ADVECO

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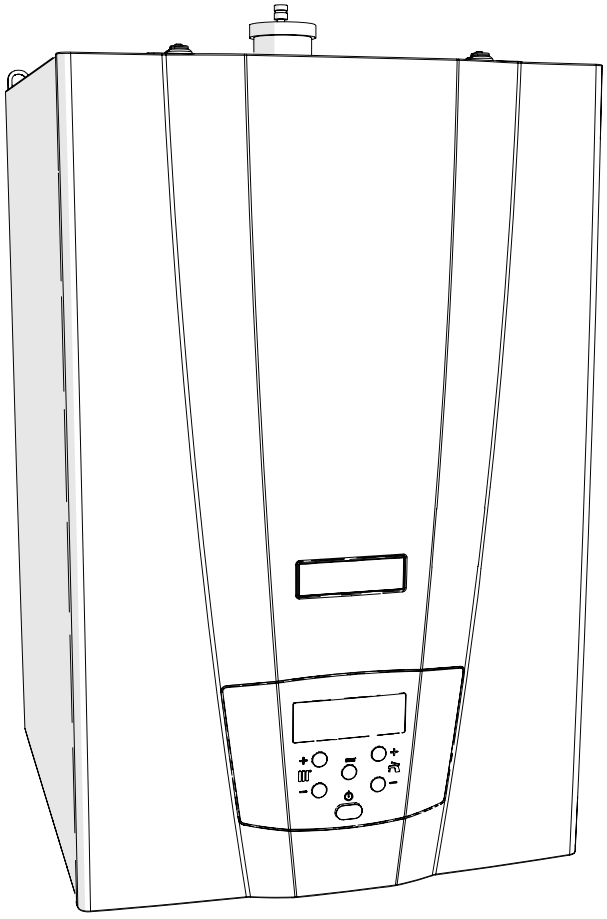

INSTALLATION, USE AND MAINTENANCE MANUAL

GAS WALL-MOUNTED CONDENSING BOILER

MYDENS 60

62403579 - R02 01-06-2019_UK

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If you smell gas
1. - Close the gas cock.
2. - Ventilate the room.
3. - Do not switch on any electric device, including a telephone.
4. - From another room, immediately call a professionally qualified technician or the gas supply company. Call the Fire Service if the former are not available.

If you can smell combustion products
1. - Switch the appliance off.
2. - Ventilate the room.
3. - Call a professionally qualified technician.

Explosive or highly flammable products
Do not store or use explosive materials or highly flammable materials such as paper, solvents, paints, etc. in the room where the appliance is installed.

Installation, modifications

☞ The gas appliance must be installed, calibrated and modified by professionally qualified staff, in compliance with national and local regulations, as well as the instructions in this manual.

☞ Incorrect installation or poor maintenance can cause damage or injury to persons, animals or objects, for which the manufacturer cannot be deemed liable.

☞ The appliance outlet must be connected to a exhaust gases evacuation pipe. Failure to comply with this regulation leads to serious risks for the safety of persons and animals.

☞ A domestic hot water temperature exceeding 51°C can cause permanent damage or injury to persons, animals and objects. In particular, protect children, the elderly and people with disabilities against any possible risks of scalds, by inserting devices that limit the usage temperature of the DHW to users.

☞ The parts conducting the flue gas must not be modified.

☞ Do not obstruct the ends of the intake/outlet pipes.

☞ Do not leave parts of the packaging and any replaced parts within the reach of children.

☞ Seal the adjustment devices after every calibration.

☞ In agreement with the provisions for use, the user must keep the installation in good working order and guarantee reliable and safe operation of the appliance.

☞ The user must have maintenance performed on the appliance by a professionally qualified technician in compliance with national and local regulations and this manual.

☞ We would also highlight the benefit of an annual scheduled maintenance contract with a professionally qualified technician.

☞ Before performing any cleaning or maintenance operations, disconnect the boiler from the mains power supply and gas, activating the relevant isolation devices up-stream from the boiler.

☞ After having performed any cleaning or maintenance operations, make sure that all internal parts of the appliance are dry before re-connecting the electric power supply.

☞ This appliance is not intended for use by persons (including children) with reduced physical, sensory and mental capabilities or a lack of experience or knowledge, unless they are supervised or have been instructed on use of the appliance by a person responsible for their safety.

☞ This manual is an integral and essential part of the product and must be retained carefully by the user for future consultation. If the appliance needs to be transferred or if you should move and leave the unit to another user, always ensure that this manual remains with the new user and/or installer.

☞ Any options or kits added later must be original Cosmogas products.

☞ This appliance must be used only for the expressly declared purpose: heating water for closed circuits intended for centrally heating rooms for civil and domestic use, and producing domestic hot water for civil use.

☞ Any contractual and non-contractual liability on the part of the manufacturer is excluded for damage caused by installation errors or usage errors and, in all cases, following a failure to comply with the instructions given by the manufacturer or with applicable national and/or local laws.

☞ For safety reasons and to safeguard the environment, the packaging components must be disposed of in the relevant separate waste collection centres.

In case of breakdown
In the event of a fault and/or poor operation of the appliance, disconnect it and do not attempt to carry out any repairs. Contact a professionally qualified technician only. If components need to be replaced, these must be original spare parts. Failure to comply with the above may jeopardise the safety of the appliance.

Professionally qualified technicians.
A 'professionally qualified technician' means a person with specific technical skills in the sector of central heating system components and the production of domestic hot water for sanitary and civil uses, electric installations, and systems for the use of combustible gas. Such people must have the skills envisaged by the law.

Technical drawings
All the drawings shown in this manual relating to electrical, hydraulic or gas installation systems must be understood to be purely illustrative. All the safety devices, auxiliary devices as well as the diameters of the electrical, hydraulic and gas pipes, must always be checked by a professionally qualified technician, to make sure they satisfy the applicable laws and regulations.

1.1 - National installation laws and regulations

- Rules regarding the prevention of fires issued by the fire service
- Ministerial Decree of 01/12/75
- Law of 09/01/91 n°10 as amended
- Presidential Decree n° 412 dated 26/08/93
- Ministerial Decree of 12/04/96
- Presidential Decree n° 551 dated 21/12/99
- Legislative Decree n°192 of 19/08/05
- Legislative Decree n°311 of 29/12/06
- Ministerial Decree of 22/01/2008 n°37
- Law of 03/08/13 n°90
- Legislative Decree n°102 of 04/07/14
- Ministerial Decree of 26/06/15
- CEI standard 64-8
- INAIL compilation R

2.1 - Presentation

Congratulations! You have purchased one of the best products on the market.
Each individual part is proudly designed, manufactured, tested and assembled within the COSMOGAS facilities, thus guaranteeing the best quality control.

2.2 - Overview of models

MYDENS XXY

"60C" = Boiler with maximum heat input of 57.8 kW with built-in pump;
"60A" = Boiler with maximum heat input of 57.8 kW without built-in pump;

Internal wall-mounted gas condensing boiler with premixed burner with low emissions of pollutants.

2.3 - Accessories included

The boiler is supplied with the following accessories:

Quantity No.	Description	Code	Figure
N° 1	GAS CONVERSION KIT	62630277	
N° 1	CONNECTIONS KIT (including appliance wall support KIT, external sensor and storage tank sensor)	62629830	

2.4 - Manufacturer

COSMOGAS srl
Via L. da Vinci 16
47014 - Meldola (FC) Italy
Tel. (+39) 0543 498383
Fax. (+39) 0543 498393
www.cosmogas.com
info@cosmogas.com

2.5 - Meaning of symbols used

WARNING!
Danger of electric shocks. If these warnings are not heeded it can jeopardise correct operation of the boiler or cause serious injury or damage to people, animals or things.

WARNING!
Generic danger. Failure to comply with these warnings may jeopardise the working order of the appliance or cause serious damage or injury to persons, animals or things.

☞ Important indication symbol

2.6 - Maintenance

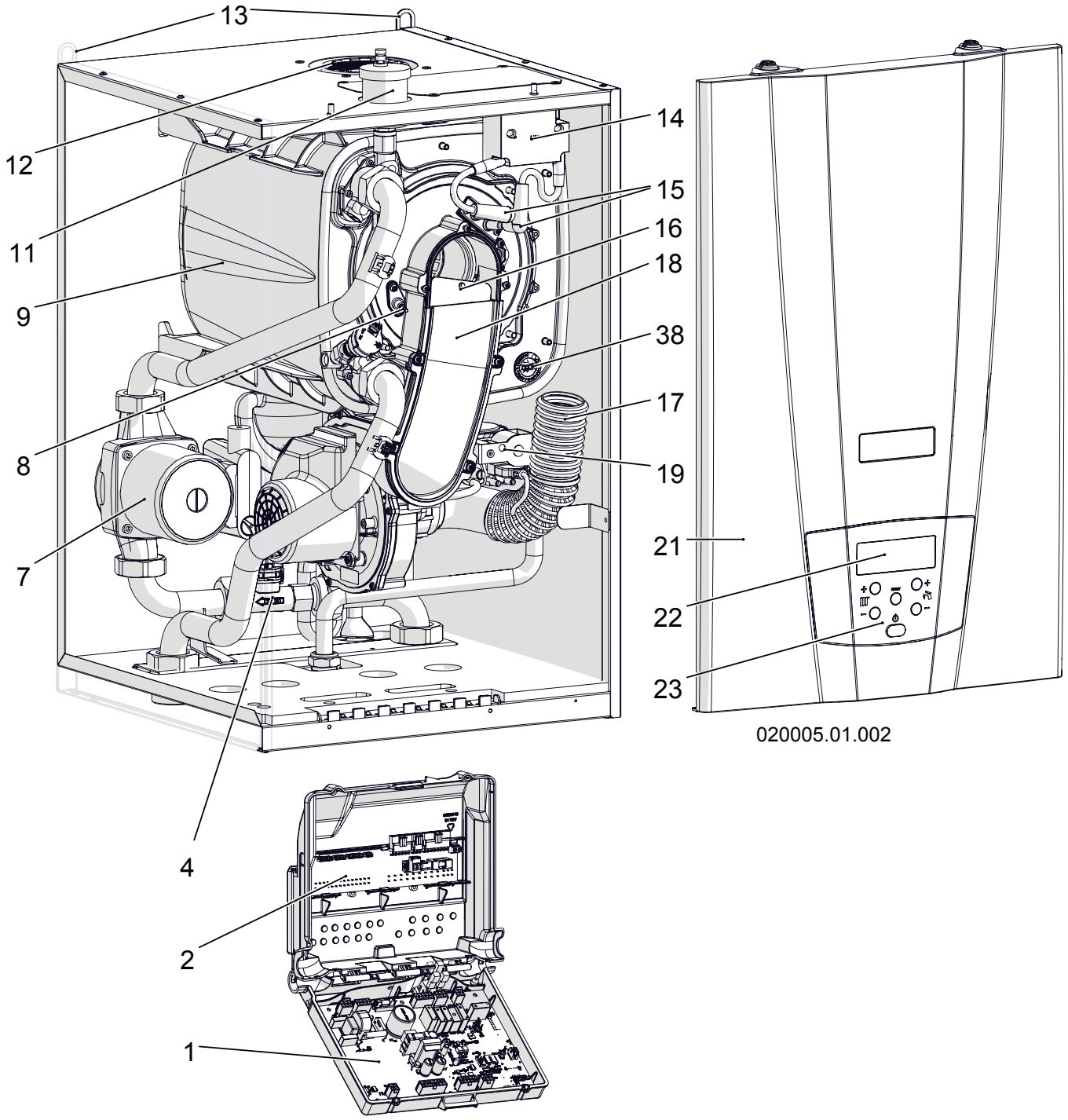
A regular annual maintenance check on the appliance is advised for the following reasons:

- to maintain high efficiency and manage the central heating system economically (with low fuel consumption);
- to achieve a high level of operating safety;
- to maintain a high level of environmental combustion compatibility;

Offer your customer a scheduled maintenance contract.

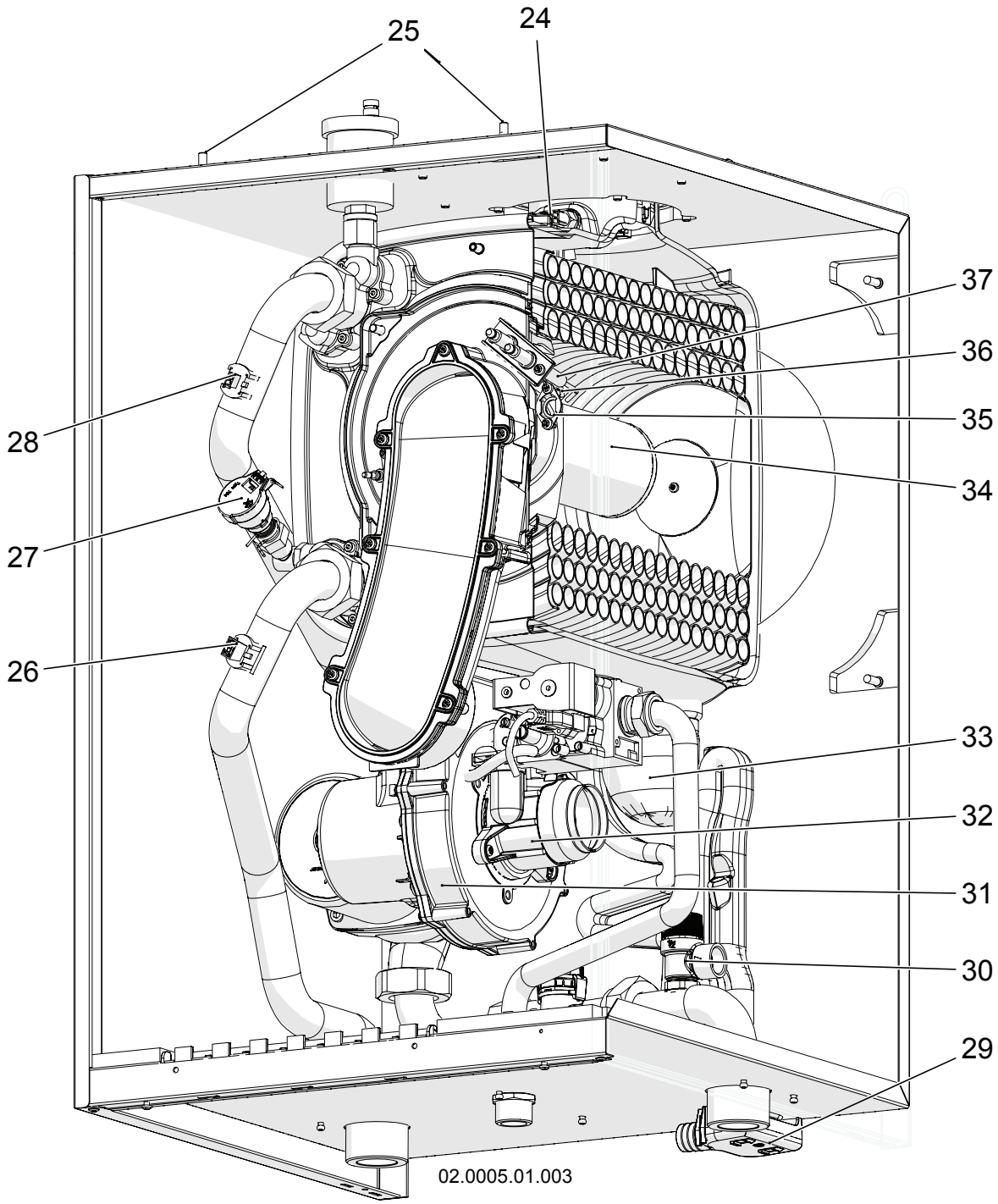
2.7 - Disposal

The crossed wheelie bin symbol means that the product must not be thrown away in the ordinary rubbish bin (i.e. in with “mixed urban rubbish”). It must be dealt with separately, in order to undergo suitable operations for it to be reused or treated to remove and safely dispose of any substances that are dangerous for the environment. This will enable all the raw materials to be recycled. The user is responsible for getting rid of the boiler at the end of its life, delivering it to a recycling centre run by the local authority or city hygiene companies, or, when he/she buys a new boiler, giving the product that has been replaced to the dealer, who is obliged to take it under the terms of EU Directive 2012/19/EU.
For further information regarding correct decommissioning of these appliances, users can contact the public service in charge or retailers.



1 - Command and control board
2 - Electric connections board
3 - ----------
4 - Water flow rate gauge
5 - ----------
6 - Circulation pump unblocking screw
7 - Circulation pump (only model “C”)
8 - Detection electrode
9 - Primary heat exchanger
10 - ----------
11 - Air vent valve
12 - Air intake and exhaust gases outlet
13 - Support attachments
14 - Sparks generator
15 - Ignition cables
16 - Back flue preventer valve
17 - Air inlet manifold
18 - Air/gas manifold
19 - Gas valve
20 - ----------
21 - Front casing
22 - Display
23 - Control panel

Figure 3-1 – Boiler internal components



24 - Flue gas temperature sensor (Par. 1006) and flue gas temperature fuse
25 - Front casing couplings
26 - Double supply temperature sensor (Par. 1001 and 1005)
27 - Central heating circuit pressure sensor
28 - Return temperature sensor (Par. 1007)
29 - Condensate collection tank
30 - Safety valve
31 - Fan
32 - Air/gas mixing group
33 - Condensate outlet siphon
34 - Burner
35 - Burner pilot light
36 - LH ignition electrode
37 - RH ignition electrode
38 - Primary heat exchanger temperature fuse

Figure 3-2 – Boiler internal components

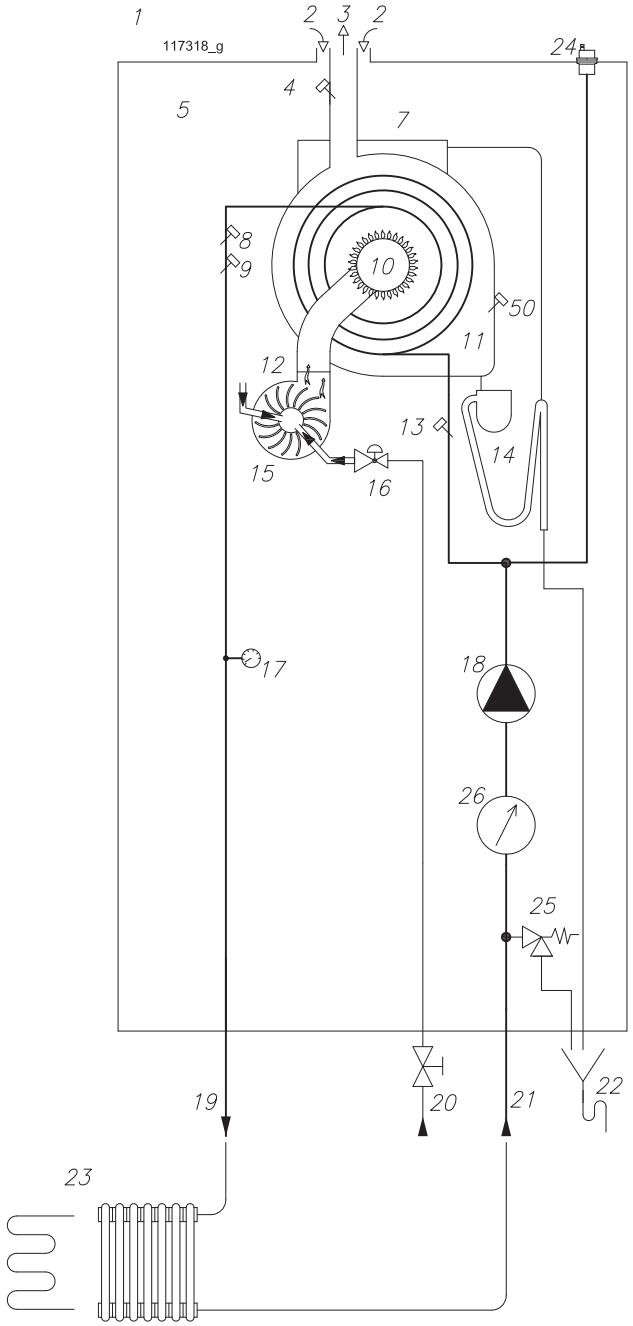


Figure 4-1 – Hydraulic layout

MYDENS 60A
MYDENS 60C

Figure 4-1 Key:

1 = Boiler
2 = Combustion agent air inlet
3 = Flue gas outlet

4 = Flue gas temperature sensor (Par. 1006) and flue gas temperature fuse
5 = Sealed chamber
6 = ----------
7 = Collection pipe for any water coming from the combustion agent air inlet pipe

8 = Supply temperature sensor (Par. 1001)

9 = Delivery temperature safety sensor (Par. 1005)
10 = Burner
11 = Stainless steel VRC type heat exchanger
12 = Fan

13 = Return temperature sensor (Par. 1007)
14 = Condensate collection siphon with sediment decanter
15 = Air/gas mixer
16 = Pneumatic gas valve
17 = Central heating circuit water pressure sensor
18 = Circulation pump *
19 = Central heating circuit supply
20 = Gas inlet
21 = Central heating circuit return
22 = Collector for condensate drain and safety valve
23 = Central heating system
24 = Air vent valve
25 = Safety valve
26 = Water flow rate gauge
50 = Primary heat exchanger temperature fuse

* Only on model C

4.1 - Operation and intended use of the appliance

This product is a gas condensing boiler, designed for the production of central heating. It can also be used for the production of domestic hot water but must be connected to an appropriate storage tank (see figure 4-6).
Carry out the adjustment between the boiler and the system, bearing in mind the characteristic residual head curve (see fig. 4-2).

4.1.1 - Modulating pump

The MYDENS 60A boiler is expressly manufactured without an internal pump in order to give the installer the option of being able to connect any modulating pump. The only preventative measure to take is to insert a by-pass valve (see figure 4-4, detail “35”) through which, in any operating situation, the boiler is always guaranteed a minimum water circulation of 600 l/h. The characteristic curve of the modulation range of the modulating pump provided by us is shown in figure 4-2.

4.1.2 - Hydraulic separator

If the system must be served by a water flow rate that is higher than the pump can deliver, a hydraulic separator must be inserted between the boiler and the system (see figures 4-5 and 4-6, detail “20”).

4.1.3 - Production of domestic hot water

For the production of domestic hot water a storage tank must be connected following the diagram in figure 4-6.
The temperature of the domestic hot water is adjusted following the procedure in section 7.7.

4.1.4 - Types of system

The following types of systems can be set up depending on the model:

With this boiler you can create a system for central heating only (see figures 4-4 and 4-5) or a system for central heating and the production of domestic hot water (see figure 4-6). In both cases, the central heating system can be at high or low temperature (See section 5.9 for adjusting the boiler).

4.2 - Precautions for installation

For the boiler to work well, respect the following directions:

☞ This appliance must be connected to a central heating system and if need be to a domestic hot water distribution network, compatible with the features, performance and power of the appliance itself.

☞ Check figure 5-1 concerning the minimum safety distances for installation and future maintenance.

4.3 - Characteristic residual head curves at the central heating system

The residual head at the MYDENS model boiler connections with the standard modulating pump is given as a graph in figure 4-2.
The modulation range (detail “x”) can be checked using the graph in figure 4-2.

Figure 4-2 KEY

X = Modulation range

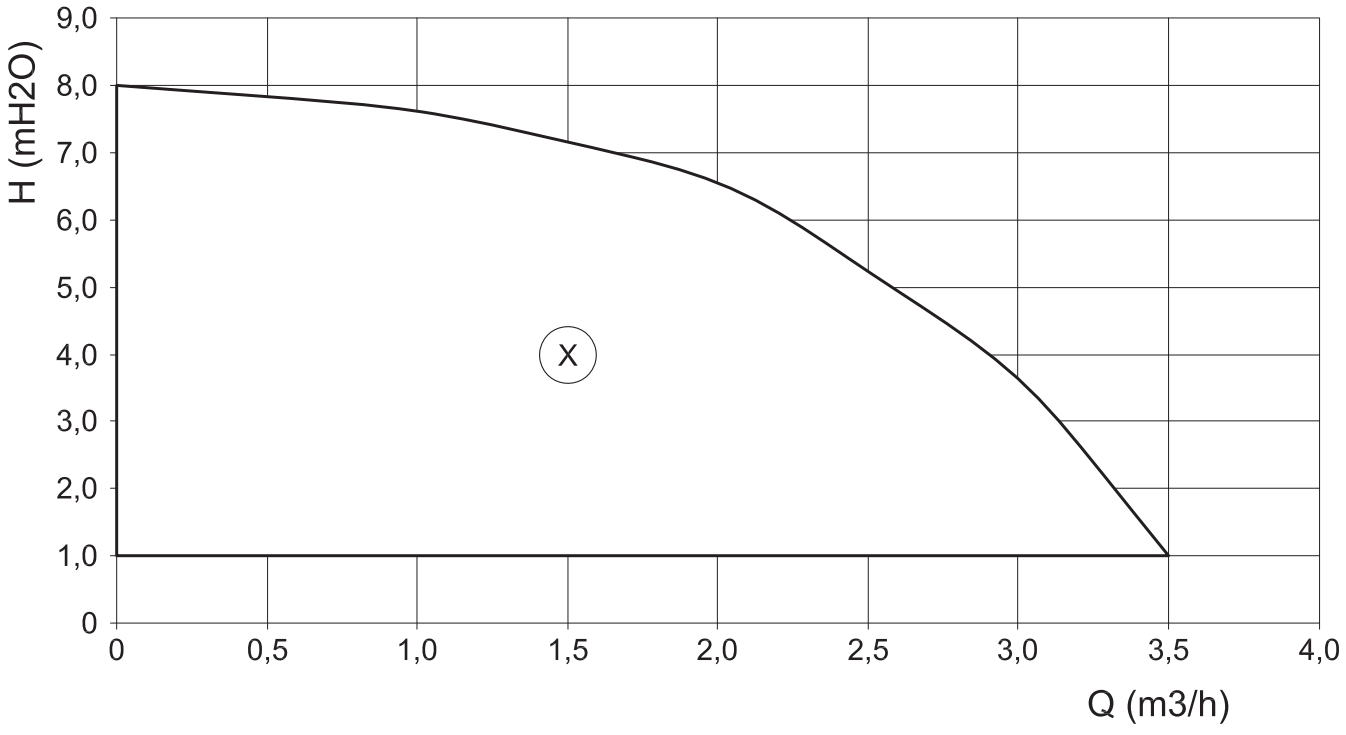


Figure 4-2 – Residual head for MYDENS 60C with modulating pump (as standard)

4.4 - Characteristic curve of head losses

The MYDENS 60A boiler does not have a circulation pump. When deciding on the size of the pump to be used, the designer must consider the system's hydraulic resistances and the hydraulic resistances of the boiler itself. For this purpose the hydraulic resistances of the boiler are shown in figure 4-3 in the form of a graph.

