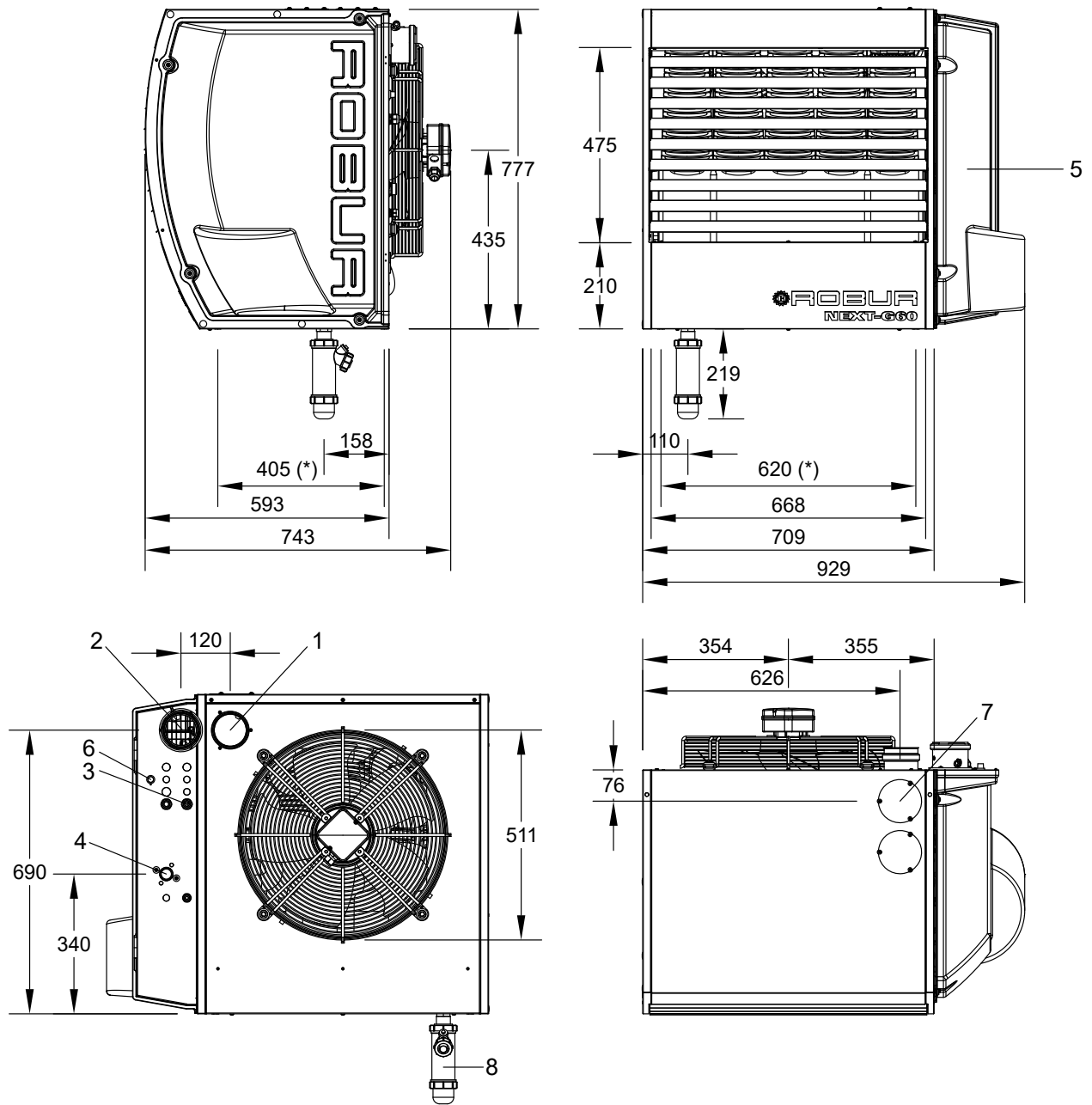
Figure 1.4 Unit dimensions



- | | | | |
|---|------------------------------|-----|---|
| 1 | Ø 80mm flue gas exhaust | 6 | Limit thermostat |
| 2 | Combustion air inlet Ø 80 mm | 7 | Flue gas exhaust blind cover, alternative to the rear one (1) |
| 3 | Power supply cables input | 8 | Condensate drain kit |
| 4 | Gas connection 3/4" M | (*) | Holes for fixing to the support bracket |
| 5 | Thermoformed door | | |

1.2.1.5 G 60, G 60 EC

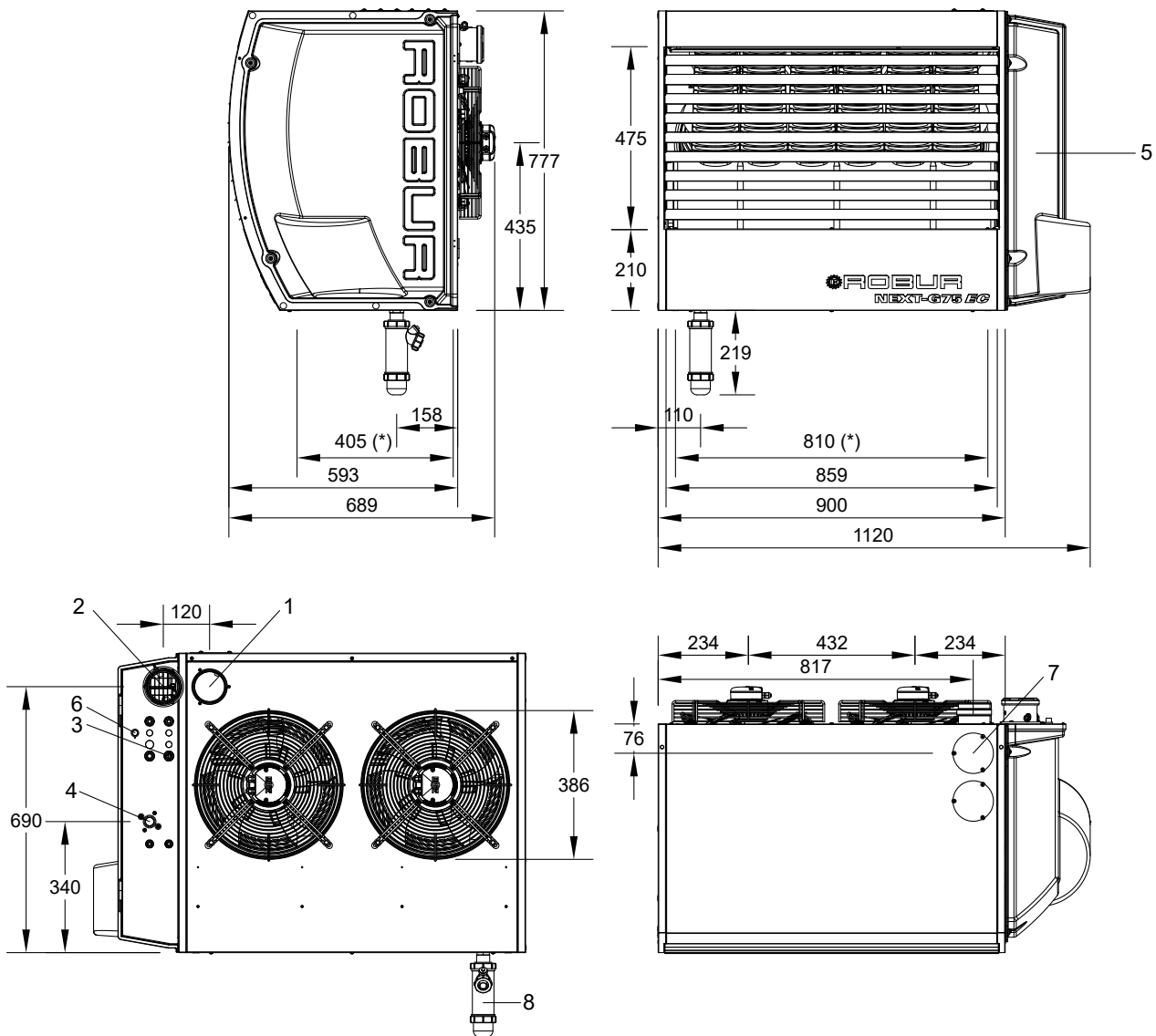
Figure 1.5 Unit dimensions



- 1 Ø 80mm flue gas exhaust
- 2 Combustion air inlet Ø 80 mm
- 3 Power supply cables input
- 4 Gas connection 3/4" M
- 5 Thermoformed door
- 6 Limit thermostat
- 7 Flue gas exhaust blind cover, alternative to the rear one (1)
- 8 Condensate drain kit
- (*) Holes for fixing to the support bracket

1.2.1.6 G 75 EC

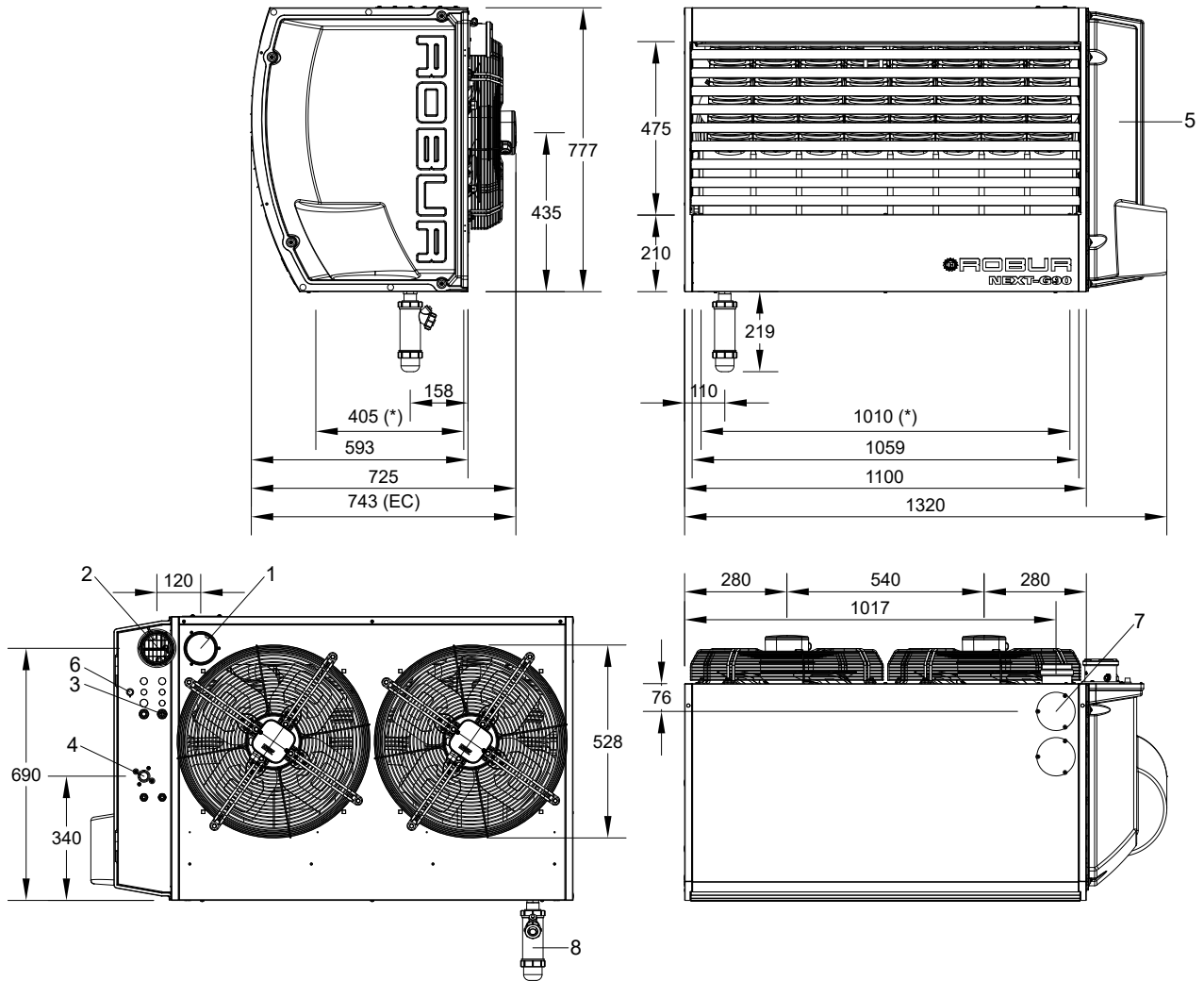
Figure 1.6 Unit dimensions



- 1 Ø 80mm flue gas exhaust
- 2 Combustion air inlet Ø 80 mm
- 3 Power supply cables input
- 4 Gas connection 3/4" F
- 5 Thermoformed door
- 6 Limit thermostat
- 7 Flue gas exhaust blind cover, alternative to the rear one (1)
- 8 Condensate drain kit
- (*) Holes for fixing to the support bracket

1.2.1.7 G 90, G 90 EC

Figure 1.7 Unit dimensions

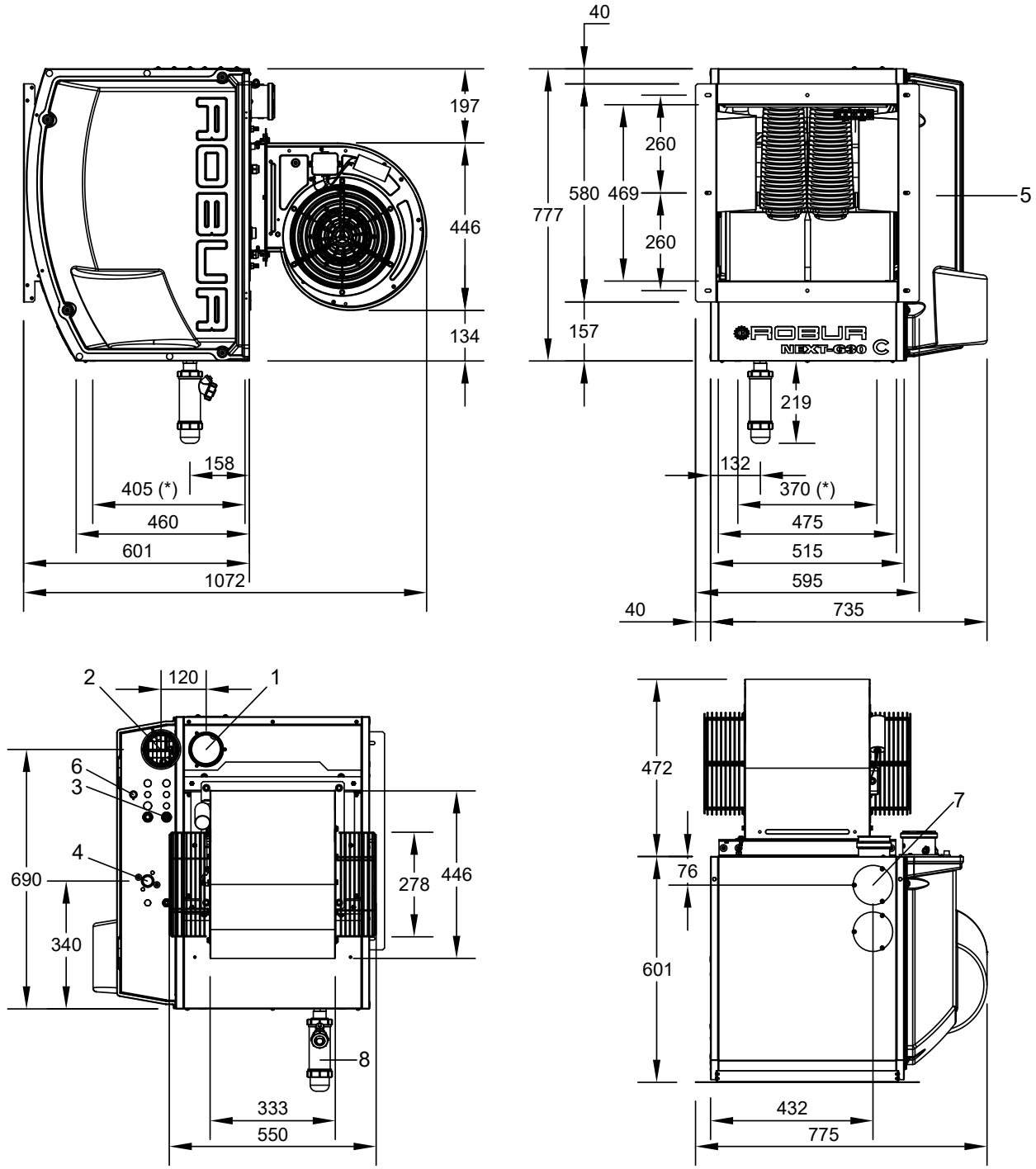


- 1 Ø 80mm flue gas exhaust
- 2 Combustion air inlet Ø 80 mm
- 3 Power supply cables input
- 4 Gas connection 3/4" F
- 5 Thermoformed door
- 6 Limit thermostat
- 7 Flue gas exhaust blind cover, alternative to the rear one (1)
- 8 Condensate drain kit
- (*) Holes for fixing to the support bracket

1.2.2 Centrifugal gas unit heaters

1.2.2.1 G 30 C

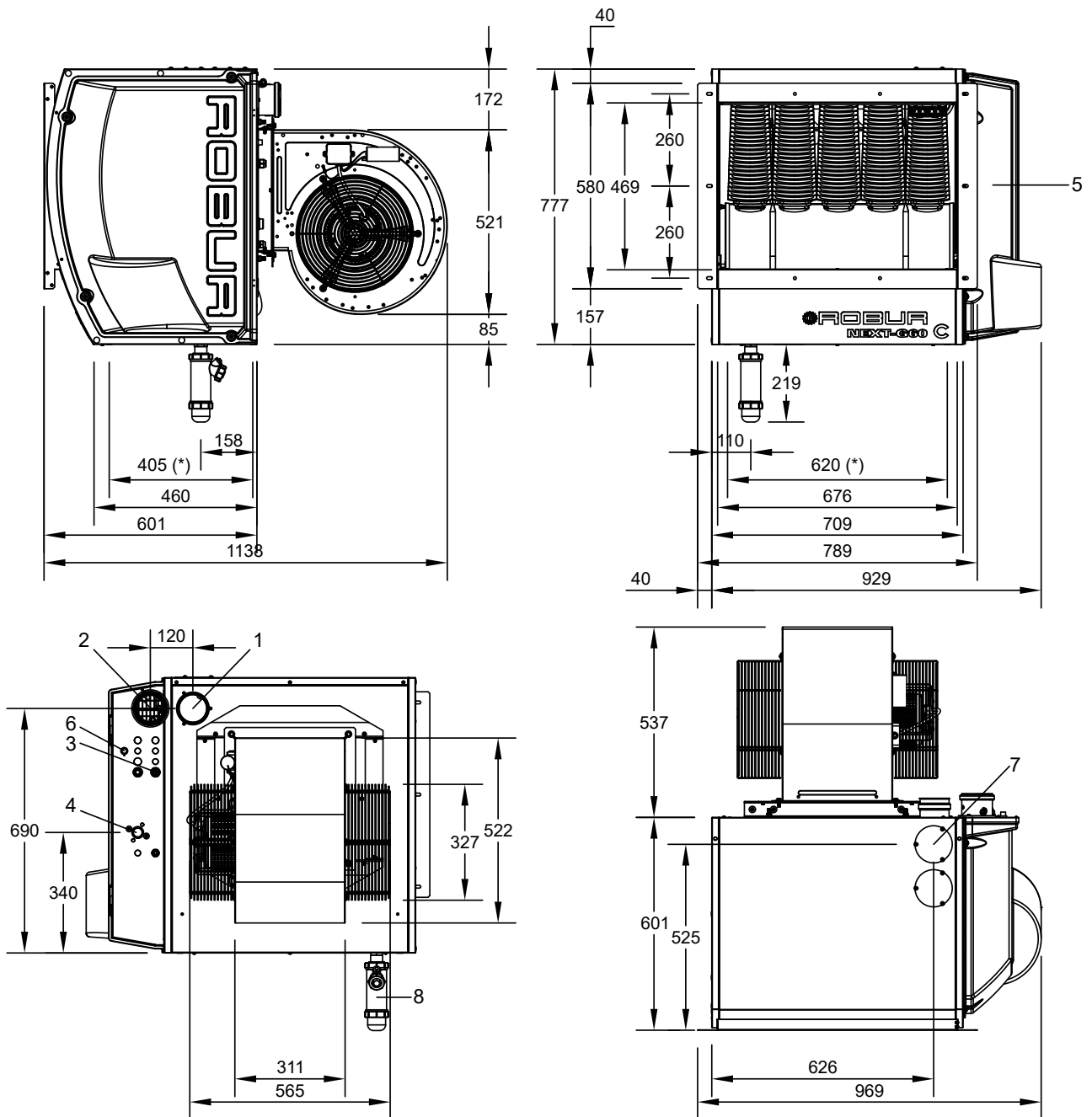
Figure 1.8 Unit dimensions



- 1 Ø 80mm flue gas exhaust
- 2 Combustion air inlet Ø 80 mm
- 3 Power supply cables input
- 4 Gas connection 3/4" M
- 5 Thermoformed door
- 6 Limit thermostat
- 7 Flue gas exhaust blind cover, alternative to the rear one (1)
- (*) Holes for fixing to the support bracket

