Condensing warm air heater

AC

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1. Introduction

1.1. Symbols

In this manual, the warnings are used to point to specific information. We want to ensure the user safety, to avoid any problem and to ensure proper operation of the appliance.

WARNING

Indicates a potential hazard which can cause bodily injuries and/or material damage

Indicates important information

Indicates a reference to other notices or other pages of the manual.

Before installation and commissioning the device, read carefully all manuals

1.2. Abbreviations

- PWM : Pulse Width Modulation (fans control in variable speed)

1.3. General

1.3.1. Manufacturer's liability

Our products are manufactured in compliance with various applicable European directives requirements. They are thus supplied with EC markings and all necessary documents. With our commitment to quality products, we constantly seek to improve them. We therefore reserve the right at any time to modify the characteristics stated in this document.

Our liability as a manufacturer does not apply in the following cases:

- Failure to follow operating instructions for the appliance.
- Failure to maintain or insufficiently maintain the appliance.
- Failure to follow installation instructions for the appliance.

1.3.2. Installer's liability

The installer is responsible for installation and first commissioning of the device. The installer must observe the following:

- Read and follow the instructions given in the instruction manuals provided with the device.
- Carry out installation in accordance with the applicable legislation and standards.
- Carry out the first commissioning and carry out all necessary controls.
- Explain the installation to the user.
- Inform the user that he cannot make changes in the appliance's design and to the installation by himself. The slightest modification (change, removal...) of security components or parts automatically results in the appliance's CE marking becoming invalid.
- Alert the user about the obligation to control and maintain the device.
- Hand all documents to the user.

1.3.3. User's liability

To ensure correct operation of the appliance, the user must observe the following:

- Read and follow the instructions given in the instructions manuals provided with the device.
- Call in a qualified technician to carry out the installation and perform the initial commissioning.
- Obtain explanations about the installation by the installer.
- Carry out checks and required maintenance.
- Keep all documents in good condition and near the appliance.

1.4. Certifications

Appliance	Gas warm air generator, with condensation an warm water heat exchanger
Directive	2009/142/CEE «Gas appliances»
NOx class	5 (EN 1020)
Flue type	Evacuation : B23
	Sealed : C13, C33, C53

2. Safety instructions and recommendations

2.1. Safety instructions

WARNING

The warm air heater is an energized device and must be grounded during installation.

WARNING

It is not necessary to open the heating appliance's casing during normal operating. This operation is needed only during installation and/or servicing by authorised personnel.

- It is not allowed to obstruct and/or reduce the space reserved for the room or the appliance vents,
- Do not obstruct flue pipes or air intake pipes
- Do not make any change in the settings made by the qualified technician,
- Do not spray water on the heater, or touch this appliance with wet body parts or bare feet,
- Do not touch the hot parts of the heating appliance, and/or moving parts,
- Do not place or hang anything on the appliance,
- Any work on the appliance is prohibited before unplugging it from the mains and closing the gas supply.
- Do not change the used gas type, security systems or control settings, as this could lead to dangerous situations.
- Do not swallow the fluid

Call a qualified technician in the case of gas replacement, change of gas pressure or modification of power supply.

If the appliance is not operated for a long period, disconnect the power supply of the appliance. When commissioning, it is advisable to use the service of a professional technician. Generally, all repair or maintenance works must be carried out exclusively by authorised and qualified personal.

Subscribing to a maintenance agreement is strongly recommended

2.2. Recommendations

AC range condensation gas warm air heaters are engineered for heating industrial and tertiary premises.

WARNING

Only qualified professionals are authorised to modify and install the appliance.

- Read all instructions in order to benefit all the functions of the appliance
- This information forms an integral part of the appliance and must always be kept always with the appliance, even in the event of transfer to another owner or user.
- Do not remove or cover the labels and material safety data plates fixed to the devices. Labels and material safety data plates must be readable throughout the device life.
- Install the device in a sufficiently ventilated room, except if it has a sealed combustion
- Please contact us for any application other than those described in this document

DON'Ts

- Do not install condensing warm air heaters:
    - Outdoors
    - In environments with explosive risks,
    - In premises containing vapours of chlorinated products
    - In extremely wet premises (electrical shock hazard).

3. Description

3.1. Operating principle

AC warm air heaters are composed of condensation gas boiler and a hot water battery positioned in the air flow, serial linked in a heat transfer fluid loop.

3.1.1. Boiler

The low NOx pre-mixed modulating burner heats the water that circulates through the heating body.

Combustion air, drawn by a variable speed fan, goes through a venturi system, which provides an air quantity proportional to the gas flow.

The air/gas mixture is led to the burner in the centre of heating stage, where it is burned.

Flue gases pass twice through a stainless steel exchanger, in order to dissipate the maximum heat. This technology allows reaching a 98% minimum efficiency at maximum power and 108 % in power modulation.

When flue gas temperature is below the dew point, water vapour in the flue gas condenses in the lower part of the heating body. Cooled flue gases are evacuated through evacuation flue pipes. The condensation water is evacuated through drain siphon.

3.1.2. Ventilation

The fan (axial models AC-H) or motor turbine (centrifuge models AC-C) blows air through the battery to increase its temperature. This technique allows a perfect homogeneity of the air temperature.

Unlike traditional exchanger, the partial or total reduction of the air flow or an interruption of the power supply during operation does not affect the appliance.

The combustion section is completely insulated from the air circuit, which ensures that pollution of the heated air flow is impossible.

The condensing warm air heaters are equipped with a fan that meets the requirements of the new European Directive 2009/125/EC.

Axial models are designed for direct blowing and are equipped in standard with a horizontal louvers grid.

3.1.3. Heat transfer fluid loop

The fluid loop is achieved in copper pipes.

The tightness is maximum :

- Thanks to the serial production of the whole piping. Especially all elbows are bent
- Thanks to the minimum number of fittings and tappings.

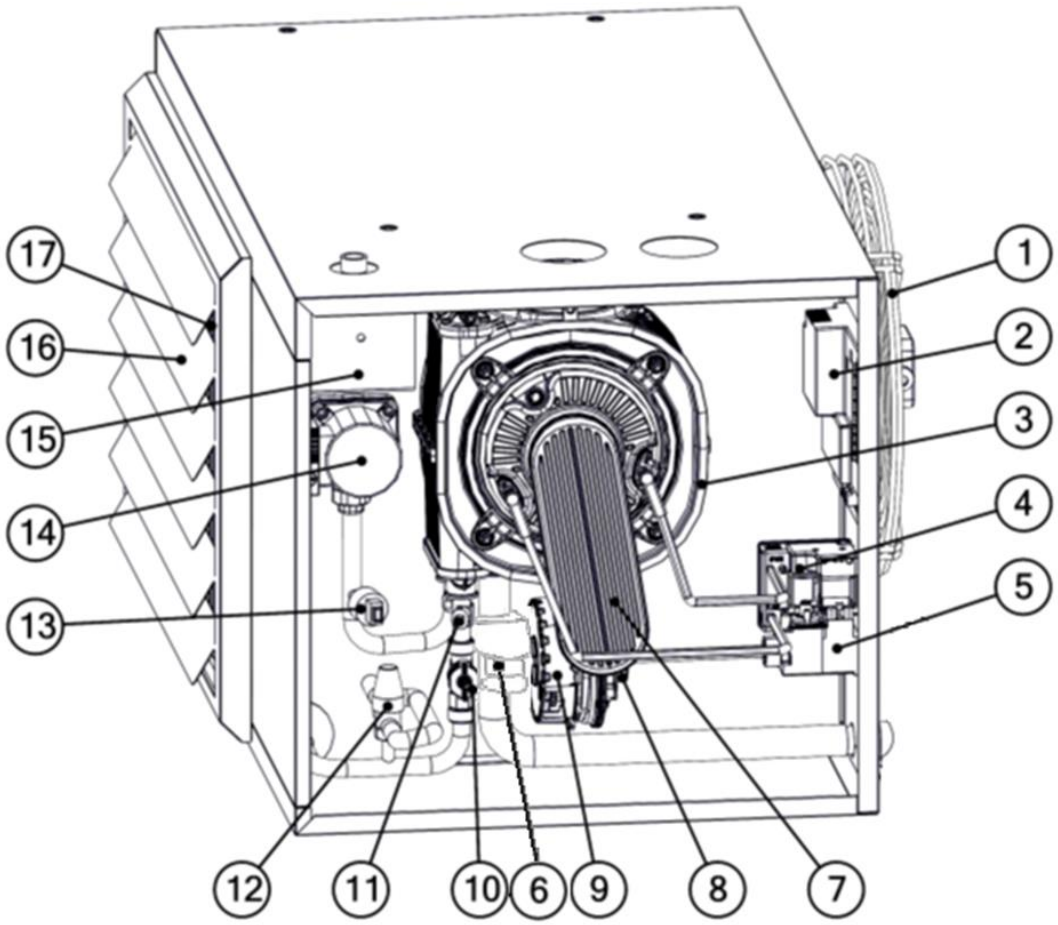
3.1.4. Regulation

Optimising a condensation system performance is related to its control.

The lower is the appliance power modulation, the more condensation will be important.

Modulation range of AC heaters is 30% to 100% of rated power. The heater internal PLC, combined with independent regulator, allows continuous modulation of the thermal output between minimum and maximum values. Modulating operation of the AC heater guarantees perfect adaptation to the premises real needs.