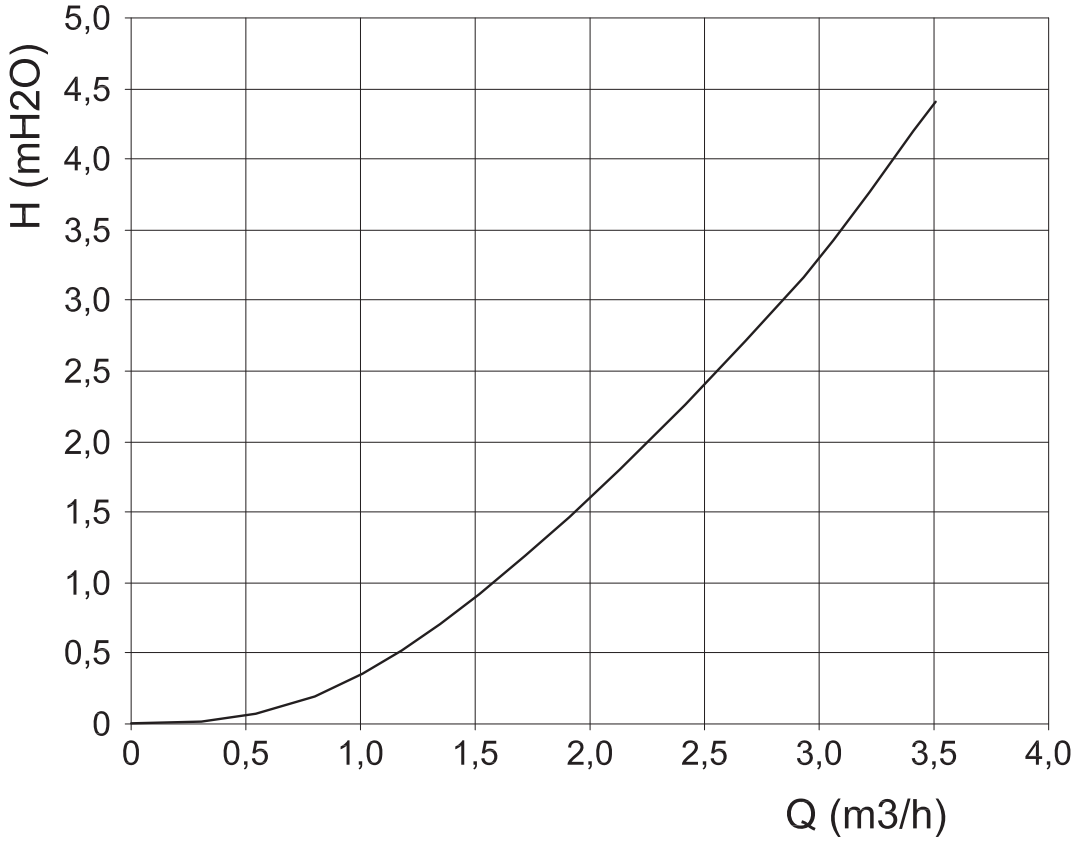


Figure 4-3 - Hydraulic resistances of MYDENS "A" boiler

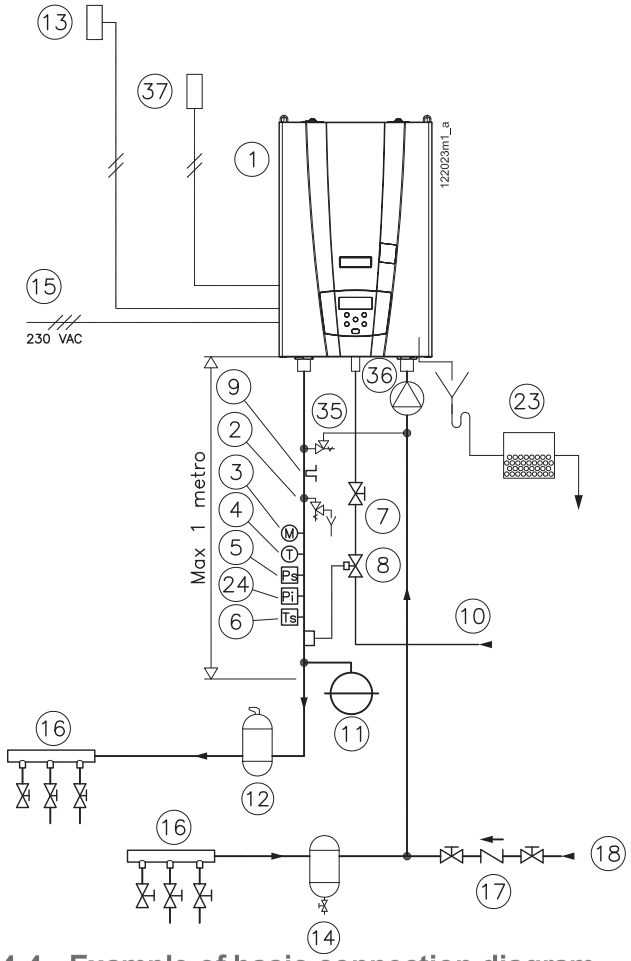


Figure 4-4 - Example of basic connection diagram

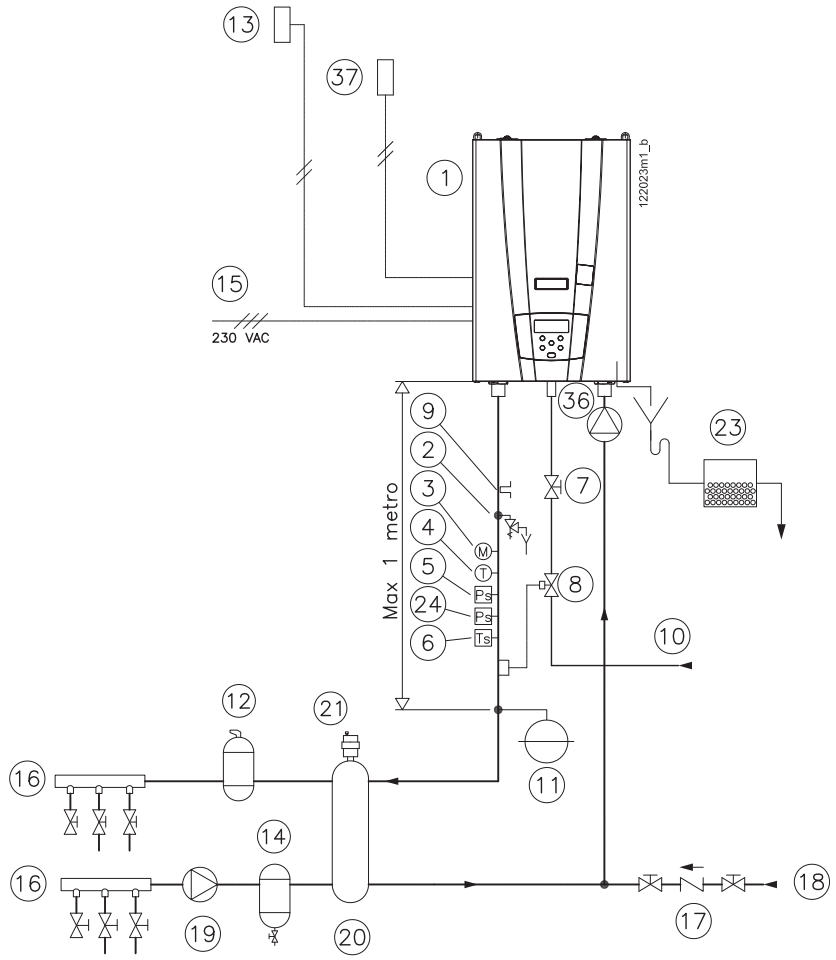


Figure 4-5 - Example of connection diagram with hydraulic separator

KEY to figures 4-4 and 4-5

1 MYDENS 60 boiler
2 INAIL safety valve
3 INAIL pressure gauge
4 INAIL thermometer
5 INAIL maximum safety pressure switch
6 INAIL safety thermostat
7 Gas cock
8 INAIL Gas isolation valve
9 INAIL basin
10 Gas inlet
11 Expansion tank
12 Microbubble separator
13 External sensor (supplied as standard)
14 Filter
15 Electric power supply
16 Low or high temperature heating system
17 System water supply
18 Cold DHW
19 Central heating circuit pump
20 Hydraulic disconnector
21 Air vent valve
23 Condensate neutraliser
24 INAIL minimum safety pressure switch
35 - By-pass valve
36 - Circulation pump (to be used with MYDENS 60A models)
37 Room thermostat or equivalent system

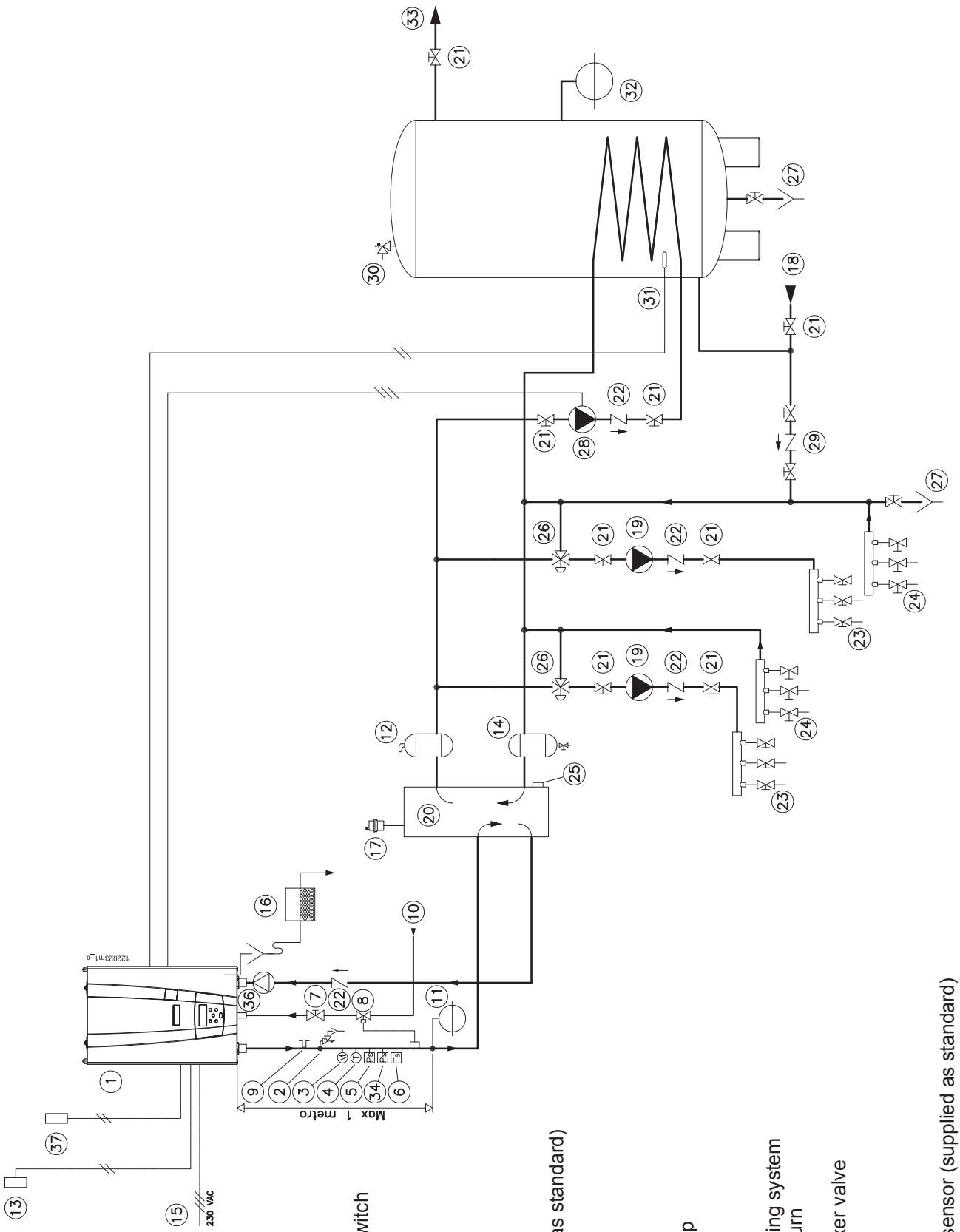


Figure 4-6 - Example of connection diagram with hydraulic separator and storage tank

1 MYDENS 60 boiler
2 INAIL safety valve
3 INAIL pressure gauge
4 INAIL thermometer
5 Maximum pressure safety switch INAIL
6 INAIL safety thermostat
7 Gas cock
8 INAIL Gas isolation valve
9 INAIL basin
10 Gas inlet
11 Expansion tank
12 Microbubble separator
13 External sensor (supplied as standard)
14 Filter
15 Electric power supply
16 Condensate neutraliser
17 Air vent valve
18 Cold DHW
19 Central heating circuit pump
20 Hydraulic disconnector
21 Isolation valve
22 Check valve
23 Delivery to the central heating system
24 Central heating system return
25 Stopper for dirt outlet
26 Central heating system mixer valve
27 System outlet
28 Storage tank load pump
29 System load assembly
30 Storage tank safety valve
31 Storage tank temperature sensor (supplied as standard)
32 Domestic hot water circuit expansion tank
33 Domestic hot water outlet
34 INAIL minimum safety pressure switch
36 - Circulation pump (to be used with MYDENS 60A models)
37 Room thermostat or equivalent system

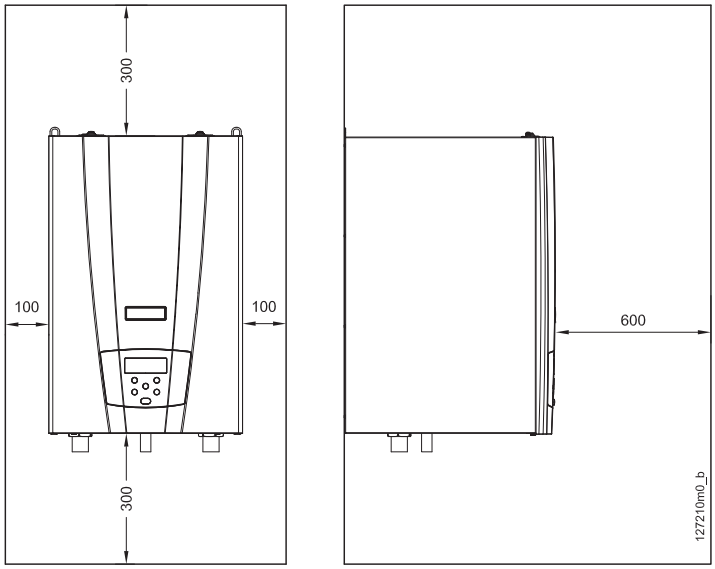


Figure 5-1 – Minimum safety distances

5.1 - Opening the package

The boiler is supplied in a cardboard package. To open it, follow the instructions given on the package's closing flaps.

5.2 - Dimensions and minimum distances to be observed

For both installation and maintenance, it is necessary to leave free spaces around the boiler, as shown in figure 5-1.

5.3 - Choosing where to install the appliance

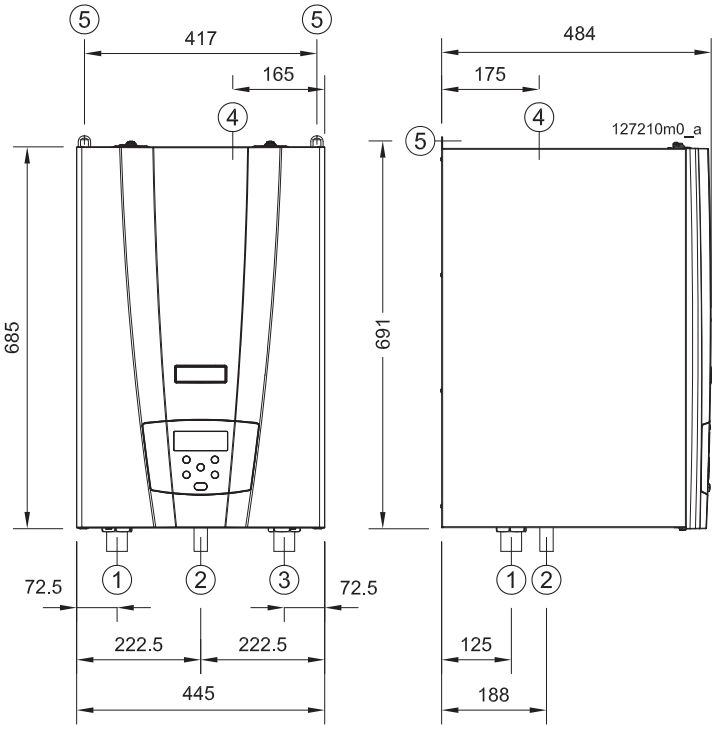
WARNING! The appliance must be installed exclusively on a solid, vertical wall, which can bear the weight.

☞ Before installing the appliance, the central heating system and, if necessary, the domestic hot water system must be washed thoroughly in order to remove any residues or impurities which could compromise the working order of the boiler.

☞ This boiler is not designed to be installed in the open air; it must not be exposed to temperatures below zero and above 50°C. Choose a place sheltered from the weather and from frost.

☞ This appliance must be installed in a place where water leakages from the appliance itself, from the joints between the pipes or from any drainage from the safety valve, cannot cause damage to materials or items below it.

The appliance must be installed inside your home, or otherwise protected from atmospheric agents such as rain, wind, sun, and especially frost.
Choose the room and suitable position for installation, taking into account the following factors:
- connection of the flue gas outlet/air intake pipes;
- connection of the gas supply pipe;
- connection to the water supply;
- connection to the central heating system;
- connection to domestic hot water system (where present);
- electric connection;
- connection to the drain for the condensate produced by the boiler;
- electric connection of the room thermostat;
- possible connection to safety valve outlet;
- connection to the outdoor temperature sensor (where applicable);



1 - Central heating delivery 1" 1/2
2 - 3/4" gas inlet
3 - Central heating return 1" 1/2
4 - Flue gas outlet / Air intake
5 - Support brackets

Figure 5-2 – Boiler dimensions and attachments centre-to-centre distances

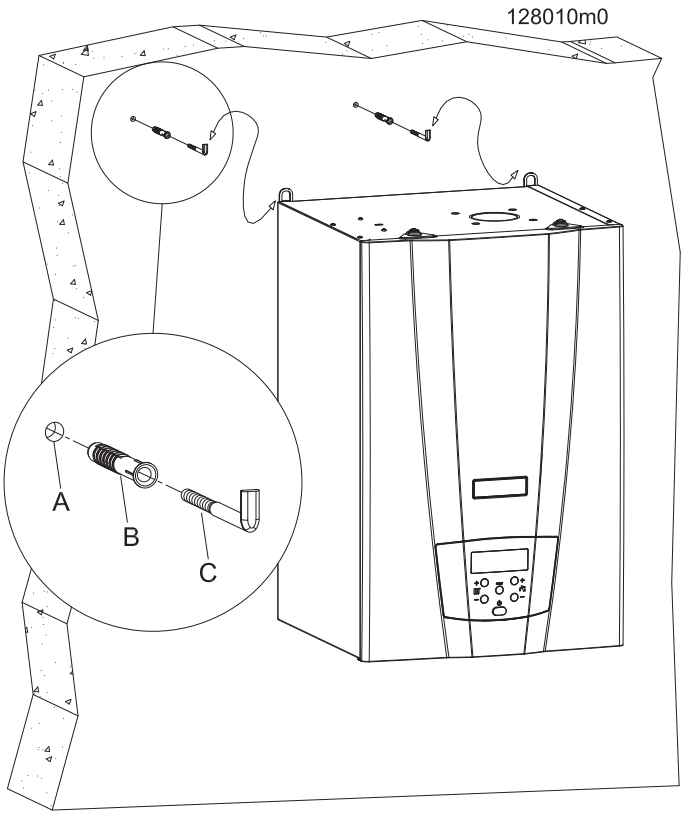


Figure 5-3 – Support plugs

5.4 - Unit assembly

Refer to figure 5-3:

1.- mark the holes for the plugs and hydraulic fittings on the wall, checking they are square;
2.- make holes “A” and insert the wall plugs “B”;
3.- make the boiler hydraulic and gas connections;
4.- hang the boiler on the plugs “C”;
5.- make the hydraulic connections.

5.5 - Delivery and return

WARNING! COSMOGAS is not liable for any damage caused by incorrect use of additives in the central heating system.

WARNING! The system after the appliance must be made with materials that resist temperatures up to 97°C and pressure of 3 bar. Otherwise (e.g. with plastic piping), the system must be fitted with the relevant protection and safety devices.

Before connecting the central heating pipes, wash the system thoroughly to eliminate any waste (hemp, radiators casting sand, etc.), which could damage the appliance. This must also be performed if the appliance is replaced.
Figure 5-2 shows the positioning of the supply and return fittings.

☞ Install a metal mesh filter on the return pipe in order to trap any system residues before they return to the boiler.

☞ Do not use the appliance to introduce any type of additive into the system.

5.6 - Water supply

Check the water mains connection pressure and if necessary install a suitable pressure reducer.

WARNING! The connection of the central heating system (and therefore the heating unit) to the water mains must be completed with the insertion between them of a device that prevents backflows to the drinking water system, as required by the anti-pollution safety regulations in force.

5.6.1 - Recommendations on characteristics of water in the system

Filling the central heating system is an extremely delicate operation that should not be underestimated, either in cases of just replacing the heat generator or in when a new appliance is installed. Incorrect assessment of the characteristics of the system's water can lead, in some cases, to damage to the system and heating unit. A system is almost never perfectly sealed; sometimes there may be water leaks and oxygen can also get in; both these phenomena cause damage.
Among the parameters that can have a negative impact on the lifetime of a system, the following are the main ones:
- The simultaneous presence of different metals (copper, brass, steel and aluminium) which, in an aqueous environment, give rise to galvanic corrosion.
- The presence of free oxygen, due to air infiltration which may occur near to joints or seals, constitutes a typical corrosive agent, particularly active at temperatures between 50 and 70° C.
- Water leakage, which leads to frequent refills, can cause corrosion or limescale, depending on the type of water available for the fillings. In all cases all of the leaks (and relative refills) must be kept under control, especially when an automatic filling system is installed. In this case it is definitely recommended that a meter be installed which can indicate the quantity of water replenished.

Natural or added impurities in the water. A lot of drinking water can contain concentrations, which may be significant, of chlorides and sulphates that can increase the speed of corrosion of metallic surfaces. Other undesirable components could have been introduced into the system before or during installation (building materials, metallic chips, shavings, grease, deposits and dirt in general). Residues from welding can also cause corrosion, both in new systems and after modifications and repairs. In old systems planned to work with radiators, characterised by pipework with a very large diameter, the water content of the system is significant and fosters the formation of dirt and deposits.
Dirt and Limescale The presence of black deposits (magnetite) indicates that there is limited corrosion, however, the high specific weight of this oxide can cause blockages that are hard to remove, especially in the hottest areas. Limescale is due to the hardness of the water, or to the presence of calcium and magnesium salts. Calcium, in the form of calcium carbonate, is deposited in the hottest areas of the system. Magnetite often contributes to consolidating the limescale. On the other hand, iron oxide (the water has a reddish colour) is an indicator of corrosion from oxygen.
Frequent leaks. Where there are frequent leaks the hydrogen and/or air accumulate on the top part of the heat exchanger and radiators, preventing full exchange of heat. When the electrolytic corrosion process has begun, the water level in the system is lowered, gases accumulate in the top part of the heat exchanger and radiators. The presence of air is caused by the fact that the system might not be perfectly sealed. A slow drop in system pressure due to a leak is often difficult to find, especially when the leak is minimal (in winter leaks from radiator valves sometimes are not visible because they are dried by the heat produced by the radiator or appliance). These micro-leaks do, however, allow air to get into the system. The main points that micro-leaks can develop are at the joints and, in particular, on the intake side of the pump (air vent valve, seals with O-rings, fill valves). In these cases, to avoid damage, the system must be protected with a suitable corrosion inhibitor.

5.6.2 - For correct operation of the system make sure that:

1) the system has no leaks or at least the most obvious leaks have been repaired;
2) if there is an automatic filling system, a litre counter must have been installed so as to know the exact quantity of any leaks;
3) filling the system and refilling is done with softened water so as to reduce its overall hardness. The water **must** also be conditioned in order to keep the pH within the threshold set so as to avoid corrosion;
4) Both on new systems and system replacements there must be efficient systems to get rid of air and impurities; filters, micro-impurity separators and micro air bubble separators;
5) Avoid discharging water from the system during normal maintenance operations, even if it is apparently insignificant quantities: for example when cleaning filters, equip the system with the relevant isolation valves up and down stream from the filter itself;
6) Always carry out an analysis of the system water before opening communication between a new boiler and the system, to establish whether the chemical and physical properties of the water indicate the need to carry out complete emptying of the system, the use of the water already in the system or chemical washing of the system, using mains water with the addition of a detergent, when there is a suspicion that the system may be dirty or particularly blocked up, and the subsequent refilling with new treated water.
If the analysis of a sample of water that will be used to fill the system shows the following values:

- $7.5 < pH < 9.5$
- $Ca^{++} + Mg^{++}$: <0.5°f (Total hardness)
- $OH + 1/2\ C0_3$: from 5 to 15°f
- P_20_5: from 10 to 30 mg/l
- Na_2S0_3: from 20 to 50 mg/l

then you can proceed with filling. If the properties are different, an inhibitor must be used.