1.2.2.2 G 60 C

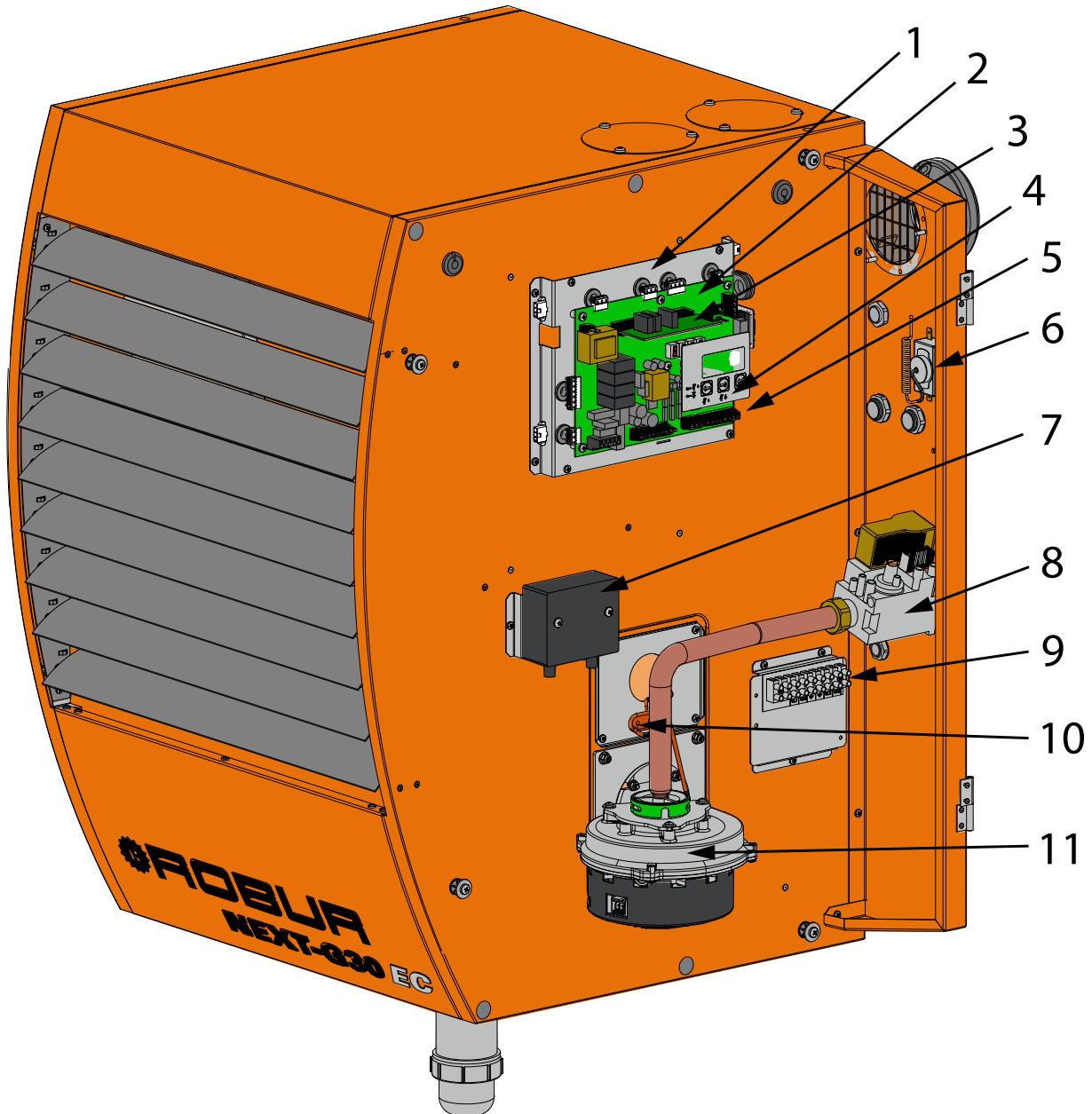
Figure 1.9 Unit dimensions



- 1 Ø 80mm flue gas exhaust
- 2 Combustion air inlet Ø 80 mm
- 3 Power supply cables input
- 4 Gas connection 3/4" M
- 5 Thermoformed door
- 6 Limit thermostat
- 7 Flue gas exhaust blind cover, alternative to the rear one (1)
- (*) Holes for fixing to the support bracket

1.3 COMPONENTS

Figure 1.10 Internal components

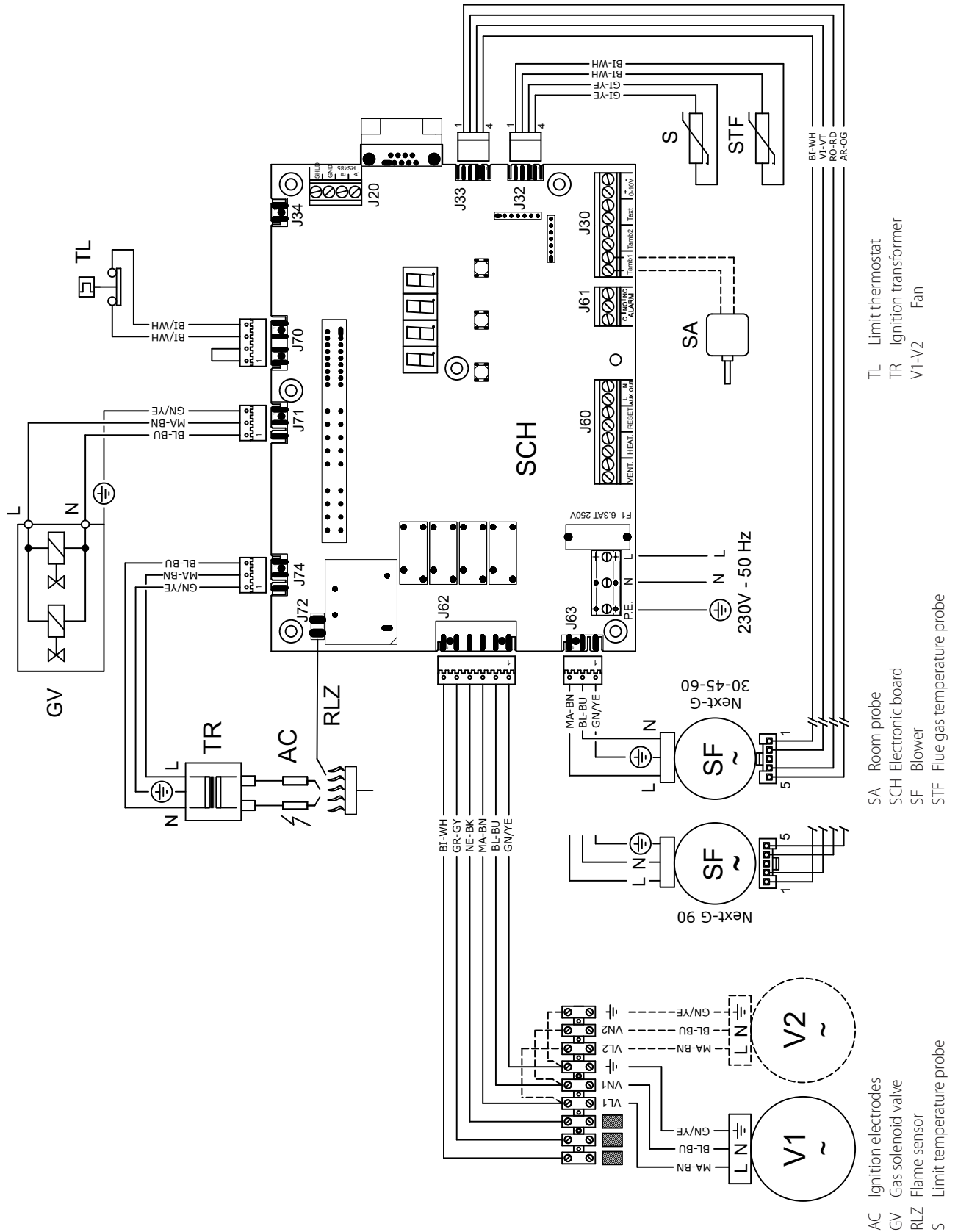


- | | | | | | |
|---|---|---|----------------------|----|------------------------------------|
| 1 | Electrical panel | 4 | GEN10 board display | 8 | Gas valve |
| 2 | GEN10 electronic board | 5 | Terminal block | 9 | Fan terminal block |
| 3 | Controller for ignition, adjustment and flame control | 6 | Limit thermostat | 10 | Flame sensor / ignition electrodes |
| | | 7 | Ignition transformer | 11 | Combustion blower |

1.4 ELECTRICAL WIRING DIAGRAM

1.4.1 G 30, G 45, G 60, G 90, G 30 C, G 60 C

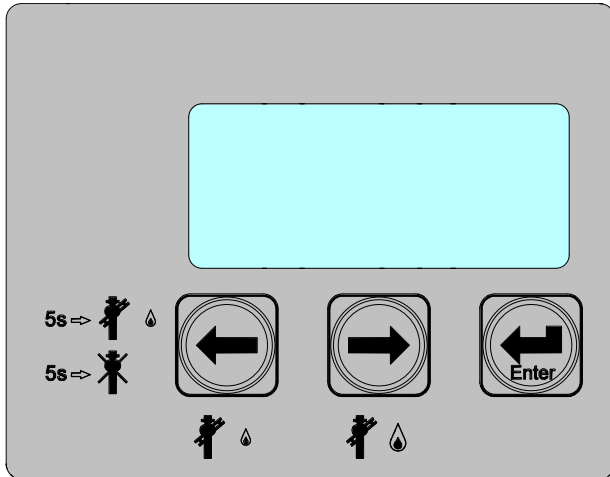
Figure 1.11 Electrical wiring diagram



1.5 ELECTRONIC BOARD

The appliance's electrical panel contains the GEN10 microprocessor electronic board, which controls the appliance and displays data, messages and operating codes. The appliance is monitored and programmed by interacting with the display and selection keys (Figure 1.13 p. 20).

Figure 1.13 GEN10 board display



1.6 OPERATION MODE

The Next-G gas unit heater has the possibility of operating in two modes, which can be selected via parameter P42 (Paragraph 5.4 p. 48):

- ▶ with the OCDS015 remote control (or a generic Modbus controller)
- ▶ without remote control

There are two service requests for both modes:

- ▶ ventilation
- ▶ heating

The features available with each operating mode are detailed below.

The Next-G gas unit heater, thanks to the presence of the supplied room probe, modulates the heat output continuously, following the setpoint set in parameter P53 (Paragraph 5.4 p. 48).

If you do not wish to use the supplied room probe, it will be possible to manage the gas unit heater operation on two power levels by opening or closing the "VENT." contact (the "HEAT." contact must be closed by a suitable device to activate the heating request, Table 1.1 p. 20):

- ▶ contact "VENT." closed: maximum power operation
- ▶ contact "VENT." open: minimum power operation

1.6.1 With the OCDS015 remote control

With the OCDS015 remote control, or a generic Modbus controller, to activate the heating or ventilation service it is necessary that the service is requested via Modbus (for a generic Modbus controller refer to the Modbus map document for the specific FW version of the GEN10 board) and that **in addition** the corresponding contact service request input is closed (Paragraph 4.4.8.1 p. 40).

i If not managed, the contact service request inputs must be jumpered accordingly.

The document describing the mapping and meaning of the Modbus registers implemented on the GEN10 board is available on-demand from Robur technical service.

The 0-10 V input is never used in this configuration.

i **Loss of communication with the remote control or generic Modbus controller results in deactivation of the service request and shutdown of the appliance.**

The supported service request types are:

- ▶ standby
- ▶ ventilation
- ▶ fixed power heating (3 power levels), with the remote control providing the setpoint and current room temperature
- ▶ fixed power heating (3 power levels), with the remote control providing the setpoint and room temperature measured by the appliance using the supplied room probe
- ▶ modulating heating, with the remote control providing the setpoint and current room temperature
- ▶ modulating heating, with the remote control providing the setpoint and room temperature measured by the appliance using the supplied room probe
- ▶ modulating heating, with the remote control providing the required power level as a percentage of maximum power

1.6.2 Without remote control

Without the remote control, or a generic Modbus controller, the service request is made exclusively via the appropriate contact request inputs (Paragraph 4.4.8.1 p. 40).

Depending on the active inputs, the functions described in the following Table 1.1 p. 20 are obtained.

Table 1.1 Functions available depending on the status of the contact inputs

"VENT." input	"HEAT." input	Features
open	open	off
closed	open	ventilation
open	closed	heating at power level 1 or modulating
closed	closed	heating at power level 3 or modulating

More in detail, thanks to the presence of the supplied room probe, when the "HEAT." contact is closed, the gas unit heater will operate in heating mode in modulation, regardless of the status of the "VENT." contact.

To achieve operation on two power levels it is necessary to set parameter P45 to value 0 (Paragraph 5.4 p. 48) and at that point it will be possible to manage the two power levels either through the contact request inputs, as described above, or through one of the commands that allow automated management of the power levels

(OTRG005 thermoregulator with or without OCDS008 digital chronothermostat and OSWR000 Genius software for remote management).

The supported service request types are:

- ▶ standby
- ▶ ventilation
- ▶ fixed power heating
- ▶ fixed power heating, with fixed setpoint (settable, Paragraph 5.4 p. 48) and room temperature measured by the appliance via the supplied room probe
- ▶ modulating heating, with fixed setpoint (settable, Paragraph 5.4 p. 48) and room temperature measured by the appliance via the supplied room probe
- ▶ fixed power heating, with setpoint from 0-10 V input and room temperature measured by the appliance via the supplied room probe
- ▶ modulating heating, with setpoint from 0-10 V input and room temperature measured by the appliance via the supplied room probe
- ▶ modulating heating, with the 0-10 V input providing the required power level as a percentage of maximum power

1.6.3 Automatic destratification function

In the operating modes in which the heating service is based on the room temperature (measured by the control system or directly by the room probe connected to the gas unit heater) it is possible to activate the automatic destratification by installing the destratification temperature probe, configuring parameter P46 to value 1 (Paragraph 5.4 p. 48) and setting the parameters relative to the minimum temperature difference above which the stratified heat can be used (P80, Paragraph 5.4 p. 48) and the maximum destratification time (P81, Paragraph 5.4 p. 48).

The destratification operation is activated when a room temperature below the setpoint is detected and the gas unit heater detects, via the destratification probe, that there is sufficient stratified heat to be used instead of starting the gas unit heater for heating.

In destratification mode, the gas unit heater will only turn on the fans, keeping the burner off, until there is sufficient stratified heat to be used or the maximum destratification time has elapsed, after which if the room temperature is still insufficient the destratification function will be interrupted and the burner started for normal heating.

In the absence of the OCDS015 Modbus remote control or of a generic Modbus controller that manages the deactivation of the destratification function, to deactivate the function it is necessary to set parameter P46 to the value 0.

1.7 CONTROLS

1.7.1 Control device

The appliance may only work if it is connected to a control device, selected from:

1. OCDS015 Modbus remote control
2. Generic Modbus controller

3. OCDS012 1-key basic control
4. OCDS016 2-keys basic control
5. OTRG005 thermoregulator
6. OCDS008 digital chronothermostat (only in association with OTRG005 thermoregulator)
7. OSWR000 Genius software for remote management of gas unit heaters (only in association with OTRG005 thermoregulator)
8. External request

1.7.2 OCDS015 Modbus remote control

The OCDS015 remote control is an optional control device with a colour touch screen that allows centralised management of the Next-G gas unit heaters, up to a maximum of 30 gas unit heaters even divided over a maximum of 6 zones.

The main functions are:

- ▶ Programmed on/off switching of the gas unit heaters, up to a maximum of 30.
- ▶ Possibility of dividing the connected gas unit heaters into several zones, up to a maximum of 6, each with its own setpoint, operating mode and time programming.
- ▶ Management of the automatic destratification function.
- ▶ Space heating and summer ventilation setpoint setting.
- ▶ Antifreeze function.
- ▶ Summer ventilation mode activation.
- ▶ Centralised control with touch interface.
- ▶ Diagnostics.
- ▶ Possibility to interface with a BMS system.
- ▶ Possibility of temporarily excluding one or more appliances from operation.

1.7.3 Generic Modbus controller

The Next-G gas unit heaters can interact directly with a generic Modbus controller on which the registers required to control the gas unit heater itself have been appropriately configured.

Depending on the registers managed on the Modbus controller, the relevant functions will be available or not (switching the gas unit heater on/off, choosing the operating mode, error reporting and reset, ...).



The document describing the mapping and meaning of the Modbus registers implemented on the GEN10 board is available on-demand from Robur technical service.

1.7.4 OCDS012 1-key basic control

Figure 1.14 OCDS012 1-key basic control



Its functions are:

- ▶ Light signalling of the presence of errors or warnings.
- ▶ Error reset.

The OCDS012 1-key basic control does not allow to control the switching on and off of the appliance for space heating, nor for the summer ventilation.

Power modulation is managed independently by the gas unit heater thanks to the presence of the supplied room probe.

For further details and diagrams see Paragraph 4.4.3 p. 37.

An external request (Paragraph 1.7.9 p. 23) must be used to control the operation of the gas unit heater.

1.7.5 OCDS016 2-keys basic control

Figure 1.15 OCDS016 2-keys basic control



Its functions are:

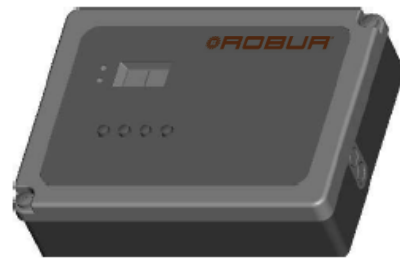
- ▶ Light signalling of the presence of errors or warnings.
- ▶ Error reset.
- ▶ Selection of the operating mode: heating, summer ventilation or off.

Power modulation is managed independently by the gas unit heater thanks to the presence of the supplied room probe.

For further details and diagrams see Paragraph 4.4.4 p. 37.

1.7.6 OTRG005 thermoregulator

Figure 1.16 OTRG005 thermoregulator



The thermoregulator is a device that can directly manage wall-mounted gas unit heaters: the serial interface makes it possible to create cascade systems managed by a single chronothermostat (optional OCDS008, described in Paragraph 1.7.7 p. 22), with considerable advantages in terms of thermoregulation, especially in large spaces.

The main functions are:

- ▶ Turning the gas unit heater on/off.
- ▶ Ambient temperature measurement by NTC probe.
- ▶ Automatic management of power modulation.
- ▶ Diagnostics.
- ▶ Reset of the flame lockout.
- ▶ Gas unit heater data display and parameters setting.
- ▶ Space heating and summer ventilation setpoint setting.
- ▶ Summer ventilation mode activation.
- ▶ Possibility of creating cascaded systems.
- ▶ Modbus interfacing for remote control.

For further details and diagrams see OTRG005 thermoregulator instruction sheet and Paragraph 4.4.5 p. 37.

1.7.7 OCDS008 digital chronothermostat

Figure 1.17 OCDS008 digital chronothermostat



OCDS008 digital chronothermostat integrates the functions of room temperature control and remote control of the gas unit heaters heating system in a single interface, specifically designed to make all functions available to the user in a clear and intuitive way.

It may be used only in association with the OTRG005 thermoregulator.

The main functions are:

- ▶ Gas unit heaters cascade system management (up to 10).
- ▶ Hourly programming on a weekly basis on 3 temperature levels.

- ▶ Diagnostics.
- ▶ Reset.
- ▶ Gas unit heater data display and parameters setting.
- ▶ Space heating and summer ventilation setpoint setting.
- ▶ Automatic management of power modulation.
- ▶ Summer ventilation mode activation.

For further details and diagrams see OCDS008 digital chronothermostat instruction sheet and Paragraph 4.4.6 p. 38.

1.7.8 OSWR000 Genius software for remote management of gas unit heaters

This is a software that allows, through the OTRG005 thermoregulators, to centralize the management of up to 100 gas unit heaters, allowing them to be freely divided into zones, for an even more personalized heating management.

If the PC on which the software is installed is accessible remotely, the software allows remote management of the whole heating system from multiple devices, as well as sending emails to report any anomalies to the gas unit heaters or to the heating system.

The main functions are:

- ▶ Centralized system to control up to 100 gas unit heaters.
- ▶ Division of gas unit heaters into zones, up to 10 different zones.
- ▶ Independent or centralized gas unit heaters control.
- ▶ Remote control of the system from multiple devices.
- ▶ Diagnostics, also by email.
- ▶ Reset.
- ▶ Gas unit heater data display and parameters setting.
- ▶ Space heating and summer ventilation setpoint setting.
- ▶ Automatic management of power modulation.
- ▶ Summer ventilation mode activation.