3.2. Main components



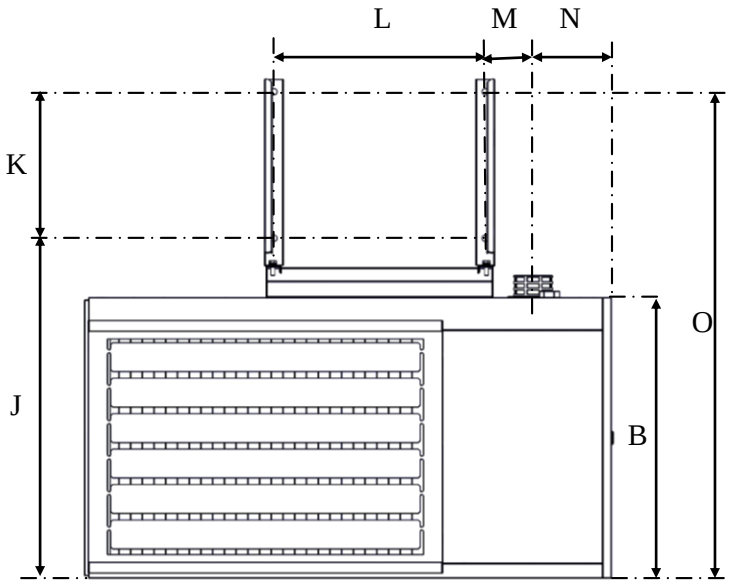
1	Axial fan	**9**	Burner fan
2	PLC	**10**	Fluid flow meter
3	Condensing heat exchanger	**11**	Fluid temperature (boiler out)
4	Burner control unit	**12**	Safety valve
5	Gas valve	**13**	Fluid pressure sensor
6	Siphon and condensate drain	**14**	Pump
7	Premix modulating burner	**15**	Expansion valve
8	Venturi	**16**	Louvers

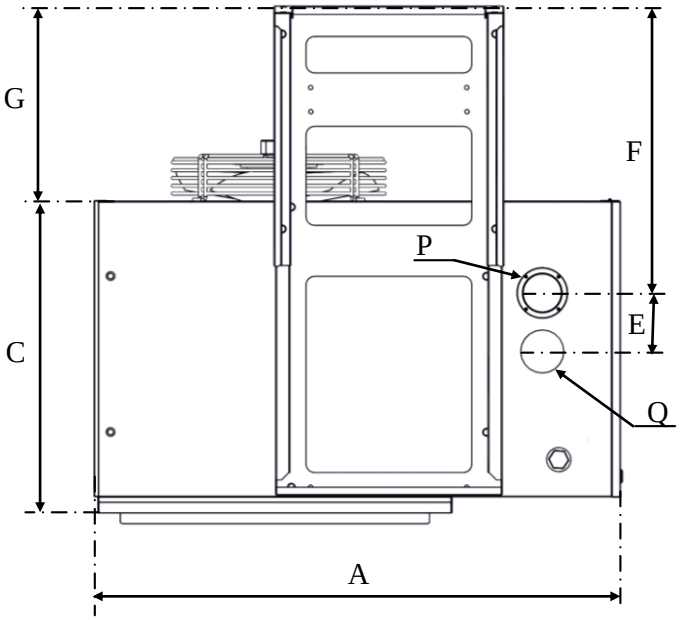
3.3. Technical characteristics

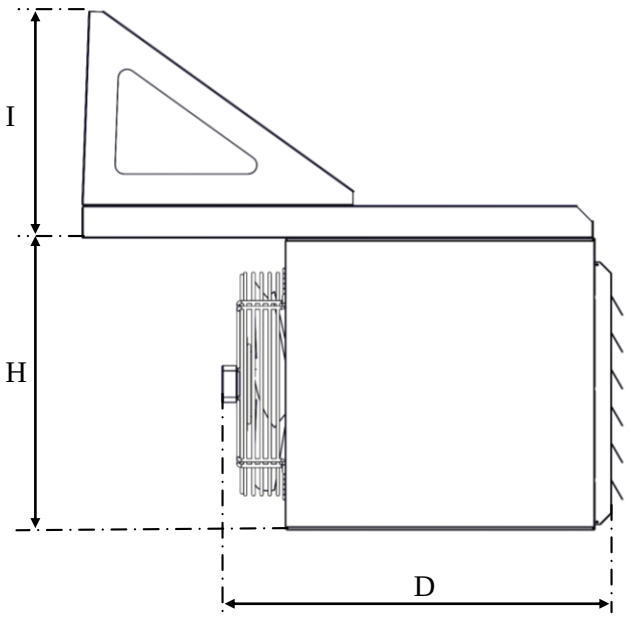
Warm air heater	Unit	AC-H30	AC-H40	AC-H50	AC-H70
General					
Nominal heat input	kW NHV	6,5 – 27	9 – 36	11 – 45	16 – 63
Nominal heat output	kW	7 – 26,2	9,7 – 34,9	11,9– 43,7	17,3 – 61,1
Efficiency at full load	%	98	98	98	98
Efficiency at minimum load	%	108	108	108	108
Air flow	m^3/h (16°C)	3050	3450	4600	5500
ΔTair	°C	8 – 25,6	8,8 – 28,5	8,5 – 27,3	8,7 - 28
Gas and flue gas data					
Gas flow (15°C) H (G20 20 mbar) L (G25 – 25 mbar) Propane (G31 – 37 mbar)	 m^3/h m^3/h kg/h	 2,86 3,18 2,11	 3,82 4,21 2,81	 4,77 5,26 3,51	 6,68 7,37 4,91
Minimum fresh air flow rate	m^3/h	100	100	100	100
Condensate flow rate	litre/h	1,8	2,4	2,9	5,2
Flue gas temperature	°C	50-100	50-100	50-100	50-100
Electric data					
Power supply voltage		230V 1N ~ 50Hz			
Extreme working temperatures		-15°C / +40°C			

Warm air heater	Unit	AC-H30	AC-H40	AC-H50	AC-H70
General					
Air supply diameter	mm	80	80	80	80
Flue pipe diameter	mm	80	80	80	80
Condensate drain diameter	mm	32	32	32	32
Venturi ring Diaphragm washer		White 6mm	White 6mm	Red No	No No
Gas connection		1/2" male			
Fan power	W	200	200	420	520
Fan speed	rpm	1300	1300	1350	900
Electric power	W	310	310	640	730
Fluid circuit volume (water + glycol -15°C)	litre	6,6	7,2	9,2	11,2
Weight	kg	88	99	110	135

3.4. Overall dimensions







Dimension	AC-H30	AC-H40
A	1080 mm	1079,5 mm
B	570 mm	624 mm
C	640 mm	640 mm
D	765 mm	765 mm
E	120 mm	120 mm
F	667 mm	667 mm
G	478 mm	478 mm
H	570 mm	654 mm
I	375 mm	375 mm
J	687 mm	737 mm
K	243 mm	243 mm
L	250 mm	250 mm
M	279,5 mm	279,5 mm
N	160 mm	161,5 mm
O	342 mm	342 mm
P (Air)	80 mm	80 mm
Q (Flue)	80 mm	80 mm

Dimension	AC-H50	AC-H70
A	1192 mm	1277 mm
B	674 mm	774 mm
C	712 mm	712 mm
D	842 mm	842 mm
E	120 mm	120 mm
F	667 mm	667 mm
G	478 mm	478 mm
H	704 mm	804 mm
I	375 mm	375 mm
J	787 mm	887 mm
K	243 mm	243 mm
L	250 mm	250 mm
M	304 mm	304 mm
N	224,5 mm	309 mm
O	342 mm	342 mm
P (Air)	80 mm	80 mm
Q (Flue)	80 mm	80 mm

4. Appliance installation

Installation of gas appliances must be carried out by qualified personnel, it is determined the premises volume and location characteristics, equipment vent or ventilation device which may be installed on those premises.

Scope of delivery :

- Warm air heater
- Technical instructions
- Cable for power supply (1 m length)
- Gas fitting
- Gasket

Reception – Storage

The gas warm air heater is delivered on a wooden pallet, protected by a cardboard and plastic film. It is essential to check the delivered material status (even if the packaging is intact) and its compliance with the purchase order.

In the event of damage or missing parts, report comments on the carrier's receipt as accurately as possible, the words "subject to unpacking" has no legal value, and then confirm the prejudice by letter within 48h to the carrier. The buyer is responsible to check the goods delivered, no appeal is possible if this procedure is not followed.

Store the material in a clean, dry place, protected from shock, vibration, temperature variations and a room humidity less than 90 %.

Handling

Unpack the appliance using adequate protective equipment. Handling must be performed by a person equipped with the proper equipment.

4.1. General rules

Condensing warm air heaters can be installed directly into the premises to be heated.

However, this facility is subject to the national security rules depending on the fuel type used and the installation country. If in doubt, check with safety and inspection bodies.

Ventilation :

Premises receiving gas appliances should be provided with permanent ventilation in accordance with the applicable rules in the country of installation.

Condensate draining:

The appliance is supplied with an integrated siphon for condensate evacuating. The siphon is an integral part of the device, it is a safety system component, and replacement by another type is strictly prohibited.

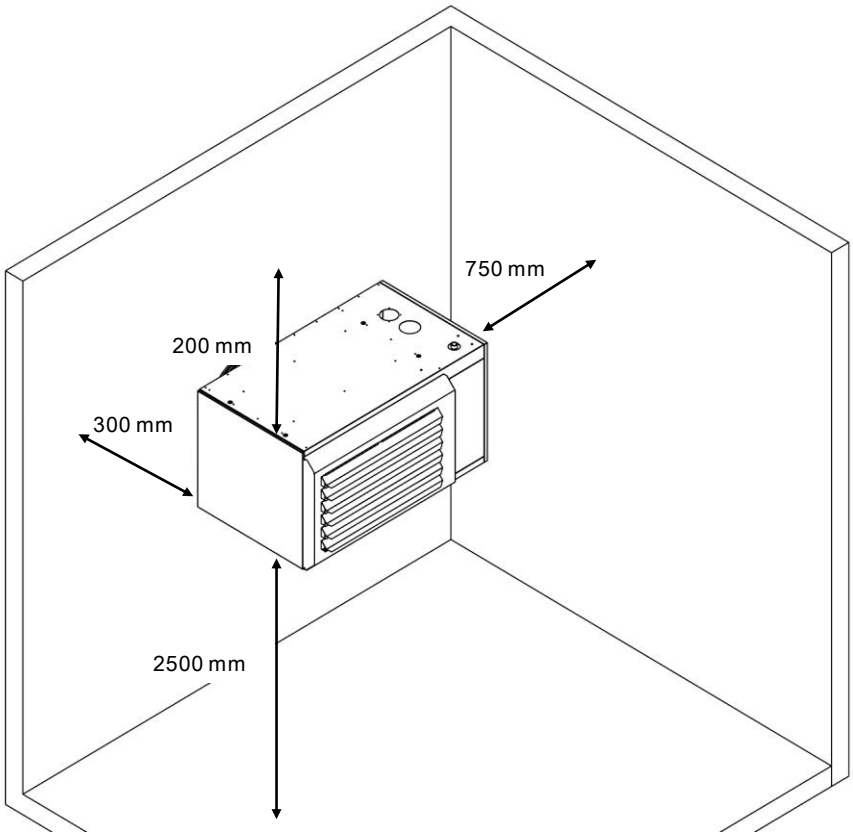
The condensate drain must be in accordance with existing rules in the heater country of installation.