5.6.3 - Water treatment in domestic heating systems

The water in domestic heating systems must always be treated both when the boiler is replaced and when it is a new system. All the treatment systems and chemical conditioning processes required must be set up during the planning stage, based on the characteristics of the unrefined water, in order to obtain water with the following characteristics:
- Appearance: clear, colourless and with no foam;
- pH: from 7.5 to 9.5;
- Conditioners: present within the concentrations laid down by the *supplier.*

If the water characteristics are unknown, there is a very high probability of running into problems such as the following:

1. LIMESCALE

1 °fr = 10mg/kg $CaCO_3$

30° fr = 300 mg/kg $CaCO_3$

For a system that contains 1000 litres of water at 30°f the content of $CaC0_3$ is 300 gr, which, if not suitably treated, will be deposited on the surface of the heat exchanger (as it is the hottest part of the system). This creates concentrated increases in temperature and consequently causes the heat exchanger to break.

2. CORROSION

As a rule corrosion is fostered by the presence of oxygen, by contact between different metals, or by the presence of chlorides.

3. DEPOSITS

These are insoluble organic and inorganic substances: DIRT, RESIDUES FROM WORK.

5.7 - Heat circuit outlet

In order to avoid constantly refilling with water and the resultant introduction of oxygen and limescale, it is advisable to limit as much as possible any work of draining the heating circuit.

5.8 - Expansion tank

WARNING! Provide the system with an expansion tank of a suitable size, as laid out in national and local installation regulations.

5.9 - Low-temperature systems (or underfloor heating)

WARNING! The system after the appliance must be made with materials that resist temperatures up to 95°C and pressure of 3 bar. Otherwise (e.g. with plastic piping), the system must be fitted with the relevant protection and safety devices.

WARNING! When installing the boiler in a low-temperature system, set parameter 2024 to 45°C and parameter 2023 to 20°C (see section 7.15).

With this setting, the boiler will adjust the supply to a temperature between 20°C and 45°C. No adjustment from the command panel (also via climate control) can supply water at a temperature over 45°C.

WARNING! If the boiler is installed in an underfloor system made with plastic piping, all of the necessary precautions must be taken against corrosion due to oxygen in the water:

make sure that the system is made with plastic pipes with oxygen permeability not exceeding 0.1 g/m3 at 40°C. Should the pipe not meet these characteristics, the radiant panel circuit must be isolated from the boiler, via a plate heat exchanger suitable for resisting the corrosion generated by the oxygen dissolved in the water.

5.10 - Gas

WARNING! Do not power the appliance with gases other than those specified.

WARNING! Check that the gas and supply pressure are those for which the boiler has been adjusted.

Two situations are possible:

A - the gas and supply pressure correspond to the adjustment of the boiler. In this case, it can be connected;

B - the gas and supply pressure do not correspond to the adjustment of the boiler. In this case, the boiler must be converted to the type of gas and supply pressure corresponding to those of the supply available.

The boiler is provided with the relevant gas conversion kit.

☞ Before installation, clean the inside of the gas supply pipe thoroughly;

☞ Install a shut-off cock on the gas supply pipe;

☞ To prevent damage to the appliance gas control unit, run a leak test at a pressure not exceeding 50 mbar;

☞ If the gas system must be inspected at pressures over 50 mbar, turn the cock located immediately upstream from the boiler, to isolate it from the system.

Use figure 5-2 to check the position of the appliance gas fitting. The cross-sections of the pipes in the gas supply system must always guarantee a gas supply that is sufficient to cover the maximum demand.

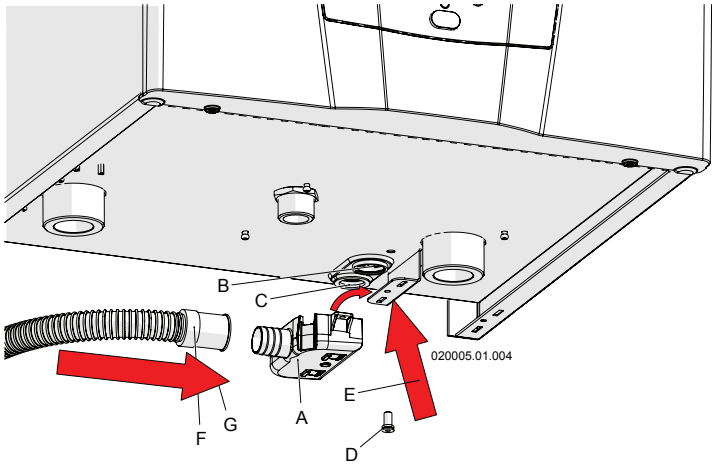


Figure 5-4 – Connecting the safety valve outlet and condensate outlet

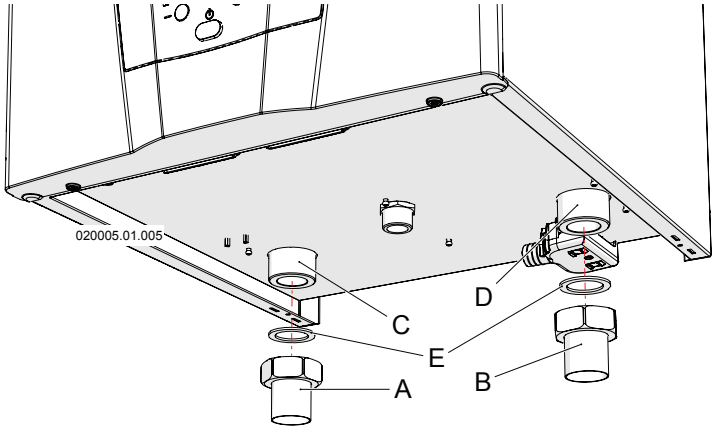


Figure 5-5 – Water connections

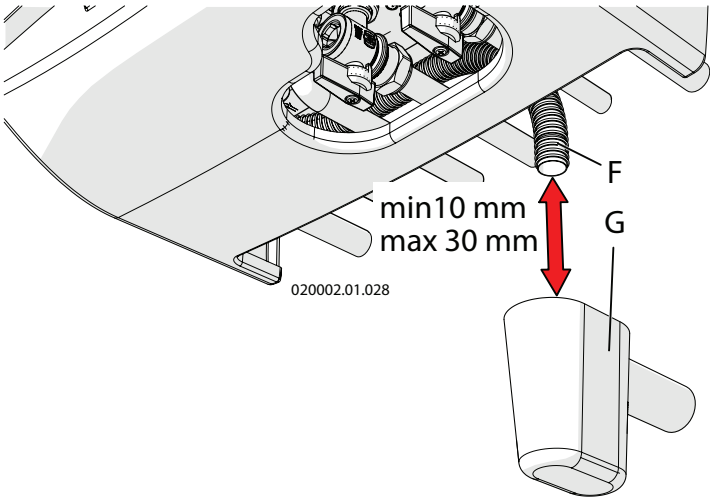


Figure 5-6 – Siphon funnel (on request)

5.11 - Condensate outlet

There is a siphon inside the boiler for the evacuation of condensate (see figure 3-2, detail “33”) and to prevent combustion products from escaping. The end of the siphon is pipe “B” in figure 5-4. This end must be conveyed into another, anti-odour siphon (figure 5-6, detail “G”) to prevent bad odours returning to the environment (the anti-odour siphon “G” is supplied on request).
Tank “A” is supplied ready assembled as shown in figure 5-4 and secured with screw “D”, outlet pipe “F” is also installed as shown in figure 5-4.
In particular, the condensate outlet system must:

- be for rooms used for residential purposes and for offices with more than 10 users; it can be connected to the domestic waste disposal plant by means of appropriate siphon with disjunction, capable of preventing the pressurisation of the system (the siphon is inside the boiler) and the return of bad odours from the sewers (detail “G” in figure 5-6). If the room used for office purposes has fewer than 10 users, before connecting up the domestic waste drain, install a condensate neutraliser (see section 9 for the acidity value of the condensate and the quantities).
- be performed with a pipe with an internal diameter equal to or greater than 13 mm;
- be installed in such a way as to prevent the liquid from freezing; therefore pay attention to any external sections. It is prohibited to drain into gutters or rainwater drainpipes;
- slope continuously towards the drain point; avoid high points, which could pressurise the pipe;

5.12 - Safety valve

The appliance is protected against overpressures by a safety valve calibrated to 3 bar (see figure 3-2 detail “30”). The safety valve outlet (detail “C” in figure 5-4), along with the condensate outlet (detail “B” in figure 5-4) must be conveyed to pipe “F” (see figure 5-4) with a minimum internal diameter of 13 mm; pipe “F” must then be taken to the anti-odour siphon (detail “G”, figure 5-6). This drain with a siphon is used to prevent overpressures if the valve is opened, and it allows the user to check possible intervention.
Pipe “F” in figure 5-6 is supplied assembled as standard together with tank “A” in figure 5-4. The anti-odour siphon “G” in figure 5-6 is provided on request.

WARNING! If the safety valve is not connected to the drain, whenever the valve intervenes, it could cause damage to persons, animals or objects.

5.13 - Plumbing and gas connections

The boiler is provided with the fittings illustrated in figure 5-5 as standard, where:
A = central heating delivery Ø 35
G = central heating return Ø 35
C = delivery fitting 1” 1/2
D = return fitting 1” 1/2
E = Gasket 1”1/2

5.14 - Electrical connections: details

WARNING! The appliance is only electrically safe when it has been correctly connected to an efficient earth circuit, performed as provided for by the current safety regulations.

This fundamental safety requirement must be met. If in doubt, request a thorough check of the electrical system by a professionally qualified technician.

☞ Have a professionally qualified technician check that the electrical system is suitable for the electric power required by the appliance, as indicated on the plate.

☞ The appliance must be connected to the mains electricity with a movable plug connection. The use of adapters, multiplugs, extension leads, etc. is not permitted.

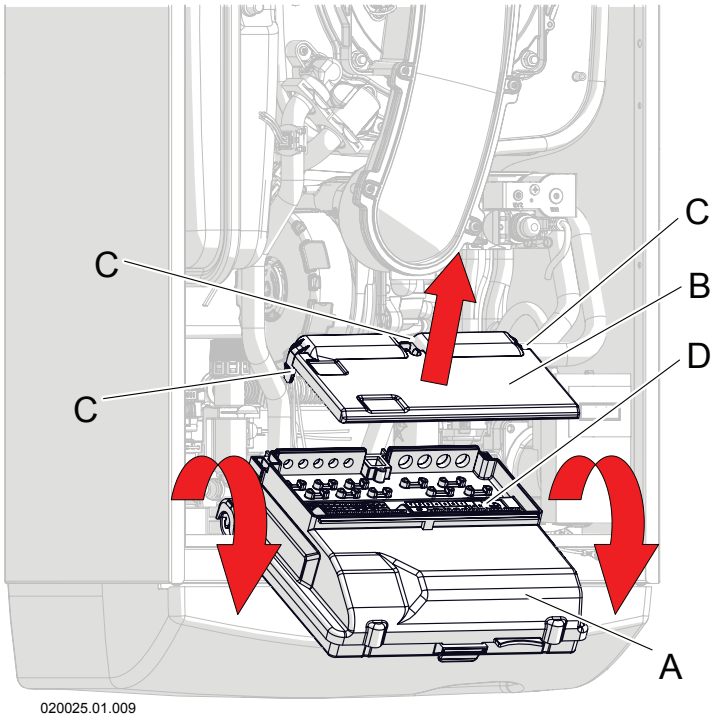
☞ The appliance must be connected to the mains electricity using a three-pole electric cable, with double insulation, a minimum section of 1.5 mm² and resistance to a minimum temperature of 70°C (characteristic T).

☞ For connection to mains electricity, a two-pole switch must be installed near the appliance with a contact opening distance of at least 3 mm, as envisioned by the current sector regulations.

☞ Respect the polarity between the neutral and phase wires when connecting the appliance.

☞ Make sure that the water system and heating pipes are not used as earth points for the electrical system or telephone lines. This piping is not suitable for this purpose; serious corrosion damage would occur in a very short time to the appliance, piping and radiators.

WARNING! The boiler is not protected against the effects caused by lightening.



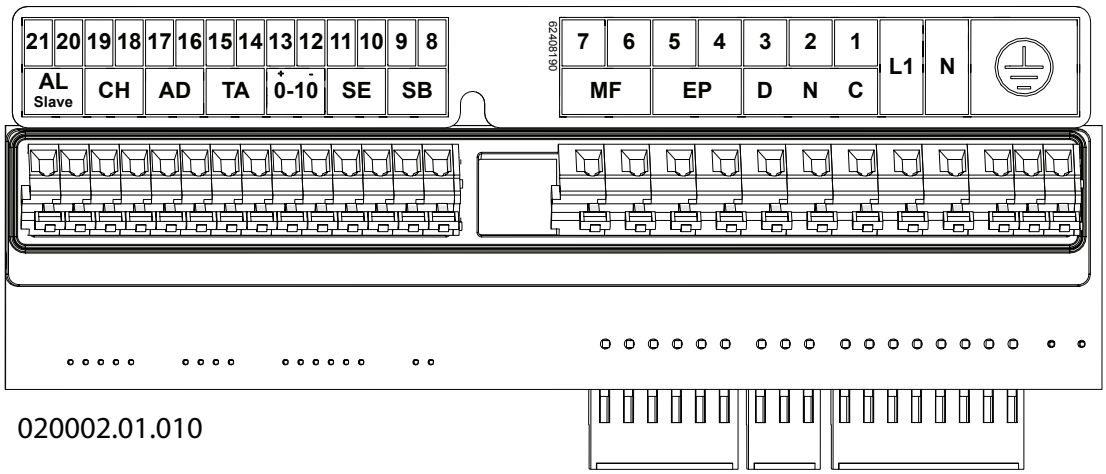


Figure 5-7 key

A = Control panel box;
B = Electrical connections cover;
C = Connections cover closing flaps;
D = Electrical connections

Electrical contacts key

AL Slave = Slave appliance BUS;
CH = Cascade probe;
AD = Master appliance BUS;
TA = Room thermostat/programmable thermostat/ CR04 remote time control/ Cosmobit
0-10 = 0-10Vdc input;
SE = External sensor (where present);
SB = Storage tank sensor (where present);
MF = Alarm output/ Automatic fill;
EP = External pump (where present);
DNC = External diverter valve (where present) (D = Domestic hot water line; N = Neutral; C = Heating line)
L1 = Boiler power supply line
N = Boiler power supply neutral
EARTH SYMBOL = Earth contacts

Figure 5-7 – Electrical connections

5.14.1 - Connecting the power supply cable

To connect the power supply cable proceed as follows (refer to Figure 5-7):

1.- Use a three-pole dual-insulation cable, with a minimum cross-section of 1.5 mm²;
2.- Remove the casing from the appliance, following the relevant instructions in section 8.3;
3.- Rotate panel “A” towards the front of the boiler;
4.- Use the flaps “C” and open the lid “B” as indicated by the arrow;
5.- Lay the power supply cable through the cable gland near the contacts “L1”, “N” and the earth symbol;
6.- Strip the cable, making sure that the earth wire (yellow/green) is kept 20 mm longer than the other two;
7.- Connect the yellow/green cable to the earth terminal (see symbol);
8.- Connect the brown cable (Phase) to terminal L1;
9.- Connect the blue cable (Neutral) to terminal N.

5.14.2 – Choosing the room thermostat/ programmable thermostat

The boiler is set up to operate with any room thermostat or programmable thermostat which has the contact to which the cables from the boiler can be connected, with the following features:

- open/closed (ON/OFF);
- potential-free (not powered);
- closing, when there is a request for heat;
- 24VAC, 1A.

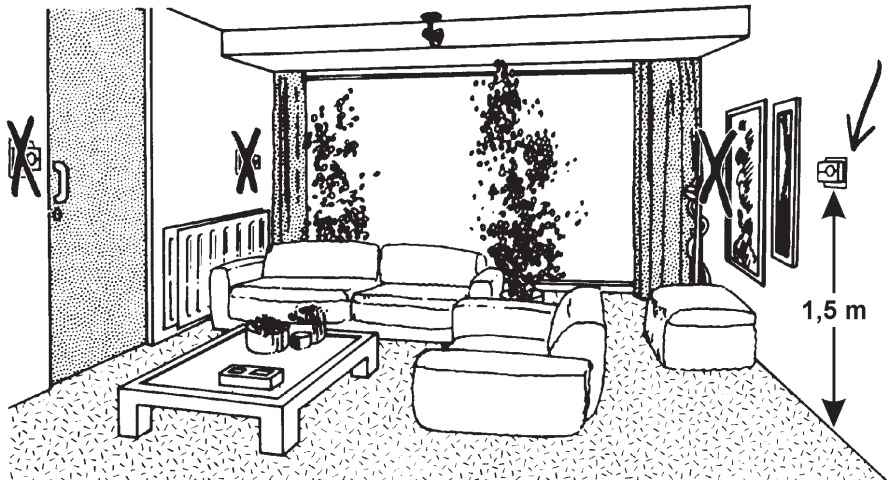


Figure 5-8 – Correct positioning of the room thermostat/programmable thermostat

5.14.3 - Connecting the room thermostat/ programmable thermostat

Install the room thermostat in a place in the house where the temperature is the most characteristic of the home and, in any event, in an area that is **not** subjected to repeated temperature changes, away from windows or doors which open directly to the outside (see figure 5-8).
Proceed as follows to connect the room thermostat cable (refer to figure 5-7):

1.- Use a bipolar cable, with a minimum cross-section of 1.5 mm2, from the appliance to the room thermostat/ programmable thermostat; The maximum length allowed is 20 metres. For lengths exceeding 100 metres, use a shielded cable with shield earthing;
2.- Remove the casing from the appliance, following the relevant instructions in section 8.3;
3.- Lay the electric cable through the cable gland near the "TA" contacts;
4.- Use a free cable gland, not used by other wires;
5.- Strip the cable;
6.- Connect the two ends of the cable to the "TA" clamps (see figure 5-7).

WARNING! As the room thermostat/programmable thermostat cables are subjected to a very low safety voltage (24 VDC), they must flow in ducts other than those supplying 230 VAC power.

5.14.4 - CR04 remote time control (on request)

The CR04 remote time control, is a room thermostat capable of interacting with the boiler, adjusting the room temperature in a modulating manner and not by steps. This device is a real heat regulator capable of operating with the outside temperature sensor and, therefore, of adjusting the room temperature in an optimum manner.
Install the CR04 remote control in a place in the house where the temperature is the most characteristic of the home and, in any event, in an area that is **not** subjected to repeated temperature changes, away from windows or doors which open directly to the outside (see figure 5-8).
In order to connect the remote control cable, proceed as follows (refer to figure 5-7):

1.- Use a two-pole cable, with a minimum cross-section of 1.5 mm², from the appliance to the CR04 remote control. The cable must also be shielded. The shield must be connected to the earth from the side of the appliance. The maximum length permitted is 100 metres;
2.- Remove the casing and access the junction box (see section 8.3);
3.- Connect the 2 cable ends to boiler terminals "14" and "15" (see figure 5-7 "TA").
4.- Connect the other two ends of the cable to the terminals on the remote control (follow the instructions in the remote control manual).

WARNING!
As the CR04 remote control cables are subjected to a very low safety voltage (24 VDC), they must run in different ducts than the 230 VAC power supplies.

Once the CR04 remote control has been connected, all the room temperature adjustments and domestic hot water temperature operations must be carried out directly on the remote control. Remember to follow the instructions in the CR04 remote control manual carefully.

5.14.5 - Installing the external temperature sensor

Install the external temperature sensor outside the building on a wall facing NORTH or NORTH-EAST, at a height of between 2 metres and 2.5 metres from the ground. For buildings with several floors, it must be installed at about half way up the second floor. Do not install it above windows, doors or ventilation outlets or directly below balconies or gutters. Do not plaster over the external temperature sensor. Do not install the sensor on walls without eaves, i.e. where not protected from rain.
Where the sensor is installed on a wall that has yet to be plastered, it must be installed with a suitable thickness or be removed before plastering.
Proceed as follows to connect the external temperature sensor cable:

1.- Lay a two-pole electric cable with a minimum cross-section of 1.5 mm², which goes from the boiler to the external temperature sensor. The maximum length allowed is 20 metres. For other lengths up to 100 metres, use a shielded cable with shield earthing.

WARNING! As the cables are subjected to a very low safety voltage (24 VDC), they must flow in wires different from the 230 VAC power supplies.

2.- Connect the two-pole cable to the “SE” clamps in figure 5-7;
3.- Connect the bipolar cable to the ends of the outdoor temperature sensor.

Set the boiler to learn from the external temperature sensor as follows:
1.- Access the “Installer” profile as detailed in section 7.15;
2.- Set parameter 2001 to 1 or 2 (see section 7.15) according to the type of climate control desired (see section 7.10);

To confirm that the external sensor has been enabled, the icon shows on the display.
Proceed with the steps given in section 7.10.3 to set the correct adjustment values for the delivery temperature, according to the external temperature.

5.14.6 - 0-10 VDC type dialogue

The appliance be controlled via 0-10 VDC dialogue by proceeding as follows:

1.- Access the “Installer” profile as detailed in section 7.15 and set parameter 2001 = 4;
2.- Now the boiler can be controlled via the 0-10 VDC signal according to the rules shown in figure 5-9;

☞ Opening the TA contact has priority over the 0-10 V signal.

5.14.7 - Alarm contact

The alarm contact closes whenever the appliance shows an error or locks. The alarm contact is a 230 VAC, 0.5 A output, which is supplied whenever the boiler exhibits an error.

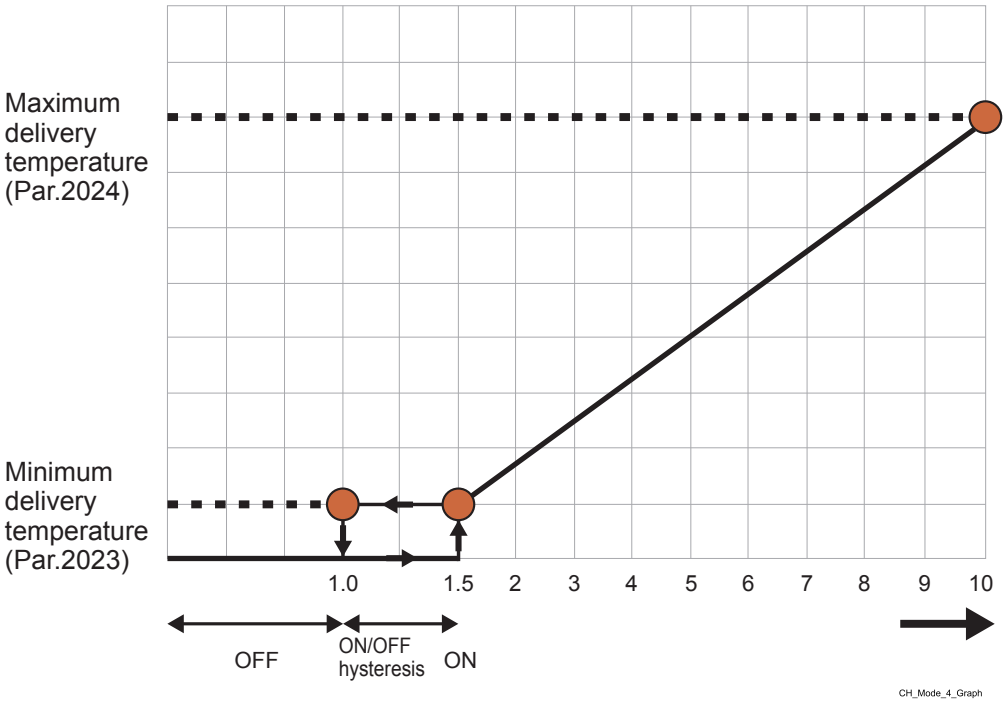


Figure 5-9 – Operating rules for 0-10 VDC analogue input

5.15 - Connecting appliances in a cascade

This appliance can be connected in a cascade including up to a maximum of 8 devices. The hydraulic connection diagram is shown in figure 5-10. Other types of hydraulic connections can be performed (ask the manufacturer for the reference diagrams). The cascade is managed by the motherboard in the device that will be defined here and then referred to as the “Master”. To connect the appliances in a cascade, proceed as follows:

1 - Set up the hydraulic installation as shown in figure 5-10;
2 - Set up the electrical installation as shown in figure 5-11;
3 - Access the appliance where the cascade probe has been connected; this will be the one closest to the hydraulic separator. Set parameter 4184 = 1 (logical address of the communication bus) and set parameter 4147 to the total number of appliances installed in the cascade (including the “Master”);
4 - On the “Master” unit, check that switch “S4” is in the ON position (see figure 5-11);
5 - Access the next appliance which will become the first “Slave” and set parameter 4184 = 2 (logical address of the communication bus). Make sure that parameter 2001 is “0”;
6 - On the “Slave” unit, move switch “S4” to the OFF position (see figure 5-11);
7 - Access each of the following appliances, repeating the instructions in points 5 and 6 above. Parameter 4184 must be increased by one unit for each additional appliance.

☞When the slave appliance is correctly connected to the master, the radiator symbol (“E”, figure 7-1) disappears from the display.