For further details and diagrams see OSWR000 Genius

software instruction sheet and Paragraph 4.4.7 p. 39.

1.7.9 External request

The appliance may also be controlled via generic enable devices (e.g. thermostat, timer, switch, contactor...) fitted with **voltage-free NO contact**.

External request control can be used on the contacts, available on the terminal block of the Next-G appliance (Figure 1.13 p. 20), to realise various functions. In detail:

- ▶ The "HEAT." and "VENT." contacts determine the operating mode and power level of the gas unit heater according to the logic described in Table 1.1 p. 20.
- ▶ The J61 contact activates the warning or error reporting of the gas unit heater.
- ▶ The "RESET" contact activates the reset of any errors present.

In addition to the contacts, inputs for temperature probes are available:

- ▶ Room probe ("Tamb1" input), supplied
- ▶ Outdoor probe ("Text" input)
- ▶ Destratification probe ("Tamb2" input)

The "0-10V" input is available for setpoint or power level communication in the form of a 0-10 V DC signal.

For managing the request signal ("HEAT." contact), Robur provides as optional different models of thermostats and chronothermostats.

For further details and diagrams see Paragraph 4.4.8 p. 40.

1.7.10 Other optional thermostats and chronothermostats

For managing the request signal ("HEAT." contact), Robur provides as optional different models of thermostats and chronothermostats, listed below.

- ▶ Room thermostat with ON/OFF switch (optional O12301035)
- ▶ Sealed room thermostat IP55 (optional O12301025)
- ▶ Digital programmable chronothermostat (optional OCDS005)

1.8 TECHNICAL DATA

Table 1.2 *Technical data*
Axial fan models with fixed speed

			G 30	G 45	G 60	G 90
Heating mode						
Heat input	nominal (1013 mbar - 15 °C) (1)	kW	28,0	43,0	58,0	90,0
	minimum (1)	kW	9,3	13,8	18,5	27,0
Heat output for each unit	nominal	kW	27,4	41,4	56,6	87,3
	minimum	kW	9,9	14,5	19,5	28,6
Efficiency	nominal heat input	%	97,8	96,2	97,5	97,0
	minimal heat input	%	106,8	105,3	105,2	106,1
	useful at 100% heat input	%	97,3	95,7	97,0	96,5
Heat losses	to flue in operation	%	2,20	3,80	2,50	3,00
	to casing in operation	%	0,50			
	with burner off	%	0,10			

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

(2) Values measured in an open area; in a real installation, the thermal flow may reach greater distances than those given here (depending on the height of the ceiling and its thermal insulation).

(3) The gas unit heater cannot operate with this type of gas.

			G 30	G 45	G 60	G 90
Temperature rise	nominal heat input	K	33,1	35,6	29,6	28,4
	minimal heat input	K	11,9	12,4	10,1	9,2
length of throw (residual speed < 0,5 m/s) (2)		m	18,0	24,0	28,0	38,0
Outdoor temperature (dry bulb)	maximum	°C	40			
	minimum	°C	0			
Electrical specifications						
Power supply	voltage	V	230			
	type	-	single-phase			
	frequency	Hz	50			
Electrical power absorption	nominal	kW	0,21	0,35	0,61	1,00
fuse		A	6,3			
Degree of protection	fan motor	IP	54			
	appliance	IP	20			
Installation data						
Gas consumption	G20 natural gas (nominal)	m ³ /h	2,97	4,56	6,14	9,37
	G25 (nominal)	m ³ /h	3,45	5,29	7,14	11,07
	G25.1 (nominal)	m ³ /h	3,43	5,28	7,13	11,06
	G25.3 (nominal)	m ³ /h	3,33	5,17	6,99	10,82
	G27 (nominal)	m ³ /h	3,61	5,56	7,51	11,61
	G2.350 (nominal)	m ³ /h	4,10	6,32	8,52	- (3)
	G30 (nominal)	kg/h	2,18	3,38	4,54	7,08
	G31 (nominal)	kg/h	2,17	3,34	4,50	6,97
Air flow	nominal (Delta T = 15 °C)	m ³ /h	2450	3450	5650	9100
Gas connection	type	-	M			F
	thread	"	3/4			
Flue gas exhaust	diameter (Ø)	mm	80			
	residual head	Pa	80	100	130	200
	type of installation	-	B23, B23P, C13, C33, C53, C63			
Combustion air intake connection	diameter (Ø)	mm	80			
recommended height		m	3,0 ÷ 3,5			
sound power L_w (max)		dB(A)	75,0	84,0	86,0	
sound pressure L_p at 5 metres (max)		dB(A)	53,0	62,0	64,0	
Dimensions	width	mm	735		929	1320
	depth	mm	731	738	743	725
	height	mm	777			
Weight	in operation	kg	56	61	79	100
General information						
number of heat exchangers		-	2	3	5	8
type of heat exchangers		-	tower			
number of fans		-	1			2

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

(2) Values measured in an open area; in a real installation, the thermal flow may reach greater distances than those given here (depending on the height of the ceiling and its thermal insulation).

(3) The gas unit heater cannot operate with this type of gas.

Axial fan models with brushless variable speed motor

			G 20 EC	G 30 EC	G 35 EC	G 45 EC	G 60 EC	G 75 EC	G 90 EC	
Heating mode										
Heat input	nominal (1013 mbar - 15 °C) (1)	kW	19,5	28,0	34,5	43,0	58,0	75,0	90,0	
	minimum (1)	kW	8,1	9,3	12,3	13,8	18,5	25,0	27,0	
Heat output for each unit	nominal	kW	19,0	27,4	33,4	41,4	56,6	72,0	87,3	
	minimum	kW	8,5	9,9	13,1	14,5	19,5	26,3	28,6	
Efficiency	nominal heat input	%	97,5	97,8	96,9	96,2	97,5	96,0	97,0	
	minimal heat input	%	105,5	106,8	106,5	105,3	105,2	105,0	106,1	
	useful at 100% heat input	%	97,0	97,3	96,4	95,7	97,0	95,5	96,5	
Heat losses	to flue in operation	%	2,50	2,20	3,10	3,80	2,50	4,00	3,00	
	to casing in operation	%					0,50			
	with burner off	%					0,10			

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

(2) Values measured in an open area; in a real installation, the thermal flow may reach greater distances than those given here (depending on the height of the ceiling and its thermal insulation).

(3) The gas unit heater cannot operate with this type of gas.

			G 20 EC	G 30 EC	G 35 EC	G 45 EC	G 60 EC	G 75 EC	G 90 EC	
Temperature rise	nominal heat input	K	24,5	33,1	36,2	35,6	29,7	39,5	28,4	
	minimal heat input	K	15,8	16,8	18,1	14,6	13,8	17,7	14,4	
length of throw (residual speed < 0,5 m/s) (2)		m	15,0	18,0	20,0	24,0	28,0		38,0	
Outdoor temperature (dry bulb)	maximum	°C	40							
	minimum	°C	0							
Electrical specifications										
Power supply	voltage	V	230							
	type	-	single-phase							
	frequency	Hz	50							
Electrical power absorption	nominal	kW	0,19	0,18	0,39	0,41	0,39	0,75		
fuse		A	6,3							
Degree of protection	fan motor	IP	54							
	appliance	IP	20							
Installation data										
Gas consumption	G20 natural gas (nominal)	m ³ /h	2,07	2,97	3,66	4,56	6,14	7,93	9,37	
	G25 (nominal)	m ³ /h	2,40	3,45	4,26	5,29	7,14	9,23	11,07	
	G25.1 (nominal)	m ³ /h	2,40	3,43	4,24	5,28	7,13	9,23	11,06	
	G25.3 (nominal)	m ³ /h	2,34	3,33	4,15	5,17	6,99	9,01	10,82	
	G27 (nominal)	m ³ /h	2,51	3,61	4,44	5,56	7,51	9,68	11,61	
	G2.350 (nominal)	m ³ /h	2,86	4,10	5,09	6,32	8,52	- (3)		
	G30 (nominal)	kg/h	1,52	2,18	2,72	3,38	4,54	5,92	7,08	
	G31 (nominal)	kg/h	1,50	2,17	2,68	3,34	4,50	5,82	6,97	
Air flow	nominal (Delta T = 15 °C)	m ³ /h	2300	2450	2735	3450	5650	5400	9100	
Gas connection	type	-	M					F		
	thread	"	3/4							
Flue gas exhaust	diameter (Ø)	mm	80							
	residual head	Pa	65	80	100	130	150	200		
	type of installation	-	B23, B23P, C13, C33, C53, C63							
	Combustion air intake connection	diameter (Ø)	mm	80						
recommended height		m	2,5	3,0 ÷ 3,5						
sound power L_w (max)		dB(A)	78,0	75,0	76,0	83,0	81,0	80,0	86,0	
sound pressure L_p at 5 metres (max)		dB(A)	56,0	53,0	54,0	61,0	59,0	58,0	64,0	
Dimensions	width	mm	678	735			929	1120	1320	
	depth	mm	579	689			743	689	743	
	height	mm	480	777						
Weight	in operation	kg	35	56	58	61	79	90	100	
General information										
number of heat exchangers		-	1	2	3	5	6	8		
type of heat exchangers		-	pipe	tower						
number of fans		-	1					2		

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

(2) Values measured in an open area; in a real installation, the thermal flow may reach greater distances than those given here (depending on the height of the ceiling and its thermal insulation).

(3) The gas unit heater cannot operate with this type of gas.

Centrifugal fan models

			G 30 C			G 60 C		
Electrical specifications								
Electrical power absorption	nominal	kW	0,65			1,50		
fuse		A	6,3			10,0		
Degree of protection	fan motor	IP	44			20		
	appliance	IP	20			44		
Installation data								
Air flow	at maximum available head	m ³ /h	2500			5400		
	free blowing	m ³ /h	3550			6500		
maximum useful pressure head		Pa	140			120		
minimum pressure drop on heat flow delivery		Pa	0					
Dimensions	width	mm	775			969		
	height	mm	777					
	depth	mm	1072			1138		
Weight	in operation	kg	78			109		

2 TRANSPORT AND POSITIONING

2.1 WARNINGS

Damage from transport or installation

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

On-site inspection

- Upon arrival at the site, ensure there is no transport damage on packing, metal panels or to the thermoformed door.
- After removing the packing materials, ensure the appliance is intact and complete.

Packing

- 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 2.5 p. 27).

2.2 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.

 The appliance is not designed for outdoor installation.

2.3.1 Where to install the appliance

 The wall or structure on which the unit is to be installed must be load-bearing or, in any case, suitable for supporting its weight.

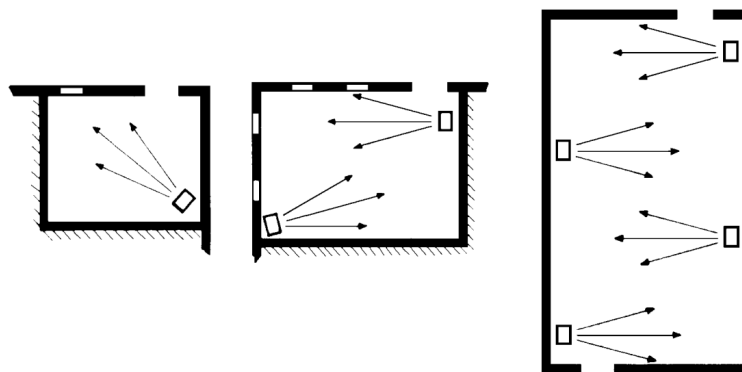
 Installation must not be made on walls with poor strength that do not guarantee adequate resistance to the stresses produced by the appliance. The manufacturer assumes no responsibility if the appliance is installed on surfaces or walls that are not suitable to support its weight.

 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.

To obtain the maximum system efficiency it is advisable to comply with the following rules:

- ▶ Take care that the air flow does not directly impinge on the staff (by tilting the front grille louvres appropriately).
- ▶ Take any obstacles into account (pillars or other).
- ▶ Consider length of throw of the unit (Table 1.2 p. 23).
- ▶ For better heat distribution in the case of multiple unit installations, create alternate flows of warm air (see Figure 2.1 p. 26).
- ▶ In some cases it may also be suitable to place the units close to the main doors, so that they can also operate as air barriers when doors are opened.

Figure 2.1 Airflow distribution



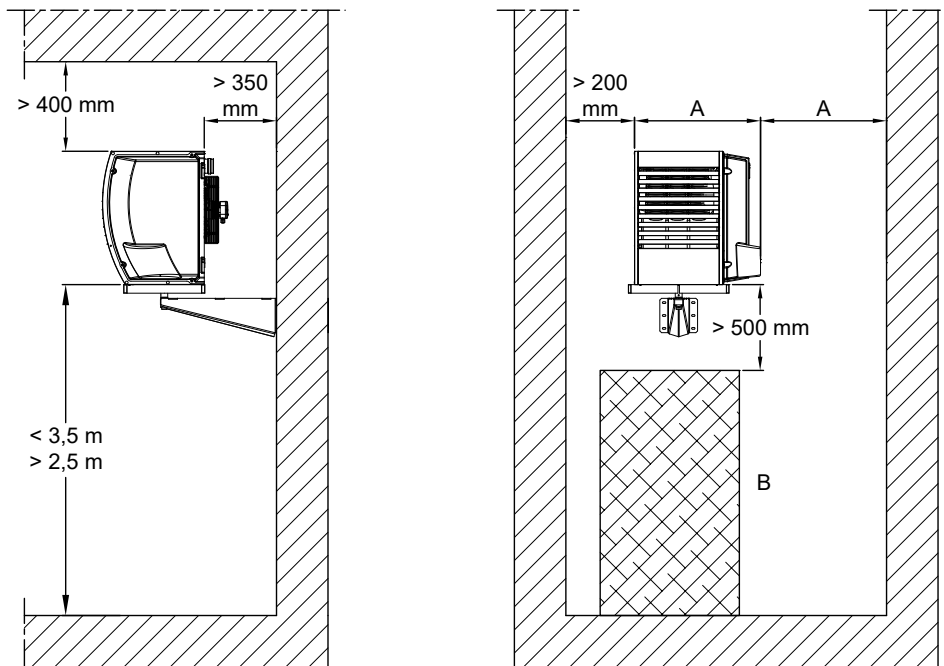
2.4 MINIMUM CLEARANCE DISTANCES

2.4.1 Distances from combustible or flammable materials

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

2.4.2.1 Axial gas unit heaters

Figure 2.2 Clearances



A Gas unit heater width

B Object or structure underneath the gas unit heater

i The recommended height from the floor to the gas unit heater base is $2,5 \div 3,5$ m (Figure 2.2 p. 27). We do not recommend installing the gas unit heaters at heights below 2,5 m from the floor.

2.4.2.2 Centrifugal gas unit heaters

The position of gas unit heaters with centrifugal fan must consider the position of the warm air duct. This must be suitably sized and verified in relation to the air flow rate and the head of the centrifugal fan (Paragraph 3.5 p. 35).

i The recommended height from the floor to the gas unit heater base is $3,0 \div 3,5$ m (Figure 2.2 p. 27). We do not recommend installing the gas unit heaters at heights below 3,0 m from the floor.

2.5 SUPPORT BRACKET

Robur provides easy mounting support brackets as an optional, suitably designed for Next-G series gas unit heaters, which allow simplifying the wall fixing.

If you do not want to use these options, refer to Figure 2.3 p. 27.

When fixing the unit to the support brackets, use 4 M10

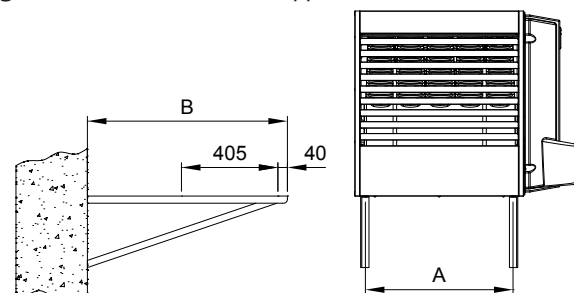
regulations.

2.4.2 Clearances around the appliance

i The minimum clearance distances are required for safety, operation and maintenance.

bolts.

Figure 2.3 Installation with support bracket



A Gas unit heater fixing points centre distance

B Support bracket length

Table 2.1 Support bracket dimensions for axial gas unit heaters

	G 30 G 30 EC	G 35 EC G 45 G 45 EC	G 60 G 60 EC	G 75 EC	G 90 G 90 EC
A	370	370	620	810	1010
B	840				

Table 2.2 Support bracket dimensions for centrifugal gas unit

heaters

	G 30 C	G 60 C
A	370	620
B	1400	

All Robur support brackets are supplied with bolts and the rear support plate.

Table 2.3 Support brackets

Next-G	Revolving support brackets					Fixed support brackets	
	OSTF020	019800020	019800026	019800028	OKMN000	OSTF009 support bracket 1,4 m length	Tubular bracket OSTF010
G 20 EC	•	-	-	-	-	-	-
G 30							
G 30 EC							
G 35 EC	-	•	-	-	-	•	•
G 45							
G 45 EC							
G 60							
G 60 EC	-	-	-	-	•	•	•
G 75 EC	-	-	•	-	-	•	•
G 90							
G 90 EC	-	-	-	•	-	•	•

- Applicable
- Not applicable



For mounting instructions of the brackets, refer to the relevant instruction sheets.

2.5.1 Axial gas unit heaters

For axial gas unit heaters, the support brackets listed in Table 2.3 p. 28 below are available as optional.

2.5.2 Centrifugal gas unit heaters

For centrifugal gas unit heaters, the following mounting brackets are available as optional:

- ▶ OSTF009 support bracket 1,4 m length

2.5.3 OSTF020 revolving wall support bracket (G 20 EC)

For the G 20 EC gas unit heater, the OSTF020 adjustable support bracket (available as an optional) can only be used while keeping the gas unit heater with a horizontal air throw.

3 HEATING ENGINEER

3.1 WARNINGS



Read the warnings in Chapter III.1 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:

- heating systems
- gas systems
- flue gas exhaust
- flue gas condensate discharge



Installation must also comply with the manufacturer's provisions.

3.2 FUEL GAS SUPPLY

3.2.1 Gas connection

It is located at the rear, on the left (dimensional drawings Paragraph 1.2 p. 8 and Table 1.2 p. 23).

- ▶ Install an anti-vibration connection between the appliance and the gas piping.

3.2.2 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 or similar system to allow the gas unit heater to be disconnected from the gas supply.
- ▶ Perform connection in compliance with applicable regulations.

3.2.3 Gas pipes sizing

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

3.2.4 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. 29, with tolerance $\pm 15\%$.



Non compliant gas pressure (Table 3.1 p. 29) may damage the appliance and be hazardous.



The Next-G gas unit heaters are also approved for use with I20 gas, i.e. a gas mix with a 20% maximum of hydrogen.

Table 3.1 Network gas pressure

Product category	Country of destination	Gas supply pressure [mbar]							
		G20	G25	G25.1	G25.3	G2.350 (1)	G27	G30	G31
I ₂ H3B/P	AL, BG, CH, CY, CZ, DK, EE, FI, GR, HR, IT, LT, LV, MK, NO, RO, SE, SI, SK, TR	20						30	30
	AT, CH	20						50	50
I ₂ H3P	AL, BG, CH, CZ, ES, GB, GR, HR, IE, IT, LT, LV, MK, PT, SI, SK, TR	20							37
	RO	20							30
	AT	20							50
I ₂ ELL3B/P	DE	20	20					50	50
I ₂ ESi3P	FR	20	25						37
I ₂ Er3P		20	25						37
I ₂ H3B/P	HU	25						30	30
I ₂ HS3B/P		25		25				30	30
I ₂ E3P	LU	20							50
I ₂ L3B/P	NL		25					30	30
I ₂ L3P			25						37
I ₂ EK3B/P		20			25			30	30
I ₂ EK3P		20			25				30
I ₂ E3B/P	PL	20						37	37
I ₂ E		20							
I ₂ ELwLs3B/P		20				13	20	37	37
I ₂ ELwLs3P		20				13	20		37
I ₂ E(R)	BE	20	25						
I ₂ E(S)		20	25						
I ₃ P									37
I ₃ P	IS								30
I ₂ H	LV	20							
I ₃ B/P	MT							30	30
I ₃ B								30	

1 The G 75 EC, G 90 and G 90 EC gas unit heaters cannot be operated with this type of gas. The appliance gas supply pressure, both static and dynamic, must comply with the values in the Table, with a tolerance of $\pm 15\%$.

3.2.5 Vertical pipes and condensate

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

3.2.6 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.

3.3 COMBUSTION PRODUCTS EXHAUST

Compliance with standards

The appliance is approved for connection to a combustion products exhaust duct for the types shown in Table 1.2 p. 23.

3.3.1 Flue gas exhaust connection

- \varnothing 80 mm with gasket, on the rear, at the top (see dimensional diagrams, Paragraph 1.2 p. 8).

For all models, it is possible to move the fumes gas outlet connection from the rear position to the top of the unit.