Gas connection :

Before installing the appliance, it is necessary to check that the local distribution conditions (gas type, pressure) are compatible with settings of the device to be installed.

WARNING

Minimum distances required for appliance maintenance and safety:



4.2. Fixing the appliance

To facilitate the installation, we recommend that you use our hanging brackets. They are perfectly suited to the device and positioned to meet the minimum distance measurements from the wall.

Mounting: ☞ Always refer to the instructions provided with the brackets

Before attaching the appliance, it is important to ensure the support resistance.

Step 1 :

- Assemble the various elements constituting the bracket
- Attach the bracket to the wall with a system adapted to the wall material: the screws size and type used must be sufficient to support twice the heater weight.
- Perform a prior resistance test

Step 2 :

- Secure the heater in the bracket with the supplied screws, tighten them.

Step 3 :

- Open the front grid louvers, at least at 45° to allow hot air diffusion.

4.3. Connecting flue pipes

The flue systems represented in this manual are those commonly used in the market. However, some of them are not usable in all countries. It is up to the installer or the building owners to ensure that the chosen flue system complies with the local installation rules.

Connection of the flue pipe/air supply pipe, can be achieved:

- with combustion air supply sealed with respect to the premises (C type)
- with combustion air drawn from inside the premises (B type)

The warm air heater is certified for : C13-C33-C53-B23.

Flue pipes, terminals and flue elements must be manufactured from a material resistant to condensate contained in cold flues, between 50 and 100 °C, resulting from condensation. Only polypropylene PP or stainless steel 316 ducts are allowed.

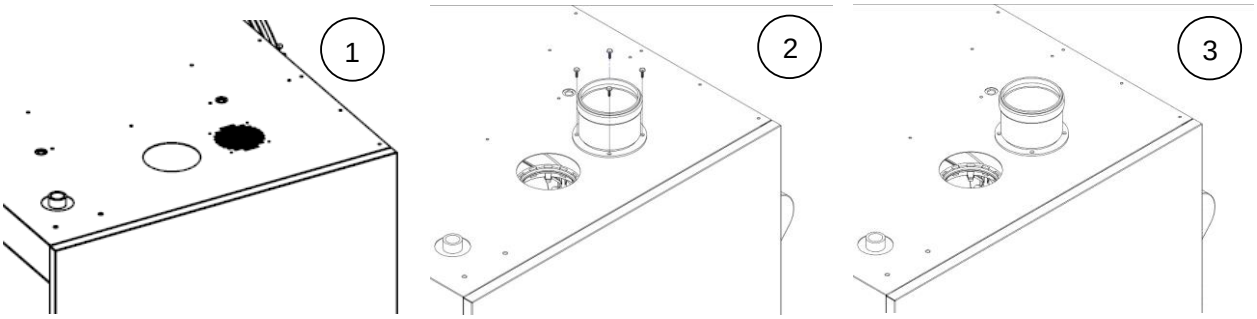
Flue pipes, terminals and accessories used must compulsorily be approved, use only suction and discharge terminals referenced by SOLARONICS CHAUFFAGE, the use of non-approved equipment results in cancelling of the warranty.

Mounting female flange of combustion air intake

The heaters are supplied with a combustion air intake (Figure 1). Ensure adequate ventilation of the premise, the fresh air intake required for combustion must be at least 100 m³/h per appliance.

For a sealed installation, it is necessary to mount the provided sealed adaptor on the appliance top (Figures 2 and 3), with the 4 provided screws.

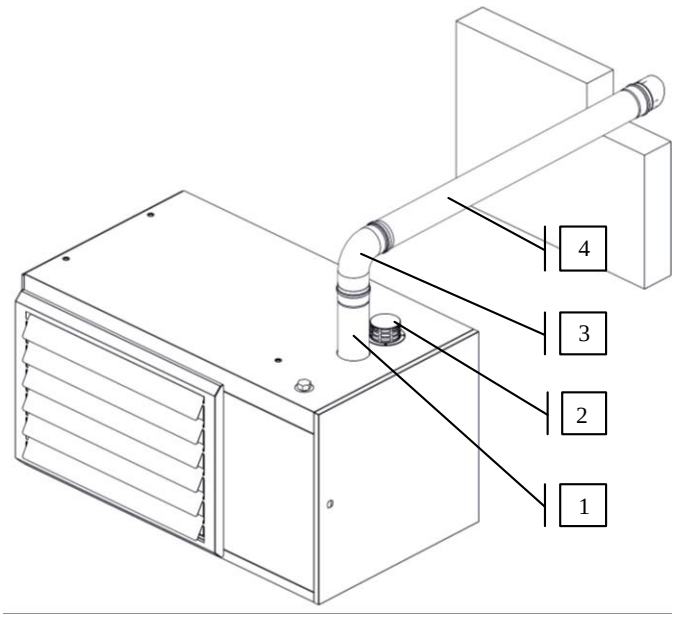
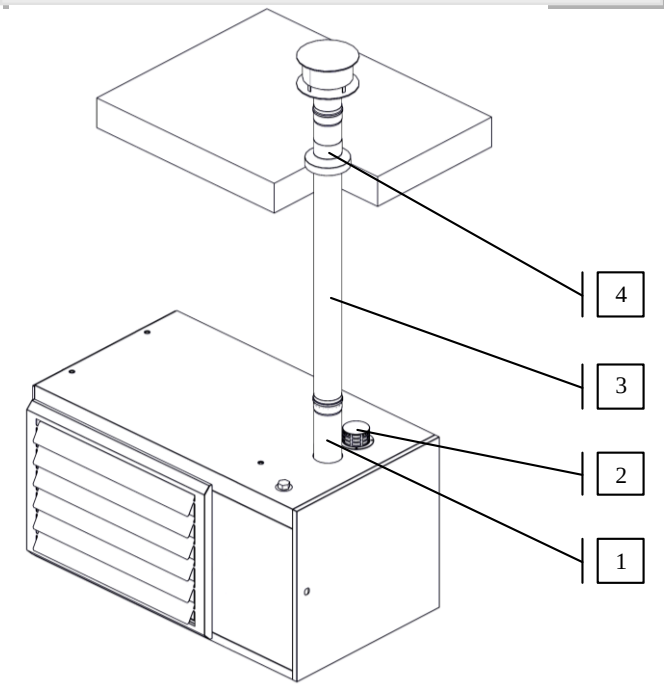
The use of sealed flues implies a perfect coupling, then to facilitate installation it is essential to use a lubricant, non-aggressive for the gasket, e.g. soapy water.



Figures 1 - 2 - 3

4.3.1. B23 type evacuation flue connection

Combustion circuit not sealed from the premise.
The combustion air is drawn directly from the premise and the flue is evacuated vertically, through the roof , or horizontally, through the wall.
Flue pipes must cross no other premise than the one in which the appliance is installed.

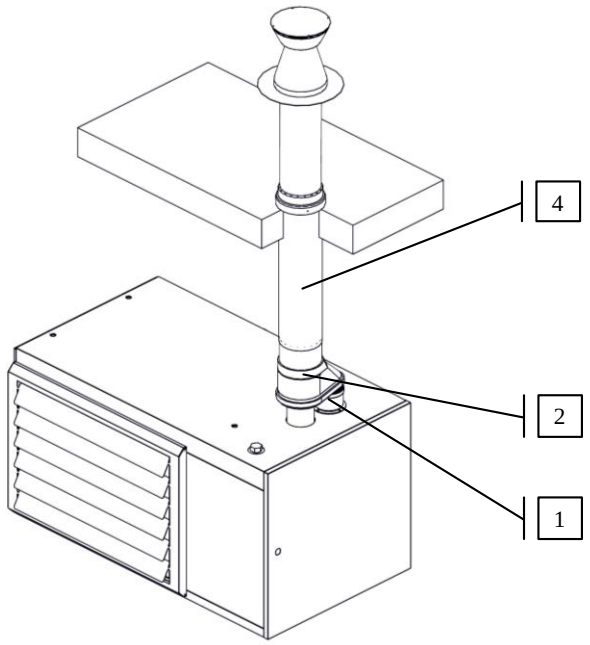
B23 Horizontal	*B23 Vertical*
	
Typical assembly: - 1) Pipe ø 80 length 250 mm - 2) Integrated air supply grid - 3) Elbow ø 80 at 90° - 4) Wall terminal ø 80 It is possible to extend or divert the wall outlet with approved accessories. The pipes diameter must be at least equal to the initial diameter of the appliance. Never reduce the pipe diameter or close the vents in the premise. It is advisable to use 45° elbows. Do not place wall outlet: - less than 2 m distance of a ventilation, a vent, the ground - in a public area	Typical assembly: - 1) Pipe ø 80 length 250 mm - 2) Integrated air supply grid - 3) Pipe ø 80 length 1000 mm - 4) Roof terminal ø 80 It is possible to extend or divert the roof outlet with approved accessories. The pipes diameter must be at least equal to the initial diameter of the appliance. Never reduce the pipe diameter or close the vents in the premise. It is advisable to use 45° elbows.