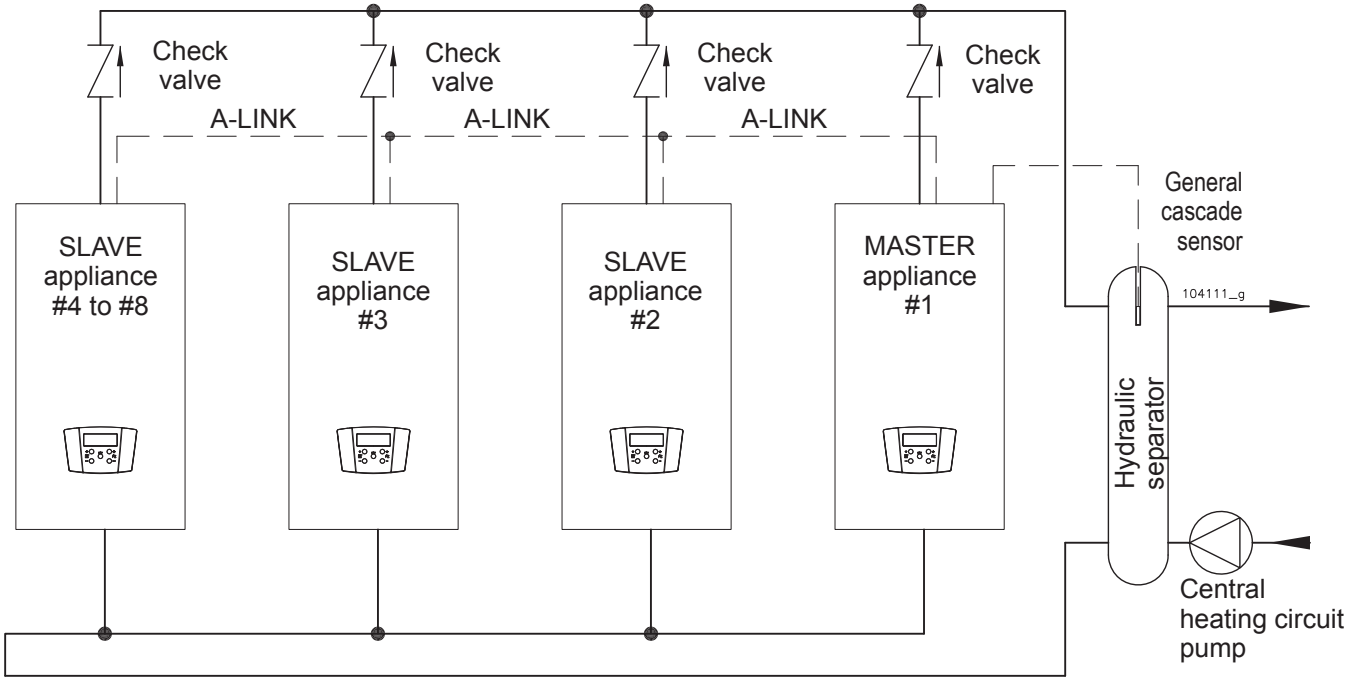


Figure 5-10 – Concept diagram: connecting appliances in a cascade

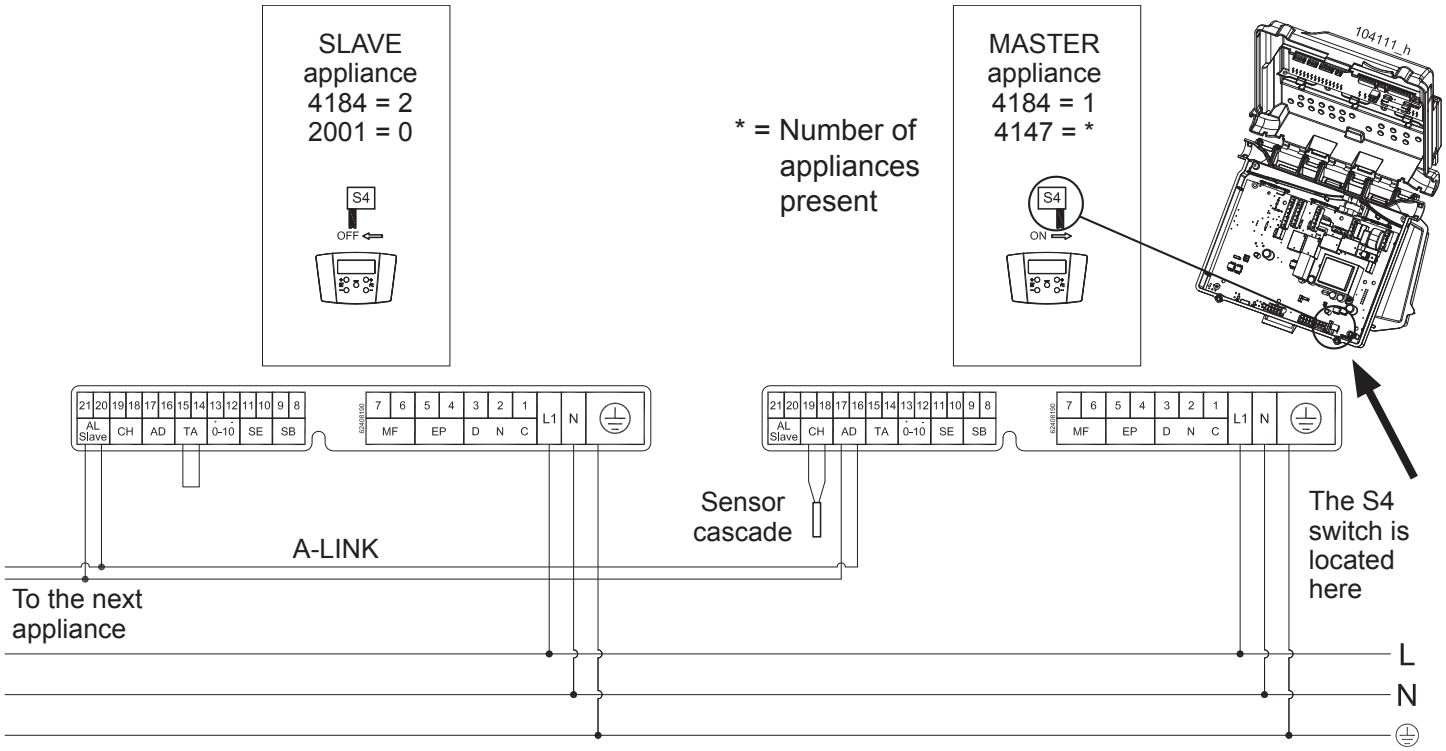


Figure 5-11 – Wiring diagram for appliances in a cascade

5.16 - Connecting the boiler to storage tank with coil

MYDENS 60 model boilers can be connected to a storage tank with coil.

The hydraulic connections must be made as per figure 4-6.
Proceed as follows for the electrical connections (refer to figure 5-7):

1.- Disconnect the electric power supply from the appliance;
2.- Lay a bipolar electric cable with a minimum cross-section of 1.5 mm², which goes from the appliance to the storage tank temperature sensor and connect it to the boiler on clamps “8” and “9” (SB);
3.- Connect the other end of the cable to the storage tank temperature sensor;
4.- Insert the temperature sensor probe inside the storage tank sample point (see figure 4-6, detail “31”).

5. - Set parameter 2035 to 1;

6.- Set parameter 2038 to 10;

MYDENS 60 model boilers can be connected to a storage tank with coil even post-installation. In this case, a diverter valve must be installed external to the appliance for the storage tank load and parameter 2035 must be set at the value of 1 and parameter 2038 at the value of 10..

Proceed as follows for the electrical connection of the external mixer valve (refer to figure 5-7):

1.- Disconnect the electric power supply from the appliance;
2.- Lay a two-pole electric cable with a minimum cross-section of 1.5 mm², which goes from the appliance to the diverter valve, and connect it to the boiler on clamps “3”, “2” and “1” (DNC);
3.- Connect the other end of the cable to the external diverter valve as shown in the instructions provided with it;

In the case of a system like the one in figure 4-6, the storage tank load pump (detail “28” in figure 4-6) must be connected to clamps “2” and “3” of the boiler (refer to figure 5-7).

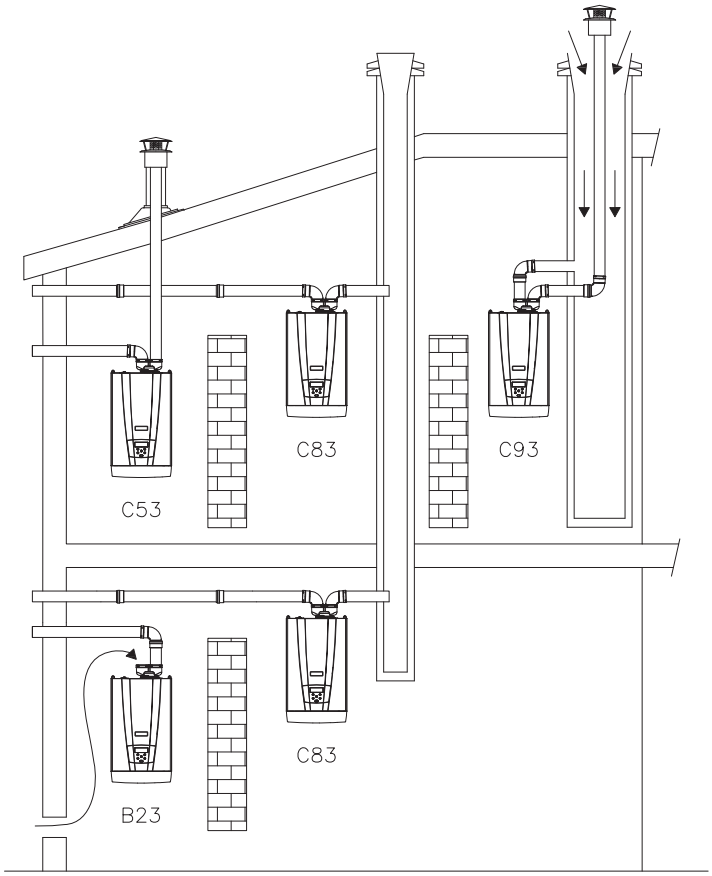
The temperature of the water stored inside the storage tank can be selected by the user from a range of between 40°C and 70°C.

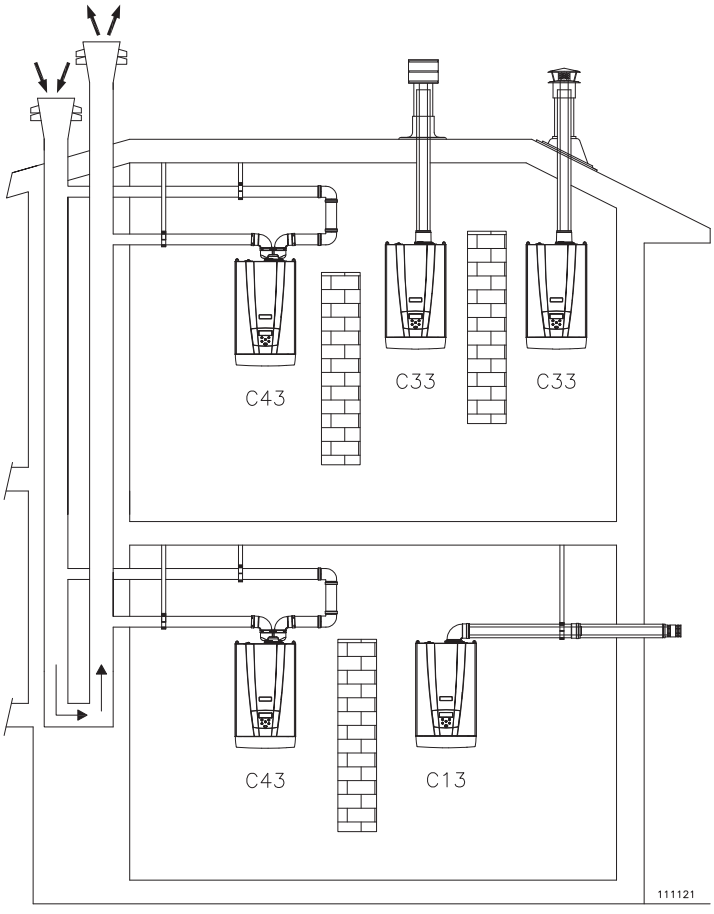
WARNING! A hot water temperature exceeding 51°C may cause permanent injury/damage to persons, animals and objects.
In particular, protect children, the elderly and people with disabilities against any possible risks of scalds, by inserting devices that limit the usage temperature of the DHW to users.

5.16.1 - Anti-legionella

If the boiler is connected to a storage tank for the preparation of domestic hot water, a disinfection cycle is used against legionella bacteria. This cycle involves bringing the storage tank to 60°C (temperature at which the legionella bacteria dies), 2 hours after the appliance has been connected to the power supply and at least every week. For this reason the water (at some times) may reach users at a higher temperature than that set with the relevant command.

WARNING! A hot water temperature exceeding 51°C may cause permanent injury/damage to persons, animals and objects.
In particular, protect children, the elderly and people with disabilities against any possible risks of scalds, by inserting devices that limit the usage temperature of the DHW to users.





5.17 - Exhaust gases outlet and combustion agent air intake pipe

WARNING! To connect the exhaust gases outlet and combustion agent air intake, the relevant national and local regulations must be respected.

WARNING! The flue gas from this appliance can reach 90°C in certain conditions. Therefore, use pipes made of plastic that can resist high temperatures.

WARNING! This appliance is a "condensing" boiler. Use AISI 316L stainless steel materials or polypropylene plastic materials to make the flue gas outlet so as to prevent corrosion due to the acidity of the condensate.

Please remember that appliances of this type must have outlet and inlet pipes supplied by the manufacturer of the appliance itself.

Other types of pipes, if used, must be type-approved for this intended use.

The types of outlet for which the appliance is approved are given in the technical features table at the end of the manual under the "type" heading and on the data plate on the boiler, also under the "type" heading.

The symbols used to define the type of outlet are given below:

- B23 and B23P, separated with intake in room and outlet through wall or roof.

WARNING! If the appliance is installed with a B23 or B23P outlet, it will take in air for combustion from the surrounding environment. Therefore, all precautions must be taken regarding ventilation of the rooms as prescribed by the national and/or local regulations.

- C13, coaxial in vertical wall
- C33, coaxial at the roof
- C43, separated with outlet in flue, combined with intake in common channel.

WARNING! The appliances installed in type C43 must only be connected to natural-draught flues.

- C53, separated with outlet on roof and intake on wall, or in two potentially different tapping points.
- C63, the appliance can be fitted to type-approved outlet and intake pipes made by other brands.

WARNING! With C63 outlets, the condensate coming from the chimney cannot be conveyed into the appliance.

- C83, separated with wall intake or another point independent from the intakes of other appliances, and outlet in exhaust flue.
- C93, separated with outlet on roof and intake in pre-existing channel.

Figure 5-12 – Outlet/intake systems

During operation, especially in winter, it is possible that white smoke may emerge from the boiler's flue gas outlet because of its high efficiency. This is a natural phenomenon and is not a cause for concern. It is the water vapour in the flue gas which condenses when it comes into contact with the outside air.

5.17.1 - Type of intake/outlet B23 and B23P

In the case of B23 and B23P type combustion agent air intake/flue gas outlet systems, it is essential that the rooms in which the appliances are installed have at least as much air as is required for combustion and ventilation of the room. It is therefore useful to remember that the combustion of 1 m³ of gas requires 11 m³ of air.
The natural flow of air must take place directly through permanent openings made in the outside walls of the room to be ventilated. However, these must be away from sources of pollution, such as vents of dubious origin, airborne industrial exhausts, etc.

The ventilation openings must meet the following requirements:

- ☞ have clear passage sections of at least 0.3 m2
- ☞ be constructed in such a way that the opening inlets both inside and outside the wall cannot be blocked;
- ☞ be protected, for example with grids, mesh, etc. The net passage cross-section must not be reduced by these systems;
- ☞ be positioned at a height near to floor level and in such a way as not to cause any problems with the operation of the combustion product exhaust devices; where this position is not possible, the cross-section of the ventilation openings must be increased by at least 50%.

The air flow can also be obtained from an adjoining room provided that:

- ☞ it has direct ventilation, in compliance with the points above;
- ☞ in the room to be ventilated, only appliances fitted to outlet pipes are installed;
- ☞ the adjacent room is not a bedroom;
- ☞ the adjacent room is not a communal part of the building;
- ☞ the adjacent room is not an environment with fire hazards such a hangar, garage, warehouse for combustible materials, etc.;
- ☞ the adjacent room does not have a negative pressure with respect to the room to be ventilated due to reverse draught (which can be caused by another appliance operating with any type of fuel in the same room, or a fireplace or any other intake device for which an adequate air intake has not been provided for);
- ☞ the flow of air from the adjacent room to the room to be ventilated can take place freely through permanent openings, with a total net cross-section not less than that indicated at the start of this section.

In rooms where gas appliances are installed, it may become necessary to evacuate stale air, as well as introducing combustion agent air, the result being the release of an additional equal amount of clean air.

If the stale air is evacuated with the aid of a mechanical tool (electric fan), the following conditions must be respected:

a) if there is a common outlet pipe in the room that is not in service, it must be capped;
b) the ventilation opening in the room in which the gas appliance is installed must be increased, depending on the maximum air flow rate required at the electric fan.
c) the action of the electric fan must not affect the correct evacuation of the combustion products. Check all of the above by running a draught test. Run the fan or extractor hood at its maximum power and the gas appliance at the maximum and minimum power.

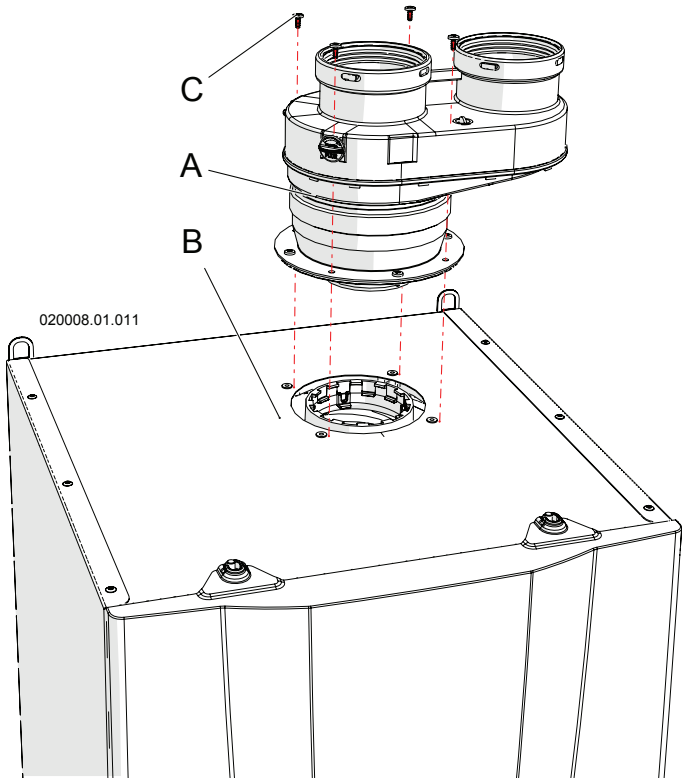


Figure 5-13 – Installing the "Split 80/80PP" system

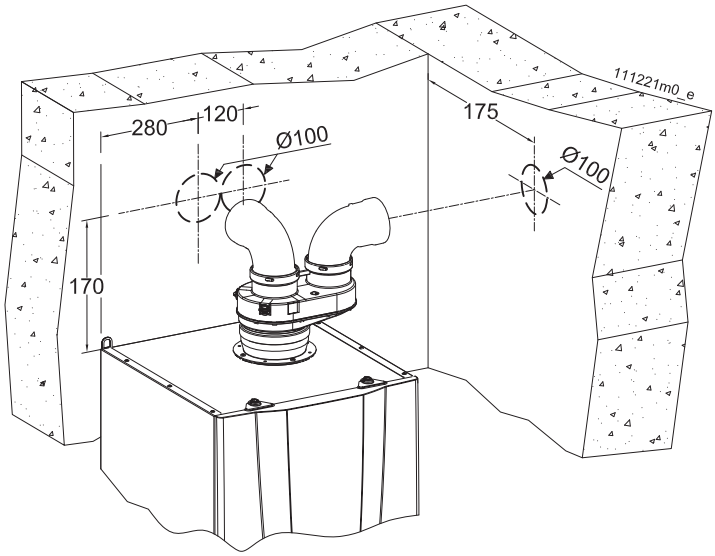


Figure 5-14 - Overall dimensions

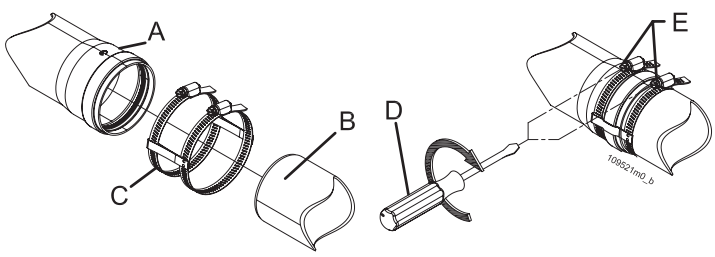


Figure 5-15 – Fixing the outlet and intake pipes

5.17.2 - "Split 80/80PP" system (polypropylene) (type C43; C53; C83; C93)

The appliance is supplied as per standard without fittings to connect the flue gas outlet/air intake. To connect it to a "Split 80/80PP" system, the relevant kit must be requested and must be installed as in figure 5-13.
Fitting "A" can rotate freely through 360°, guaranteeing optimum installation versatility.

- ☞ In the flue gas outlet side, it is recommended to install AISI 316L stainless steel or polypropylene pipes, which are more resistant to the formation of condensate.
- ☞ Take particular care with the installation of pipes in the part that goes through the wall to the outside. Normal maintenance operations must always be possible; therefore, install the pipes in a sheath so that they can be slid out.
- ☞ The horizontal tracts must always have an inclination of at least 2% towards the condensate drain device.
- ☞ The boiler is already provided with a condensate collector that must be connected to an outlet pipe (see section 5.11).

WARNING! This condensate outlet is designed to drain away all of the liquid produced by a single appliance. If more than one boiler is installed, each boiler should have its own condensate drain.
The flue gas outlet/air intake system can be extended up to a maximum distance as indicated in section 9. Every 90° bend has a loss equivalent to the value in section 9. Every 45° bend has a loss equivalent to the value in section 9.

WARNING! The flue gas outlet terminal must be appropriately protected against the effects of the wind (see also section 7.16.1 error Loc 20).

WARNING! Mechanically secure the joints between the various component elements of the outlet and intake pipe, through the use of fixing systems or equivalent systems. See figure 5-15

WARNING! The temperature of the outlet pipe can reach 90°C during operation. If the pipe passes through walls that are sensitive to these temperatures, insert a protective heat-insulating sheath.

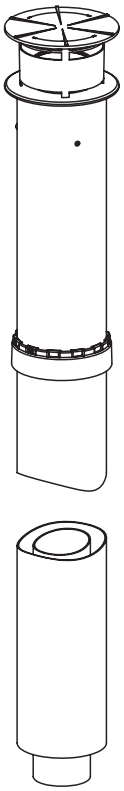
WARNING! If the air intake and flue gas outlet terminals are positioned on the same wall, they must remain at a minimum distance of 1 metre.

WARNING! The outlet and intake pipes must be appropriately sustained via rigid brackets positioned no more than 1 metre from each other. The rods must be fastened to rigid walls that can take the weight of the duct itself.

5.17.3 - “Split 80/80PP” system (Type C43; C53; C83; C93): accessories available

To make the “80/80PP split” flue gas outlet/air intake system, we offer some of the most common accessories available; remember that a wide range can be found in the relevant catalogue:
(the number after the code refers to the piece in the diagrams that follow)

62617306 - N° 10 PP coaxial roof terminal
62617244 - N° 12 M/F PP 90° bend
62617255 - N° 29 valley for pitched roofs from 15° up to 25°
62617236 - N° 11 M/F PP extension
62617249 - N°18 PP anti-slip bands for extensions
62617240 - N° 14 M.F. PP L=20m hose
62617241 - N°16 spacer for hose
62617238 - N° 17 PP telescopic joint
62617242 - N° 15 PP T-fitting
62617246 - N° 13 M/F PP 45° bend



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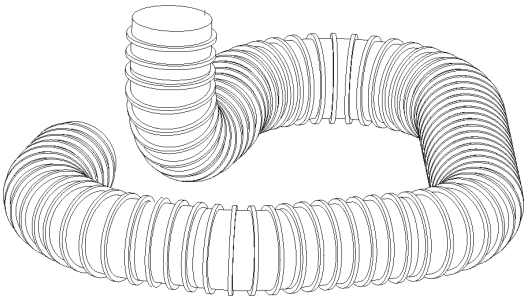

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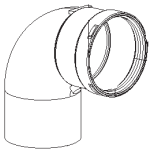

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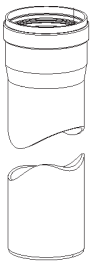

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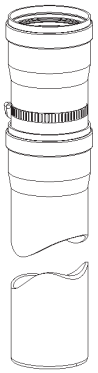

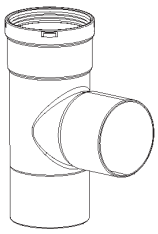

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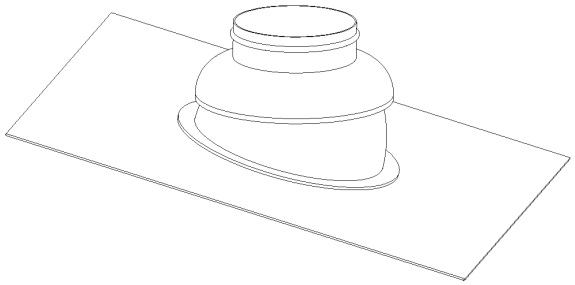

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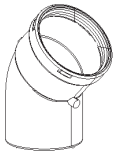

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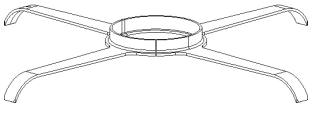

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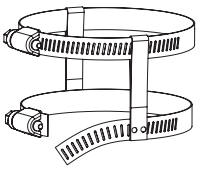

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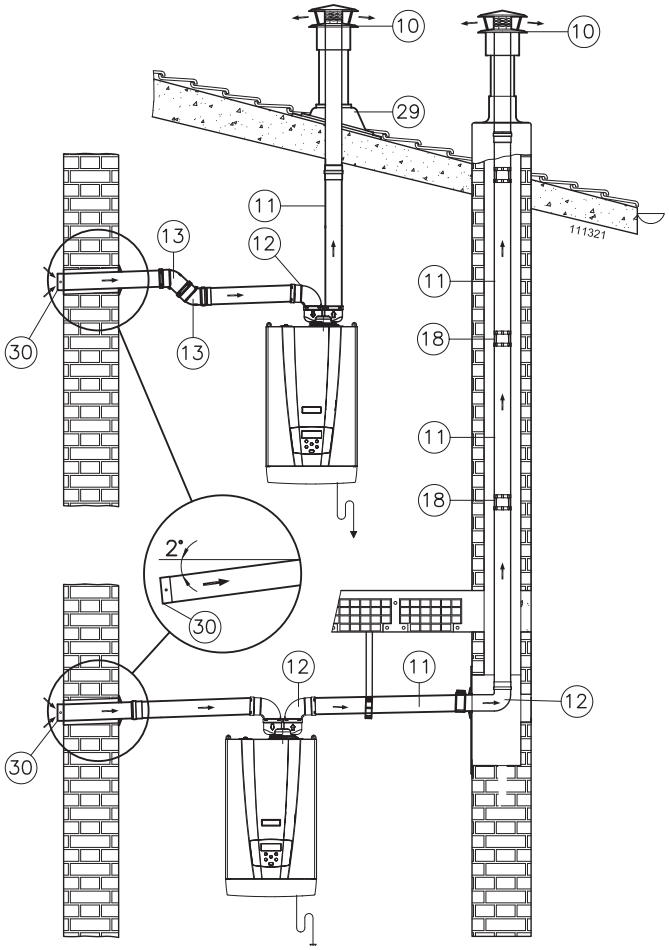


Figure 5-16 – Example of “80/80 PP system” installation

5.17.4 - “Split 80/80PP” system (type C43; C53; C83; C93): installation examples

In figure 5-16 two installation examples are given:

- outlet in chimney with condensate collection inside the boiler itself.