How to move the fumes gas outlet

1. Remove the gas unit heater top panel.
2. Remove the blind cover of the upper flue gas exhaust (detail 7 in the dimensional diagrams, Paragraph 1.2 p. 8) from the top panel.
3. Unscrew the three screws fixing the flue gas exhaust to the rear collar.

4. Position the flue gas exhaust in the lead-in in the top panel.
5. Secure the flue gas exhaust to the upper lead-in with the three screws.
6. Fit the blind cover on the rear flue gas exhaust.
7. Fit the gas unit heater top panel back on.

3.3.2 Combustion air intake fitting

- ▶ Ø 80 mm with gasket, on the rear, at the top (see dimensional diagrams, Paragraph 1.2 p. 8).

3.3.3 Installation types



The lengths in following Tables are intended for installations where the air and/or flue gas exhaust ducts follow linear paths as shown in the respective Figures. Otherwise, you must proceed with the calculation of the pressure drop (Paragraph 3.3.4 p. 32).



If ducts other than those supplied by the manufacturer are used, make sure that they are suitable for the unit on which they are installed. In particular, the temperature class of the duct must be appropriate for the operating characteristics of the unit, and must also respect the chemical-physical stability of the system itself.



The material used for the flue gas exhaust duct must be class W1 according to EN 1443 and therefore suitable to withstand the action of condensate of combustion products from gaseous fuels.



In any case, use approved ducts according to the type of installation to be made. Upon request, Robur can supply suitable rigid pipes, coaxial ducts and terminals.

Gas unit heaters of the Next-G series can be installed to one of the following ways.

3.3.3.1 B23 type installation with wall flue gas exhaust pipe

Figure 3.1 B23 type installation with Ø 80 flue gas exhaust pipe

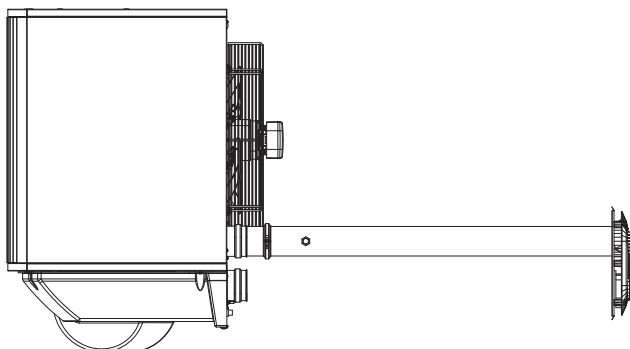


Table 3.2 B23 type maximum allowed length

Next-G	Indicative maximum lengths (m)		
	Flue gas exhaust pipe		
	Ø 80	Ø 100	Ø 110
G 20 EC	30	30	30
G 30, G 30 EC	30	30	30
G 35 EC	30	30	30
G 45, G 45 EC	30	30	30
G 60, G 60 EC	27	30	30
G 75 EC	18	30	30
G 90, G 90 EC	19	30	30

3.3.3.2 B23 type installation with roof flue gas exhaust pipe

Figure 3.2 B23 type installation with Ø 80 roof flue gas exhaust pipe

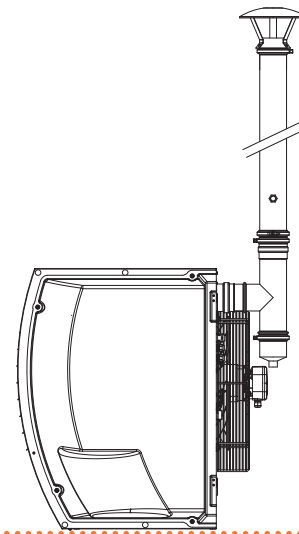


Table 3.3 B23 type maximum allowed length with roof flue gas exhaust pipe

Next-G	Indicative maximum lengths (m)		
	Flue gas exhaust pipe		
	Ø 80	Ø 100	Ø 110
G 20 EC	30	30	30
G 30, G 30 EC	30	30	30
G 35 EC	30	30	30
G 45, G 45 EC	30	30	30
G 60, G 60 EC	24	30	30
G 75 EC	15	30	30
G 90, G 90 EC	16	30	30

3.3.3.3 C13 type installation with separate ducts

Figure 3.3 C13 type installation with Ø 80 separate ducts

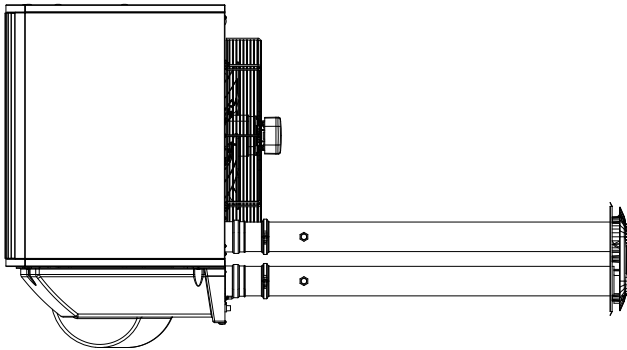


Table 3.4 C13 type maximum allowed length with separate ducts

Next-G	Indicative maximum lengths (m)					
	Air pipe			Flue gas exhaust pipe		
	Ø 80	Ø 100	Ø 110	Ø 80	Ø 100	Ø 110
G 20 EC	30	30	30	30	30	30
G 30, G 30 EC	30	30	30	30	30	30
G 35 EC	22	30	30	22	30	30
G 45, G 45 EC	19	30	30	19	30	30
G 60, G 60 EC	15	30	30	15	30	30
G 75 EC	10	30	30	10	30	30
G 90, G 90 EC	11	30	30	11	30	30

3.3.3.4 C13 type installation with wall coaxial terminal

Figure 3.4 C13 type installation with wall coaxial terminal and Ø 80 ducts

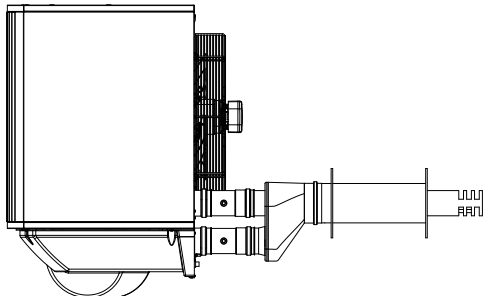


Table 3.5 C13 type maximum allowed length with 80/125 wall coaxial terminal and Ø 80 ducts

Next-G	Indicative maximum lengths (m)	
	Air pipe	Flue gas exhaust pipe
G 20 EC	30	30
G 30, G 30 EC	29	29
G 35 EC	20	20
G 45, G 45 EC	16	16
G 60, G 60 EC	12	12
G 75 EC	8	8
G 90, G 90 EC	8	8

Table 3.6 C13 type maximum allowed length with 130/180 wall coaxial terminal

Next-G	Indicative maximum lengths (m)			
	Air pipe		Flue gas exhaust pipe	
	Ø 80	Ø 130	Ø 80	Ø 130
G 20 EC	30	30	30	30
G 30, G 30 EC	30	30	30	30
G 35 EC	21	30	21	30
G 45, G 45 EC	18	30	18	30
G 60, G 60 EC	14	30	14	30
G 75 EC	9	30	9	30
G 90, G 90 EC	9	30	9	30

3.3.3.5 C33 type installation with roof coaxial terminal

Figure 3.5 C33 type installation with roof coaxial terminal

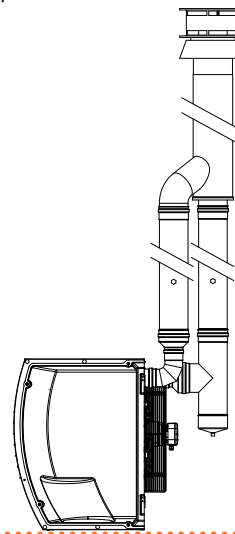


Table 3.7 C33 type maximum allowed length with 80/125 roof coaxial terminal and Ø 80 ducts

Next-G	Indicative maximum lengths (m)	
	Air pipe	Flue gas exhaust pipe
G 20 EC	30	30
G 30, G 30 EC	25	25
G 35 EC	15	15
G 45, G 45 EC	11	11
G 60, G 60 EC	7	7
G 75 EC	2	2
G 90, G 90 EC	2	2

Table 3.8 C33 type maximum allowed length with 100/150 roof coaxial terminal

Next-G	Indicative maximum lengths (m)			
	Air pipe		Flue gas exhaust pipe	
	Ø 80	Ø 100	Ø 80	Ø 100
G 20 EC	30	30	30	30
G 30, G 30 EC	27	30	27	30
G 35 EC	18	30	18	30
G 45, G 45 EC	14	30	14	30
G 60, G 60 EC	10	30	10	30
G 75 EC	5	20	5	20
G 90, G 90 EC	5	19	5	19

Table 3.9 C33 type maximum allowed length with 130/210 roof coaxial terminal

Next-G	Indicative maximum lengths (m)					
	Air pipe			Flue gas exhaust pipe		
	Ø 80	Ø 110	Ø 130	Ø 80	Ø 110	Ø 130
G 20 EC	30	30	30	30	30	30
G 30, G 30 EC	29	30	30	29	30	30
G 35 EC	20	30	30	20	30	30
G 45, G 45 EC	16	30	30	16	30	30
G 60, G 60 EC	12	30	30	12	30	30
G 75 EC	7	30	30	7	30	30
G 90, G 90 EC	7	30	30	7	30	30

3.3.3.6 C53 type installation with separate ducts

Figure 3.6 C53 type installation with Ø 80 separate ducts

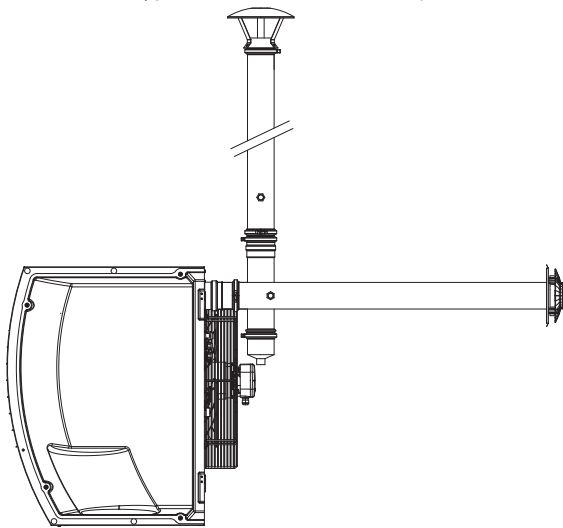


Table 3.10 C53 type maximum allowed length with separate ducts

Next-G	Indicative maximum lengths (m)			
	Air pipe	Flue gas exhaust pipe		
		Ø 80	Ø 100	Ø 110
G 20 EC	1	30	30	30
G 30, G 30 EC	1	30	30	30
G 35 EC	1	30	30	30
G 45, G 45 EC	1	29	30	30
G 60, G 60 EC	1	23	30	30
G 75 EC	1	14	30	30
G 90, G 90 EC	1	15	30	30

Table 3.11 Data for the calculation of the air/fumes system with pipes found on the market

				G 20 EC	G 30	G 35 EC	G 45	G 60	G 75 EC	G 90
Installation data										
Flue temperature	Nominal heat input	G20	°C	82,0	75,0	85,0	100,0	79,0	99,0	82,0
Fumes flow rate	Nominal heat input	G20	kg/h	33	49	60	74	98	127	151
CO₂ percentage in fumes	Nominal heat input	G20	%	9,3	9,5		9,2	9,0	9,2	9,3
Flue gas exhaust	residual head		Pa	65	80		100	130	150	200

3.3.4 Sizing and installing combustion air/ exhaust fumes ducts

In order to dimension the duct system, the total pressure drop of the system must be calculated.

The total allowed pressure drop in the flue gas exhaust system depends on the unit model (Table 3.11 p. 32).

The pressure drops of the flue and air pipes available as Robur optional are shown in Table 3.12 p. 33.

Table 3.13 p. 33 shows the pressure drops for Ø 100 flue and air pipes in aluminium, available on the market.

The pressure drops of the coaxial pipes available as Robur optional are shown in Table 3.14 p. 33.

Resistance from the separate terminals are negligible since they are very low.

When designing, it must be checked that the total pressure drop of the piping system is lower than the residual head of the appliance (Table 3.11 p. 32). An example of how to calculate pressure drops is given in Paragraph 3.3.5 p. 34.

The maximum lengths of air and flue gas exhaust pipes, depending on the type of installation, are shown in tables under the installation type figures, described in Paragraph 3.3.3 p. 30.



The above lengths are intended to be approximate values for standard installations where the air and flue gas exhaust ducts follow linear paths as shown in the respective figures. Otherwise, you must proceed with the calculation of the pressure drop (Paragraph 3.3.5 p. 34): installation will be permitted if the total pressure drop is lower than the residual head of the appliance (Table 3.11 p. 32).



The Ø 80, 110 and 130 pipes available as Robur optional are made of stainless steel, while the Ø 100 adapters available as Robur optional are made of aluminium.

Table 3.12 Data for the calculation of the air/fumes system with Ø 80/110/130 pipes available as optional

				G 20 EC	G 30	G 35 EC	G 45	G 60	G 75 EC	G 90
Flue gas exhaust pressure drop										
Ø 80 mm	Pipe	1 m	Pa	0,7	1,4	2,0	3,0	4,7	7,9	10,2
	Elbow	90°	Pa	0,8	1,8	2,8	4,5	7,4	13,1	17,6
	Tee		Pa	1,7	3,7	5,5	8,9	14,8	26,2	35,2
Ø 110 mm	Pipe	1 m	Pa	0,2	0,3	0,4	0,7	1,0	1,6	2,2
	Elbow	90°	Pa	0,2	0,5	0,8	1,2	2,1	3,5	4,9
	Tee		Pa	0,5	1,0	1,5	2,5	4,1	7,3	9,9
Ø 130 mm	Pipe	1 m	Pa	0,1	0,1	0,2	0,3	0,5	0,7	1,0
	Elbow	90°	Pa	0,1	0,3	0,4	0,6	1,1	1,9	2,5
	Tee		Pa	0,2	0,5	0,8	1,3	2,1	3,8	5,1
Air intake pressure drop										
Ø 80 mm	Pipe	1 m	Pa	0,5	1,1	1,5	2,2	3,7	5,8	7,9
	Elbow	90°	Pa	0,6	1,4	2,1	3,3	5,7	9,6	13,6
	Tee		Pa	1,3	2,9	4,3	6,5	11,5	19,3	27,2
Ø 110 mm	Pipe	1 m	Pa	0,1	0,2	0,3	0,5	0,8	1,3	1,7
	Elbow	90°	Pa	0,2	0,4	0,6	0,9	1,6	2,7	3,8
	Tee		Pa	0,4	0,8	1,2	1,8	3,2	5,4	7,6
Ø 130 mm	Pipe	1 m	Pa	0,1	0,1	0,2	0,2	0,4	0,6	0,8
	Elbow	90°	Pa	0,1	0,2	0,3	0,5	0,8	1,4	2,0
	Tee		Pa	0,2	0,4	0,6	0,9	1,6	2,8	3,9

Table 3.13 Data for the calculation of the air/fumes system with Ø 100 pipes

				G 20 EC	G 30	G 35 EC	G 45	G 60	G 75 EC	G 90
Flue gas exhaust pressure drop										
Ø 100 mm	Pipe	1 m	Pa	0,2	0,5	0,7	1,0	1,6	2,5	3,5
	Elbow	90°	Pa	0,3	0,8	1,1	1,8	3,0	5,1	7,2
	Tee		Pa	0,7	1,5	2,3	3,6	6,1	10,2	14,4
Air intake pressure drop										
Ø 100 mm	Pipe	1 m	Pa	0,2	0,4	0,5	0,8	1,3	2,0	2,7
	Elbow	90°	Pa	0,3	0,6	0,9	1,3	2,3	3,9	5,6
	Tee		Pa	0,5	1,2	1,8	2,7	4,7	7,9	11,1

Table 3.14 Data for the calculation of the air/fumes system with coaxial pipes available as optional

				G 20 EC	G 30	G 35 EC	G 45	G 60	G 75 EC	G 90
Coaxial exhaust pipe pressure drop										
Ø 80/125 mm	wall	Pa		2,5	5,4	8,2	13,1	21,7	38,7	51,9
	roof	Pa		5,3	11,4	17,6	27,9	46,2	82,1	110,4
Ø 130/180 mm	wall (1)	Pa		0,5	1,0	1,5	2,4	4,0	7,1	9,5
Ø 100/150 mm	roof	Pa		2,3	5,1	7,8	12,4	20,5	36,5	49,1
Ø 130/210 mm	roof	Pa		0,7	1,5	2,4	3,7	6,2	11,0	14,8

(1) Can be used only with OSTF009 support bracket



In the case of horizontal flue gas exhaust pipes installations, the following instructions must be observed:

- Length of the flue pipe < 1 m: install the flue pipe with a counter slope of 2 or 3 cm towards the gas unit heater (Figure 3.7 p. 34).
- Length of the flue pipe > 1,5 m: the condensate produced by the exhaust duct must be properly collected and drained by a suitable discharge system, in accordance with the applicable regulations in force.



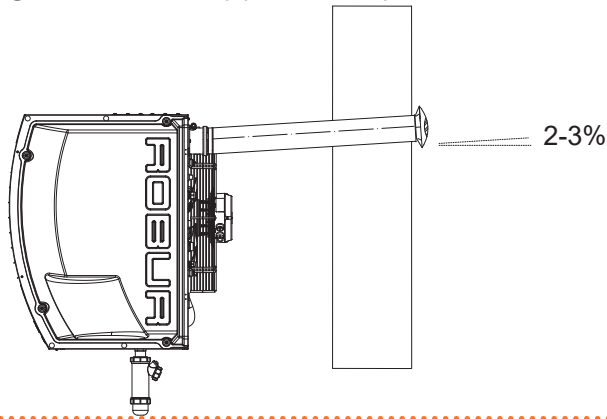
If vertical flue gas exhaust pipes longer than 1,5 m are installed, at the base of the vertically mounted

flue gas exhaust pipe a T-shaped piece must be fitted to collect the condensate, to prevent any condensate drops from entering the gas unit heater (Figure 3.2 p. 30).



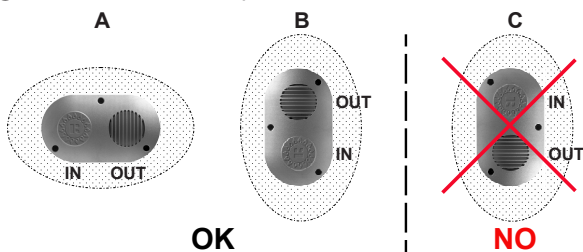
For each 45° elbow an increment of 1,2 m in length should be added.

Figure 3.7 Horizontal pipe counter-slope



For proper installation of the wall external terminals for the flue gas exhaust and combustion air intake, follow the details given in Figure 3.8 p. 34.

Figure 3.8 Wall terminal position



IN Combustion air intake (OK)
 OUT Flue gas exhaust
 A Recommended position B Allowed position (OK)
 C Position NOT allowed (NO)

3.3.5 Example of calculation

Let's assume to install a G 75 EC in C13 type installation (Figure 3.3 p. 31). The air/fumes system will be realized with Ø 80 separate pipes in the following way:

- ▶ 10 m of Ø 80 flue gas exhaust pipe
- ▶ 2 90° Ø 80 elbows on the flue gas exhaust pipe
- ▶ 10 m of Ø 80 air pipe

It is therefore possible to proceed with the verification, remembering that the residual head is 150 Pa (see Table 3.11 p. 32).

- ▶ Ø 80 flue gas exhaust pipe
 10 m x 7,9 Pa/m = 79,0 Pa
- ▶ 90° elbow
 2 x 13,1 Pa = 26,2 Pa
- ▶ Ø 80 air pipe
 10 m x 5,8 Pa/m = 58,0 Pa

Total pressure drop = 163,2 Pa

Total pressure drop of the piping system is greater than the maximum allowed pressure drop (150 Pa), therefore the installation is not allowed.

The installation can be done if one of the following steps is taken:

- ▶ Reduce the length of the air/fumes pipes.
- ▶ Increase pipe diameter, e.g. by using Ø 110. In this case the total pressure drop would be:
 10 m x 1,6 Pa/m = 16,0 Pa

2 x 3,5 Pa = 7,0 Pa
 10 m x 1,3 Pa/m = 13,0 Pa
 Total pressure drop = 36,0 Pa
 which is therefore compatible with the maximum allowed pressure drop.

3.4 FLUE GAS CONDENSATE DRAIN

The Next-G unit is a condensing appliance and therefore produces condensation water from combustion flue gases.

i Condensate acidity and exhaust regulations

The flue gas condensate contains aggressive acid substances. Refer to applicable regulations in force for condensate exhaust and disposal.

- If required, install an acidity neutraliser of adequate capacity.

i Do not use gutters to discharge the condensate

Do not discharge the flue condensate in gutters, due to the risk of materials corrosion and ice formation.