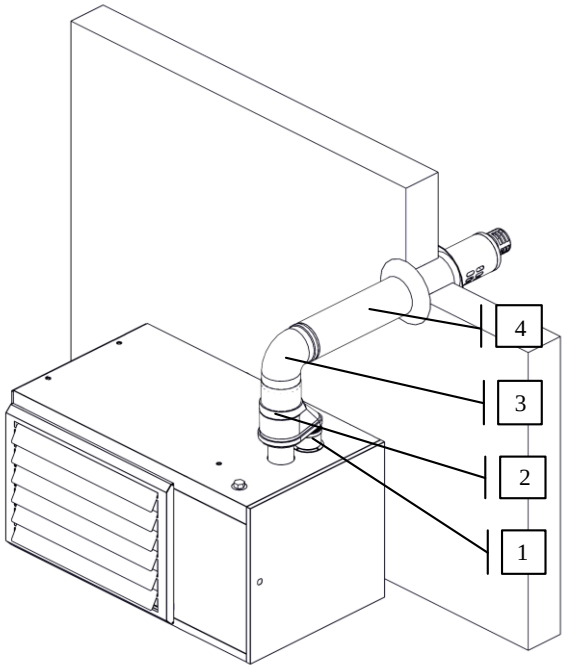
WARNING
Junctions must be sealed and rigid: ensure the presence of seals.
Flue pipes mounted horizontally must be installed with a slight slope, 3 ° to the heater to allow recovery of condensates formed in ducts.

4.3.2. C33 and C13 type evacuation flue connection

Combustion circuit sealed from the premise.
The combustion air intake and the flue evacuation are made vertically, through the roof , or horizontally, through the wall.
Flue pipes must cross no other premise than the one in which the appliance is installed.

C33 Vertical concentric (Roof)	*C13 Horizontal concentric*





Typical assembly :

- 1) Sealed female adaptor ø 80
- 2) Concentric twin reduction 2 x ø 80 -> ø 80/125
- 3) Concentric elbow ø 80/125 at 90°
- 4) Concentric wall or roof terminal ø 80/125

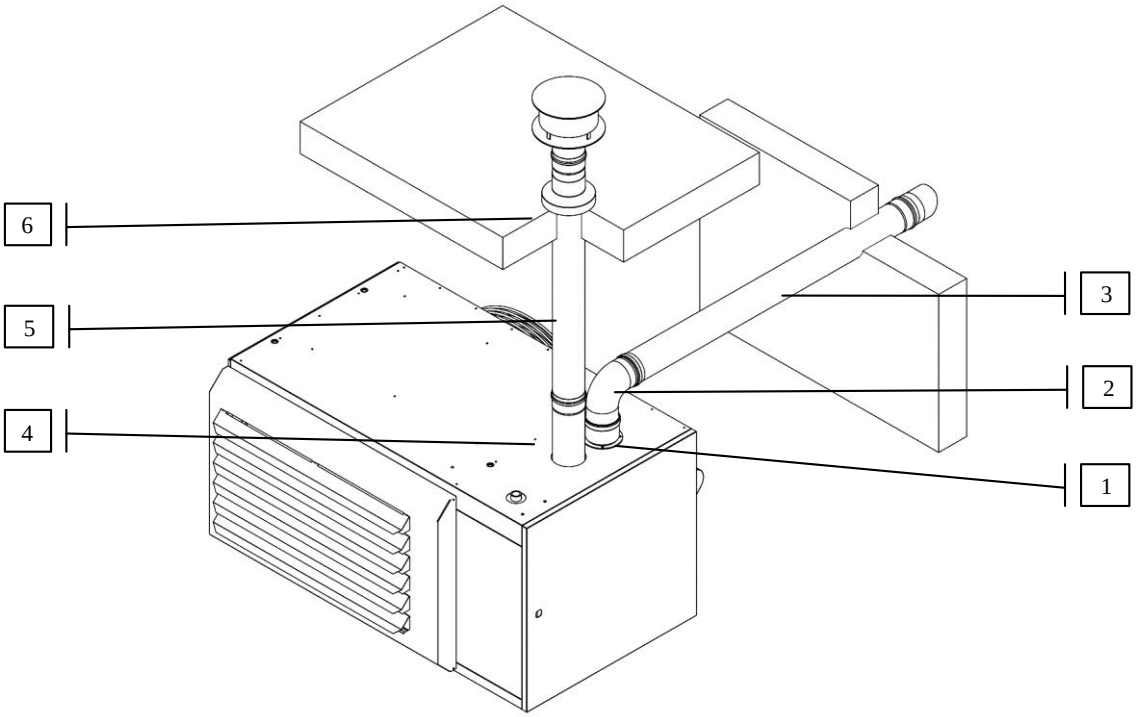
It is possible to extend or divert the concentric system with approved accessories. The pipes diameter must be at least equal to the initial diameter of the appliance. Never reduce the pipe diameter or close the vents in the premise.
Do not place the horizontal concentric terminal :
- less than 2 m of a ventilation or a vent,
- in a public area,
- less than 2 m from the ground or directly accessible (obstruction risk: it is recommended to install a protection system to the terminal - accessory not enclosed)

WARNING
Junctions must be sealed and rigid: ensure the presence of seals.
Flue pipes mounted horizontally must be installed with a slight slope, 3 ° to the heater to allow recovery of condensates formed in ducts

4.3.3. C53 type evacuation flue connection

Combustion circuit sealed from the premise.
The combustion air intake is made horizontally, through the wall and the flue evacuation is made vertically, through the roof.
Flue pipes must cross no other premise than the one in which the appliance is installed.

C53 Vertical



Typical assembly :

- 1) Sealed female adaptor ø 80
- 2) Elbow ø 80 at 90°
- 3) Wall terminal ø 80
- 4) Pipe ø 80 length 250 mm
- 5) Pipe ø 80 length 1000 mm
- 6) Roof terminal ø 80

It is possible to extend or divert the roof outlet with approved accessories. The pipes diameter must be at least equal to the initial diameter of the appliance. Never reduce the pipe diameter or close the vents in the premise. We recommend using 45° elbows rather than 90° elbows. If the 90° elbows installation is inevitable, you should never use more than 2.

WARNING
Junctions must be sealed and rigid: ensure the presence of seals.

4.4. Condensate drain

Condensation gas heaters are equipped with a siphon which allows condensing water flow from the back of the device.

WARNING

Draining must be carried out with acid water resistant materials.

Do not use copper or galvanized pipes.

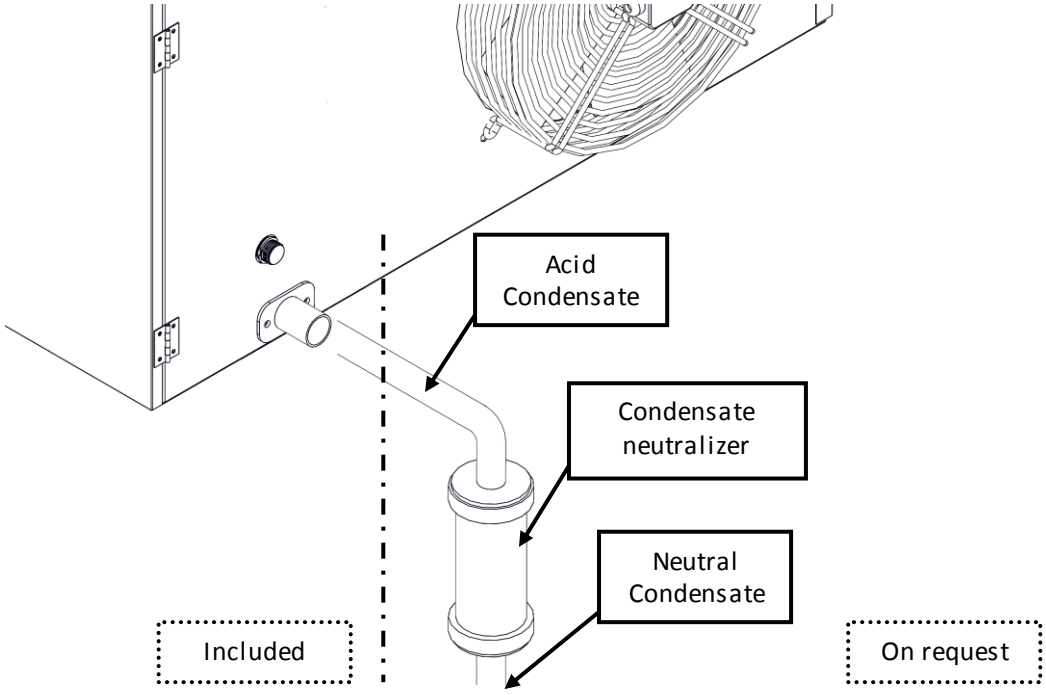
- For condensate drain system, use PVC pipes of diameter at least equal to the appliance pipe (Ø 32 PVC). Make sure that the drain piping is always positioned below the heater condensate exit.
- Check tightness of condensation water drain piping

Frost protection

The condensate draining must be protected from frost. It is best to keep the drain piping inside a frost protected premise. If it is outside of the building, the part of the pipe behind the heater must be open to avoid any eventual ice from closing the drain. Take all necessary measures to prevent such incident; it may cause irreversible damage to the heater.

Neutralisation of condensation water

The water generated by the combustion of the natural gas acidity is pH = 3.5 to 3.8. Some regulations on pollutant discharges require neutralisation of these condensates. In this case, prepare a condensate neutralisation kit (accessory not supplied). Contact customer service for more information.



Assembly suggestion for condensate draining

4.5. Gas connection

Firstly, you should check that the device you have received is consistent with the distributed gas nature. To do this, you should refer to the information given on the heater rating plate.