The horizontal part of the flue gas outlet side must be inclined towards the boiler.

The intake must slope towards the outside to prevent rain water entering.

- outlet on the outside, directly via the boiler pipes with condensate collection inside the boiler itself.

The intake must slope towards the outside to prevent rain water entering.

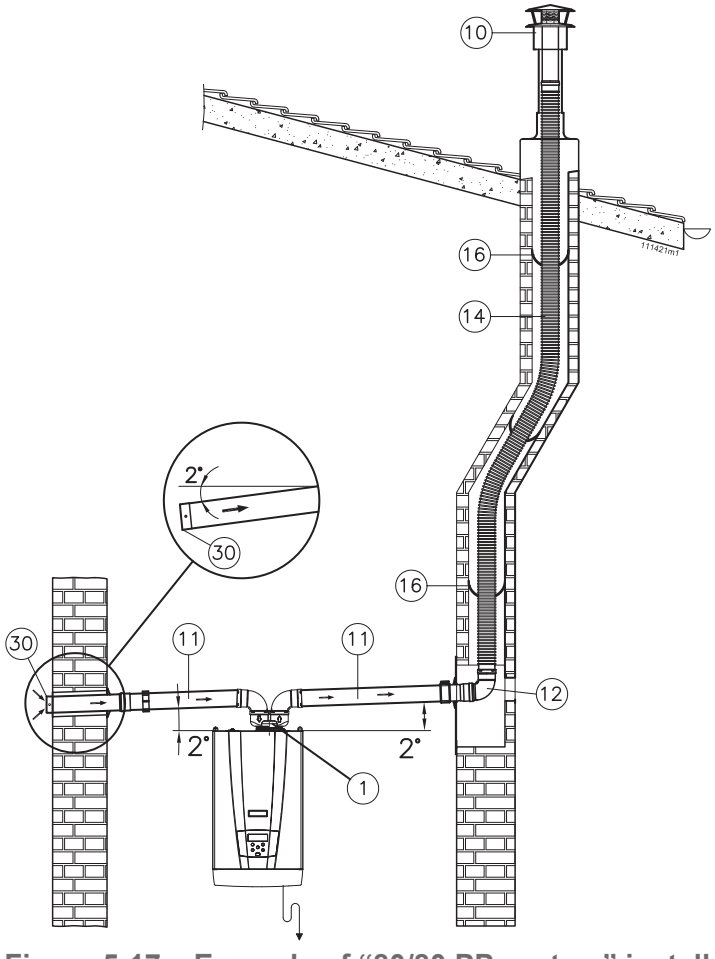


Figure 5-17 – Example of “80/80 PP system” installation

See figure 5-17 for a separated flue gas outlet set-up, where the flue gas outlet is made from a polypropylene hose for piping technical cells.

The condensate produced in the vertical pipe must all be conveyed into the boiler.

The intake must slope towards the outside to prevent rain water entering.

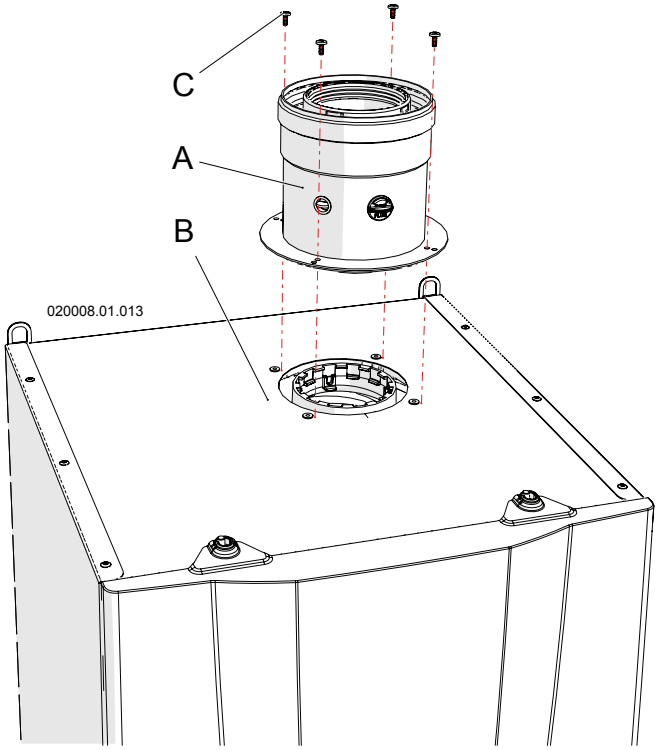


Figure 5-18 – Installation of vertical coaxial system

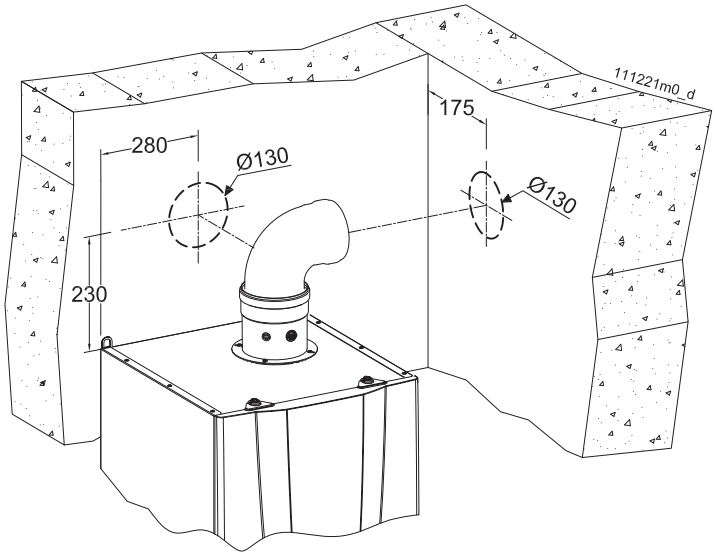


Figure 5-19 - Measurements and centre space distances for coaxial outlet preinstallation hole

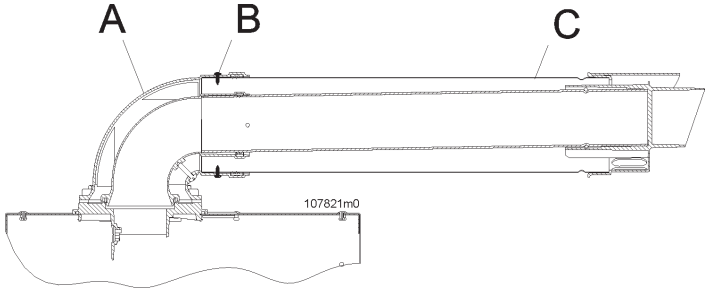


Figure 5-20 - Positioning the coaxial pipe

5.17.5 - “80/125PP vertical coaxial” system (polypropylene) (Type C13; C33)

The appliance is supplied as per standard without fittings to connect the flue gas outlet/air intake. To connect the boiler to a 80/125 vertical coaxial system, the relevant kit must be requested and must be installed as in figure 5-18.

WARNING! Scrupulously follow the coaxial pipe installation phases as illustrated in figure 5-20. In particular:

1.- Insert coaxial pipe “C” into bend “A”;

2.- Fix the external pipe using the stainless steel self-threading screws “B”.

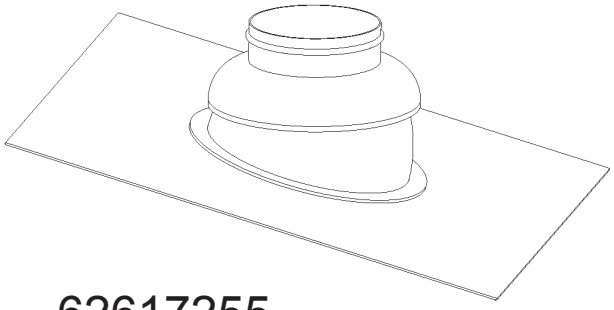
WARNING! The coaxial outlet and intake pipes must be appropriately sustained via rigid brackets positioned no more than 1 metre from each other. The rods must be fastened to rigid walls that can take the weight of the duct itself.

WARNING! Once these operations have been performed, check that the outlet/intake terminal is exposed to the outdoors with the tolerances given in figure 5-21.

☞ Take particular care with the installation of pipes in the part that goes through the wall to the outside. Normal maintenance operations must always be possible; therefore, install the pipes in a sheath so that they can be slid out.

☞ The horizontal tracts must always have an inclination of at least 2% towards the boiler.

☞ The flue gas outlet/air intake pipe can be extended up to the maximum distance indicated in the table in section 9 at the end of the manual. Every 90° bend has a loss equivalent to the value in section 9. Every 45° bend has a loss equivalent to the value in section 9.



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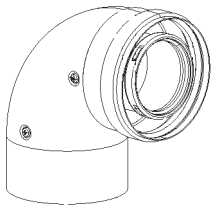
5.17.6 - “80/125PP coaxial” system: accessories available

The following accessories are available on request to make the 80/125 coaxial flue gas outlet/air intake system:
(the number after the code refers to the piece in the diagrams that follow)
62617255 - N° 2 valley for pitched roofs from 5° to 25° extension L = 1000 mm
62617321 - N° 1 M/F PP 90° coaxial bend
62617322 - N° 6 M/F PP 45° coaxial bend
62617323 - N° 7 L 1m PP coaxial extension
62617325 - N° 3 PP coaxial roof terminal
62617324 - N° 5 PP coaxial wall terminal



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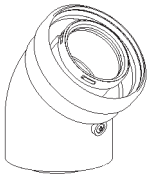

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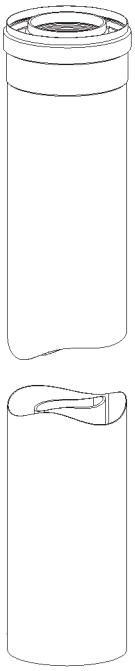

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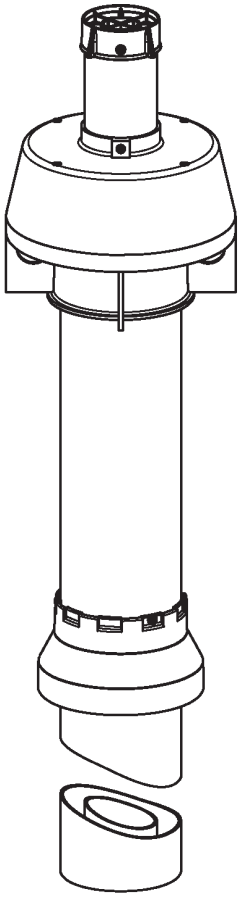

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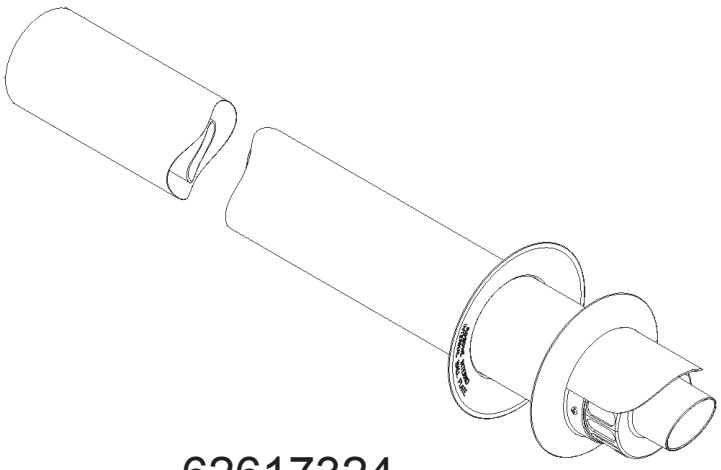

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5.17.7 - “80/125PP coaxial” system: installation examples

When setting up a coaxial outlet (see figure 5-21), whether vertical and horizontal, the outlet pipe must slope upwards so that the condensate flows into the boiler.

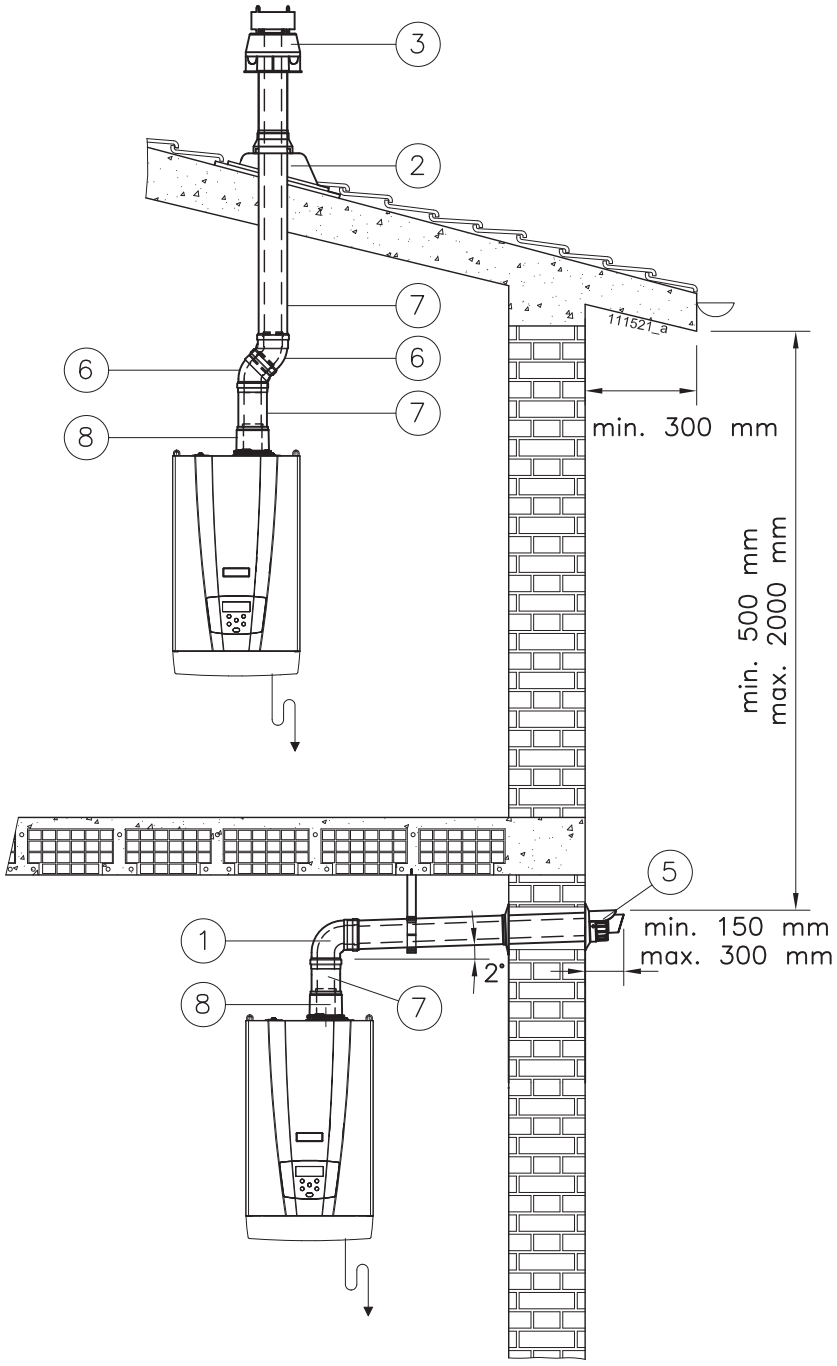


Figure 5-21 – Examples of coaxial pipe installation

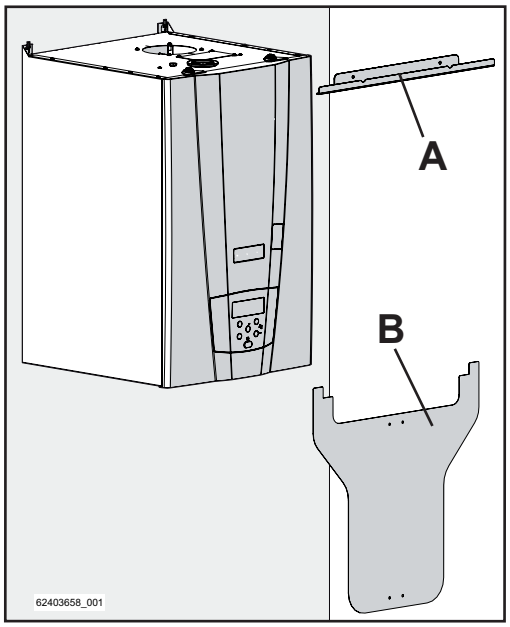


Figure 5-22

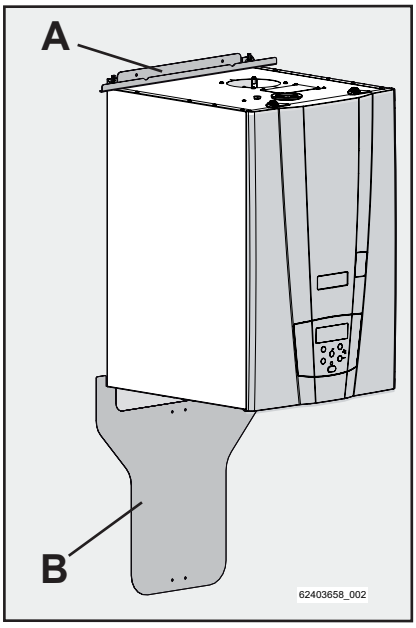


Figure 5-23

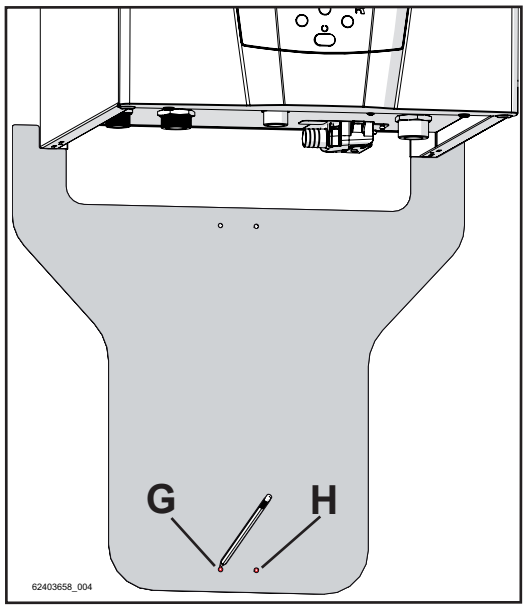


Figure 5-24

5.18 - Installing and uninstalling the MYDENS 60 external cover kit (on request)

To fit the external cover, follow the instructions below:

1 - Position upper fixing bracket “A” and the centring template “B” on the wall, as shown in figures 5-22 and 5-23;
2 - Mark holes “G”, “H” and “L”, “M” using a pencil as shown in figures 5-24 and 5-25;
3 - Remove the template and upper fixing bracket, and drill the holes marked out previously, as shown in figures 5-26 and 5-27;
3 - Fasten upper fixing bracket “A” to the wall, using the dowels supplied in the kit, as shown in figure 5-28;
4 - Remove pre-cut disc “R” from fixing bracket “N”, as shown in figure 5-29;
5 - Fasten fixing bracket “N” to the wall, insert gas pipe “P” inside it and connect the various components as shown in figures 5-30 and 5-31 (the components shown belong to the kit code 62630231 and code 62630232, sold separately);
6 - Apply the cover as shown in figures 5-32, 5-33 and 5-34 in sequence, making sure that the two hooks “C”, in the cover frame, are anchored to the upper fixing bracket “A” as shown in figure 5-35.
7 - Lock the cover using clamping screw “E”, as shown in figure 5-36.
8 - Apply the rainproof gasket “D” on the cover “Q” as shown in figure 5-37

WARNING: If the appliance is equipped with a coaxial flue gas outlet terminal, remove the area marked “F” (which can be identified by pre-cutting on the lower surface) from the gasket “D” with a cutter, as shown in figure 5-38.