3.4.1 Flue gas condensate connection

The fitting (Ø 18 mm) for the flue gas condensate drain is located in the lower part of the appliance.

- ▶ The condensate drain hose must be connected to a suitable discharge manifold.
- ▶ The junction between the pipe and the manifold must remain visible.

3.4.2 Condensate drain kit installation

A condensate drain kit is supplied as standard and must be connected (by the installer) to the appropriate outlet in the lower part of the gas unit heater.

⚙ How to install the condensate drain kit

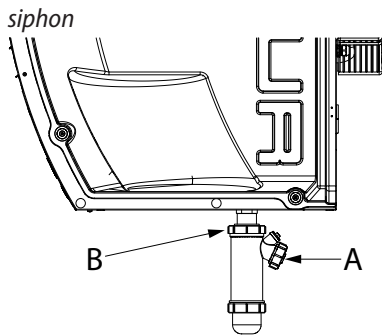
1. Unscrew the upper seal of the condensate drain siphon.
2. Insert the condensate drain connection neck ring into the upper seal with the connection towards the outside.
3. Screw the seal back onto the siphon.
4. Screw the siphon onto the condensate drain at the bottom of the gas unit heater.
5. Adjust the siphon so that the outlet port of the siphon is facing the intended path of the drain pipe (Figure 3.9 p. 35).

The output in the lower part of the appliance has been designed so that it remains usable even in case of mounting of the revolving wall support bracket (optional, Paragraph 2.5 p. 27).

The connection of the discharge to the sewerage system must be made at atmospheric pressure, i.e. by dripping into a siphoned container connected

to the sewerage system.

Figure 3.9 Detail of the installation of the condensate drain



- A Ø 18 mm condensate discharge connection (to be provided by the installer)
 B Upper seal

3.4.3 Flue gas condensate drain manifold

To make the condensate drain manifolds:

- ▶ Size the ducts for maximum condensation flow rate (Table 1.2 p. 23).
- ▶ Use plastic materials resistant to acidity pH 3-5.
- ▶ Provide for min. 1% slope, i.e. 1 cm for each m of the length (otherwise a booster pump is required).
- ▶ Prevent freezing.

3.5 AIR DUCTING

Only models equipped with a centrifugal fan (Next-G C series) can be combined with air ducting systems, which can be positioned both on the air intake (with or without mixing chambers) and on the delivery.

For this purpose, the delivery outlet of the Next-G C gas unit heaters is provided with fixing flanges for the delivery air ducting.

Refer to the Paragraph 1.2.2 p. 15 for the dimensions of the flange connection.

i In order to avoid vibrations (possible source of noise and mechanical failures), it is advisable to install anti-vibration connections, easily removable for maintenance operation, at the connection between the gas unit heater and the air duct.

Set up the air ducting using a traditional sufficiently smooth sheet metal duct.

The insulation of the duct must be assessed, in order to avoid heat losses.

For the dimensioning of the air duct, consider the data of air flow and available head of the fan, summarized in Table 1.2 p. 23.



Minimum pressure drop on heat flow delivery

The Next-G C gas unit heaters do not require a minimum pressure drop on the heat flow delivery.

4 ELECTRICAL INSTALLER

4.1 WARNINGS

i General warnings

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

i 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.

i 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.

i 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 SYSTEMS

Electrical connections provide:

- A. Power supply (Paragraph 4.3 p. 36).
- B. Control system (Paragraph 4.4 p. 36).
- C. Probe inputs (Paragraph 4.5 p. 42).
- D. 0-10 V input (optional, Paragraph 4.6 p. 44).



How to make connections

All electrical connections must be made in the connection terminal block located near the electrical panel:

1. Ensure the appliance is not live.
2. To access the electrical board of the unit, open the thermoformed door on the right side of the unit (detail 5 on dimensional diagrams, Paragraph 1.2 p. 8).
3. Insert cables through the appropriate cable gland (dimensional drawings, Paragraph 1.2 p. 8). PG9 cable glands are suitable for cables with diameters from 3,5 to 8 mm. PG11 cable glands are suitable for cables with diameters from 5 to 10 mm. PG13.5 cable glands are suitable for cables with diameters from 6 to 12 mm.
4. Remove the sheet metal cover of the electrical panel.
5. Identify the appropriate connection terminals.
6. Make the connections.
7. Replace the sheet metal cover of the electrical panel.
8. Close the thermoformed door.

4.3 ELECTRICAL POWER SUPPLY

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

- ▶ H05VV-F 3x1,5 mm² type cable with a maximum external diameter of 12 mm.
- ▶ Bipolar disconnecter with minimum contact opening of 3 mm.

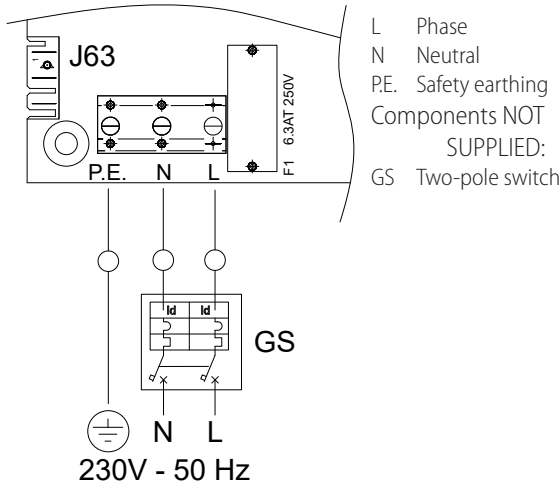


How to connect the power supply

To connect the three-pole power supply cable:

1. Access the connection terminal block according to Procedure 4.2 p. 35.
2. Connect the three wires to the terminal block as shown in Figure 4.1 p. 36.
3. Provide the earth lead-in wire longer than live ones (last to be torn in the event of accidental pulling).

Figure 4.1 Power supply connection



4.4 CONTROL SYSTEM

Separate control systems are provided, each with specific features, components and diagrams:

1. OCDS015 Modbus remote control
2. Generic Modbus controller
3. OCDS012 1-key basic control
4. OCDS016 2-keys basic control
5. OTRG005 thermoregulator
6. OCDS008 digital chronothermostat (only in association with OTRG005 thermoregulator)
7. OSWR000 Genius software for remote management of gas unit heaters (only in association with OTRG005 thermoregulator)
8. External request

4.4.1 OCDS015 Modbus remote control

The OCDS015 Modbus remote control must be installed on the wall in a suitable position, using expansion screws. The remote control is connected to the terminal block located in the electrical panel inside the appliance.



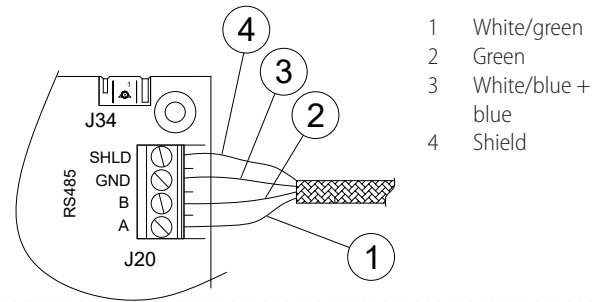
How to connect the remote control

1. Access the connection terminal block according to Procedure 4.2 p. 35.
2. Use LAN Cat. 5e FTP cable 4x2xAWG 24/1.
3. Make electrical connections as described in Figure 4.2 p. 36.
4. For further information refer to the instruction sheet supplied with the OCDS015 optional.



The total length of the connection cables between all gas unit heaters and the OCDS015 Modbus remote control must not exceed 1100 m.

Figure 4.2 Modbus connection



4.4.2 Generic Modbus controller

The connection of a generic Modbus controller to the gas unit heater is identical to that provided for the OCDS015 Modbus remote control (Paragraph 4.4.1 p. 36).



Check with the Modbus controller manufacturer the type of cable to be used, the cross-sections and the maximum permissible cable lengths.

Depending on the registers managed on the Modbus controller, the relevant functions will be available or not (switching the gas unit heater on/off, choosing the operating mode, error reporting and reset, ...).

Any functions not supported by the Modbus controller can be managed via external requests by making the relevant connections (Paragraph 4.4.8 p. 40).



The document describing the mapping and meaning of the Modbus registers implemented on the GEN10 board is available on-demand from Robur technical service.

4.4.3 OCDS012 1-key basic control

The control must be installed on the wall in a suitable position, using expansion screws.



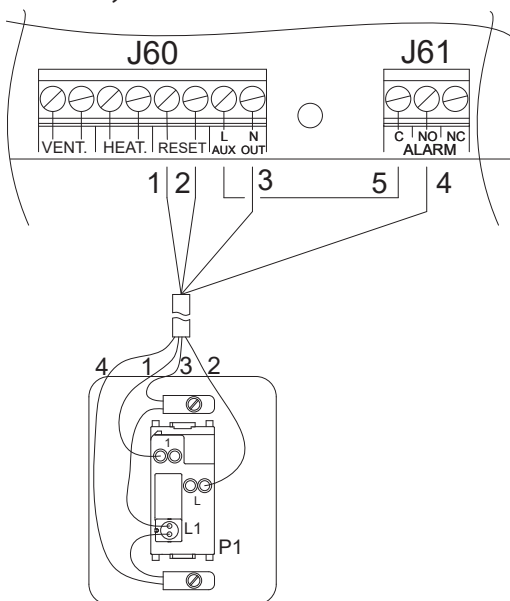
How to connect the OCDS012 1-key basic control

1. Access the connection terminal block according to Procedure 4.2 p. 35.
2. Use FRO-HP 4x0,75 mm² cable for connection.
3. Connect the wires to the terminal block as shown in Figure 4.3 p. 37.
4. For further information refer to the instruction sheet supplied with the OCDS012 optional.



The cable may not be longer than 20 metres.

Figure 4.3 1-key basic control connection



L1 Alarm indicator lamp P1 Reset button

4.4.4 OCDS016 2-keys basic control

The control must be installed on the wall in a suitable position, using expansion screws.



How to connect OCDS016 2-key basic control

1. Access the connection terminal block according to Procedure 4.2 p. 35.
2. Use FRO-HP 7x0,75 mm² cable (available as OCVO015 optional, with 5 m length).
3. Connect the wires to the terminal block as shown in Figure 4.4 p. 37.
4. If there is an external request for managing start/stop of the gas unit heater (e.g. thermostat, timer, switch,

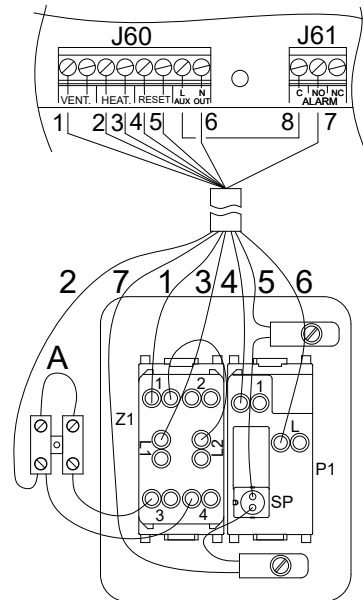
contactor ...) this must be connected to terminal A, removing the factory-installed jumper.

5. For further information refer to the instruction sheet supplied with the OCDS016 optional.



The cable may not be longer than 20 metres.

Figure 4.4 2-key basic control connection



A Terminal for possible external request P1 Reset button
Z1 Summer/Winter/Off switch
SP Alarm indicator lamp

4.4.5 OTRG005 thermoregulator

The thermoregulator must be installed on the wall in a suitable position, using expansion screws.

Connection of the thermoregulator is made on the wiring terminal block located in the electrical panel inside the unit.



How to connect OTRG005 thermoregulator

1. Access the connection terminal block according to Procedure 4.2 p. 35.
2. Use FRO-HP 7x0,75 mm² cable (available as OCVO015 optional, with 5 m length).
3. Make electrical connections as described in Figure 4.5 p. 38 and in Table 4.1 p. 38.
4. For further information refer to the instruction sheet supplied with the OTRG005 optional.

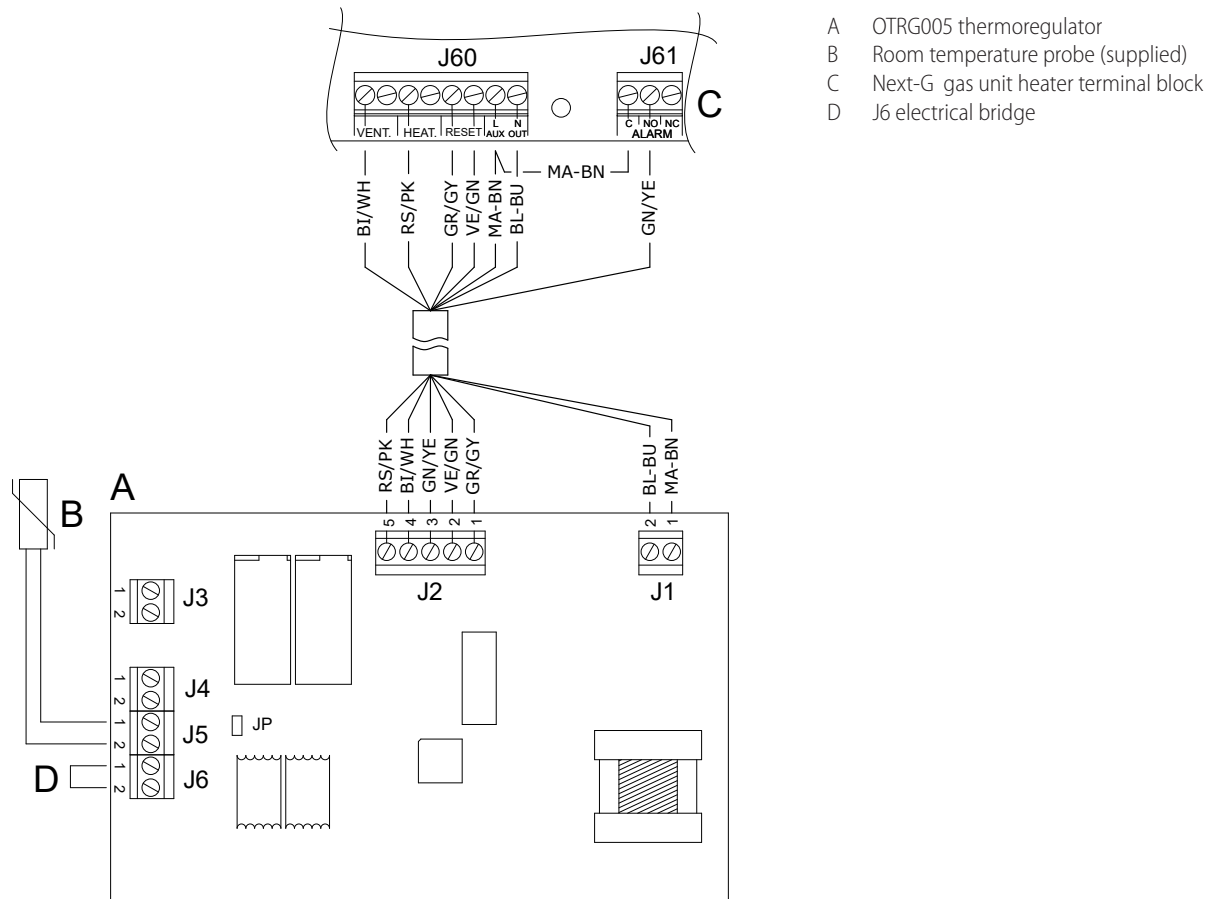


The cable may not be longer than 10 metres.

Table 4.1 OTRG005 thermoregulator connection

OTRG005 thermoregulator		Next-G	Recommend- ed colour	
J1	1	Line	L (AUX OUT)	brown
	2	Neutral	N (AUX OUT)	blue
J2	1	RES	"RESET"	grey
	2	RES	"RESET"	green
	3	LF	NO (ALARM)	yellow
	4	FAN	"VENT."	white
	5	REQ	"HEAT."	pink

Figure 4.5 Connections between the thermoregulator and the gas unit heater



- A OTRG005 thermoregulator
- B Room temperature probe (supplied)
- C Next-G gas unit heater terminal block
- D J6 electrical bridge

4.4.6 OCDS008 digital chronothermostat

The chronothermostat must be installed on the wall in a suitable position, using expansion screws. Connection of OCDS008 chronothermostat is made on OTRG005 thermoregulator, which is necessary for the use of the chronothermostat.



How to connect the OCDS008 digital chronothermostat

Make electrical connections as described in Figure 4.6 p. 39.

OTRG005 thermoregulator is connected as described in Paragraph 4.4.5 p. 37.

To connect OCDS008 chronothermostat to OTRG005 thermoregulator, use a two-pole cable (e.g. H03VV-F) with a section between 0,5 mm² and 2,5 mm².

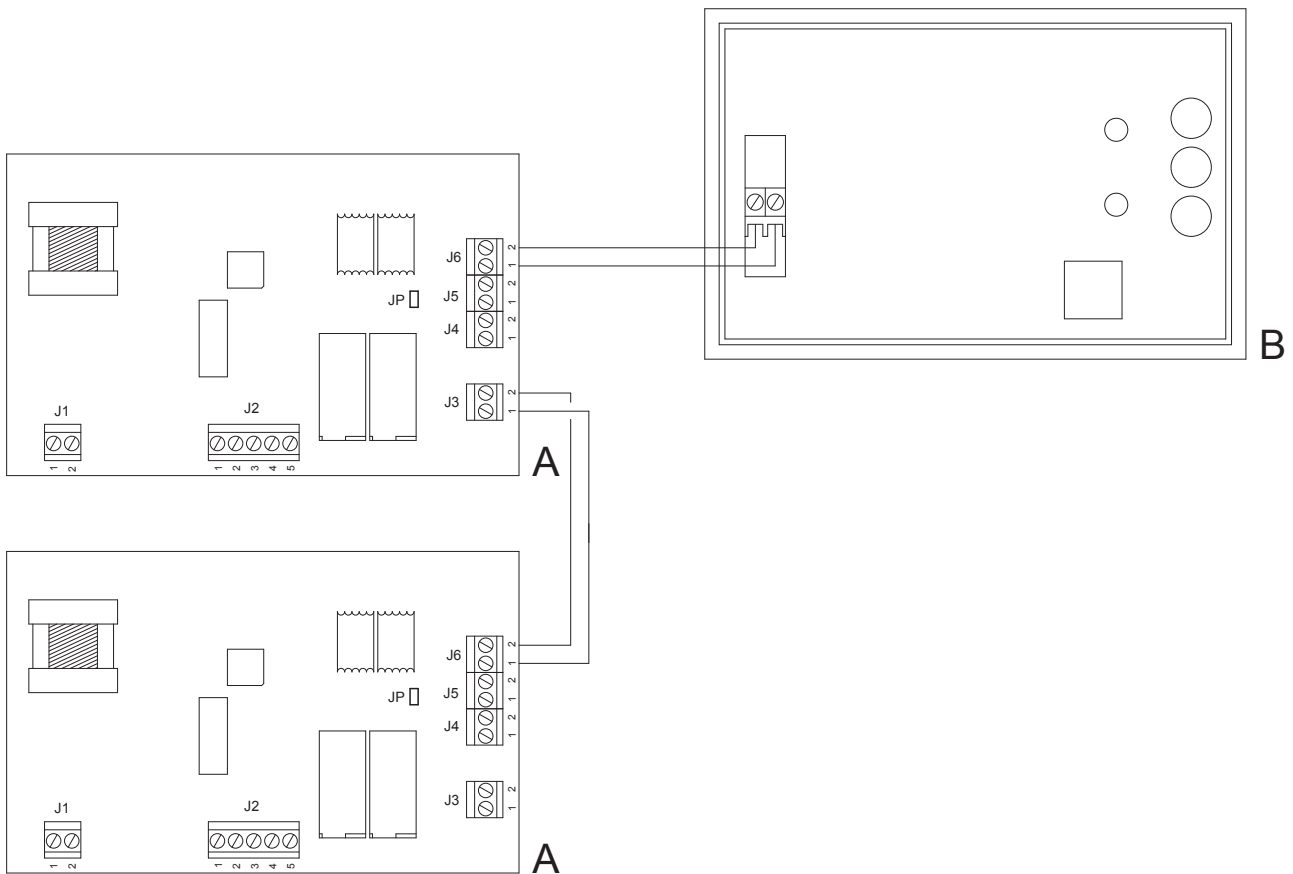
In rooms with high electromagnetic noise, it is recommended to use shielded cable.

For further information refer to the instruction sheet supplied with the OCDS008 optional.



The cable may not be longer than 50 metres.

Figure 4.6 OCDS008 digital chronothermostat connection



- A OTRG005 thermoregulator
 B OCDS008 digital chronothermostat

4.4.7 OSWR000 Genius software for remote management of gas unit heaters

OSWR000 Genius software for remote management of gas unit heaters comes with a PC Windows setup package and installation instructions.

The Modbus connection between the PC and OTRG005 thermoregulators must then be made, using the specific USB/RS485 converter, supplied.