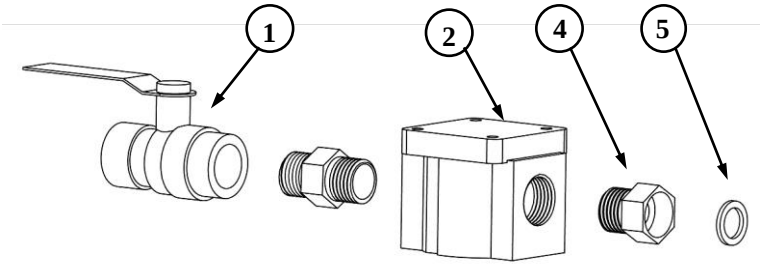
The gas supply must match the heater output and be equipped with all safety and control devices requested by standards.

A detailed study will be carried out on gas pipe diameters depending on the nature of gas flow and the pipes length. It should ensure that ducts pressure drop does not exceed 5% of the supply pressure. The gas connections must be performed in accordance with indoor installations requirements regardless the type of gas, by qualified personnel having the applicable approvals. Before commissioning, ensure that the gas line is tight and clean all residues caused by the work.

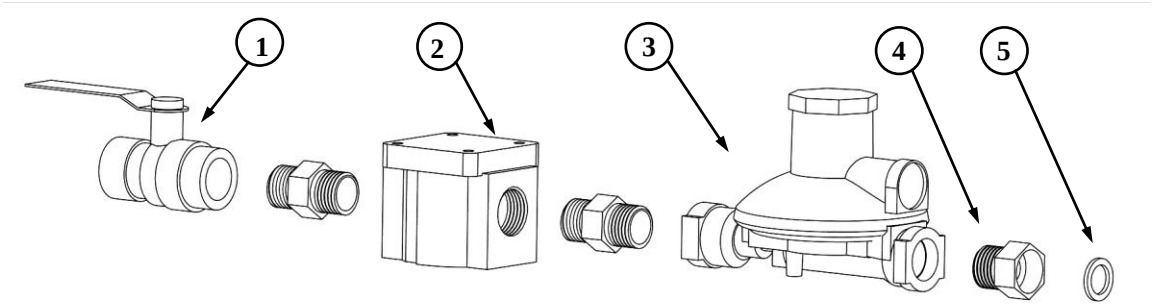
WARNING

Before opening the gas network, check the valve tightness to the appliance

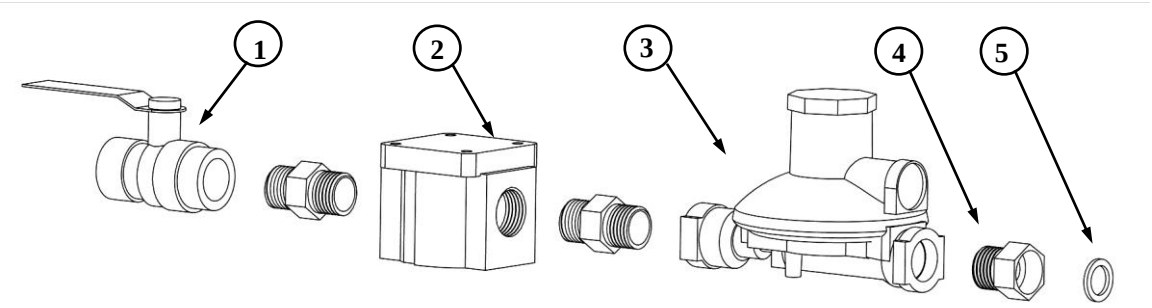
Natural gas supply pressure below 50 mbar



Natural gas supply pressure above 50 mbar



Propane gas



(1) Manual gas valve - **(2)** Gas filter - **(3)** Pressure reducer - **(4)** Fitting (enclosed) - **(5)** Gasket (enclosed)

Examples of gas connection

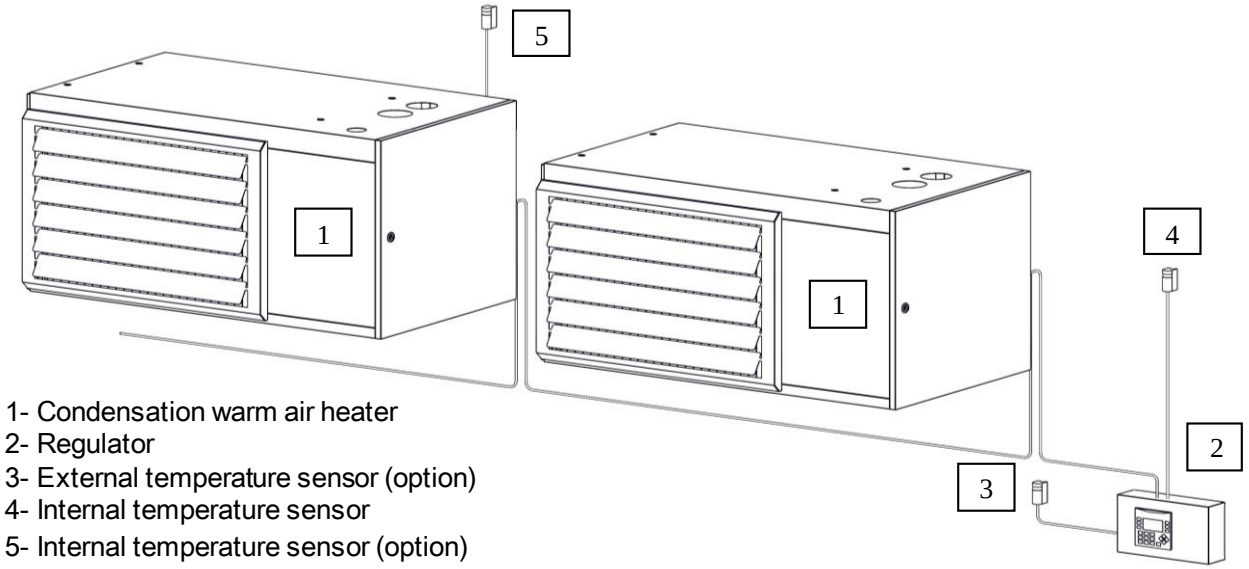
5. Temperature control – Electric connection

5.1. Temperature control

The condensing gas heaters AC must be controlled by a specific regulation allowing their power modulation.

The independent regulator for heater connects directly to the heater by a 200 metres maximum length shielded cable.
It allows the premise zone temperature regulation in accordance with a room temperature sensor connected either to the heater or to the regulator. The weekly schedule allows adjustment of two temperature setpoints per day. The controller has the following features:

- Displaying appliance status
- Program selection
- Reset burner



1- Condensation warm air heater
2- Regulator
3- External temperature sensor (option)
4- Internal temperature sensor
5- Internal temperature sensor (option)

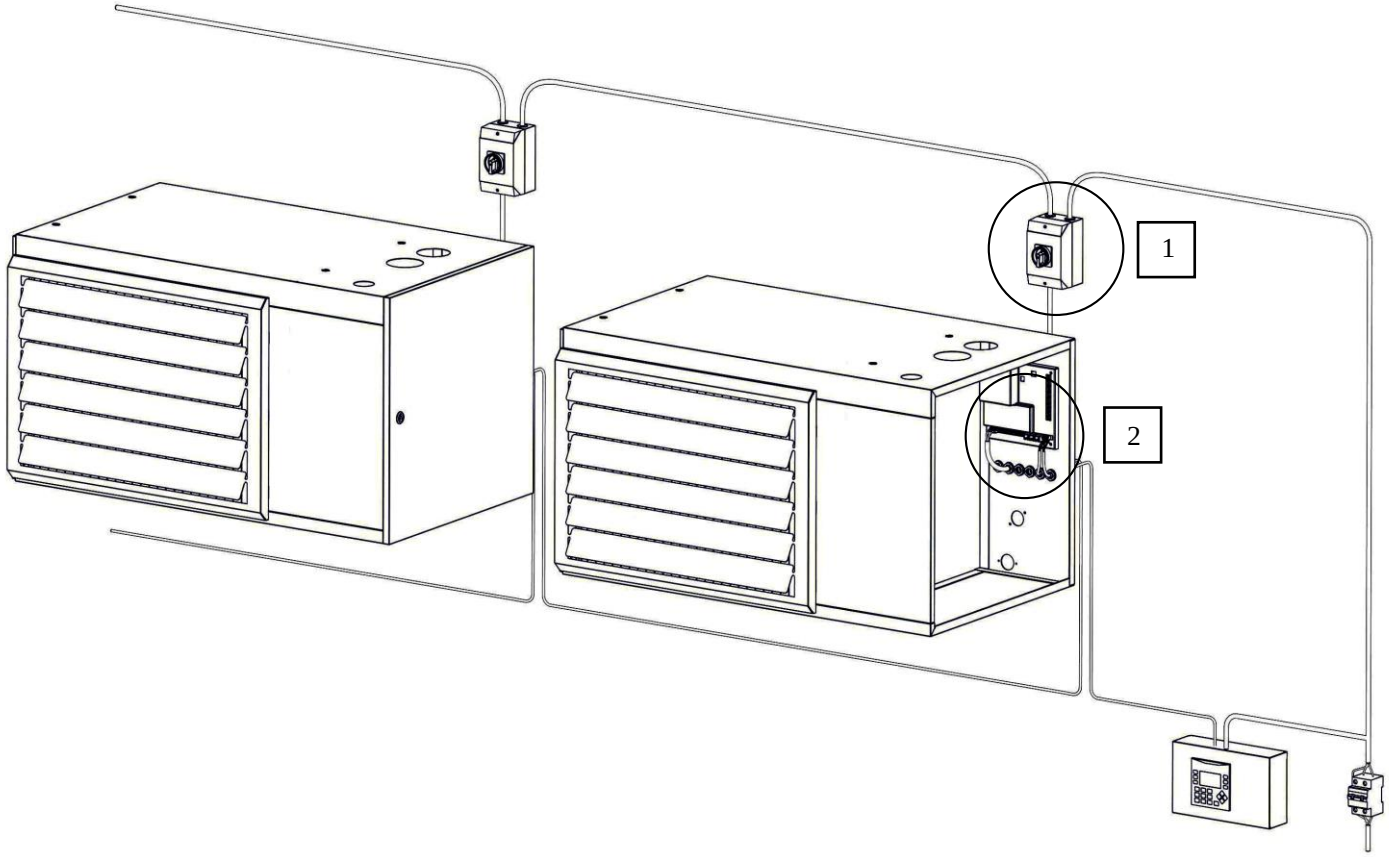
5.2. Electric connection

5.2.1. Description

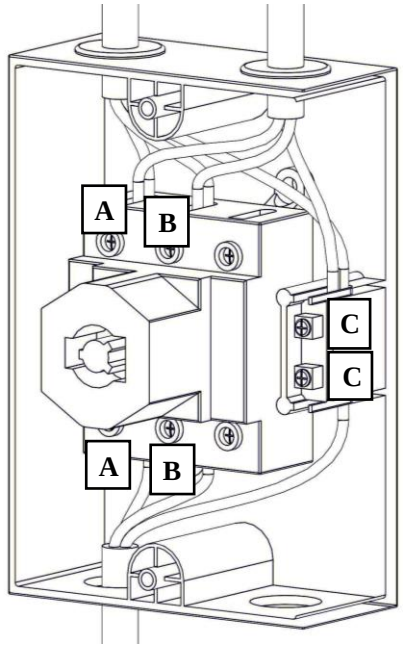
The regulator and the appliances are power supplied with 1x230V 50Hz. Cable section and electric protection must be determined according to the number of appliances and the length of the cable.