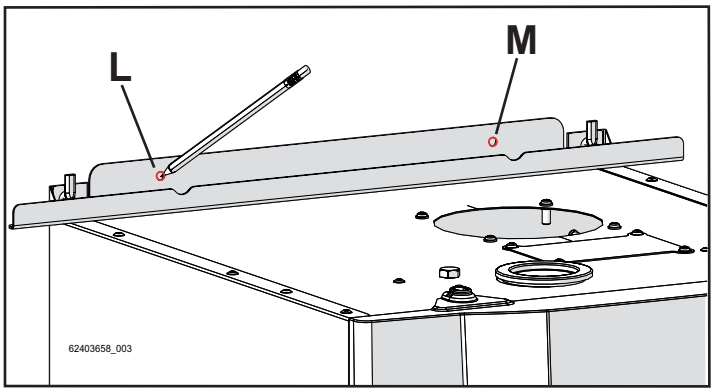


Figure 5-25

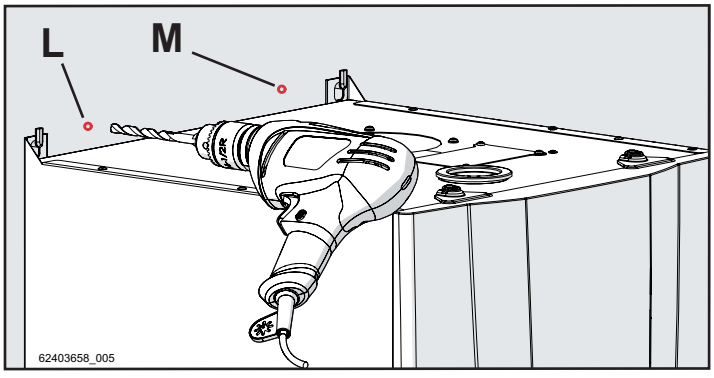


Figure 5-26

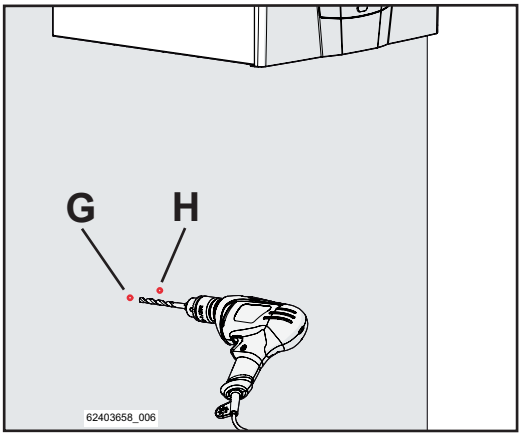


Figure 5-27

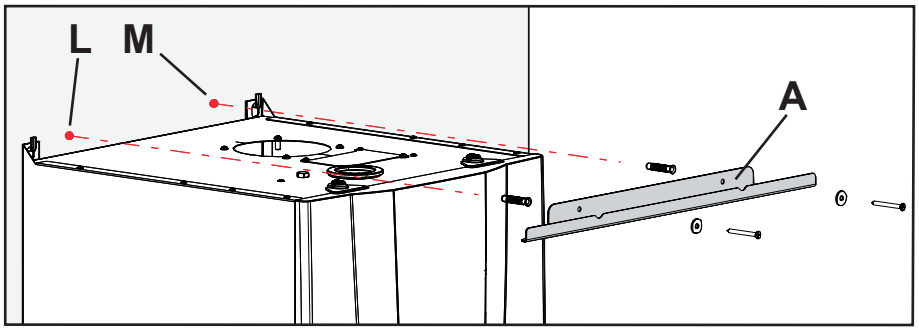


Figure 5-28

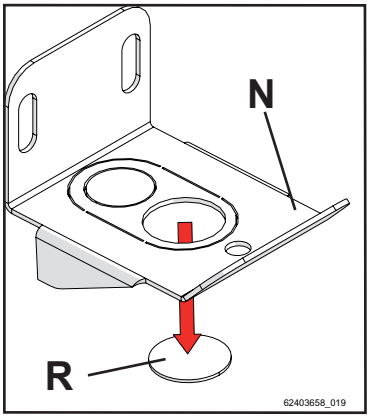


Figure 5-29

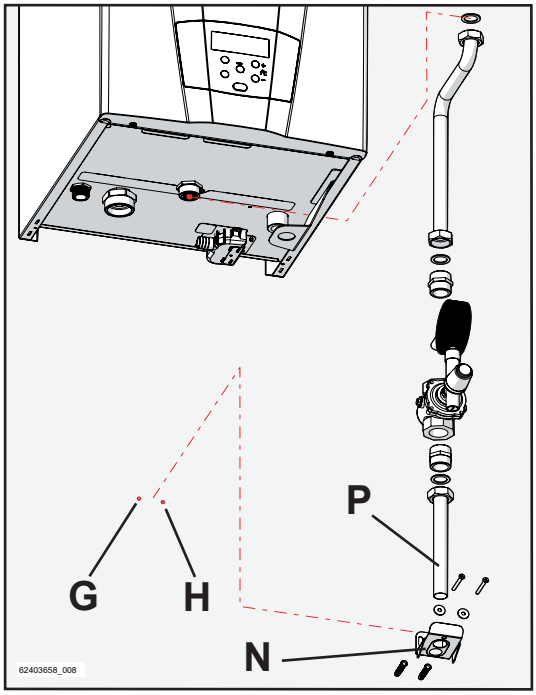


Figure 5-30

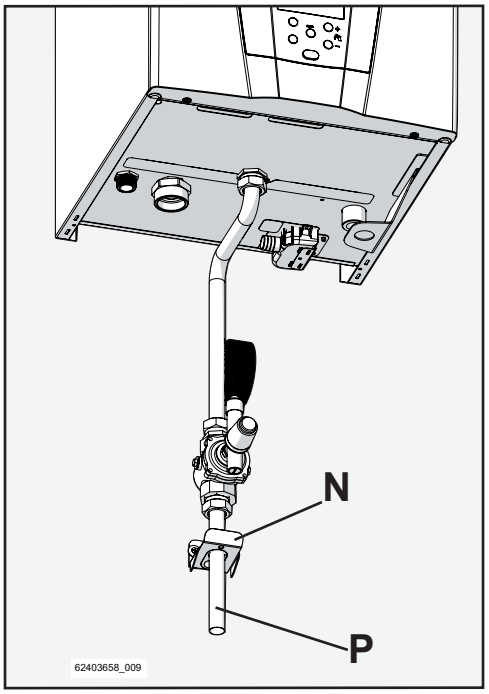


Figure 5-31

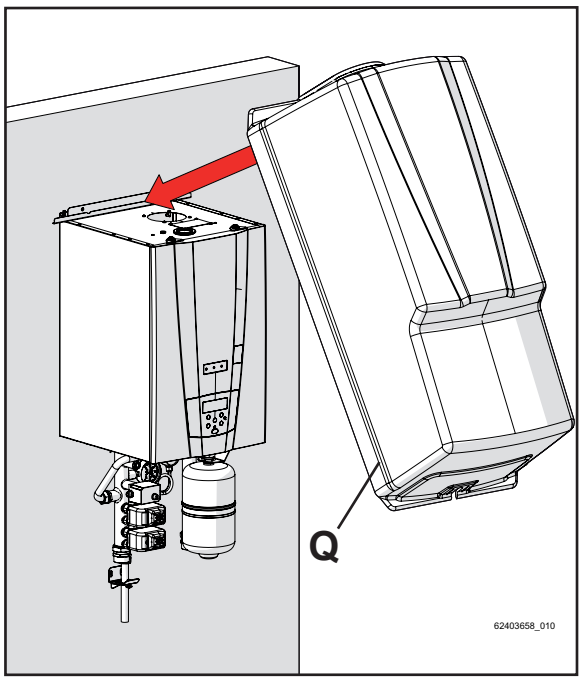


Figure 5-32

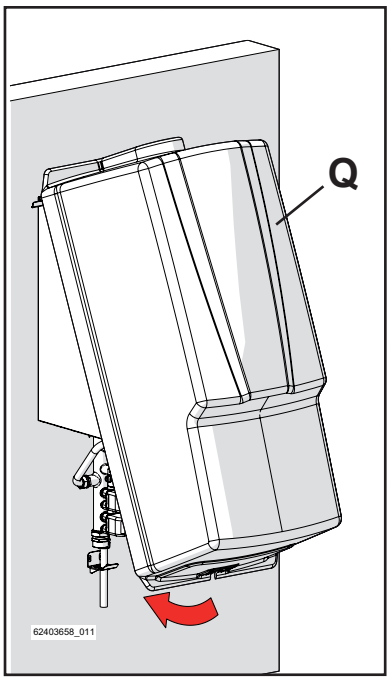


Figure 5-33

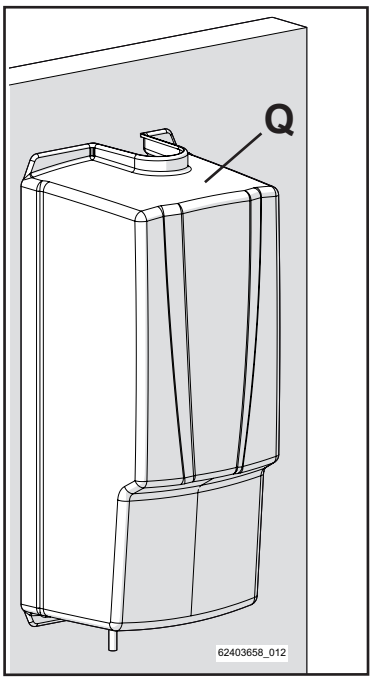


Figure 5-34

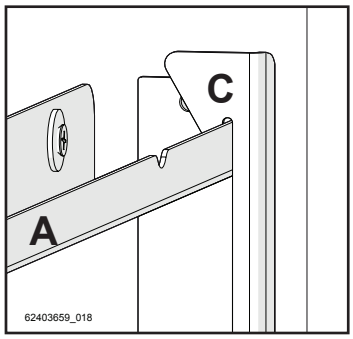


Figure 5-35

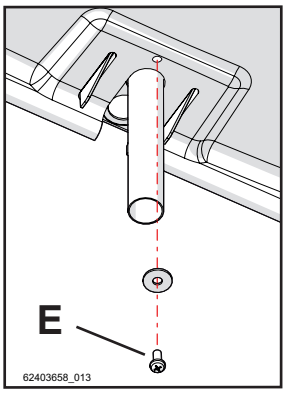


Figure 5-36

To remove the external cover, follow the instructions below:

- Remove the fixing screw “E” in figure 5-36;
- Press on the areas marked with an arrow in figure 5-39; this takes you from the position in figure 5-40 showing two triangular points “S” and “T”, to the position in figure 5-41;
- Turn and lift the cover as shown in figure 5-42, remembering to unhook the frame hooks “C” from the upper support bracket “A” as illustrated in figure 5-35.

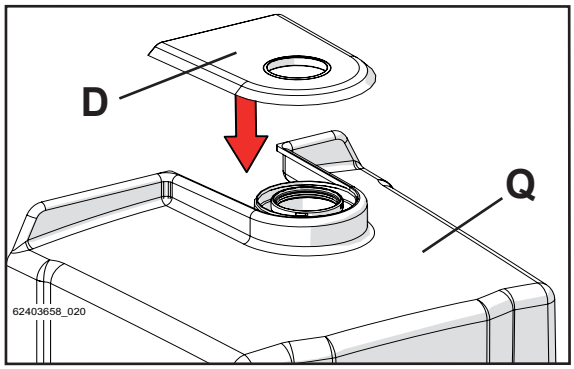


Figure 5-37

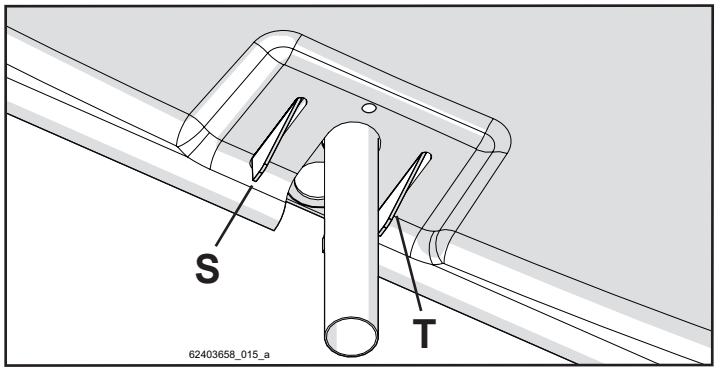


Figure 5-40

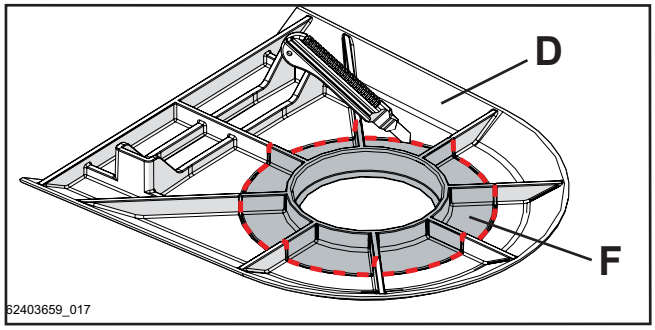


Figure 5-38

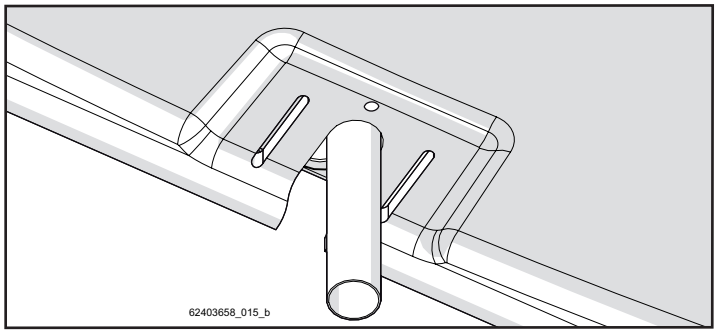


Figure 5-41

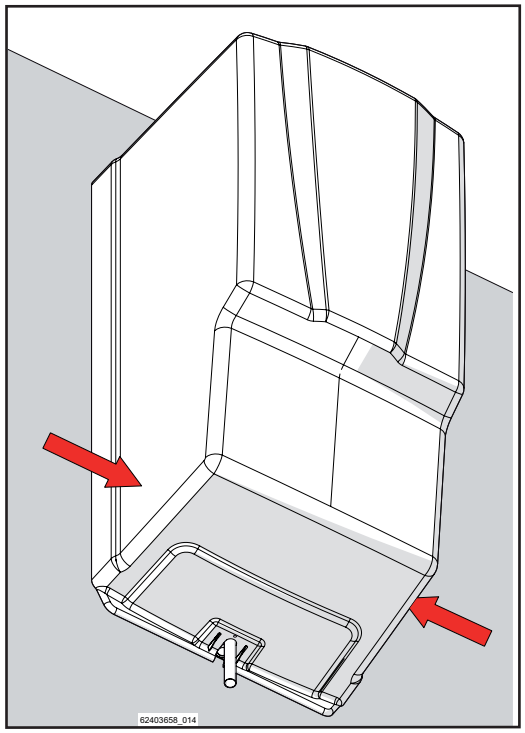


Figure 5-39

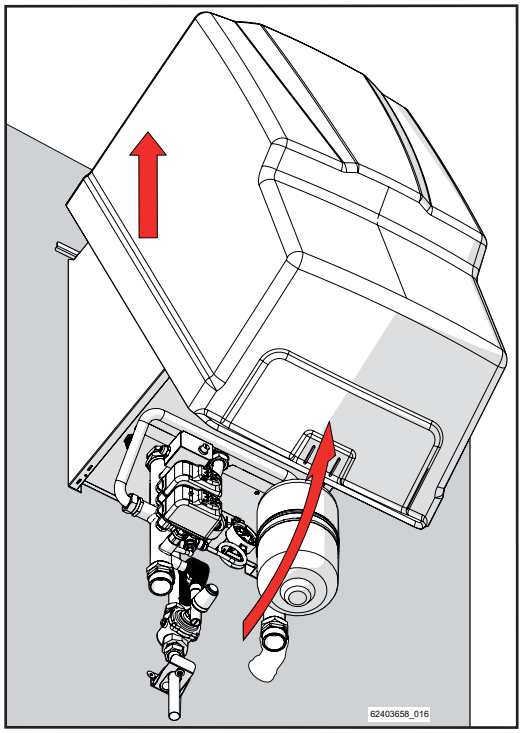


Figure 5-42

6.1 - Start-up

Before starting up the boiler, the following operations must be carried out.

6.1.1 - Instructions to the user

Instruct the user on correct use of the boiler and the whole system in general. In particular:

- ☞ Hand over the installation and use manual and all the documentation contained in the package to the user.
- ☞ Instruct the user on any special measures for discharging exhaust gases, informing them that they must not be modified.
- ☞ Inform the user of the water pressure check that needs to be done on the system and the steps required to fill it and vent the air.
- ☞ Inform the user regarding the correct temperature, control unit/room thermostat and radiator settings for saving energy.

6.1.2 - Filling the condensate drain siphon

The siphon found inside the boiler (see figure 3-2, detail “33”) must be filled with water to create the head capable of preventing the fumes escaping from pipe “F” in figure 5-4. Proceed as follows to do this:
(refer to figure 6-1)

1.- undo and remove stopper “R”;
2.- insert a rubber tube into hole “S” and at the other end of the tube position a funnel;
3.- Use the funnel to slowly pour in about 200 cm³ of water (= a glass);
4.- reassemble everything in reverse order.

⚠ WARNING! If the boiler remains off for more than 3 months, the siphon must be filled again as explained above.

6.1.3 - Filling the central heating system

If the word FILL appears on the display when the boiler is powered electrically, this means that the central heating system must be filled. Proceed as follows:

- ☞ only use clean water from the mains.

⚠ WARNING! The addition of chemical substances such as anti-freeze must be performed in compliance with the product instructions. In all cases, these substances must not be introduced directly inside the boiler.

1.- Open the fill cock located by the installer up stream from the boiler and fill the system at about 1.5 bar (the word FILL disappears from the display);
2.- Make sure there are no water leaks from the fittings;
3.- Reclose the filling device provided by the installer upstream from the appliance;
4.- Bleed the heating elements;
5.- Check the pressure on the boiler display again. If it has dropped, fill up to 1.5 bar again.

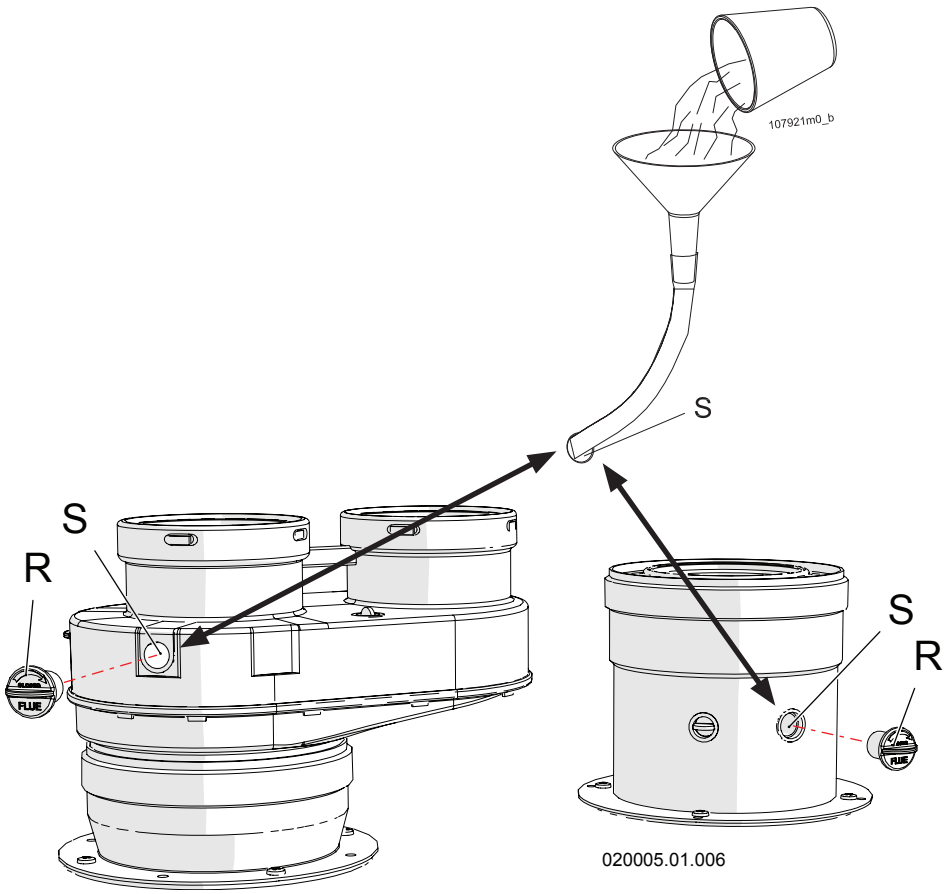


Figure 6-1 – Filling the condensate drain siphon

6.2 - General recommendations regarding the gas supply

To commission the boiler, have a professionally qualified technician perform the following checks:

- ☞ That the boiler is powered by the type of fuel for which it is set-up.
- ☞ That the gas supply pressure (with boiler operating and stopped) is within the maximum and minimum values indicated in the table in section 9 at the end of the manual.
- ☞ That the gas supply system is fitted with all of the safety and control parts required by current national and local regulations.
- ☞ That the flue gas outlet terminal and the combustion agent air intake terminal are free from any obstruction.
- ☞ That the flue gas outlet and combustion agent air intake terminal are positioned outside the building.
- ☞ That the condensate drain connection is connected.

WARNING! If you smell gas:

A - Do not turn on any electrical device, including a telephone, or any item that could cause sparks;

B - Immediately open doors and windows to create a draught that can quickly clear the gas from the room;

C - From another room, or from a neighbour's property, immediately call a professionally qualified technician or the gas supply company. Call the Fire Service if the former are not available.

6.3 - Type of gas for which the appliance is set.

There is a label on the front of the appliance certifying the gas supply type and pressure for which the boiler is set. The boiler may have one of the following two types of wording:

2H-G20-20mbar METHANE

This means that the boiler is set to operate with G20 gas (methane) of group H of the second family, at a supply pressure of 20 mbar.

3P-G31-37mbar LPG

This means that the boiler is set to operate with G31 gas (propane, also known as LPG) of group P of the third family, at a supply pressure of 37 mbar.

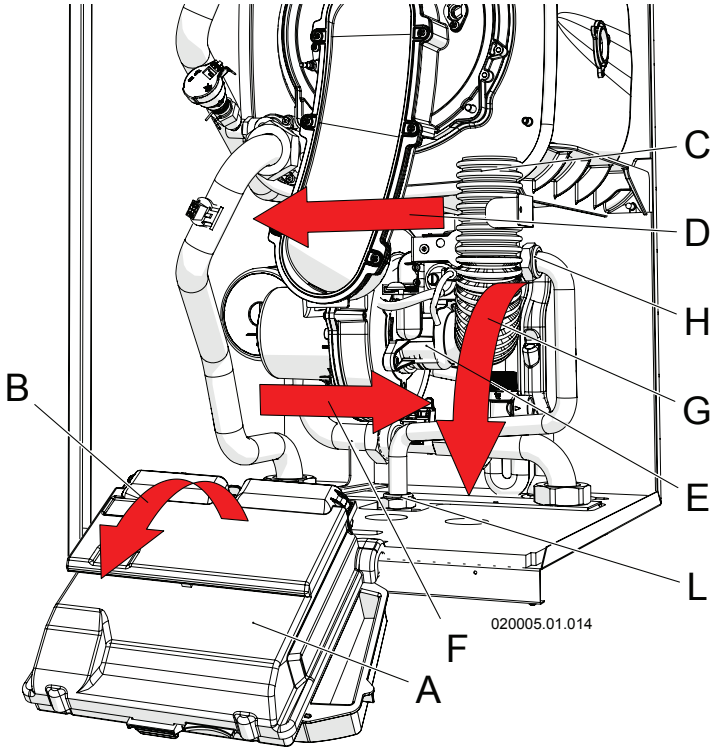


Figure 6-2 – Removing the air manifold

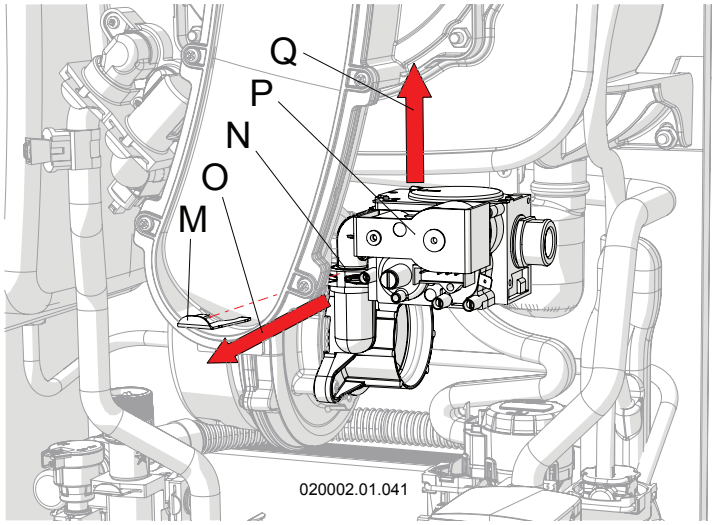


Figure 6-3 – Removing the gas valve

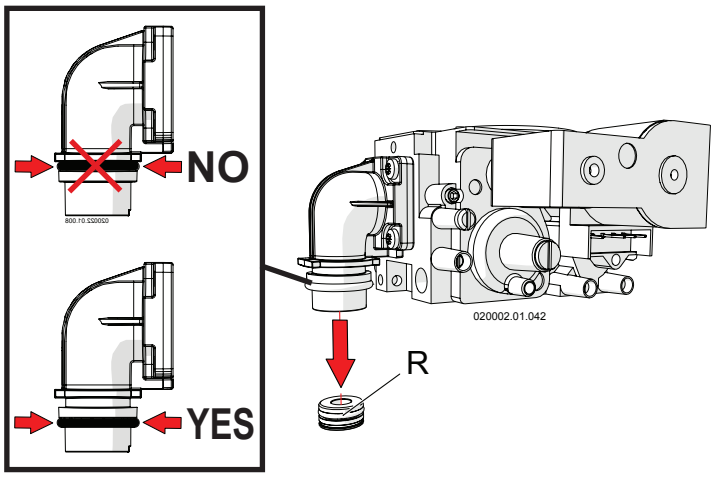


Figure 6-4 – Replacing the gas nozzle

6.4 - Conversion of the appliance from one type of gas to another

- Read these instructions carefully before changing the gas:

- **The installation, calibration or modification of the gas boiler must be carried out by specialised people, in compliance with the law;**
- **Check and be certain that the type of gas which is powering the appliance is compatible with the adjustment kit in your possession;**
- **Do not supply the boiler with a type of gas other than those specified.**

Follow the instructions given below to change the gas:

1. - Access the “installer” profile (see section 7.15);
2. - Set parameter [2 130] to the value shown in table on figure 6-6;
3. - Turn off electricity to the boiler;
4. - Open the boiler casing as reported in section 8.3;
5. - Close the gas supply;
6. - Remove the air manifold, making sure to rotate it outwards and then slide it out of the fan inlet (see figure 6-2, detail “C”);
7. - Remove the gas inlet pipe using the two fittings (see figure 6-2, details “H” and “L”);
8. - Remove clamp spring “M” from seat “N” releasing valve “P” (see figure 6-3);
9. - Slide gas valve “P” up and out;
10. - Replace gas nozzle “R” (see figure 6-4) with an appropriate one according to figure 6-6 under “Gas nozzle diameter”;
11. - Refit the gas valve (see figure 6-3, detail “P”), making sure to reposition spring “M”;
12. - Refit the gas supply pipe via the two fittings (see figure 6-2, details “H” and “L”);
13. - Refit the air manifold (see figure 6-2, detail “C”);
14. - Open the gas cock;
15. - Check for any gas leaks using the relevant tools.

WARNING! Test the gas seal using a soap and water solution only. The use of naked flames is prohibited.

WARNING! If you smell gas:

A - Do not turn on any electrical device, including a telephone, or any item that could cause sparks;

B - Immediately open doors and windows to create a draught that can quickly clear the gas from the room;

C - From another room, or from a neighbour’s property, immediately call a professionally qualified technician or the gas supply company. Call the Fire Service if the former are not available.

16. - Check the supply gas pressure, following the procedure in section 6.6;
17. - Open the CO2 adjustment screw completely (see figure 6-7, detail “A”);

18.- Check and adjust the CO2, following the procedure in section 6.7;
19.- Apply the sticker certifying the appliance's new setting onto the front casing of the boiler in place of the label showing the old status (see figure 6-5): apply label "B" if the boiler has been converted from methane to LPG; apply label "A" if the boiler has been converted from LPG to methane.