How to connect OTRG005 thermoregulator

OTRG005 thermoregulator is connected as described in Paragraph 4.4.5 p. 37.



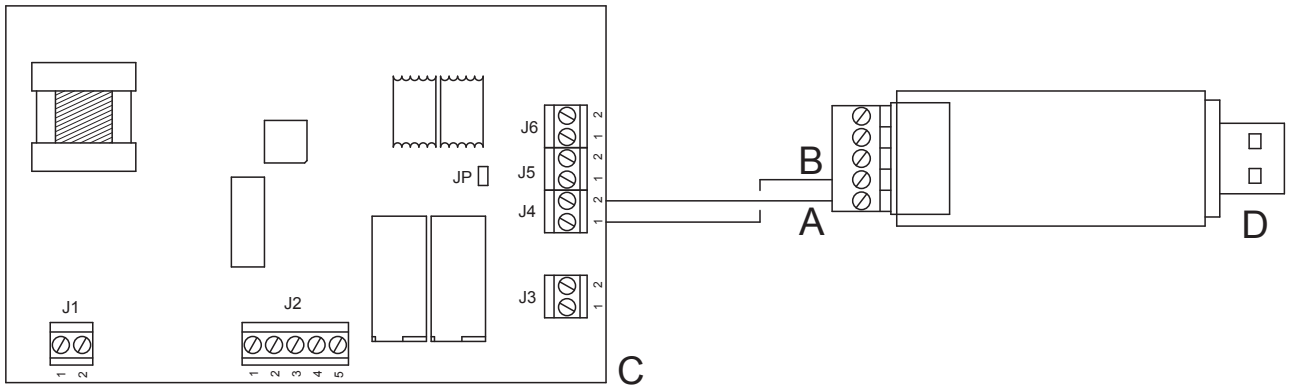
How to make Modbus connection

1. Access the connection terminal block according to Procedure 4.2 p. 35.
2. Use unshielded 2x0,5 mm² twisted cable.
3. Connect the wires to the USB/RS485 converter terminal block as shown in Figure 4.7 p. 40.
4. Insert the USB converter into the PC. The device drivers will be downloaded and installed automatically if the PC is online.
5. For further information refer to the instruction sheet supplied with the OSWR000 Genius software.



The cable may not be longer than 1100 metres.

Figure 4.7 USB/RS485 converter connection



A A signal
B B signal

C OTRG005 thermoregulator
D USB/RS485 converter

4.4.8 External request

Depending on the required operation, it is required to arrange:

- ▶ Request device (e.g. thermostat, timer, switch, ...) equipped with a voltage-free NO contact, used for managing start/stop of the gas unit heater.
- ▶ Request device (e.g. switch) equipped with a voltage-free NO contact, for managing the two power levels of the gas unit heater, only if the default modulating mode is not desired.

Refer to the wiring diagrams in Paragraph 1.4 p. 18 for details of the position of the appliance's terminal block contacts.



All the contacts for external requests of the terminal block in the electrical panel inside the unit have a 230 V voltage applied to the relative terminals.

4.4.8.1 Gas unit heater start/stop management



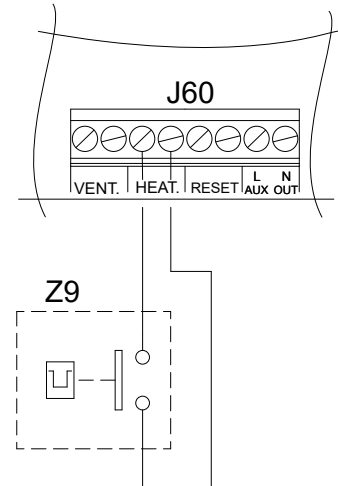
How to connect the external request for gas unit heater start/stop management

1. Access the electrical board of the appliance according to the Procedure 4.2 p. 35.
2. Connect the external request, using a 2x0,75 mm² FRO-HP cable, to the "HEAT." contact of the terminal block as shown in Figure 4.8 p. 40.



The cable may not be longer than 20 metres.

Figure 4.8 Connection of external request for gas unit heater start/stop management



Z9 External request (e.g. thermostat, timer, switch, ...)

4.4.8.2 Power level control



The standard operation of the gas unit heater is in modulation, thanks to the presence of the supplied room probe. Only in the presence of particular needs can it be appropriate to switch to operation on two power levels.



How to connect the external request for gas unit heater power level management

1. Access the electrical board of the appliance according to the Procedure 4.2 p. 35.
2. Connect the external request, using a 2x0,75 mm² FRO-HP cable, to the "VENT." contact of the terminal block as shown in Figure 4.9 p. 41.



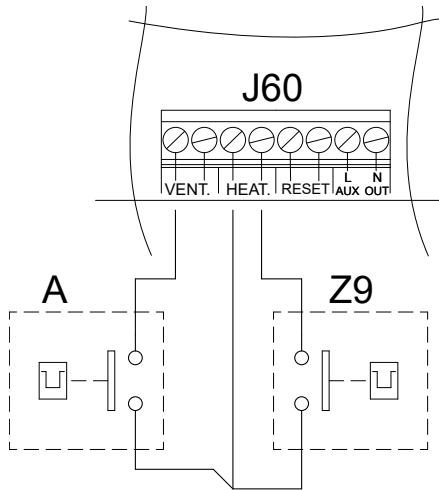
The gas unit heater operates at maximum power when the "VENT." contact is closed, while it operates at minimum power when the "VENT." contact

is open. In any case, the "HEAT." contact must be closed for power selection to be active. If the "HEAT." contact is open, closing the "VENT." contact causes activation of the summer ventilation mode.



The cable may not be longer than 20 metres.

Figure 4.9 Gas unit heater power level selector switch connection



Z9 External request (e.g. thermostat, timer, switch, ...)

A Gas unit heater power level selector switch

- Closed contact: gas unit heater at maximum power
- Open contact: gas unit heater at minimum power

4.4.8.3 Operation as destratifier

For all Next-G gas unit heaters, it is possible to connect an

optional temperature probe, suitably positioned, to allow operation of the appliance's fan only (with the burner off), for thermal destratification.

In this way, if the temperature measured by the probe is higher than the threshold set in the gas unit heater parameters (Paragraph 5.4 p. 48), it will start the fan only, which will push the mass of hot air towards the heated room without any gas consumption.

The connection of the temperature probe for the destratifier function is described in Paragraph 4.5.2 p. 43.

4.4.8.4 Control of multiple gas unit heaters with a single external request

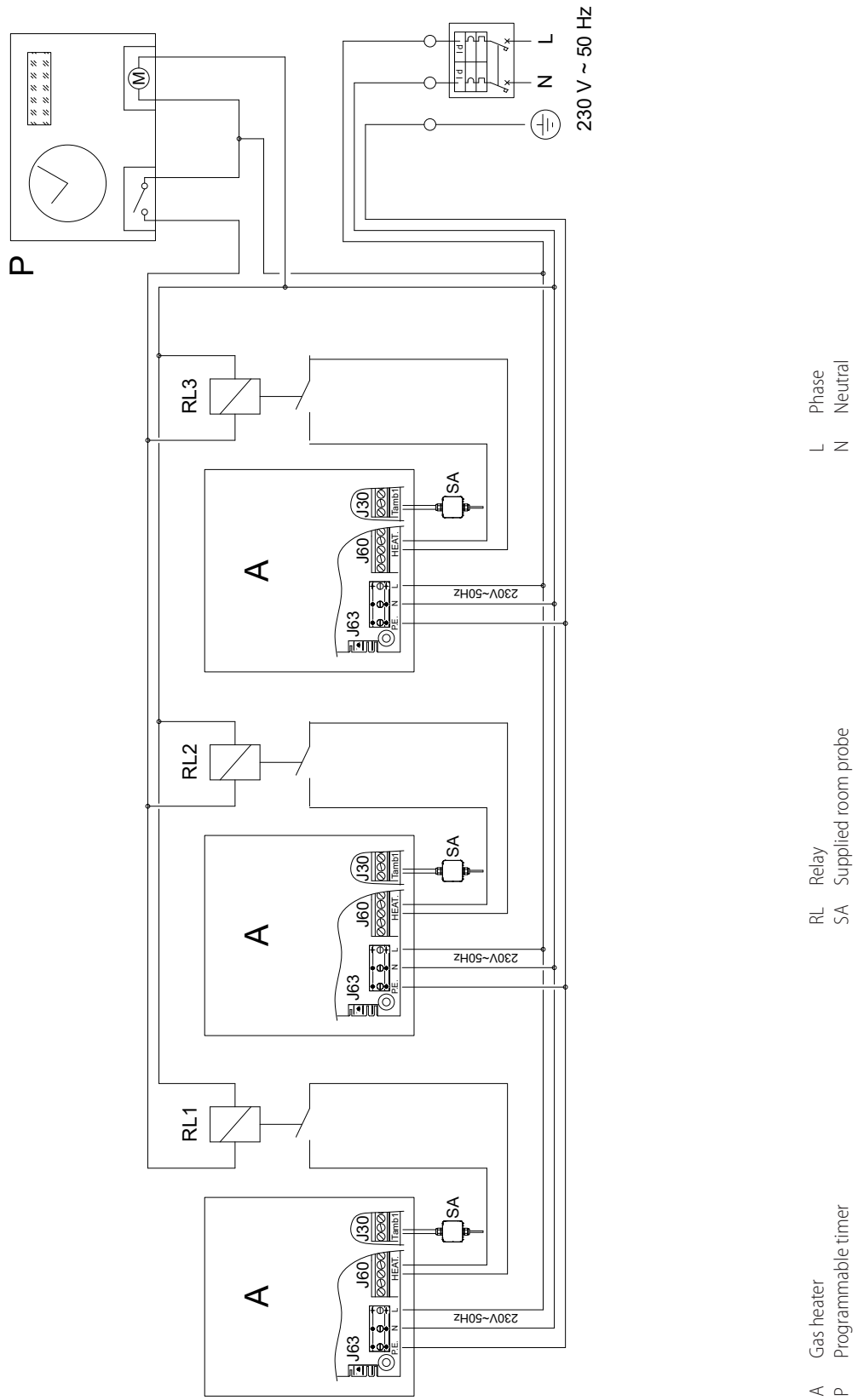
Through a suitable connection to the terminals described above, it is possible to manage the specific function on more than one gas unit heater using a single external request.

In the case of centralized management of multiple gas unit heaters start/stop, advice given is to use:

- ▶ OCDS008 digital chronothermostat (described in Paragraph 1.7.7 p. 22), up to 10 gas unit heaters.
- ▶ The OCDS015 Modbus remote control (described in Paragraph 1.7.2 p. 21), up to 30 gas unit heaters.
- ▶ OSWR000 Genius software (described in Paragraph 1.7.8 p. 23), up to 100 gas unit heaters.

If you do not want to use these solutions, the centralized management of start/stop can be done as described in Figure 4.10 p. 42, using a programmable timer. The supplied room probes serving each gas unit heater allow the gas unit heater to be activated only when the specific zone actually needs heat, avoiding wastage of energy. The programmable timer allows subordinating the gas unit heater activation, even if requested by the room probe, to a centralized request.

Figure 4.10 Multiple appliances wiring diagram with one programmable timer and more room thermostats



4.4.9 Positioning the control system

Install the chosen thermostat/control system according to the positioning instructions given in Paragraph 4.5.1 p. 43.

4.5 TEMPERATURE PROBES INPUTS

In order to extend the available features, the Next-G gas unit heater allows up to three NTC 10k temperature probes to be connected:

- ▶ Room probe (supplied)
- ▶ Destratification probe
- ▶ Outdoor probe



Cable to be used for temperature probes connection

2x0,5 mm² up to 40 m
 2x0,75 mm² up to 60 m
 2x1,0 mm² up to 80 m
 2x1,5 mm² up to 120 m

For industrial environments, a shielded cable should be used, connecting the shield to the right-hand terminal of the contact to which the probe is connected.

4.5.1 Room probe (supplied)

The supplied room probe allows the temperature inside the heated room to be measured.



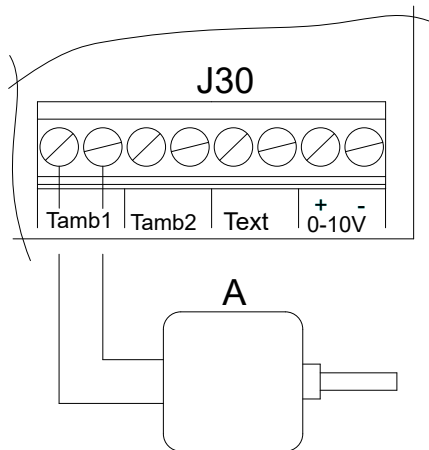
How to connect the room temperature probe

1. Access the electrical board of the appliance according to the Procedure 4.2 p. 35.
2. Connect the room probe to the "Tamb1" contact of the terminal block as shown in Figure 4.11 p. 43.



For further information refer to the instruction sheet supplied with the probe.

Figure 4.11 Room probe connection



A Room probe

4.5.2 Destratification probe

The destratification probe (available as OSND012 optional) allows the temperature inside the heated room to be measured at a high point where heat can accumulate and be reused.



How to connect the destratification probe

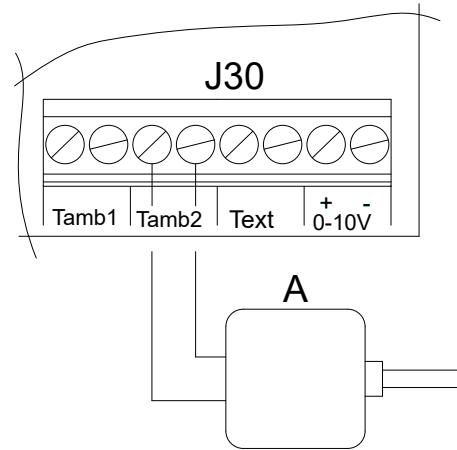
1. Access the electrical board of the appliance according to the Procedure 4.2 p. 35.
2. Connect the destratification probe to the "Tamb2" contact of the terminal block as shown in Figure

4.12 p. 43.



For further information refer to the instruction sheet supplied with the probe.

Figure 4.12 Destratification probe connection



A Destratification probe

4.5.3 Outdoor probe

The outdoor probe (available as OSND007 optional) allows detecting the outdoor temperature.

The probe is required, in combination with the OCDS015 Modbus remote control, for the activation of the predictive start-up function.



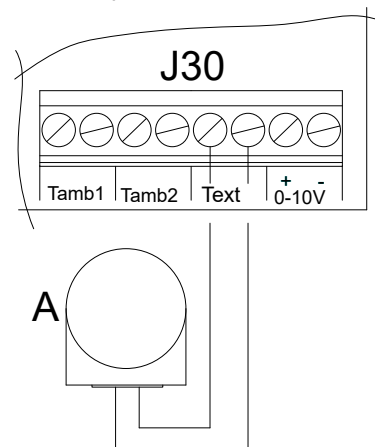
How to connect the outdoor temperature probe

1. Access the electrical board of the appliance according to the Procedure 4.2 p. 35.
2. Connect the outdoor probe to the "Text" contact of the terminal block as shown in Figure 4.13 p. 43.



For further information refer to the instruction sheet supplied with the probe.

Figure 4.13 Outdoor probe connection



A Outdoor probe

4.6 0-10 V INPUT

Without a Modbus controller, either the room temperature setpoint or the power value can be communicated to the Next-G gas unit heater alternatively via a 0-10 V analogue signal.

The meaning to be given to the 0-10 V input is chosen by appropriately configuring the gas unit heater parameters (Paragraph 5.4 p. 48).



How to connect the 0-10 V signal

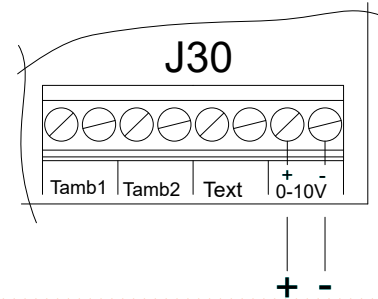
1. Access the electrical board of the appliance according to the Procedure 4.2 p. 35.
2. Connect the 0-10 V signal, using a FRO-HP 2x0,75 mm² cable, to the "0-10V" contact of the terminal block as shown in Figure 4.14 p. 44, respecting the indicated polarity. For industrial environments, a shielded

cable should be used, connecting the shield to the "-" terminal.



The cable may not be longer than 30 metres.

Figure 4.14 0-10 V input connection



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. 44.

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. 29, with max tolerance $\pm 15\%$.
- ▶ Correct installation of the flue gas 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 switched on/off with the main switch, instead of the provided control device.
- ▶ 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 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 COMBUSTION PARAMETERS CHECK





Paragraph reserved exclusively to TACs.



The gas unit heater is supplied with the gas valve already calibrated with respect to the fuel indicated on the sticker next to the gas connection. Therefore, during the commissioning, only the CO₂ value must be checked and, only if the check is not successful, or after a gas changeover, the complete check procedure must be carried out.

 The CO₂ value should be checked with the thermoformed door closed, while the gas valve should be adjusted with the thermoformed door open.

 If a differential pressure gauge is used, it is necessary to connect the pressure intake of the gas valve to the + (positive) port of the pressure gauge.

 Check that the static and dynamic supply gas pressure values, with the gas unit heater running at maximum power, correspond to what is shown in Table 3.1 p. 29 (with low supply gas pressure values the CO₂ value will also be at minimum values).

 The operation request for checking combustion

parameters is independent of any heating service requests on the "HEAT." contact.

Table 5.1 p. 45 shows the messages that can appear on the display while the chimney sweep function is running, the relative meaning and the optional actions required.



Limit the time you use the chimney sweep function to the minimum actually required.





The system automatically interrupts the chimney sweep function 15 minutes after the last key on the interface was pressed.




If the required CO₂ settings cannot be reached, contact Robur.

Table 5.1 Display messages for chimney sweep function


Message	Meaning	Action
CS.LO / UAlt	Chimney sweep function is active at minimum capacity and the flame is still not lit or lit at a different capacity than required.	Wait.
CS.LO / _GO_	Chimney sweep function is active at minimum capacity and the flame is lit at the required capacity.	Run CO ₂ reading (minimum capacity).
CS.HI / UAlt	Chimney sweep function is active at maximum capacity and the flame is still not lit or lit at a different capacity than required.	Wait.
CS.HI / _GO_	Chimney sweep function is active at maximum capacity and the flame is lit at the required capacity.	Run CO ₂ reading (maximum capacity).
Err.	The appliance switched off due to a fault (Warning or Error).	It is not possible to reset any errors with the function active. Deactivate the function by pressing the  key for 5 seconds and then intervene according to the operating codes shown on the display, while referring operative codes table. Once the problem is resolved, reactivate the function.
Cod.x (x = 0, 1, ..)	The appliance is temporarily running a special cycle that requires specific control of the power that is not compatible with the execution of the chimney sweep function.	In the rare event of one of these codes appearing, deactivate the function by pressing the  key for 5 seconds and then contact Robur.

5.2.1 All models except G 75 and G 90


 Figure 5.1 p. 46

1. If the appliance is not running, switch it on using the applicable control system.
2. Open the thermoformed door.
3. Remove the cap over the offset adjustment screw (C) of the gas valve.
4. Connect a pressure gauge to offset pressure intake (A), after having first removed or loosened the sealing screw.
5. Press the  key on the user interface of the appliance for 5 seconds to activate the chimney sweep function at minimum power.
6. The display shows the letters "CS.LO" (chimney sweep low power), alternating with the flashing message "UAlt" (wait) which indicates that the machine is not yet ready for the reading.
7. After up to 8 minutes the flashing message becomes


"_GO_" to indicate that the combustion control can be carried out.

8. Ensure that the CO₂ value corresponds to the value indicated in the "Minimal heat input" column of the following Tables, according to the model and the gas type used. Otherwise, set CO₂ percentage value using the offset adjustment screw.
9. Disconnect the pressure gauge from the offset pressure intake (A) and tighten its sealing screw.
10. Connect a pressure gauge to throttle pressure intake (E), after having first removed or loosened the sealing screw.
11. Press the  key on the user interface to activate the chimney sweep function at maximum power.
12. The display shows the letters "CS.HI" (chimney sweep high power), alternating once again with the flashing message "UAlt" (wait) which indicates that the machine is not yet ready for the reading.

13. After a short while, the flashing message becomes "_GO_" again to indicate that the combustion control at maximum power can be carried out.
14. Ensure that the CO₂ value corresponds to the value indicated in the "Nominal heat input" column of the following Tables, according to the model and the gas type used. Otherwise, set CO₂ percentage value using the throttle adjustment screw.
15. Disconnect the pressure gauge from the throttle pressure intake (E) and tighten its sealing screw.

 Check the burner at the maximum power, which must not show any reddened areas.