The regulator may be installed outside the heated rooms. It is connected to the appliances with a shielded cable. Connect the regulator to the first heater and then the first to the second etc (see Fig. 2a).

Please refer to the regulator user's manual for connection.



1 : Manual disconnecting switch



In order to ensure safety for people and equipment it is advised to install manual disconnecting switches.

Cabling shall be performed as per herebefore figure by an certified installer.

A: Phase

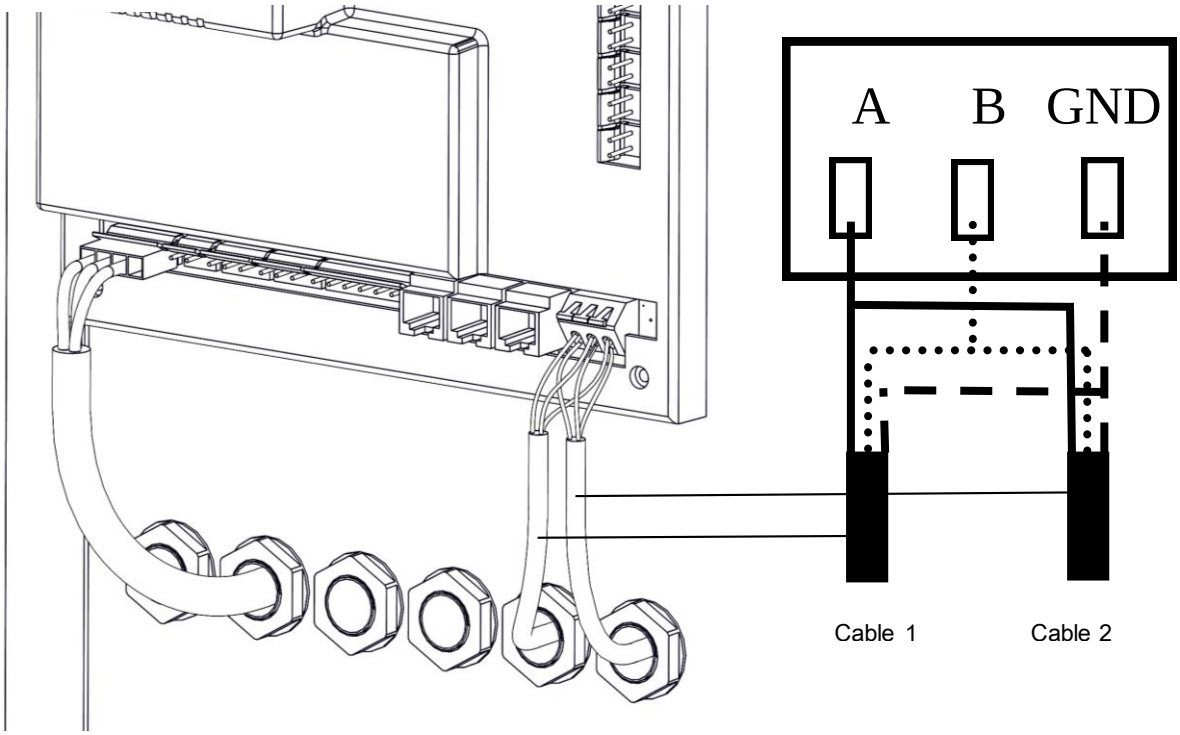
B: Neutral

C: Ground

Warning : Make sure that the power supply is cut before any electric connection operation.

2 : Connecting the regulator to the heater

Figure 2a

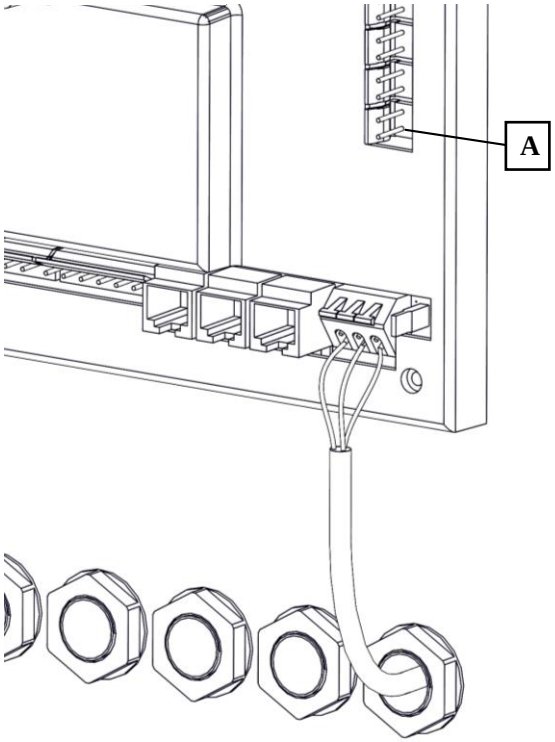


The communication between the regulator and the appliances is performed through a shielded cable.

This cable shall be connected as per Fig 2a

Cable (1) from the regulator, cable connection (2) towards the next heater

Figure 2b



3/ Temperature sensor connexion

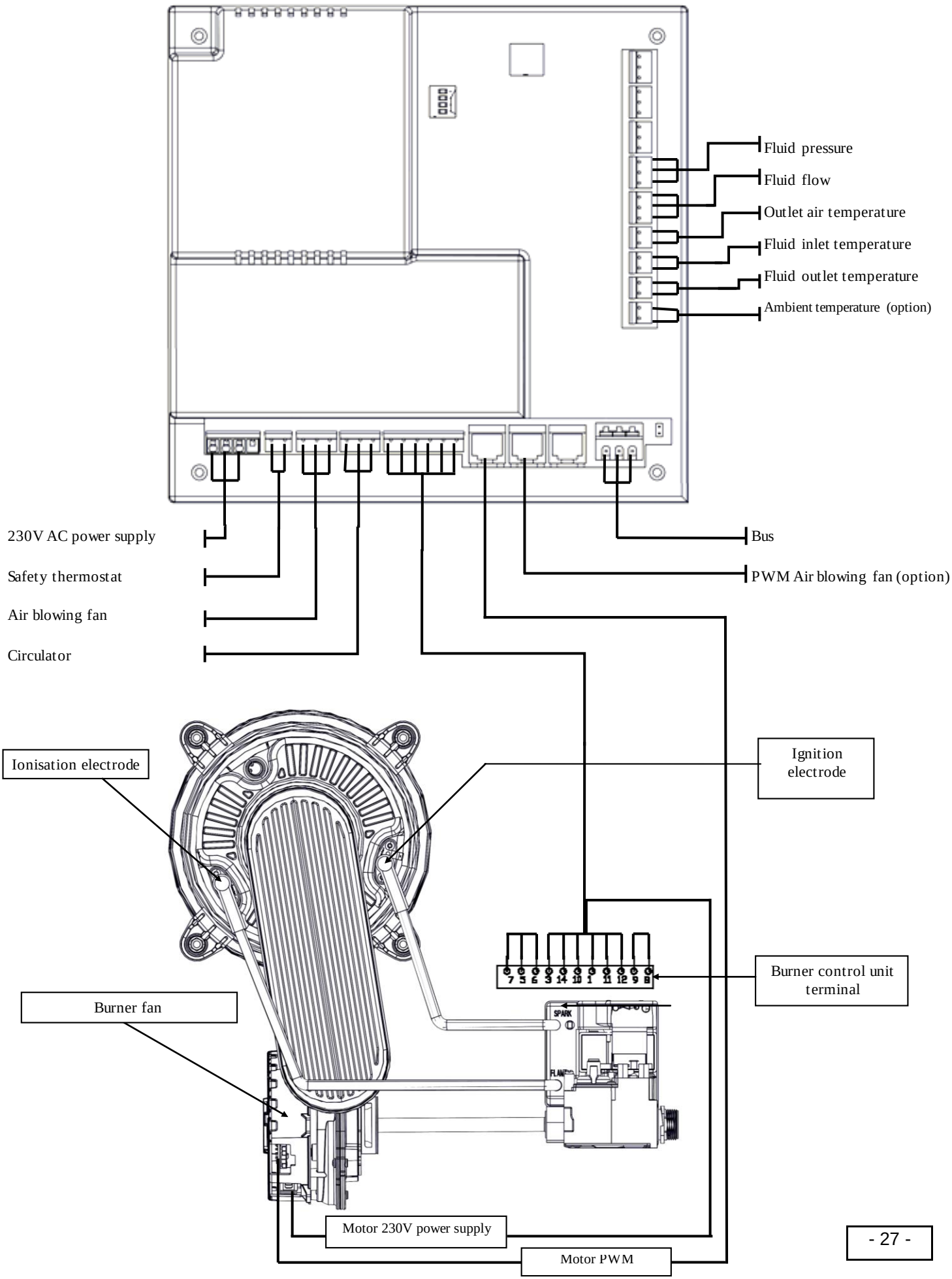
Plug the sensor on JP10 connector, position A (Fig. 2b)