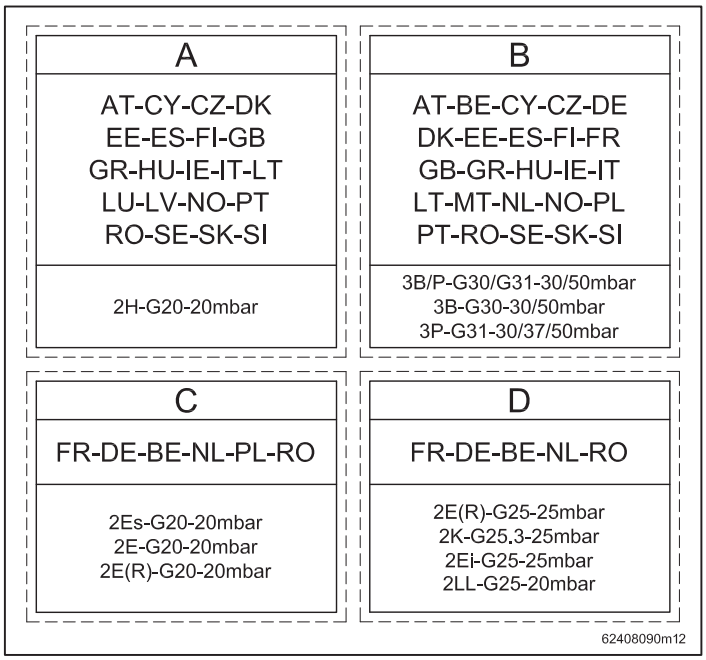


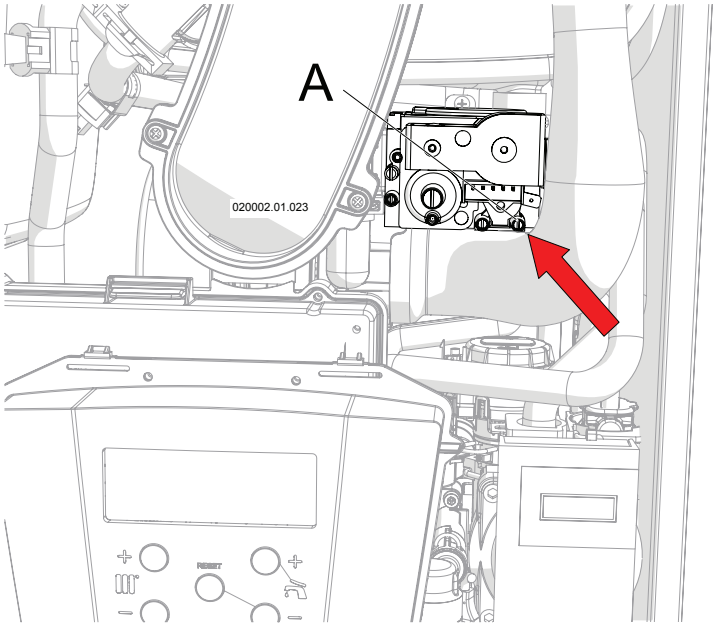
Figure 6-5 – Labels certifying the new boiler status

Model	Type of gas	Setting parameter C 138	Gas supply minimum pressure (mbar)	Gas supply maximum pressure (mbar)	Gas nozzle diameter (mm)	CO2 Maximum power (%)	CO2 Minimum power (%)	O2 Maximum power (%)	O2 Minimum power (%)
60	G20	54	17	25	8.0	8.7 ± 0.3	8.3 ± 0.1	5.4 ± 0.2	6.1 ± 0.1
	G25	52	20	30	10.0	8.7 ± 0.3	8.3 ± 0.1	5.0 ± 0.2	5.8 ± 0.1
	G30	55	25	35	5.2	10.1 ± 0.3	9.5 ± 0.1	5.9 ± 0.2	6.8 ± 0.1
	G31	55	25	45	5.7	10.1 ± 0.3	9.5 ± 0.1	5.5 ± 0.2	6.4 ± 0.1

Figure 6-6 – Correspondence table for parameter C 138 and the operating values

6.5 - Ignition

1.- Open the gas cock;
2.- Power the boiler electrically;
3.- Adjust the desired temperature from the heating service using the + and − keys. The icon on the display shows the heating service operating status:
   a) icon on: central heating inactive (check that the room thermostat is in call mode or, where there is an external sensor, that the outdoor temperature is lower than the heating stop external temperature (par. 20.25);
   b) flashing icon: central heating in operation.
4.- Set the desired temperature for the domestic hot water service, if present, using the + and − keys. The icon on the display shows the DHW service operating status:
   a) fixed icon: domestic hot water inactive (no-one is using domestic hot water or, where there is a storage tank, the delivery temperature has been reached);
   b) flashing icon: domestic hot water service in use.
5.- If the icon flashes, but the radiators do not heat up, the pump may be blocked (see figure 3-1, detail “7”). Check the condition of the pump and replace it if necessary;
6.- If the icon flashes but the radiators still do not heat up, bleed the air from the radiators again.



A - Gas inlet tapping point.

Figure 6-7 – Gas valve

6.6 - Controlling the supply gas pressure and any adjustments

The gas supply pressure must correspond to that stated in the table in section 9 at the end of the manual. Proceed as follows to verify the pressure:

1.- Close the gas cock;
2.- Access the components inside the boiler, following the procedure in section 8.3;
3.- Loosen tapping point “A” (see figure 6-7);
4.- Connect a manometer with a resolution of at least 0.1 mbar (1 mmH2O) to it;
5.- Open the gas cock;
6.- Check that the pressure does not exceed the value given in the table in section 9 under “Gas supply maximum pressure”;
7.- Make sure that any cocks and thermostatic valves after the central heating circuit are open;

WARNING! When forcing the delivery temperature, it automatically sets itself at 93°C to dispose of as much of the heat generated by the boiler as possible. Check that the central heating system can support this temperature.

8.- Access the “installer” profile as detailed in section 7.15;
9.- Set parameter 0200 to H 1;
10.- Now the burner will operate at maximum power for 10 minutes;
11.- Check that the pressure does not drop to a value lower than the “Gas supply minimum pressure” given in the table in section 9. If the supply pressure does not respect the values described, operate on the system upstream from the appliance in order to bring it back to within the minimum and maximum range;
12.- Once the check is complete, access the “installer” profile again and set parameter 0200 back to OFF;
13.- Close the tapping point “A” again as in figure 6-7;
14.- Check for any gas leaks at the pressure point using suitable tools.

WARNING! Test the gas seal using a soap and water solution only. The use of naked flames is prohibited.

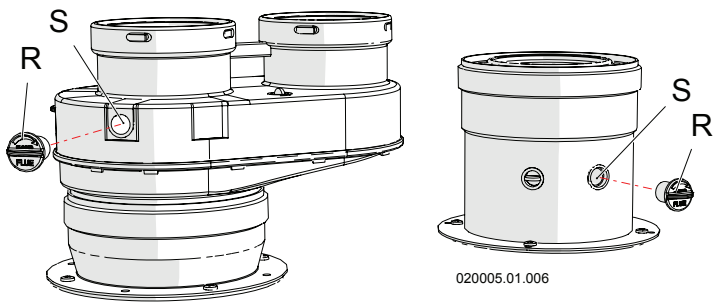
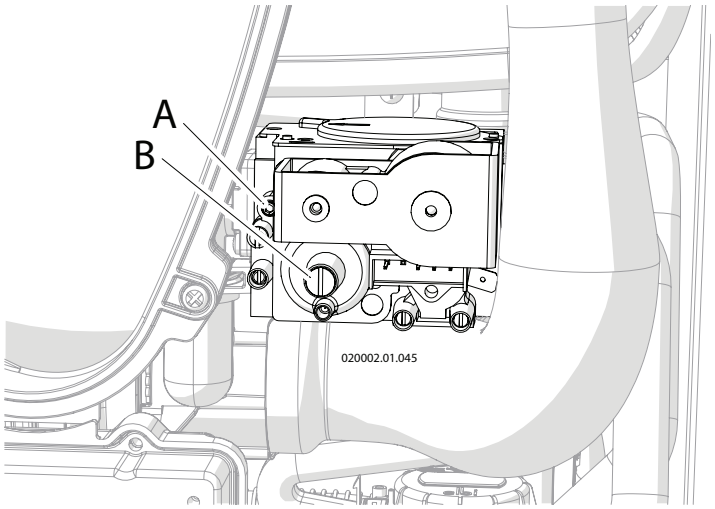


Figure 6-8 – Combustion analysis points



A - CO2 adjustment screw at maximum power;
B - CO2 adjustment screw at minimum power;

Figure 6-9 – Gas valve

6.7 - Controlling the level of CO2 and any adjustments

The boiler in normal operating mode, and for altitudes up to 1000 m, has a level of CO2 (carbon dioxide) in the flue gas as shown in the table in section 9. A combustion analysis must be performed to check and adjust the CO2 level as required. Proceed as follows:

1.- Start up the boiler;
2.- Connect a combustion analyser to the appropriate point on the flue gas outlet fitting “S” in figure 6-8;
3.- Make sure that any cocks and thermostatic valves after the central heating circuit are open;

WARNING! When forcing the delivery temperature, it automatically sets itself at 93°C to dispose of as much of the heat generated by the boiler as possible. Check that the central heating system can support this temperature.

4.- Access the “installer” profile as detailed in section 7.15;
5.- Set parameter 0200 to H 1;
6.- Now the burner will operate at maximum power for 10 minutes;
7.- Wait for the CO2 measurement to stabilise;
8.- Compare the value measured with that given in the table in figure 6-6, “CO2 maximum power”. If the value measured differs from the value read, it must be brought back to within the value given in the table in figure 6-6, proceeding as follows:
   a) Turn screw “A” clockwise as in figure 6-9 to decrease the level of CO2;
   b) Turn screw “A” anti-clockwise as in figure 6-9 to increase the level of CO2;
9.- Once the check has been completed, seal the screw “A” in figure 6-9 with red paint or a similar method;
10.- Access the “installer” profile again as detailed in section 7.15 and set 0200 to Lo;
11.- Now the burner will operate at minimum power for 10 minutes;
12.- Wait for the CO2 measurement to stabilise;
13.- Compare the value measured with that given in the table in figure 6-6, “CO2 minimum power”.
   If the value measured differs from the value read, it must be brought back to within the value given in the table in figure 6-6, proceeding as follows:
   a) Turn screw “B” anti-clockwise as in figure 6-9 to decrease the level of CO2;
   b) Turn screw “B” clockwise as in figure 6-9 to increase the level of CO2;
14.- Once the check has been completed, seal screw “B” in figure 6-9 with red paint or a similar method;
15.- Access the “installer” profile again as detailed in section 7.15 and set parameter 0200 to OFF;

WARNING! If during forcing, the power supplied by the boiler is much higher than the power absorbed by the system, the boiler switches off continuously to reach the maximum temperature allowed (93°C).

Power necessary (kW)	Values for parameter 20 14
60	100
59	98
57	94
55	90
53	86
51	83
49	79
47	75
45	71
43	68
41	64
39	60
37	56
35	53
33	49
31	45
29	41
27	38
25	34
23	30
21	26
19	23
17	19
15	15
13	11
11	8
9	4
7.5	1

Figure 6-10 – Corresponding values to enter under parameter 20 14 to obtain the desired power necessary in central heating line

To resolve this problem, set the heating power to the value effectively required by the system, as laid down in section 6.8, and run the CO2 analysis test or combustion efficiency test, setting parameter 0200 previously referred to at the r E9 value.

6.8 - Adjusting the power in central heating line (Range Rated)

This appliance is designed and type-approved to adapt the maximum heating power to the effective power needed by the system, as per the calculation. To do this and to make use of the boiler's full potential, it is recommended to set the maximum power in central heating line at the effective value required by the system. Proceed as follows:

1.- Access the "installer" profile as detailed in section 7.15;

2.- Set parameter 20 14 as shown in the table in figure 6-10;

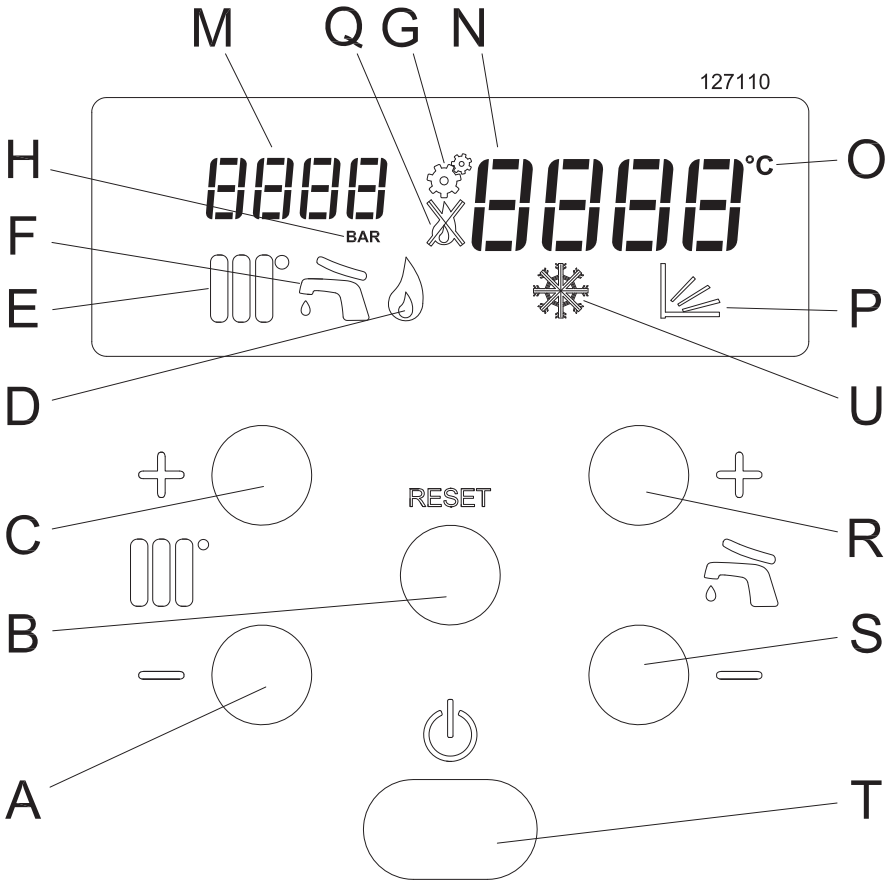


Figure 7-1 - Control panel

FIGURE 7-1 KEY

A - Key for reducing the central heating temperature (below the minimum, the central heating is set to OFF)
B - Reset key
C - Key for switching on and increasing the heating temperature
D - Burner status (the burner is on when this icon is showing)
E - Heating service status:
Icon off = Central heating off
Icon on = Central heating active but not in operation
Icon flashing = Central heating active and in operation
F - Domestic hot water service status:
Icon off = Domestic hot water off
Icon on = Domestic hot water on but not in operation
Icon flashing = Domestic hot water on and in operation
G - Icon to enter the “installer” menu
H - Unit of measurement of pressure displayed
M - Central heating system pressure (if flashing, pressure is low) or indicator of parameters in the various menus
N - Temperature of the central heating or domestic hot water or indicator of the values assumed by the various parameters
O - Unit of measurement of the temperature displayed
P - Central heating service adjusted by the external sensor
Q - Boiler in lockout (see sections 7.16.1 and 7.16.2 for the diagnostics)
R - Key for switching on and increasing the temperature of the domestic hot water or for scrolling through and changing the value of the parameters
S - Key for reducing the temperature of the domestic hot water (below the minimum, the domestic hot water is set to OFF) or for scrolling through and changing the value of the parameters
T - On/off switch
U - Appliance in anti-freeze mode

7.1 - Checking the cock opening

- The gas cock must be open;
- Any valves on the supply and return must be open;

7.2 - Checking the central heating system pressure

If the pressure inside the central heating circuit drops below 0.8 bar, the display “N” in figure 7-1 shows the message F IL L to indicate that the correct pressure must be restored. Proceed as follows:

1.- Open the device provided by the installer upstream of the appliance in order to fill the system;
2.- Check the pressure on display “M” in figure 7-1; it must reach a pressure of 1.5 bar (the F IL L message must disappear);
3. - Close the filling device provided by the installer upstream from the appliance.

WARNING! During normal operation the device provided by the installer upstream from the appliance for filling the system must always stay in the closed position.

If the pressure drops over time, restore the correct value. This operation may have to be repeated several times in the first month of operation to remove any air bubbles in the system.

7.3 - General information

During operation, the display shows the boiler operating status as well as other information as indicated in section 7.16 (Diagnostics).
Other parameters can be consulted through the “user profile” (see section 7.15), useful for understanding appliance operation and checking the most recent lockouts or errors.

7.4 - Ignition procedure

1.- Open the gas cock;
2.- Power the boiler electrically;
3.- Adjust the domestic hot water temperature and the central heating temperature as per sections 7.7 and 7.8 respectively.

The command and control equipment will switch the burner on. If ignition does not take place within 20 seconds, the boiler automatically attempts ignition again up to 3 times, after which, if it still does not ignite, it locks out and the display shows “Loc 1”.

Press and hold the RESET button until rSt appears on the display, then release the RESET button and wait for the normal operating conditions to resume.
The boiler will automatically attempt to ignite again.

NOTE: If, when pressing the RESET button, the display changes, press the °+ key once to return to the normal display. Then press the RESET key, taking care to hold it down until the message “rSt“ shows on the display.

WARNING! If shutdown due to lockout occurs frequently, contact a qualified technician to restore normal operating conditions.
Once the boiler has been ignited correctly, it will continue to operate for the service requested.

7.5 - Summer operating mode

Whenever the central heating function is to be stopped for a long period of time, leaving only the domestic hot water function operating, adjust the central heating temperature to the minimum using the °+ or °− keys, until the message “OFF” appears.

7.6 - Winter operating mode

In winter operating mode, the boiler sends the water to the system via the pump at the temperature set using the °+ or °− keys. When the temperature inside the boiler approaches the temperature set, the burner starts to modulate the flame to reduce the power to the effective power required by the system. If the temperature starts to rise further, the burner stops.
At the same time, the pump that sends water to the system is switched on and off by the room thermostat. This can be noted because the ° indicator flashes when the pump is on, while it remains steadily on when the pump is off. The pump may initially make a noise. This is due to the presence of residual air in the hydraulic system, which will disappear quickly, without any intervention.
For a sustainable use of the boiler, it is recommended to keep the central heating temperature, adjusted using the °+ or °− keys, at the lowest value possible, compatibility with the temperature requested in the rooms. If the winter season is particularly cold, meaning the room temperature can no longer be maintained, raise the central heating temperature to higher values.

7.7 - Adjusting the domestic hot water (if there is a storage tank)

The temperature of the domestic hot water is adjusted using the + and − keys. Once one of the two keys has been pressed, the display “N” in figure 7-1 starts to flash and show the temperature that is being set. The adjustment field within which the DHW temperature can be set is from 40°C to 70°C. By pressing and holding the − key down even below 40°C, the message “OFF” appears to indicate that the domestic hot water service is being switched off. The icon “F” in figure 7-1 also goes off.

7.8 - Central heating

Using parameter 2001, which can be modified by accessing the “installer profile” (see section 7.15), it is possible to select different operating modes for the central heating service:

- 2001 = 00; “Constant temperature with TA (Thermostatic adjustment)”: the central heating delivery temperature is adjusted manually via the + or − keys.
  The opening and closing of the room thermostat stops or starts the boiler pump correspondingly in order to adjust the room temperature;

- 2001 = 01; “Climate control with Room Thermostat”: The icon appears on the display; the delivery temperature to the central heating is adjusted automatically by the external temperature sensor according to the algorithm corresponding to figure 7-2. The opening and closing of the room thermostat stops or starts the boiler pump correspondingly. When the external temperature rises above the value set under parameter 2025 (heating stop spring temperature), the central heating service ends. It re-starts automatically when the external temperature drops below the temperature set under parameter 2025 again. Small corrections can be made to the delivery temperature via parameter 2109, as shown in figure 7-2.

- 2001 = 02; “Climate control with room thermostat compensation”: The icon appears on the display; the delivery temperature to the central heating is adjusted automatically by the external temperature sensor according to the algorithm corresponding to figure 7-2. The opening of the room thermostat reduces the delivery temperature to the central heating by a value set under parameter 2028. The boiler pump operates constantly. When the external temperature rises above the value set under parameter 2025 (heating stop spring temperature), the central heating service ends. It re-starts automatically when the external temperature drops below the temperature set under parameter 2025 again. Small corrections can be made to the delivery temperature via parameter 2109, as shown in figure 7-2.

- 2001 = 03; “Constant temperature with room thermostat compensation”: the central heating delivery temperature is adjusted manually via the + or − keys.
  The opening of the room thermostat reduces the delivery temperature to the central heating by a value set under parameter 2028.

- 2001 = 04; “Control from input 0-10 VDC with room thermostat”: The heating delivery temperature is adjusted by means of the 0-10 VDC signal as shown in figure 5-9. The opening or closing of the room thermostat has priority over the 0-10 VDC signal adjustment.

7.9 - Thermostatic control

The boiler is factory set with parameter 2001 at 00, i.e. the boiler supplies hot water to the central heating system at a temperature adjusted using the + or − keys. Any room thermostat operates directly on the pump inside the boiler to adjust the heating of the rooms.
To make full use of the boiler efficiency, adjust the temperature to a value that is just sufficient to obtain the desired temperature in the rooms. If the season gets colder, progressively increase the value of the central heating temperature. Proceed in reverse order when the season goes towards warmer temperatures.
This very simple operating mode is suitable for the following types of systems:
- small systems, with radiators and where there is one room whose temperature is characteristic of all other rooms;
- large systems, with radiators, where each area is controlled by its own room thermostat and the boiler pump is stopped only when all area thermostats are satisfied (appropriate electrical system set-up required);
- large systems, with radiant panels (low temperature), where each area is controlled by its own room thermostat and the boiler pump is stopped only when all area thermostats are satisfied (appropriate electrical system set-up required).

7.10 - Climate control

Access the “installer menu” to set parameter 2001 to 01. The central heating delivery temperature is related to the external temperature sensor according to the algorithm in figure 7-2. To adapt the calculation line to the various homes/ climatic conditions, all adjustment parameters must be set according to the following sections. The calculated delivery temperature is visible by pressing the + or − key.
Corrections can be made to the line via parameter 2109, as shown in figure 7-2.

7.10.1 - Climate control: which systems?

“Climate control” is a more sophisticated and precise adjustment than “Thermostatic control”. This feature is able to make full use of boiler efficiency and is suitable for the following types of system:
- small systems, with radiators and where there is one room whose temperature is characteristic of all other rooms. The room thermostat makes the appropriate corrections to the room temperature by switching the boiler pump on and off.
- large systems, with radiators, where each area is controlled by its own room thermostat and the boiler pump is stopped only when all area thermostats are satisfied (appropriate electrical system set-up required);
- small systems, with radiant panels (low temperature), where there is one room whose temperature is characteristic of all other rooms. The room thermostat makes the appropriate corrections to the room temperature by switching the boiler pump on and off.
- large systems, with radiant panels (low temperature), where each area is controlled by its own room thermostat and the boiler pump is stopped only when all area thermostats are satisfied (appropriate electrical system set-up required).

7.10.2 - Climate control: precautions during adjustment

To set the delivery temperature correctly, it is good practice to immediately set the line setting values in figure 7-2. If these values do not give a satisfactory result, make the relevant changes, keeping in mind that:

- every parameter must be adjusted in small degrees;
- after each change, wait at least 24 hours to see the result;
- the better the adjustment line corresponds to the real requirements of the building, the more the central heating in the building will provide comfort and the greater the energy savings will be;
- the small corrections highlighted in figure 7-2, i.e. moving the parallel line, can be made using parameter 2 109, in steps of 1°C more or 1°C less, up to 10°C.

7.10.3 - Climate control: setting the parameters

Access the “installer profile” (see section 7.15) to set:

- 2019 = the “Winter heating temperature”, adjustable to between 20°C and 90°C. The delivery temperature assumes the value set under this parameter when the external temperature corresponds to that set under parameter 2020. The recommended start values are: 40°C for low-temperature systems (underfloor heating); 70°C for high-temperature systems (radiators);
- 2020 = the “Outside winter temperature”, adjustable to between -25°C and 25°C. This is the outdoor temperature used to define the heat output necessary for the system. The recommended start value for a typical home is -5°C;
- 2021 = the “Spring heating temperature”, adjustable to between 20°C and 90°C. The delivery temperature assumes the value set under this parameter when the external temperature corresponds to that set under parameter 2022. The recommended start values are: 30°C for low-temperature systems (underfloor heating); 40°C for high-temperature systems (radiators);
- 2022 = “Outside spring temperature”, adjustable to between 0°C and 30°C. This is the outdoor temperature at which the central heating is to reach the minimum delivery temperature. The recommended start value is 20°C;
- 2025 = “Heating stop spring temperature”, adjustable to between 0°C and 35°C. When the outdoor temperature reaches the value set under this parameter, the central heating is switched off automatically. The central heating switches back on automatically when the outdoor temperature drops back to below this value. The recommended start value is 22°C.
- It is also possible to set the minimum and maximum central heating temperatures using the respective parameters 2023 and 2024 in section 7.15.

7.10.4 - Climate control: adaptation to different climate areas

The previously recommended values are for homes with average insulation and for climate areas where the external temperature used for calculating the heat requirement is -5°C (with these data and a high-temperature system, there is correspondence with the graph in figure 7-2). If the climate area is different, adjust parameter 2020, “Outside winter temperature”, so as to obtain a delivery temperature of 70°C (40°C in the case of “low-temperature” systems), when the external temperature is the one used as the basis for calculating the heat requirement.

7.10.5 - Climate control: switching the central heating service on and off

The climate control service is completely automatic, including switch-off at the end of the season and switch-on at the start of the next season via parameter 2025. When the outside temperature rises above the value set under this parameter, the central heating switches off automatically. When the outside temperature drops back below the value set under this parameter, the central heating service switches back on automatically.

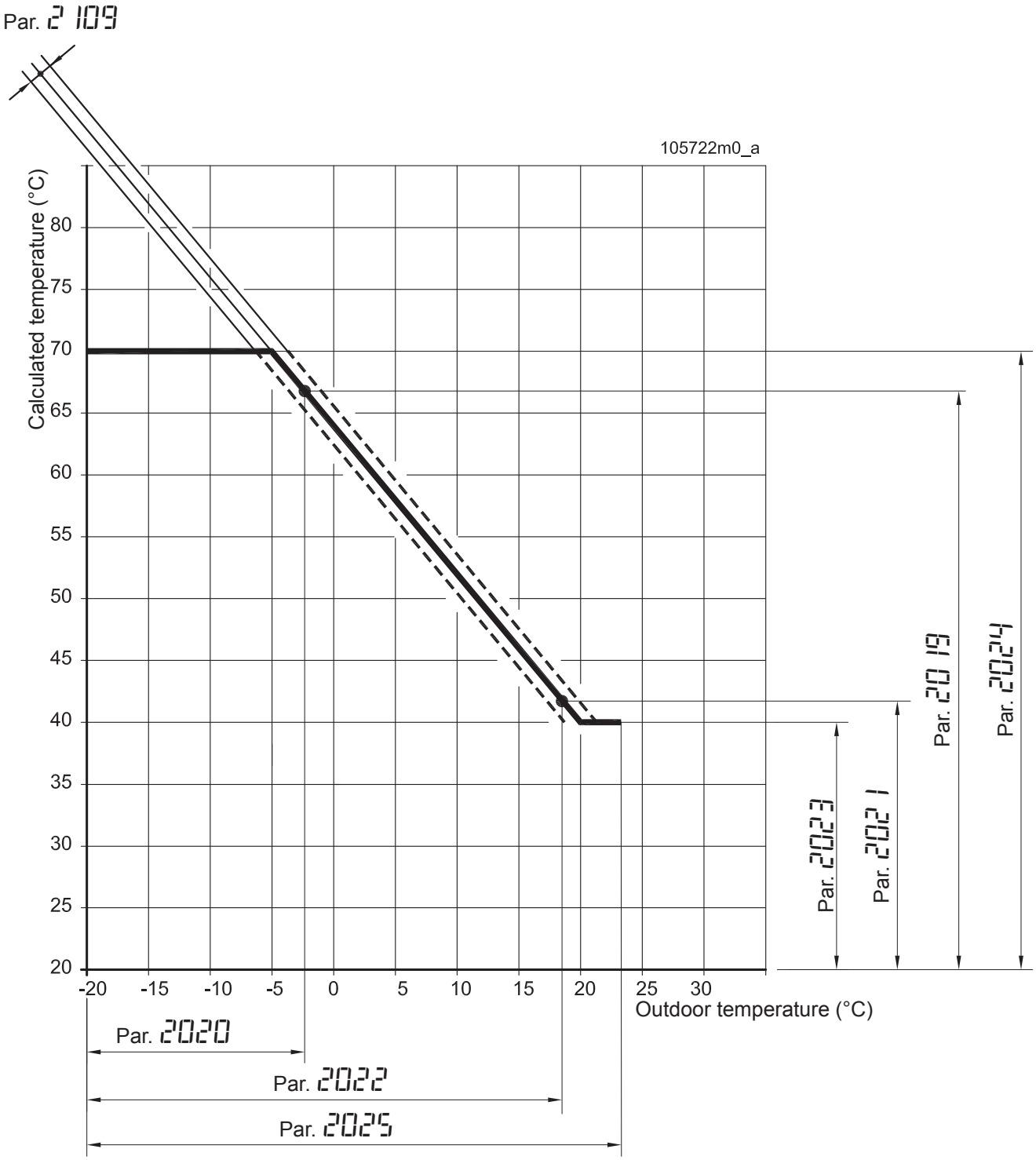
7.10.6 - Climate control with room compensation

Access the “installer profile” (see section 7.15) to adjust parameter 2001 to 02. Everything operates exactly as in the previous sections on “Climate control”, the only difference being that now the boiler pump is always on. Opening the room thermostat contact translates into a downward parallel translation of the line in figure 7-2 for the value set under parameter 2028, which can be set from the “installer profile” (see section 7.15). Parameter 2028 can assume values between 0°C and 30°C. The values recommended for this parameter are:

- 10°C for high-temperature systems (radiators)
- 3°C for low-temperature systems (underfloor heating).