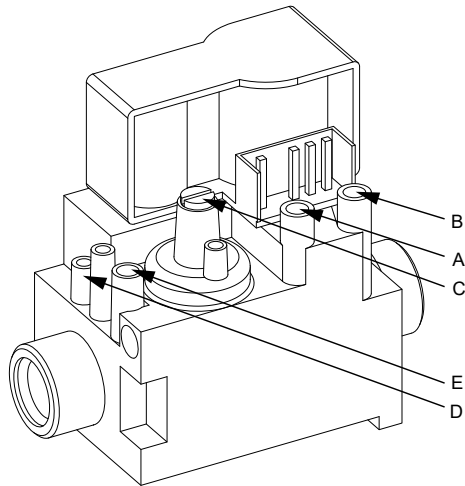
If the check is successful:

16. Press the  key on the user interface again for 5 seconds to deactivate the chimney sweep function and complete the procedure.
17. Screw the cap back over the offset adjustment screw (C) of the gas valve.
18. Close the thermoformed door.

If the check is not successful:

19. Repeat the checking procedure, at the minimum heat input or at the maximum heat input, until CO₂ values corresponding to those indicated in the following Tables are achieved, according to the model and the type of gas used.
20. Repeat steps 16 to 18 to complete the procedure.

Figure 5.1 Gas valve



- | | | | |
|---|---------------------------|---|---------------------------|
| A | Offset pressure intake | D | Throttle adjustment screw |
| B | Gas mains pressure intake | E | Throttle pressure intake |
| C | Offset adjustment screw | | |

Table 5.2 Next-G 20 gas valve setting table

Gas	Gas network pressure	Offset pressure	CO ₂ percentage in fumes	
		nominal	Minimal heat input	Nominal heat input
Type	mbar	Pa	%	%
G20	See Table 3.1 p. 29	-5	8,8	9,3
G25		-5	8,8	9,2
G25.1		-5	10,2	10,5
G25.3		-5	9,0	9,4
G27		-5	8,8	9,0
G2.350		-5	8,7	9,0
G30		-5	10,2	10,5
G31		-5	10,4	10,7
LPG		-5	10,3	10,6

A tolerance of ±0,3% is applied to all values of CO₂ percentage in fumes.

Table 5.3 Next-G 30 gas valve setting table

Gas	Gas network pressure	Offset pressure	CO ₂ percentage in fumes	
		nominal	Minimal heat input	Nominal heat input
Type	mbar	Pa	%	%
G20	See Table 3.1 p. 29	-5	8,1	9,5
G25		-5	8,1	9,7
G25.1		-5	9,1	10,9
G25.3		-5	8,1	9,6
G27		-5	8,0	9,3
G2.350		-5	7,8	9,4
G30		-5	8,9	10,5
G31		-5	8,3	10,3
LPG		-5	8,8	10,2

A tolerance of ±0,3% is applied to all values of CO₂ percentage in fumes.

Table 5.4 Next-G 35 gas valve setting table

Gas	Gas network pressure	Offset pressure	CO ₂ percentage in fumes	
		nominal	Minimal heat input	Nominal heat input
Type	mbar	Pa	%	%
G20	See Table 3.1 p. 29	-5	8,6	9,5
G25		-5	8,2	8,9
G25.1		-5	10,8	11,5
G25.3		-5	8,6	9,2
G27		-5	9,4	9,8
G2.350		-5	8,8	9,4
G30		-5	10,1	10,3
G31		-5	9,6	10,1
LPG		-5	9,8	10,2

A tolerance of ±0,3% is applied to all values of CO₂ percentage in fumes.

Table 5.5 Next-G 45 gas valve setting table

Gas	Gas network pressure	Offset pressure	CO ₂ percentage in fumes	
		nominal	Minimal heat input	Nominal heat input
Type	mbar	Pa	%	%
G20	See Table 3.1 p. 29	-5	8,1	9,2
G25		-5	8,1	9,1
G25.1		-5	9,4	10,3
G25.3		-5	8,2	9,0
G27		-5	8,0	8,9
G2.350		-5	7,8	8,4
G30		-5	9,3	10,0
G31		-5	9,6	9,9
LPG		-5	9,4	10,0

A tolerance of $\pm 0,3\%$ is applied to all values of CO₂ percentage in fumes.

Table 5.6 Next-G 60 gas valve setting table

Gas	Gas network pressure	Offset pressure	CO ₂ percentage in fumes	
		nominal	Minimal heat input	Nominal heat input
Type	mbar	Pa	%	%
G20	See Table 3.1 p. 29	-5	7,7	9,0
G25		-5	8,0	8,8
G25.1		-5	11,7	11,9
G25.3		-5	8,2	9,0
G27		-5	7,9	8,9
G2.350		-5	8,1	9,3
G30		-5	9,8	10,2
G31		-5	9,4	9,9
LPG		-5	9,6	10,1

A tolerance of $\pm 0,3\%$ is applied to all values of CO₂ percentage in fumes.

5.2.2 G 75, G 90



Figure 5.2 p. 47

1. If the appliance is not running, switch it on using the applicable control system.
2. Open the thermoformed door.
3. Connect a pressure gauge to offset pressure intake (A), after having first removed or loosed the sealing screw.
4. Press the key on the user interface of the appliance for 5 seconds to activate the chimney sweep function at minimum power.
5. The display shows the letters "CS.LO" (chimney sweep low power), alternating with the flashing message "UAlt" (wait) which indicates that the machine is not yet ready for the reading.
6. After up to 8 minutes the flashing message becomes "_GO_" to indicate that the combustion control can be carried out.
7. Ensure that the CO₂ value corresponds to the value indicated in the "Minimal heat input" column of the following Tables, according to the model and the gas type used. Otherwise, set CO₂ percentage value using the offset adjustment screw.
8. Disconnect the pressure gauge and tighten the sealing screw of the pressure intake (A).

9. Press the key on the user interface to activate the chimney sweep function at maximum power.
10. The display shows the letters "CS.HI" (chimney sweep high power), alternating once again with the flashing message "UAlt" (wait) which indicates that the machine is not yet ready for the reading.
11. After a short while, the flashing message becomes "_GO_" again to indicate that the combustion control at maximum power can be carried out.
12. Ensure that the CO₂ value corresponds to the value indicated in the "Nominal heat input" column of the following Tables, according to the model and the gas type used.



Check the burner at the maximum power, which must not show any reddened areas.

If the check is successful:

13. Press the key on the user interface again for 5 seconds to deactivate the chimney sweep function and complete the procedure.

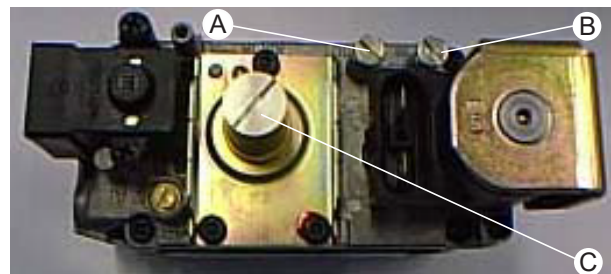
14. Close the thermoformed door.

If the check is not successful:

15. Repeat the checking procedure, at the minimum heat input or at the maximum heat input, until CO₂ values corresponding to those indicated in the following Tables are achieved, according to the model and the type of gas used.

16. Repeat steps 13 and 14 to complete the procedure.

Figure 5.2 Gas valve



- A Offset pressure intake
- B Gas mains pressure intake
- C Offset adjustment screw

Table 5.7 Next-G 75 gas valve setting table

Gas	Gas network pressure	Offset pressure	CO ₂ percentage in fumes	
		nominal	Minimal heat input	Nominal heat input
Type	mbar	Pa	%	%
G20	See Table 3.1 p. 29	-5	8,5	9,2
G25		-5	8,1	8,8
G25.1		-5	9,0	9,8
G25.3		-5	8,0	8,7
G27		-5	8,2	9,0
G2.350 (1)		- (1)	- (1)	- (1)
G30		-5	9,8	10,4
G31		-5	9,7	10,2
LPG		-5	9,6	10,1

1 The gas unit heater cannot operate with this type of gas. A tolerance of ±0,3% is applied to all values of CO₂ percentage in fumes.

Table 5.8 Next-G 90 gas valve setting table

Gas	Gas network pressure	Offset pressure	CO ₂ percentage in fumes	
		nominal	Minimal heat input	Nominal heat input
Type	mbar	Pa	%	%
G20	See Table 3.1 p. 29	-5	8,5	9,3
G25		-5	8,1	9,3
G25.1		-5	9,3	10,4
G25.3		-5	8,2	9,3
G27		-5	8,2	9,0
G2.350 (1)		- (1)	- (1)	- (1)
G30		-5	10,2	10,7
G31		-5	9,6	10,5
LPG		-5	9,8	10,5

1 The gas unit heater cannot operate with this type of gas. A tolerance of ±0,3% is applied to all values of CO₂ percentage in fumes.

Table 5.9 Next-G gas unit heaters parameters

Parameter	Description of parameter	Setting	Measurement unit	Default
40	Modbus address	1 ÷ 128	-	1
42	Modbus remote control installed	0. No 1. Yes	-	0
45	Room temperature probe installed	0. No 1. Yes	-	1
46	Destratification temperature probe installed	0. No 1. Yes	-	0
47	Outdoor temperature probe installed	0. No 1. Yes	-	0
51	Room temperature setpoint differential	0,5 ÷ 3,0 K	K/10	10
53	Room temperature setpoint	0,0 ÷ 40,0 °C	°C/10	180
54	Fan speed in summer ventilation mode with standalone operation	1 ÷ 4	-	4
55	Fan mode in heating mode	0. at discrete speed levels 1. fixed maximum speed	-	0
56	Standalone heating mode	0. at discrete power levels 1. power modulation (PID)	-	1
80	Destratification differential threshold	3,0 ÷ 8,0 K	K/10	70
81	Maximum destratification time	1 ÷ 15 minutes	min	10

5.3 GAS CHANGEOVER



For gas change instructions, refer to the relevant documentation.

5.4 SETTING THE PARAMETERS



Paragraph dedicated to TACs and installers.



The instructions on the use of the GEN10 electronic board concern the firmware version 1.002.



To access the installer menu (4), the password 1111 must be entered when accessing the first parameter in the menu. To access the menus and parameters Paragraph 6.4.2 p. 52.

Parameter	Description of parameter	Setting	Measurement unit	Default
82	RS485 Modbus communication parameters	0. 9600 8 N 1 1. 9600 8 N 2 2. 9600 8 E 1 3. 19200 8 N 1		
83	RS232 Modbus communication parameters	4. 19200 8 N 2 5. 19200 8 E 1 6. 38400 8 N 1 7. 38400 8 N 2 8. 38400 8 E 1	-	3

5.4.1 Settings according to the control system

With the OCDS015 Modbus remote control or a generic Modbus controller, set the parameters as follows:

- ▶ Parameter 40 to a unique value for each gas unit heater
- ▶ Parameter 42 to value 1 for all gas unit heaters connected via Modbus

Without OCDS015 Modbus remote control or a generic Modbus controller, leave parameter 42 at value 0 (default).

5.4.2 Settings depending on the installed temperature probes

The room temperature probe is supplied and therefore parameter 45 must be left at value 1 (default). Only if you wish to activate the operation on two power levels, managed by one of the controllers that support this function (OTRG005, OCDS008, OSWR000), it is necessary to set parameter 45 to value 0.

If the destratification temperature probe is present, set parameter 46 to value 1.

If the outdoor temperature probe is present, set parameter 47 to value 1.

5.4.3 Settings of the automatic destratification function

To activate the automatic destratification function, it is necessary:

- ▶ Whether the supplied room temperature probe is installed (P45 = 1) or the control system provides the room temperature value via Modbus.
- ▶ That the optional destratification probe is installed (P46 = 1).
- ▶ Set parameter 80 (destratification differential threshold).
- ▶ Set parameter 81 (maximum destratification time).

The destratification function starts in the presence of a heating request (room temperature below setpoint) if both of the following conditions are met:

- ▶ the temperature measured by the destratification probe is higher than the setpoint
- ▶ the temperature differential is greater than the value (P80 - 2)

At the start of the function, the fan runs at the first speed and switches to the second speed (only for EC heaters) if the difference between the temperature measured by the destratification probe and the room temperature is

greater than P80.

If the maximum destratification time (P81) is exceeded or if the difference between the temperature measured by the destratification probe and the room temperature is lower than the value (P80 - 2) the gas unit heater automatically switches to heating mode, turning on the burner.

5.4.4 Settings according to the ventilation mode

For the summer ventilation mode, set parameter 54 to the (fixed) speed value to be used for the summer ventilation function.

For heating mode, set parameter 55 to value 1 if you wish to have a fixed maximum ventilation speed (minimum thermal leap) under all operating conditions. Otherwise, leave it at value 0 (default) where the ventilation speed is linked to the power level.

5.4.5 Settings according to the heating mode

Leave parameter 56 at value 1 (default) if you want the gas unit heater power to modulate continuously.

Set parameter 56 to value 0 if you want the gas unit heater to operate on three different power levels.

5.4.6 Settings according to the service request

5.4.6.1 With the remote control or a Modbus controller
With the remote control or a generic Modbus controller, set the parameters as specified in Paragraph 5.4.1 p. 49.



For the OCDS015 Modbus remote control, please refer to the instructions in the relevant manual.

For a generic Modbus controller, the parameters to be set are a function of which Modbus registers are actually managed by the controller and which must be configured directly on the appliance board.



The document describing the mapping and meaning of the Modbus registers implemented on the GEN10 board is available on-demand from Robur technical service.

5.4.6.2 Without remote control or Modbus controller

Without the OCDS015 Modbus remote control or a generic Modbus controller, the following Table 5.10 p. 50 lists the parameters to be configured according to the functionality to be obtained.

Table 5.10 Parameters to be configured without a Modbus control

Features	Parameters to be set	Additional components
Summer ventilation	P54 (fixed) speed value to be used for the summer ventilation function	-
Fixed power heating (2 power levels)	P56 = 0	-
Fixed power heating (2 power levels), with fixed setpoint and room temperature measured by the appliance via the supplied room probe	P45 = 1 P53 room setpoint P56 = 0	-
Modulating heating, with fixed setpoint and room temperature measured by the appliance via the supplied room probe	P45 = 1 P53 room setpoint	-
Fixed power heating (2 power levels), with setpoint from 0-10 V input and room temperature measured by the appliance via the supplied room probe	P45 = 1 P48 = 1 P49 setpoint corresponding to 0 V P50 setpoint corresponding to 10 V P56 = 0	0-10 V input signal
Modulating heating, with setpoint from 0-10 V input and room temperature measured by the appliance via the supplied room probe	P45 = 1 P48 = 1 P49 setpoint corresponding to 0 V P50 setpoint corresponding to 10 V	0-10 V input signal
Modulating heating, with the 0-10 V input providing the required power level as a percentage of maximum power	P48 = 2	0-10 V input signal

6 NORMAL OPERATION



This section is for the end user.

6.1 WARNINGS

General warnings

Prior to using the appliance carefully read 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 5 p. 44).

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.

6.2 SWITCH ON AND OFF

Routine switching on/off

The appliance may exclusively be switched on/off by means of the suitably provided control device.

Do not switch on/off with the power supply switch


Do not switch the appliance on/off with the power supply switch. This may be harmful and dangerous

for the appliance and for the system.

Checks before switching on

Before switching on the appliance, ensure that:

- gas valve open
- appliance electrical power supply (main switch ON)
- connection and any necessary power supply of the control device

 After a long period of unit inactivity or at the first start-up, it may be necessary to repeat the ignition operation due to the presence of air in the gas piping.

6.2.1 OCDS015 Modbus remote control

 Refer to the instructions in the relevant manual.

6.2.2 Generic Modbus controller

 Refer to the instructions in the relevant manual.

6.2.3 OCDS012 1-key basic control and external request

6.2.3.1 Space heating activation

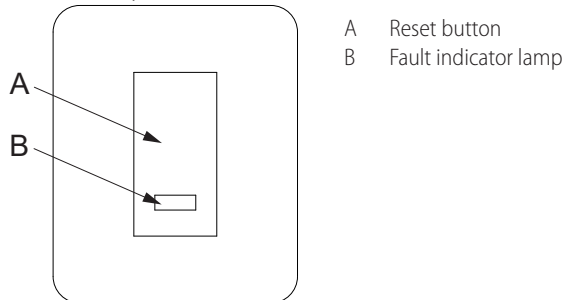
1. Activate the "HEAT." contact via the provided control device (thermostat, chronothermostat or voltage-free contact).
2. After the purge time (around 30 seconds), the gas solenoid valve opens and the burner ignites.
3. When the flame is detected, the control box keeps the gas valve open.
4. Otherwise, the control unit will try the ignition again

5 times, after the appropriate purge time. If the flame does not ignite anyway, the control unit locks the appliance and light the fault indicator lamp (B) on the control (Figure 6.1 p. 51).

- In case of flame locking, press the reset button (A).

i After a long period of unit inactivity or at the first start-up, it may be necessary to repeat the ignition operation due to the presence of air in the gas piping.

Figure 6.1 1-key basic control



6.2.3.2 Space heating shutdown

- Switch off space heating request by opening the "HEAT." contact using the provided control device (thermostat, chronothermostat or voltage-free contact).
- The burner will shut down, while the fans will continue to operate until the appliance has cooled down completely.

i In case of prolonged periods of inactivity, see Paragraph 7.5 p. 55.

6.2.4 OCDS016 2-keys basic control and possible external request

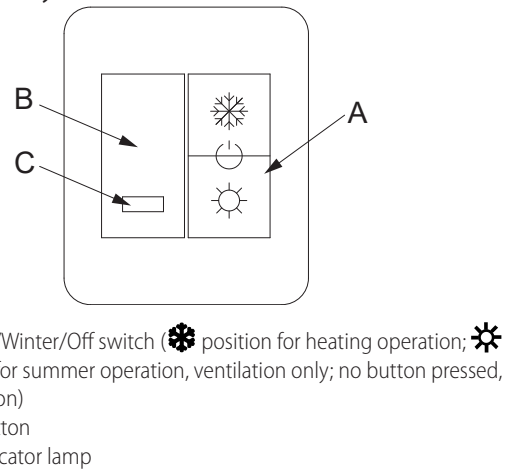
6.2.4.1 Space heating activation

- Set the summer/winter selector switch (A) in the winter position ❄️ (Figure 6.2 p. 51).
- If there is an external request connected to the OCDS016 2-key basic control, activate it via the provided control device (thermostat, chronothermostat or voltage-free contact).
- After the purge time (around 30 seconds), the gas solenoid valve opens and the burner ignites.
- When the flame is detected, the control box keeps the gas valve open.
- Otherwise, the control unit will try the ignition again 5 times, after the appropriate purge time. If the flame does not ignite anyway, the control unit locks the appliance and light the fault indicator lamp (C) on the control (Figure 6.2 p. 51).
- In case of flame locking, press the reset button (B).

i After a long period of unit inactivity or at the first start-up, it may be necessary to repeat the ignition operation due to the presence of air in the gas

piping.

Figure 6.2 2-keys basic control



6.2.4.2 Space heating shutdown

- Press the winter button ❄️ again so that neither of the two summer/winter buttons is pressed (Figure 6.2 p. 51) or, if there is an external request connected to the OCDS016 2-key basic control, deactivate the heating request via the provided control (thermostat, chronothermostat or voltage-free contact).
- The burner will shut down, while the fans will continue to operate until the appliance has cooled down completely.

i In case of prolonged periods of inactivity, see Paragraph 7.5 p. 55.

6.2.4.3 Ventilation activation (summer mode)

- Close the gas valve and check power supply availability to the unit.
- Set the summer/winter selector switch (A) in the summer position ☀️ (Figure 6.2 p. 51). This way the fan only will start.
- To stop the fan, press the summer button ☀️ again so that neither summer nor winter button is pressed.



It is recommended that the heating request is deactivated during the summer season by means of the provided control device (thermostat, chronothermostat or voltage-free contact), if any.

6.2.5 OTRG005 thermoregulator



Refer to the instructions in the relevant manual.

6.2.6 OCDS008 digital chronothermostat



Refer to the instructions in the relevant manual.

6.2.7 OSWR000 Genius software for remote management of gas unit heaters



Refer to the instructions in the relevant manual.

6.3 MESSAGES ON THE DISPLAY

6.3.1 4 digit display

The GEN10 board of the appliance (Figure 1.5 p. 20) is equipped with a 4-digit display (Figure 1.13 p. 20), which is only visible with the thermoformed door open.

- ▶ When the appliance is powered, the system checks that the board is functioning correctly, then all the LEDs on the display light up and finally the GEN10 board name is displayed in two subsequent stages (GEN during the first stage and 10 during the second).
- ▶ After 5 sec, the appliance is ready to operate.

6.3.2 Signals in normal operation

During normal operation, three temperature values alternate on the display:

- ▶ heat exchanger temperature, prefix O
- ▶ room temperature, prefix A
- ▶ flue gas temperature, prefix F

6.3.3 Events reporting

When they occur, the display of the GEN10 board shows three types of events, recognisable by the first character:

- ▶ "I" for information
- ▶ "u" for warning
- ▶ "E" for errors

The other three red digits represent a numeric event code. Info events are shown steadily while warnings and errors blink.