Maximum cable length : 50 m

5.2.2. Connexion

- Check available power supply: 230V 50 Hz, TT (neutral to ground). In the case of unearthed neutral (IT), install an insulation transformer.
- Connect the manual disconnecting switch to the air heaters supply line
- Connect the 3 x 1 mm2 power cable between the manual disconnecting switch and the air heater PLC: connector JP6 - terminals L, T and N (use the cable supplied with the appliance).
- Connect the bus cable to the « A B GND » connector of the heater PLC
- Connect the optional room sensor on the heater PLC: connector JP10 "amb". This probe is not polarized: the connection sense is irrelevant. The probe comes with a 5 metre cable set to the proper connector. If necessary it is possible to replace this cable by a shielded cable 2 x 1 mm2 with a maximum length 50 metres (not supplied)

5.2.3. Internal wiring diagram



6. Commissioning

6.1. Start

1- Before commissioning and turning on the heater, check that all connections have been carried out as defined above:

- § "Flues connection"
- § "Condensate connection"
- § "Gas connection"
- § "Electrical connection"

Also check:

- That blowing louvers are well open, minimum 45°
- That protective film on the panels is removed
- Distances around the heater are respected
- That all electrical components connections are made
- That earth connection is effective

2- Check that the power supply is switched on. Check the supply voltage at the heater terminals. The voltage value must be between 210 V and 230 V (AC). Attention to the correct polarity phase neutral.

3- Check that the condensate drain is connected and does not exceed the height of the boiler, otherwise the burner will drown. If appropriate, use a pump.

4- According to the temperature regulator type and user's manual affect a unique code number to the air heater. Beware that the code number must be different for each heater connected to the centralised regulator (otherwise bus communication is faulty).

5- Check that the gas type and supply pressure comply with the appliance, maximum pressure 50 mbar. Check that the general gas valve is open, purge the gas line. Open valve upstream of each appliance.

6– Check that the temperature controller communicates with the air heater and that no sensor is faulty.

7- Switch on the air heaters.

- On the regulator, switch to day mode and adjust the setpoint 2°C

above actual temperature.
- All heaters start at full power.
Nota : The appliances are factory preset, however the setting values can be corrected. This correction may be necessary when the appliances are installed at altitudes above 500 metres. Indeed, the atmospheric pressure is lower, the quality of combustion is affected. For this operation, refer to § "Burner Setting"

8- Set the regulator ☞ refer to the specific manual)

6.2. Burner setting

This operation must be performed by a qualified professional, equipped with a combustion analyser.
Before any work, disconnect the power and gas supplies.
NB: When changing gas, the label "setting gas" located inside the heater door must be modified to indicate the new setting.

⚠ **WARNING**
Check for gas leaks after each intervention

Needed tools :

- Hexagonal head key "BTR" 2.5 mm (High air flow gas ratio adjustment)
- Hexagonal head key "BTR" 4 mm (Low air flow gas ratio adjustment)
- Combustion analyzer (CO2 - CO – Flue gas temperature) set to the type of supply gas
- Gas pressure meter (max pressure 50 mbar)

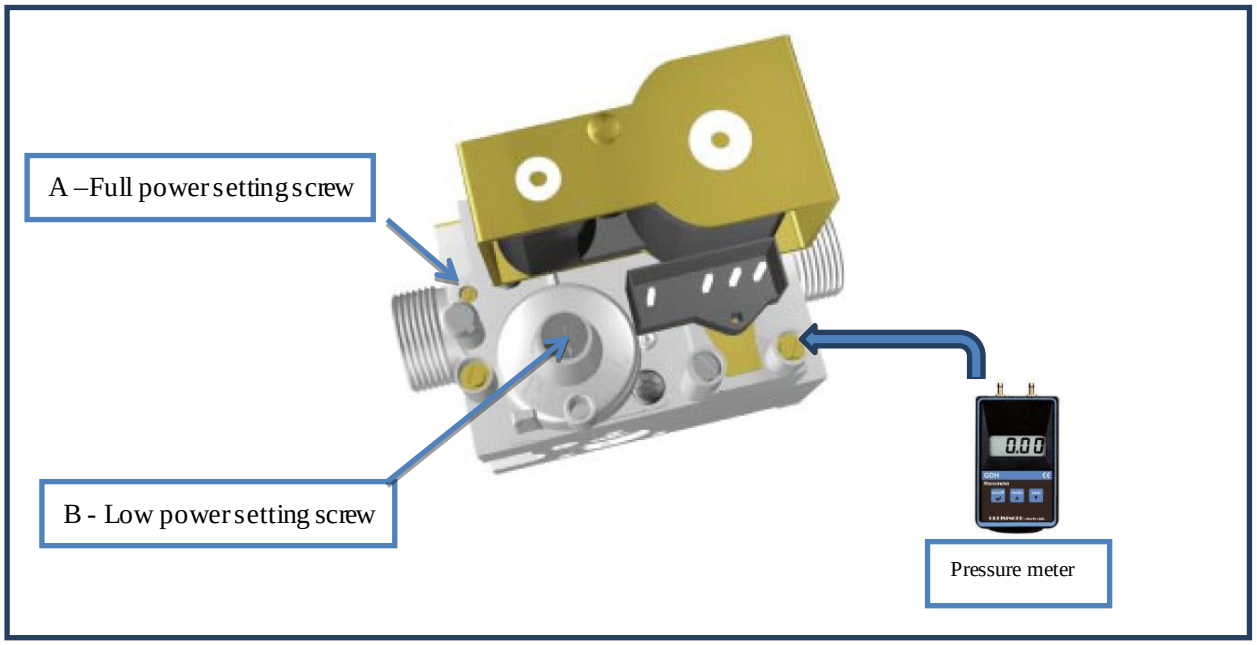
Premix burner control and setting process:
1) Calibrate the combustion analyser and place the rod in the flue.
2) Check the gas pressure before ignition, in Off and in On mode (see table).
3) Start the burner at full power (☞ efer to the regulator user's manual)

- After 2 minutes of operation, check the of O2 ratio
- Adjust the value of O2 with screw A according to the table below. Turn in clockwise direction to **increase** O2 and counter clockwise to decrease it.
- Once the full power setting made, switch to minimum power

(☞ refer to the regulator user's manual)

- Adjust the value of O2 with screw B according to the table below. Turn in clockwise direction to **decrease** O2 and counter clockwise to increase it.

  ☞ Screw B is located behind a first protection screw. This brass screw is for low power setting. Do not forget to put it back in place after setting.
- Once the low power setting done, return to normal control



Gas type	Off pressure	Minimum operating pressure	O2 at full power A screw	O2 at low power B screw
G20 (natural gas)	20 to 50 mbar	18 mbar	5 %	5,5 %
G25 (natural gas)	25 to 50 mbar	20 mbar	5 %	5,5 %
G31 (LPG)	28 to 50 mbar	25 mbar	5 %	5,5 %

7. Troubleshooting

7.1. Troubleshooting

In case of problems, the prerequisites for the proper functioning of the heater § "Start" must be met.

If the burner control unit is locked, rearm the burner.

WARNING

All electrical or mechanical interventions should be made when the power is turned off and the gas supply closed.

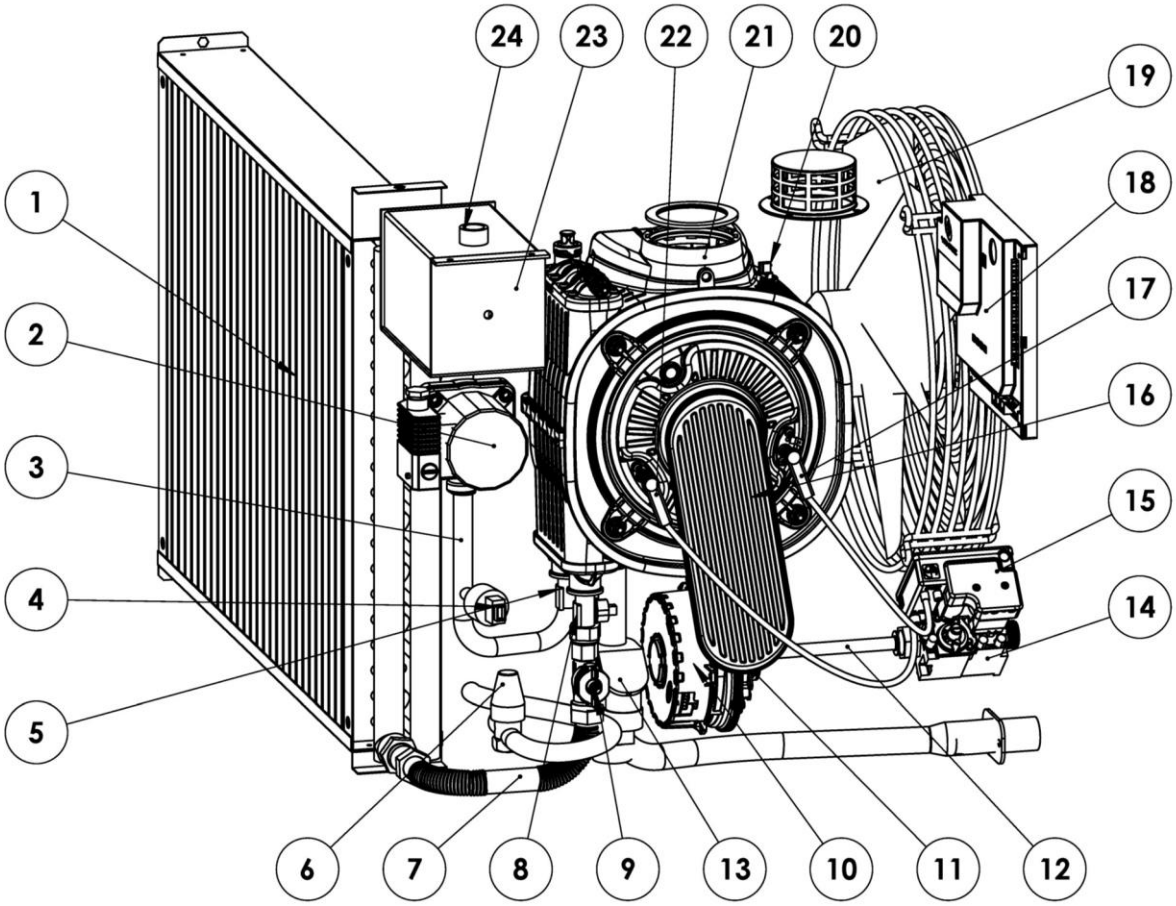
Failures	Causes	Corrections
Unit does not start	- Main switch of heater is OFF - Regulator is OFF - Burner fan damaged - Regulator is set wrong	- Turn the switch ON - Check the power supply - Replace it - Set the regulator
	- Regulator indicates a failure	- Check circulator, pressure switch or liquid level. The level must be at cap level. If necessary complete with adequate fluid.
The burner blower starts several times without flames and the burner control unit locks (burner failure)	- Regulator indicates burner failure - No gas - Air in the pipes - Wrong air/gas ratio - Faulty gas valve - Wrong set or defective ignition electrode - Faulty burner control unit	- Rearm the burner - Control the pressure - Purge the piping - Set the burner - Replace - Set it or replace it - Replace it
The burner fan is at its maximum speed but the power is not at maximum.	- Flue pipe is too long - Air intake or exhaust flue is clogged - Wrong air/gas ratio - Return air too warm	- Reduce the length (or validate the performance of the appliance) - Unclog and clean the flue pipes - Set the burner - Reduce the setpoint
Burner does not modulate and the burner fan speed is at maximum.	- Regulator indicates temperature TA = -33,6°C - Regulator is set wrong - PWM control cable is disconnected - Faulty burner fan - Faulty PLC	- Test / replace the ambient air temperature - Set the regulator - Check the connexion - Replace it - Replace it
The burner starts, the flame grows and the burner control unit locks.	- Phase and neutral are reversed - Power supply is without neutral - Faulty ionisation electrode	- Check and correct the connexion - Add an insulating transformer - Replace it