The display rotates after the temperature values (Paragraph 6.3.2 p. 52).

If multiple events are active, they are shown in sequence, ordered by increasing code number.

If warning or error events are active, the left green symbol, shown together with water temperature data, blinks.

If it is a permanent error or warning the appliance stops. Please refer to Table 8.1 p. 55 for details of operating codes.

6.3.4 Menu navigation

Once the menu list has been accessed (see Paragraph 6.4 p. 52), the display shows:

- ▶ First green digit on the left indicates menu number (eg. "0.", "1.", "2.", ... "8").
- ▶ The three red digits on the right indicate a parameter code or value, among those included in the selected menu (eg. "___6" "_20", "161").









(e.g. menu+parameter "1.__6", "2._20", "3.161").


6.4 GEN10 BOARD MENUS AND PARAMETERS

6.4.1 Selection keys

The keys on the GEN10 board (Figure 1.13 p. 20) can be

used to perform one of the following actions:

- ▶ Enter the menu list (by pressing the  key the first time).
- ▶ Scroll the menu list, or a series of parameters in a menu (by pressing keys  , .
- ▶ Select a menu or a parameter (by pressing the  key).
- ▶ Edit and confirm the setting of a parameter (pressing keys  ,  and confirming with the key .
- ▶ Perform a command (pressing key .
- ▶ Exit a menu and go back to the higher level by selecting the letter "E" which is displayed at the end of the menu list or of a series of parameters in a menu.

The letter "E" is displayed at the end a menu parameters list, and indicates the exit to go back to the higher level by pressing .

6.4.2 Menus and parameters

The menu may be display only (functional data or parameters), display and setting (parameters) or control (reset).

- ▶ Display menus: menu "0", menu "1" and menu "7".
- ▶ Command menu: menu "2" to execute error reset command (Paragraph 6.6.3 p. 54).
- ▶ Display and setting menu (for the user): menu "3" to display or set the value of some system parameters (e.g. room setpoint temperature); the values are initialised by the TAC at the first start-up; the Table 6.1 p. 53 shows the parameters present in menu 3.
- ▶ Visualization and setting menu (to be exclusively used by the installer and TAC): menu "4." (for the installer) "5." and "6." (for the TAC). They are password protected. These are specific sections, exclusively intended for qualified personnel (installer or TAC). For information see the Service manual.







Before accessing menus and parameters






1. Power supply switch "ON".
2. Display of the GEN10 board showing in sequence the detected temperature data (if the appliance is in normal operation), and eventually the flashing warning and error codes (if the appliance is in failure).




How to access the menus and parameters

1. Open the thermoformed door.
2. Press the  key once to display the menus: the first menu is displayed, "0." (= menu 0).
3. Press the  key to scroll down and display the other/subsequent menus; the menu numbers will be displayed in order, "1.", "2.", ... , "6." ... or "E" (= exit).
4. Select the menu of interest (e.g. display "2.___" = menu 2) by pressing the  key; the first parameter code will be displayed, in order in the menu (e.g. display "2._21" = parameter 21 in menu 2).
5. Press the  key to scroll down the other parameters in the menu; the codes will be displayed in order (e.g. display "2._21", ... "2._26" = parameters 21, ... 26 in menu 2), or letter "E" (= exit) at the end

of the list.

6. Select the parameter of interest by pressing the  key; the display will show the value previously assigned to the parameter, either read-only or to be set; if instead of a value/setting it is a command, a blinking code is displayed (eg. "rEr1" for the board error reset command).
7. Press the  key to reconfirm the value; or use  and  keys to modify the value, and press  at the end to confirm or set the new value; if however,

it is a matter of controlling an appliance operation, press the  key to perform it.



8. To exit a parameter menu or the menu list and go back to the higher level, press the  key until displaying the letter "E" for exit, then press the  key again.
9. The display alternates again between the temperature values: exchanger, room and flue gas.
10. Close the thermoformed door.

Table 6.1 Menu 3 parameters (for the user)

Parameter	Description of parameter	Setting	Measurement unit	Default
53	Room temperature setpoint	0,0 ÷ 40,0 °C	°C/10	180
54	Fan speed in summer ventilation mode with standalone operation	1 ÷ 4	-	4
55	Fan mode in heating mode	0. at discrete speed levels 1. fixed maximum speed	-	0
56	Standalone heating mode	0. at discrete power levels 1. power modulation (PID)	-	1

6.5 MODIFYING SETTINGS



Do not modify complex settings

Specific technical and system knowledge is required for complex settings. Contact a TAC.







The settings described below apply only when using the 1- or 2-key basic control or an external request. In all other cases, please refer to the instruction manual of the specific control used.

6.5.1 How to raise/lower the room temperature setpoint (fixed setpoint)

The room temperature setpoint determines the room temperature to be achieved by the gas unit heater. The temperature setting is preset by the TAC at the first start-up.



To raise/lower the room temperature setpoint, via the GEN10 board, proceed as follows (see also Paragraph 6.4 p. 52):

1. Access menu 3 parameter 53 (= room temperature setpoint) with the  and  keys; set parameter 53 to the desired temperature setting, paying attention to the fact that the value on the display is expressed in °C/10 (so for example 17 °C corresponds to the value 170).
2. Exit menu 3 by pressing the  key until displaying the letter "E" for exit, then press the  key.
3. The display alternates again between the temperature values: exchanger, room and flue gas.

6.6 RESTARTING A LOCKED-OUT UNIT

6.6.1 Fault signals

In the event of locked-out appliance, an operational code flashes on the display (first green figure on the left, letter "u" = warning or "E" = error).

- ▶ To restart the appliance you must know and perform the procedure concerning the issue signalled and identified by the code (Paragraph 8.1 p. 55).
- ▶ Only act if you are familiar with the issue and with the procedure (technical expertise and professional qualifications might be required).
- ▶ If you do not know the code, the problem, or the procedure, or you do not have sufficient skills, and in any case of doubt, contact the TAC.

The presence of a fault is also reported via connector J61 on the GEN10 board.

Depending on the event taking place on the gas unit heater, the relay output of connector J61 is activated with different levels of intermittence, detailed in Table 6.2 p. 53 below.

Table 6.2 Activation status of output J61 in the presence of faults

Fault	Relay status
E812	Flame controller lockout
E801	Limit thermostat trip
W/E 802	Flue gas thermostat trip
E809	Flue gas temperature too low
Other fault	

After 72 hours of continuous flashing status, the led becomes fixed.

If an indicator lamp (which is included when using optional 1- or 2-key basic controls, see Paragraph 1.7.4 p. 22 and 1.7.5 p. 22) is connected to this contact, the lamp

will glow when the contact is closed, indicating the presence of a fault.

6.6.2 Locked-out appliance

An external intervention (reset or repair) is required due to an appliance fault.


- ▶ A reset may be enough for a temporary and provisional fault.
- ▶ For a fault or breakdown, alert the maintenance technician or TAC.

6.6.3 Reset

To reset a fault, the following options are available:

- ▶ Using the specific button, with the 1- or 2-key optional basic control, OTRG005 thermoregulator, OCDS008 digital chronothermostat, or OSWR000 Genius software.
- ▶ Via the appropriate function of the OCDS015 Modbus remote control.
- ▶ If applicable, via the appropriate function of the

generic Modbus controller (refer to the documentation of the Modbus controller used).

- ▶ Via menu 2, accessing parameter 21 (Paragraph 6.4 p. 52) and pressing .


6.7 EFFICIENCY


For increased appliance efficiency:


- ▶ Install horizontal flow units observing requirements on height above ground (Figure 2.2 p. 27).
- ▶ Direct the warm air flow downwards, using the horizontal louvres of the delivery grille, respecting the instructions given in Paragraph 2.3 p. 26.
- ▶ Position the thermostat/control system according to the guidelines given in Paragraph 4.4.9 p. 42.
- ▶ Program appliance activation for actual periods of use.
- ▶ Keep the fan grilles clean.
- ▶ Reduce repeated switch-ons to the minimum.
- ▶ Take advantage of the appliance's heat output modulation.


7 MAINTENANCE


7.1 WARNINGS


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

 Maintenance operations described herein may exclusively be performed by the TAC or skilled maintenance technician.

 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 disconnecter and gas valve.

 The efficiency checks and every other "check and maintenance operation" (see Table 7.1 p. 54) must be performed with a frequency according to current regulations or, if more restrictive, according to the provisions set forth by the manufacturer, installer or TAC.

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

7.2 SCHEDULED ROUTINE MAINTENANCE

Perform the operations in the following Table 7.1 p. 54 on an annual basis.


Table 7.1 Scheduled routine maintenance

	Next-G	Next-R	M	
Ordinary scheduled maintenance				
Check of the unit	clean the burner	√	√	√
	clean the ignition and flame sensor electrodes	√	√	√
	clean the fan	√	√	√
	clean the blower/exhaust fan	√	√	√
	check the % value of CO ₂	√	√	√
	check the unit safety devices	√	√	√
	check that the condensate discharge is clean	√	-	-

7.3 RESETTING THE TEMPERATURE LIMIT THERMOSTAT

The temperature limit thermostat stops the burner in case of appliance overheating.

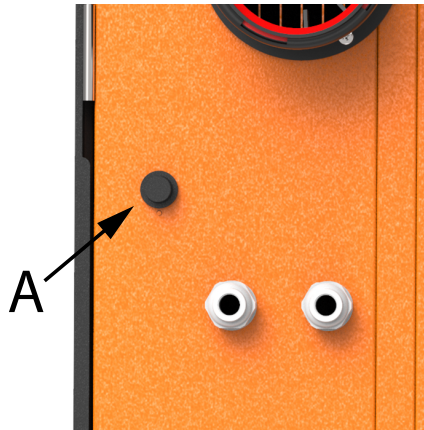
Resetting is carried out by pressing the button on the back of the unit (detail 6 on dimensional diagrams, Paragraph 1.2 p. 8), after unscrewing the protective cap (see Figure 7.1 p. 55). Set back in place the protective cap after resetting the thermostat.

 Resetting of the temperature limit thermostat should be carried out by qualified service personnel, after removing the cause of overheating.



The intervention of the temperature limit thermostat ALWAYS indicates an abnormal condition. Before resetting, it is therefore advisable to search for the reasons that led to the unit overheating. If frequent stops occur, contact Robur TAC.

Figure 7.1 Position of the limit thermostat reset



A Protective cap of the limit thermostat reset button

7.4 EMERGENCY MODE

If there is a fault on the supplied room probe, the emergency mode is activated, which deactivates room temperature control by the gas unit heater and activates continuous operation at the lowest power level.

This condition is indicated by warning 821 (Table 8.1 p. 55).

On deactivation of the service request by the provided control device, the burner is switched off.

If, on the other hand, the room temperature value is

communicated via Modbus and Modbus communication fails, the gas unit heater will switch off.

7.5 PERIODS OF INACTIVITY

Should you foresee to leave the appliance inactive for a long period of time, disconnect it from the electrical and gas mains.



How to deactivate the appliance for long periods of time

1. Switch the appliance off (Paragraph 6.2 p. 50).
2. Only when the appliance is completely off, power it off with the main switch/disconnector switch (Detail GS in Figure 4.1 p. 36).
3. Close the gas valve.



How to reactivate the appliance after long periods of inactivity

Before reactivating the appliance, the operator/maintenance technician of the system must first of all:

- Check whether any maintenance operations are required (contact the TAC; see Paragraph 7.2 p. 54).
- Ensure that the flue gas exhaust duct and the air intake are not obstructed.

After completing the above checks:

1. Open the gas valve and ensure there are no leaks; should gas smell be noticed, close the gas valve again, do not switch any electrical devices on and request intervention by qualified personnel.
2. Power on with the main power supply switch (GS, Figure 4.1 p. 36).
3. Switch on the appliance by means of the provided control device (Paragraph 6.2 p. 50).

8 DIAGNOSTICS

8.1 BOARD CODES

Table 8.1 Operative codes

Code	Description	Warning (u)	Error (E)
801	Limit thermostat trip	NA	Contact the TAC.
802	Flue gas thermostat trip	Contact the TAC.	
807	High heat exchanger temperature	Reset is automatic when the triggering condition ceases.	NA
809	Flue gas temperature too low	NA	Contact the TAC.
812	Flame controller lockout	Reset is automatic up to 5 attempts (in about 5 minutes).	Check gas supply. If the code persists or in case of doubt, contact the TAC. The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54.
813	Flame controller communication error	Reset is automatic when the triggering condition ceases.	The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54. If the code persists, shows up again or in case of doubt, contact the TAC.
814	Flame controller not compatible	NA	Contact the TAC.

NA: Not Applicable

Code	Description	Warning (u)	Error (E)
815	Flame controller parameters error	NA	Contact the TAC.
819	Room temperature probe needed	Install the room temperature probe and set P45 = 1.	NA
820	Heat exchanger temperature probe fault	NA	The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54. If the code persists, shows up again or in case of doubt, contact the TAC.
821	Room temperature probe fault	Contact the TAC.	
824	Flue gas temperature probe fault	NA	The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54. If the code persists, shows up again or in case of doubt, contact the TAC.
827	Loss of Modbus communication	Check Modbus connection.	NA
835	De-stratification probe fault	Contact the TAC.	
836	Blower fault	Reset occurs automatically 20 minutes after the code is generated.	The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54. If the code persists, shows up again or in case of doubt, contact the TAC.
838	Internal flame controller error	Reset occurs automatically 10 seconds after the code is generated.	The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54. If the code persists, shows up again or in case of doubt, contact the TAC.
841	Parasitic flame lockout	NA	The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54. If the code persists, shows up again or in case of doubt, contact the TAC.
842	Flame loss	Reset occurs automatically 10 seconds after the code is generated.	NA
843	Flame controller communication error	Reset is automatic when the triggering condition ceases.	The reset may be done following one of procedures shown in Paragraph 6.6.3 p. 54. If the code persists, shows up again or in case of doubt, contact the TAC.
880	Incomplete functional parameters	Contact the TAC.	
80	Invalid configuration parameters	Contact the TAC.	
81	Corrupt parameter memory	NA	Contact the TAC.
85	Invalid module type configuration parameters	NA	Contact the TAC.
90	Parameter memory fault	NA	Contact the TAC.
91	Electronic board fault: firmware	NA	Contact the TAC.

NA: Not Applicable

9 APPENDICES

9.1 PRODUCT FICHE

Figure 9.1

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:							Next-G 30
B ₁ warm air heater: [yes/no]							no
C ₂ warm air heater: [yes/no]							no
C ₄ warm air heater: [yes/no]							no
Type of fuel: [gas/liquid/electricity]							gas
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	27,4	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	88,1	%
Minimum capacity	P _{min}	9,9	kW	Useful efficiency at minimum capacity (*)	η _{pl}	96,2	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,035	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,012	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	21	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	94,9	%
				Seasonal space heating energy efficiency	η _{s,h}	90,6	%
Contact details							Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)
(*) Not required for electric warm air heaters.							

Figure 9.2

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:							Next-G 45
B ₁ warm air heater: [yes/no]							no
C ₂ warm air heater: [yes/no]							no
C ₄ warm air heater: [yes/no]							no
Type of fuel: [gas/liquid/electricity]							gas
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	41,4	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	86,7	%
Minimum capacity	P _{min}	14,5	kW	Useful efficiency at minimum capacity (*)	η _{pl}	94,9	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,048	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,016	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	53	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	94,6	%
				Seasonal space heating energy efficiency	η _{s,h}	89,1	%
Contact details							Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)
(*) Not required for electric warm air heaters.							

Figure 9.3

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 60	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	56,6	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	87,8	%
Minimum capacity	P _{min}	19,5	kW	Useful efficiency at minimum capacity (*)	η _{pl}	94,8	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,072	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,024	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	21	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	95,6	%
				Seasonal space heating energy efficiency	η _{s,h}	90,2	%
Contact details		Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)					

(*) Not required for electric warm air heaters.

Figure 9.4

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 90	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	87,3	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	87,4	%
Minimum capacity	P _{min}	28,6	kW	Useful efficiency at minimum capacity (*)	η _{pl}	95,6	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,110	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,037	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	26	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	96,0	%
				Seasonal space heating energy efficiency	η _{s,h}	91,2	%
Contact details		Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)					

(*) Not required for electric warm air heaters.

Figure 9.5

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 20 EC	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	19,0	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	87,8	%
Minimum capacity	P _{min}	8,5	kW	Useful efficiency at minimum capacity (*)	η _{pl}	95,1	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,030	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,010	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	24	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	95,7	%
				Seasonal space heating energy efficiency	η _{s,h}	89,6	%
Contact details						Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)	
(*) Not required for electric warm air heaters.							

Figure 9.6

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 30 EC	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	27,4	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	88,1	%
Minimum capacity	P _{min}	9,9	kW	Useful efficiency at minimum capacity (*)	η _{pl}	96,2	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,035	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,012	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	21	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	94,9	%
				Seasonal space heating energy efficiency	η _{s,h}	90,6	%
Contact details						Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)	
(*) Not required for electric warm air heaters.							

Figure 9.7

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 35 EC	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	33,4	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	87,3	%
Minimum capacity	P _{min}	13,1	kW	Useful efficiency at minimum capacity (*)	η _{pl}	96,0	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,036	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,012	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	20	mg/kWh input energy (GCV)
				Emission efficiency	η _{ls,flow}	94,1	%
				Seasonal space heating energy efficiency	η _{ls,h}	89,3	%
Contact details		Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)					
(*) Not required for electric warm air heaters.							

Figure 9.8

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 45 EC	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	41,4	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	86,7	%
Minimum capacity	P _{min}	14,5	kW	Useful efficiency at minimum capacity (*)	η _{pl}	94,9	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,048	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,016	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	53	mg/kWh input energy (GCV)
				Emission efficiency	η _{ls,flow}	94,6	%
				Seasonal space heating energy efficiency	η _{ls,h}	89,1	%
Contact details		Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)					
(*) Not required for electric warm air heaters.							

Figure 9.9

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 60 EC	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	56,6	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	87,8	%
Minimum capacity	P _{min}	19,5	kW	Useful efficiency at minimum capacity (*)	η _{pl}	94,8	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,072	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,024	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	21	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	95,6	%
				Seasonal space heating energy efficiency	η _{s,h}	90,2	%
Contact details						Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)	
(*) Not required for electric warm air heaters.							

Figure 9.10

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 75 EC	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	72,0	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	86,5	%
Minimum capacity	P _{min}	26,3	kW	Useful efficiency at minimum capacity (*)	η _{pl}	94,6	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,100	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,037	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	14	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	93,8	%
				Seasonal space heating energy efficiency	η _{s,h}	88,0	%
Contact details						Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)	
(*) Not required for electric warm air heaters.							

Figure 9.11

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 90 EC	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	87,3	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	87,4	%
Minimum capacity	P _{min}	28,6	kW	Useful efficiency at minimum capacity (*)	η _{pl}	95,6	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,110	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,037	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	26	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	96,0	%
				Seasonal space heating energy efficiency	η _{s,h}	91,2	%
Contact details		Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)					
(*) Not required for electric warm air heaters.							

Figure 9.12

Table 9 Information requirements for warm air heaters							
Model(s): Information to identify the model(s) to which the information relates:						Next-G 30 C	
B ₁ warm air heater: [yes/no]						no	
C ₂ warm air heater: [yes/no]						no	
C ₄ warm air heater: [yes/no]						no	
Type of fuel: [gas/liquid/electricity]						gas	
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	27,4	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	88,0	%
Minimum capacity	P _{min}	9,9	kW	Useful efficiency at minimum capacity (*)	η _{pl}	96,2	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,035	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,012	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	21	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	95,0	%
				Seasonal space heating energy efficiency	η _{s,h}	90,6	%
Contact details		Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)					
(*) Not required for electric warm air heaters.							

Figure 9.13

Model(s): Information to identify the model(s) to which the information relates:				Next-G 60 C			
B ₁ warm air heater: [yes/no]				no			
C ₂ warm air heater: [yes/no]				no			
C ₄ warm air heater: [yes/no]				no			
Type of fuel: [gas/liquid/electricity]				gas			
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Capacity				Useful efficiency			
Rated heating capacity	P _{rated,h}	56,6	kW	Useful efficiency at rated heating capacity (*)	η _{nom}	87,2	%
Minimum capacity	P _{min}	19,5	kW	Useful efficiency at minimum capacity (*)	η _{pl}	94,8	%
Electric power consumption (*)				Other items			
At rated heating capacity	e _{l,max}	0,072	kW	Envelope loss factor	F _{env}	0,0	%
At minimal capacity	e _{l,min}	0,024	kW	Ignition burner power consumption (*)	P _{ign}	0,0	kW
In standby mode	e _{l,sb}	0,004	kW	Emissions of nitrogen oxides (*)	NO _x	21	mg/kWh input energy (GCV)
				Emission efficiency	η _{s,flow}	95,4	%
				Seasonal space heating energy efficiency	η _{s,h}	89,9	%
Contact details	Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)						
(*) Not required for electric warm air heaters.							

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.



caring for the environment

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