Failures	Causes	Corrections
For variable air flow versions only : The fan does not modulate.	- Variable speed not set - PWM control cable is disconnected - Faulty air fan	- Set the regulator - Check the connexion - Replace it

WARNING

Only genuine manufacturer parts ensure product and people safety. The use of parts other than genuine invokes the responsibility of the individual and will void the product warranty.

7.2. Spares



Nb	Designation	Spares reference			
		AC-H30	AC-H40	AC-H50	AC-H70
1	Heat exchanger				
2	Circulator	3510260			
3	Inlet fluid pipe				
4	Pressure sensor	3510261			
5	Inlet fluid temperature probe	3510262			

Nb	Designation	Spares reference			
		AC-H30	AC-H40	AC-H50	AC-H70
6	Safety valve 3 bar	3510263			
7	Outlet fluid pipe				
8	Outlet fluid temperature probe	3510262			
9	Fluid flow meter	3510264			
10	Burner fan	3510265			3510266
11	Venturi				
12	Gas pipe				
13	Condensate drain (siphon, T, cap)				
14	Gas valve	3510267			
15	Burner control unit	3510268			
16	Gas premix burner				
17	Ignition electrode	3510269			
18	PLC	3510274	3510275	3510276	3510277
19	Standard axial fan	3510072	3510073	3510074	3510075
20	Boiler limit temperature thermostat				
21	Stainless steel heating element				
22	Ionisation electrode				
23	Expansion vessel				
24	Fill-in cap				

8. Maintenance

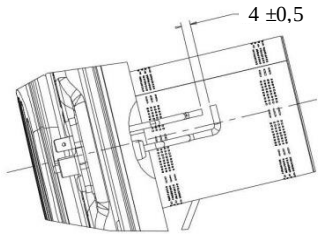
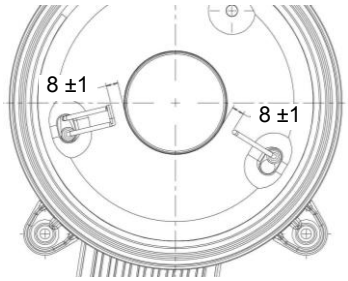
A proper and regular maintenance, at least once a year, determine an efficient and effective functioning, a minimum consumption and an important longevity.

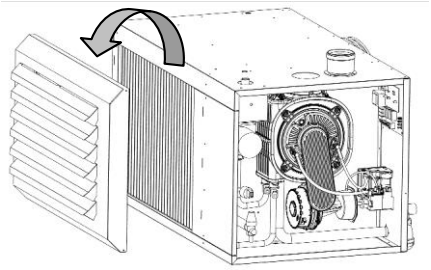
WARNING

The gas appliance must be maintained cold and with electric power cut

These works can be performed only by a qualified technician

Components	Maintenance operations
Warm air heater	Check the proper functioning of all safety systems and check that all screws are tightened.
Flue pipes	Check the air intake and flue pipes. Flue pipes shall be tight and corrosion-resistant.

Components	Maintenance operations
Condensate drain (siphon)	In order to guarantee the safe functioning of the appliance : Check and clean yearly the siphon and the condensate drain pipes. The siphon must be filled with clean water. Without maintenance, the siphon may clog, the condensate will not flow and will fill the heating element, leading to malfunction.
Burner 	Disconnect the electrodes, the electrical connection of the burner fan, the pressure venturi tube / gas block. Remove the gas injector from the gas block. Remove the front plate assembly / fan / combustion chamber and venturi. Clean the burner using a brush, vacuum cleaner or compressed air. Inspect the burner for any damage or cracks on the surface. In case of damage, replace the burner. **WARNING** During reassembly of the injector on the gas block use a new gasket.
Ignition / Ionisation   	Check the clogging state and clean the electrodes if required. Check ignition electrode spacing (4 +/-0.5 mm) and spacing between electrodes and burner (8 +/-1 mm). Check the sealing gasket. Replace, if necessary. Check the ionisation current value. If the ionisation current is less than 3µA, check ignition / ionisation electrode, ignition line and connection to earth.

Components	Maintenance operations
Heating element 	Check the front plate seal. Check insulating part between the front plate and rear heat exchanger. Handle with care heat exchanger front and rear insulation plates. A hardened or damaged seal must always be replaced. Clean inside the heat exchanger with a brush.
Heat exchanger 	Remove the air flow louvers, and then clean the battery with a vacuum cleaner or compressed air.
Circulator	Check that the pump is working, any pump failure is indicated by the pressure sensor. In case of a prolonged shutdown, it may be necessary, in very rare cases, to proceed to a "motoring", that is manually forcing the circulator rotation. In this case: switch off the appliance, unscrew the pump plug, use a flat screwdriver to rotate the pump until "motoring" the full body.

Components	Maintenance operations
Combustion	Measuring the O2/CO2 rate as well as flue temperature. Attention, the regulations may require to respect maximum values, contact your distributor or local agencies. If the values of § "Burner setting" are not met, a full servicing of the device is necessary. Control the flame through the sightglass, it must be stable, its colour should be blue with orange particles around the edge of the burner (at full power). During the combustion analysis, check that the rod is sealed at the level of the sampling point, the tip of the probe is at the centre of the flue pipe.

9. Warranty

Your appliance has a contractual guaranty against any manufacturing defect.

Solaronics Chauffage is not responsible for improper use of the device, failure or insufficient maintenance, or improper installation of the appliance (it is your responsibility to ensure that it is carried out by a qualified professional).

In particular, Solaronics Chauffage will not be liable for any damage, loss or injury caused by improper installation that does not comply:

- with legal and regulatory provisions or imposed by the local authorities,
- with national, or even local and specific guidelines governing the installation,
- with our manuals and installation instructions, in particular, for maintenance of the appliance,
- with the engineering practice

Solaronics Chauffage warranty is limited to replacement or repair of defective parts only by our services excluding labour costs, travel and transport.

Our warranty does not cover replacement or repair of parts damaged by normal wear and tear, misuse, unskilled third party interventions, defect or failure in monitoring or maintenance, non-compliant power supply or use of an inappropriate gas or of poor quality gas.

Components, such as motors, pumps, electric valves, etc ... are only guaranteed if they have never been removed. Rights established by the European Directive 1999/44/CEE remain valid.

END OF LIFE OF EQUIPMENT

This device contains electrical and / or electronic components and should not be considered as household waste. Ensure compliance with applicable standards and regulations for waste disposal when dismantling.

THE RIGHT THING FOR THE SAFETY

- Keep ventilation in good condition:
- Keep free and clear air inlets and outlets (grills, vents ...)
- Check annually flue pipes. Maintain equipment:
- Maintain or have the equipment maintained by a competent person at appropriate intervals, following the manufacturer's recommendations
- Check the gas appliance by a competent person in case of triggering of a safety device

SMELL GAS? GOOD REACTIONS

Flammable but non toxic, gas has been odorized to allow discovering any leak, even small.
This smell allows you to react fast. If you smell gas, close the gas valve and check the equipment. If everything is normal and the smell persists, you have good reflexes

DO NOT PROVOKE ANY FLAME OR SPARK ... AND DO NOT USE ELECTRICAL APPLIANCES.

- Do not call an elevator, use a phone, even mobile, press an electric switch, in order not to create a spark.

Whatever the room where the gas smell is perceived, ventilate this room as much as possible by opening windows and doors.

"Gas troubleshooting" service is at your disposal 24/24 and 7/7 at the gas distributor. This service reacts free of charge and as soon as possible in case of gas leak or smell.

- The phone number is: ……., it is noted on the invoices

The number of the emergency services (fire) is: ……...

Solaronics Chauffage

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