Values that are too high can translate into room temperature instability. Values that are too low can make the room thermostat ineffective.

The climate control with room compensation can be used in all cases specified in section 7.10.1, with the advantage that the pump’s continues operation stabilises the room temperatures and makes them uniform, especially where some of the heat system loops have flow resistances that are much higher than others.



Par. 2019 = - Winter heating temperature
Par. 2020 = - Outside winter temperature
Par. 2021 = - Spring heating temperature
Par. 2022 = Outside spring temperature
Par. 2023 = Minimum heating temperature setting
Par. 2024 = Maximum heating temperature setting
Par. 2025 = Heating stop spring temperature
Par. 2109 = Adjusting the line parallelism

Figure 7-2 – Climate control graph for "high temperature" systems (with radiators)

7.11 - Timers for the various functions

To protect the lifespan of the appliance, improve comfort, and increase energy savings, timers have been introduced during operation. These time settings are as follows:

- Pump post-circulation: every time the room thermostat determines the end of the central heating service, the pump continues to operate for 3 minutes;
- Central heating delay: every time the domestic hot water service finishes, before the central heating service is reactivated, there is a standby period of 2 minutes;
- Pump and diverter valve anti-block function: every 24 hours, the central heating pump, the domestic hot water pump (if present) and the diverter valve are forced;
- Anti-legionella: if the boiler is connected to a storage tank for preparing DHW, every seven days the storage tank is forced to a temperature of 60°C to disinfect it and protect against legionella bacteria. This function is also activated two hours after the boiler has been powered electrically.
- Ignition delay: In all operating modes, excluding domestic hot water mode, every time the burner switches off, it waits 3 minutes before it ignites again.

7.12 - Pump anti-blocking

During the summer, the pump switches on once every 24 hours for 15 seconds in order to prevent any build-up from blocking it. The diverter valve and the storage tank pump (if present) are activated at the same time for the same reason.

7.13 - Anti-freeze protection

WARNING!

For the anti-freeze protection to be effective, the appliance must be left with the electrical power supply and gas supply present and the two services (domestic hot water and central heating) in the OFF position.

WARNING!

The anti-freeze protection service offered by the boiler cannot guarantee anti-freeze protection of the central heating system, the domestic hot water system or the building itself, or a part of the same.

The central heating pump starts automatically when the boiler temperature reaches 10°C. If the temperature drops further to below 5°C, the burner also ignites to protect the boiler from the effects of freezing.
If the boiler is not used for a long period of time (over a year), empty it following the procedure in section 8.15.

7.14 - “User profile”

Each time the appliance is switched on, the “user profile” opens by default.

To adjust the heating setpoint, press the  or  keys; to adjust the DHW setpoint, press the  and  keys.

To display the parameters that are available for consultation in this profile, press the RESET button once. The display “M” in figure 7-1 shows parameter 0.000.

Press the  and  keys to scroll through the parameters within this profile. Once the desired parameter has been found, press the ENTER key to select it. Then use the  and  keys to change it and press the RESET key again to confirm the change.

To exit the parameter, press the  key.

To exit parameter consultation mode, press the  key.

If no key is pressed for more than 60 seconds, consultation mode is exited automatically.

The following parameters can be examined in this profile:

Parameter	Description of the parameter	Access level	U.M.	Setting range	Factory value
0003	Central heating temperature requested	User	°C		Value
0048	DHW temperature requested	User	°C		Value
0200	Forcing	Installer	Test	OFF = No forcing FAN = fan only at maximum speed Lo = burner at minimum power Ign = burner at ignition power Hi = burner at maximum power rEg = burner at power regulated by parameter 2014; Stb = Burner stopped; LCO01 = Safety input 1 test (N/A) LCO02 = Safety input 2 test (N/A)	OFF
0901	Temperature unit of measurement	Factory	°C/°F	C/F	C
0902	Pressure unit of measurement	Factory	bar/psi	bar/psi	bar
0997	Display icon test	User			
0998	Installer access code	Factory	Code	0000…9999	0300
0999	Factory access code	Factory	Code	0000…9999	

Parameters for consultation only:

Parameter	Description of the parameter	Access level	U.M.
1001	Delivery temperature	User	°C
1002	Domestic hot water temperature (or storage tank temperature, where present)	User	°C
1003	Cold water temperature (N/A)	User	/
1004	External temperature (visible when an external temperature sensor is installed)	User	°C
1005	Delivery temperature (according to sensor)	User	°C
1006	Flue gas temperature	User	°C
1007	Return temperature	User	°C
1008	Ionisation current (see section 8.17)	User	µA
1012	Temperature required by climatic curve or by input 0-10 V	User	°C

1013	Room thermostat input status (OPEN = no central heating request; CLOSED = central heating request)	User	OPEN/CLOSED
1014	Flue gas temperature (according to sensor) (N/A)	User	(N/A)
1015	Cascade temperature	User	°C
1030	Burner status (2 = Stand by; 8 = Flame present; 11 = Post-circulation pump);	User	Value
1031	Error code	User	Value
1033	Central heating water pressure	User	bar
1040	Current fan speed	User	RPM
1041	Fan speed at ignition	User	RPM
1042	Fan speed at minimum power	User	RPM
1043	Fan speed at maximum power	User	RPM
1051	Last lockout code (Loc) (see section 7.16.1) (255 means no lockouts)	User	Value
1052	Last error code (Err) (see section 7.16.2) (255 means no errors)	User	Value
1053	Number of failed flames	User	Value
1054	Number of successful ignition attempts	User	Value
1055	Number of failed ignition attempts	User	Value
1056	Operating hours in heating mode	User	hx10
1057	Operating hours in domestic hot water mode	User	hx10
1058	Total operating hours (power supply to the appliance)	User	days
1059	Time between last two lockouts (Loc)	User	1: mins 2: hours 3: days 4: weeks
1060	Time between last two errors (Err)	User	1: mins 2: hours 3: days 4: weeks
1061	Instant turbine speed	User	RPM
1062	Domestic hot water flow rate	User	l/min
1063	Input 0-10 V	User	volt
1090	Days until maintenance (negative when the deadline has expired)	User	days
1098	Command board version	User	Hexadecimal
1099	Appliance software version	User	Hexadecimal
1995	Display software version	User	Hexadecimal

* N/A = Not applicable;

7.15 - “Installer profile”

WARNING! Changing these parameters could cause boiler and therefore system malfunctions. For this reason only a technician with the awareness and in-depth knowledge of the boiler can change them.

To analyse the operation and adaptation of the appliance to the system, the technician has access to the parameters below via the “installer profile”.

To access this profile:

1.- Press the RESET key; the display “M” in figure 7-1 shows parameter 0.000. Use keys + and − to scroll to the CodE parameter and press RESET to access it.

2.- Type the code 0300 in the following way:

use keys + and − to select the values:

- 0 and confirm with the RESET key;
- 3 and confirm with the RESET key;
- 0 and confirm with the RESET key;
- 0 and confirm with the RESET key;

3.- The + and − keys can be used to scroll through the parameters within this profile:

4.- Once the desired parameter is displayed, it can be changed as follows:

a.- Press the RESET key to access the parameter (the display “N” in figure 7-1 starts to flash);

b.- Modify the value of the parameter using the + and − keys;

c.- Press the RESET key to confirm the change and go back to the list of parameters;

5.- Press the °+ key twice to exit.

If no key is pressed for more than 5 minutes, the menu returns to the “user” profile. Any changes to data that have not been confirmed using the RESET key will be lost.

WARNING! Any variations made to the parameters must be noted in the “Customised values” column in the following table, in order to facilitate any future replacements of the command and control board.

The following parameters can be changed or examined in this profile:

Parameter	Description of the parameter	Access level	U.M.	Setting range	Factory value	Customised values
2001	Central heating mode	Installer	#	0 = Constant temperature with TA; 1 = Climatic with TA; 2 = Climatic compensated by TA; 3 = Constant temperature compensated by TA; 4 = Control from input 0-10 V with room thermostat; 5 = N/A	0	
2003	Central heating temperature requested	Installer	°C	30-80	60	
2005	Heating post-circulation pump	Installer	Secs	0-900	120	
2006	Maximum flue gas temperature	Factory	°C	10-120	95	
2007	Heating positive hysteresis	Factory	°C	0-20	5	
2009	Delay against frequent burner ignition	Installer	Secs	10-900	180	
2010	Temperature differential against frequent burner ignition	Installer	°C	0-20	16	
2012	Maximum differential heat exchanger temperature	Factory	°C	10-80	30	
2013	Maximum differential heat exchanger temperature delay	Factory	Secs	10-250	10	
2014	Central heating maximum power	Installer	%	1-100	75	
2015	Central heating minimum power	Installer	%	1-75	1	
2016	Heating PID factor P	Factory	#	0-1275	20	
2017	Heating PID factor I	Factory	#	0-1275	100	
2018	Heating PID factor D	Factory	#	0-1275	0	
2019	Climate - Winter heating temperature	Installer	°C	20-90	80	
2020	Climate - Outside winter temperature	Installer	°C	-25 to 25	-5	
2021	Climate - Spring heating temperature	Installer	°C	20-90	40	

2022	Climatic - Outside spring temperature	Installer	°C	0-30	20	
2023	Minimum heating temperature (priority over Par. 2021)	Installer	°C	0-80	30	
2024	Maximum heating temperature (priority over Par. 2019)	Installer	°C	27-90	80	
2025	Climatic - Heating stop spring temperature	Installer	°C	0-35	22	
2026	Heating acceleration increase (N/A)	Installer	°C	0-30	0	
2027	Heating acceleration delay (N/A)	Installer	min	1-120	0	
2028	Night heating reduction by opening TA	Installer	°C	0-30	10	
2035	DHW mode	Installer	#	0 = No domestic hot water; 1 = Puffer with temperature sensor; 2 = Puffer with thermostat; 3 = N/A; 4 = N/A; 5 = Plate heat exchanger; 6 = N/A; 7 = Hot water heater with recirculation control; 8 = Hot water heater;	0	
2036	Puffer negative hysteresis	Factory	°C	0-20	3	
2037	Puffer positive hysteresis	Factory	°C	0-20	3	
2038	Delivery temperature increase for puffer	Installer	°C	0-30	0	
2039	Puffer fill delivery negative hysteresis	Factory	°C	0-20	5	
2040	Puffer fill delivery positive hysteresis	Factory	°C	0-20	5	
2041	Puffer maintenance temperature (N/A)	Factory	°C	0-10	5	
2042	DHW priority mode with puffer	Installer	#	0 = Time (time set under par. 2043); 1 = Heating priority; 2 = DHW priority; 3 = N/A;	2	
2043	DHW/heating priority timing	Installer	min	1-255	60	
2044	DHW post-circulation	Installer	Secs	0-900	40	
2045	Puffer PID factor P	Factory	#	0-1275	50	
2046	Puffer PID factor I	Factory	#	0-1275	270	
2047	Puffer PID factor D	Factory	#	0-1275	0	
2048	DHW temperature requested	Installer	°C	40-80	50	
2049	Instant DHW negative hysteresis	Factory	°C	0-20	5	
2050	Instant DHW positive hysteresis	Factory	°C	0-20	5	
2051	Instant DHW PID factor P	Factory	#	0-1275	50	
2052	Instant DHW PID factor I	Factory	#	0-1275	270	
2053	Instant DHW PID factor D	Factory	#	0-1275	0	
2060	DHW flow rate detection	Factory	l/min	0.1-20.0	2.5	
2061	Flow rate at which the setpoint can be reached at minimum power (N/A)	Factory	l/min		2.5	
2062	Flow rate at which the setpoint can be reached at maximum power (N/A)	Factory	l/min		2.5	
2063	DHW modulation timing ON/OFF	Factory	Secs		30	

2064	DHW recirculation pre-heat mode (only for 2035 = 7)	Installer	#	0 = Off; 1 = Antifreeze (N/A) 2 = Eco (recirculation kept at value set under 2065); 3 = Comfort (recirculation kept at DHW temperature);	0	
2065	ECO recirculation temperature (see par. 2064)	Factory	°C	20-60	30	
2067	Recirculation pre-heat timer after call	Factory	Secs	0-255	30	
2068	DHW timer after call	Factory	Secs	0-255	120	
2069	Recirculation pre-heat negative hysteresis	Factory	°C	0-30	0	
2070	Recirculation pre-heat positive hysteresis	Factory	°C	0-30	5	
2071	Recirculation pre-heat delay	Factory	Secs	0-15	10	
2091	Maximum DHW temperature setting	Installer	°C	50-90	60	
2092	Maximum fan speed setting	Factory	RPM	1750-9999		
2093	Minimum fan speed setting	Factory	RPM	500-7050		
2094	Fan speed ignition setting	Factory	RPM	1950-7050		
2096	Minimum DHW temperature setting	Installer	°C	20-50	40	
2109	Climate offset adjustment (parameter 2001 = 1 or 2)	Installer	°C	OFF - 10-10	0	
2110	Minimum heating temperature setting (N/A)	Installer	°C	20-50	20	
2111	Maximum heating temperature setting (N/A)	Installer	°C	50-90	80	
2112	Central heating negative hysteresis	Factory	°C	0-20	5	
2113	Maximum power in DHW mode	Installer	%	50-100	50	
2114	Minimum power in DHW mode	Installer	%	1-30	1	
2115	DHW puffer temperature setting	Installer	°C	20-80	50	
2116	Programmable input J7 2-3 Central heating pressure sensor	Installer	#	0 = Disabled 1 = Enabled 2 = N/A 3 = N/A	1	
2117	Programmable input J7 7-8 1 = Instant DHW flow sensor; 2 = Instant DHW thermostat; 3 = Heat exchanger flow sensor;	Installer	#	0 = Disabled 1 = Enabled point 1 2 = Enabled point 2 3 = Enabled point 3 4 = N/A;	3	
2118	Programmable input J7 9-10	Installer	#	0 = Disabled 2 = N/A	0	
2120	Programmable input J6 3-10 Return temperature sensor	Installer	#	0 = Disabled 1 = Enabled	1	
2121	Programmable input J6 5-12 Flue gas temperature sensor	Installer	#	0 = Disabled 1 = Enabled 2 = N/A	1	
2122	Programmable input J6 6-13 Cascade sensor	Installer	#	0 = Disabled 1 = N/A 3 = Enabled	3	
2123	Programmable input J7 2-4	Installer	#	0 = Disabled 1 = N/A 3 - 6 = N/A	0	
2124	Room thermostat programmable input	Installer	#	0 = Disabled 1 = Enabled	1	
2125	Programmable output 1 J3 3-8 6 = Alarm 7 = Automatic filling	Installer	#	0 = Disabled 1-5 = Not applicable 6 = Enabled point 6 7 = Enabled point 7	0	

2126	Programmable output 2 J3 5-10 9 = External spark generator	Factory	#	0 = Disabled 1-8 = N/A 9 = Enabled point 9 10 = N/A	9	
2127	Programmable output 3 J3 6	Installer	#	0 = Disabled 1-10 = N/A	0	
2128	Output setting 18 = 3-way DHW valve in standby 20 = 3-way central heating valve in standby	Installer	#	0 = Disabled 1-17 = N/A 18 = Enabled point 18 19 = N/A 20 = Enabled point 20	20	
2129	Domestic hot water flow rate sensor	Installer	#	0 = Bitron 1 = Huba DN8 2 = Huba DN10 3 = Huba DN15 4 = Huba DN20 5 = N/A	4	
2130	Domestic hot water flow rate factor (N/A)	Installer	l/min	0-25.5	3.2	
2131	Minimum central heating water pressure	Installer	bar	OFF 0.1-5.0	0.8	
2132	Automatic filling hysteresis	Installer	bar	OFF 0.1-1.0	0.5	
2133	Modulating pump temperature differential	Installer	°C	5-40	15	
2134	Modulating pump ignition time	Installer	Secs	0-255	120	
2135	Type of modulating pump	Installer	#	0 = Wilo Yonos; 1 = Salmson; 2 = Grundfos;	0	
2136	Modulating pump mode	Installer	#	0 = Not modulating 1 = Modulating 2 = N/A 3 = N/A 4 = fixed speed at 40% 5 = fixed speed at 50% 6 = fixed speed at 60% 7 = fixed speed at 70% 8 = fixed speed at 80% 9 = fixed speed at 90% 10 = fixed speed at 100%	10	
2137	Minimum pump modulation power	Installer	%	0-100	40	
2138	Fan speed map	Installer	#	50-55	54	
2139	Air bleed function (N/A)	Installer		0-2	0	
2140	Minimum heat exchanger water flow rate	Installer	l/min/10	0-10	0.8	
2141	Rated heat exchanger water flow rate	Installer	l/min/10	0-10	4.3	
2201	Enable/disable central heating	Installer		EnA = Enabled dIS = Disabled	EnA	
2202	Enable/disable domestic hot water	Installer		EnA = Enabled dIS = Disabled	EnA	
2203	Setting maintenance requests	Installer		ON = On OFF = Off RST = Reset	OFF	
2204	Days until maintenance request	Installer	days	30-1275	1000	
2205	Anti-freeze protection	Installer		EnA = Enabled dIS = Disabled	EnA	
2206	Anti-legionella	Installer		EnA = Enabled dIS = Disabled	EnA	
2207	DHW detection delay	Installer	secs	0-255	1	

7.15.1 - Parameters for cascade systems

WARNING! Changing these parameters could cause boiler and therefore system malfunctions. For this reason only a technician with the awareness and in-depth knowledge of the boiler can change them.

For systems with appliances installed in a cascade, the following parameters can be changed or examined (accessible from the installer profile only):

Parameter	Description of the parameter	Access level	U.M.	Setting range	Factory value	Customised values
4072	Emergency mode	Installer		NO/YES	NO	
4074	Emergency temperature	Installer	°C	20-90	45	
4075	Next module ignition delay	Installer	Secs	5-1275	60	
4076	Next module shutdown delay	Installer	Secs	5-1275	60	
4077	Module ignition negative hysteresis	Factory	°C	0-20	5	
4078	Module shutdown positive hysteresis	Factory	°C	0-20	5	
4079	Cascade temperature maximum decrease	Installer	°C	0-20	6	
4080	Cascade temperature maximum increase	Installer	°C	0-20	6	
4081	Modulation delay	Installer	min	0-60	1	
4082	Next module insertion power	Installer	%	10-100	80	
4083	Next module removal power	Installer	%	10-100	40	
4084	Rotation interval	Installer	days	0-30	5	
4086	Cascade temperature control PID, parameter P	Factory	#	0-1275	20	
4087	Cascade temperature control PID, parameter I	Factory	#	0-1275	300	
4142	Next module rapid ignition delay	Installer	Secs	5-1275	30	
4143	Next module rapid shutdown delay	Installer	Secs	5-1275	30	
4144	Module rapid ignition negative hysteresis	Factory	°C	0-20	5	
4145	Module rapid shutdown positive hysteresis	Factory	°C	0-20	5	
4146	All module shutdown positive hysteresis	Installer	°C	0-20	7	
4147	Number of modules in cascade (Master included)	Installer	#	0-8	0	
4148	Power management 0 = modulation on cascade temperature; 1 = minimum number of active modules; 2 = maximum number of active modules; 3 = balanced number of active modules;	Installer	#	0 = Enabled point 0 1 = Enabled point 1 2 = Enabled point 2 3 = Enabled point 3	2	
4149	First module igniting (due to rotation)	Installer	#	1-8	1	
4150	Positive power turn PID	Factory	#	0-26	0	
4151	Negative power turn PID	Factory	#	0-26	0	
4152	Power management 2 (parameter 4148) – Minimum power	Installer	%	0-100	10	
4153	Power management 2 (parameter 4148) – hysteresis	Installer	%	0-100	40	
4154	Cascade pump post-circulation	Installer	Secs	0-255	60	
4155	Cascade sensor anti-freeze temperature	Installer	°C	10-30	15	
4184	Module logical address	Installer	#	0-8	0	

7.16 - Diagnostics

During normal appliance operation, the display “N” in figure 7-1, shows the working status of the appliance via the following indications:

Parameter	Description of the parameter	Display “N” in figure 7-1
AtE	Boiler not locked out but alarm pending	Alarm code (see section 7.16.3 for code key)
F ILL	System pressure too low, perform filling (see section 6.1.3)	FILL
Loc	Boiler in lockout mode. To reset, press and hold the **RESET** button until the rSt message is displayed. If the lockout occurs frequently, contact a professional qualified technician	Lockout code (see section 7.16.1 for code key)
Err	Boiler in error mode. Restore operation by resolving the cause of the anomaly. Contact a professionally qualified technician	Error code (see section 7.16.2 for code key)
ALE9	Anti-legionella function running (see section 5.16.1). It will end when the water inside the storage tank reaches a temperature of 60°C.	Storage tank temperature (°C)
SEr	Boiler maintenance request	

7.16.1 - Diagnostics: lockouts “Loc”

Once the type of “Loc” has been displayed and the appropriate checks and solutions have been carried out, reset the appliance by pressing and holding the RESET button (detail “B” in figure 7-1) until the “rSt” message is displayed.

Lockout	Lockout description	Checks	Solutions
Loc 0	Internal memory error E2prom at command board		Replace the command and control board.
Loc 1	No flame detection after three successive ignition attempts	Check: Supply gas pressure (see section 6.6), sparks on the ignition electrodes (see section 8.6); 230 VAC electric power supply to the gas valve; electric resistance of the two gas valve coils of 0.88 kohm and 6.59 kohm. If the burner comes on and goes off at the end of the ignition attempt, check: that the ionisation current is above 4 (see section 8.17)	If the supply pressure is not correct, adjust the components before the appliance to restore the correct value. If the current at the gas valve is not 230 VAC, replace the command and control board. If the electric resistance of the gas valve is not 0.88 kohm and 6.59 kohm, replace the valve. If the ionisation current is not over 4, check the CO_2 (see section 6.7) and restore it to the correct value. Check the ionisation spark plug and replace it if necessary. Check the integrity of the ionisation current electric circuit cables.
Loc 2	Gas valve command relay broken		Replace the command and control board.
Loc 3	The appliance has reached the maximum intervention temperature	Check that the pump works; Check that the electrical resistance of the two sensors matches the graph in section 8.19; Check that the high limit flue gas temperature fuse has not been triggered;	Restore the water circulation or replace the command and control board; If either or both of the sensors are not within the correct values, replace them; If the flue gas temperature fuse has been triggered (the contact is open), carefully check the appliance efficiency as detailed in section 8.18 before replacing it; **WARNING! If the efficiency is not within the specified limits, DO NOT ATTEMPT TO RESET THEM. Please contact the manufacturer.**
Loc 4	Boiler in error mode for more than 20 hours	Check the last error displayed on the board.	Respond according to the last error displayed.

Loc 5	Fan stopped for more than 60 seconds	Check it is powered at 300 VDC.	If the fan is powered, it must be replaced; otherwise, replace the command board.
Loc 6	Fan too slow for more than 60 seconds	Check it is powered at 300 VDC.	If the fan is powered, it must be replaced; otherwise, replace the command board.
Loc 7	Fan too fast for more than 60 seconds	Check it is powered at 300 VDC.	If the fan is powered, it must be replaced; otherwise, replace the command board.
Loc 8	Software error on the command board		Replace the command board.
Loc 9	Content of the command board internal memory E2prom not updated		Replace the command board.
Loc 10	E2prom memory parameters incorrect		Replace the command board.
Loc 11	Software error on the command board		Replace the command board.
Loc 12	Software error on the command board		Replace the command board.
Loc 13	Software error on the command board		Replace the command board.
Loc 14	Software error on the command board		Replace the command board.
Loc 15	Flue fuse	Check that the high limit flue gas temperature fuse has not been triggered	If the flue gas temperature fuse has been triggered (the contact is open), carefully check the appliance efficiency as detailed in section 8.18 before replacing it; **WARNING! If the efficiency is not within the specified limits, DO NOT ATTEMPT TO RESET THEM. Please contact the manufacturer.**
	The delivery temperature exceeds 105°C with the gas valve closed	Check that the electrical resistance of the two supply sensors matches the graph in section 8.19.	If one of the two sensors does not match, the double supply sensor must be replaced.
		Check that the gas valve closes the gas correctly when the burner switches off.	The gas valve must be replaced if it does not close correctly.
	Exchanger malfunction	Check that the primary heat exchanger temperature fuse has not intervened	If the primary heat exchanger temperature fuse has intervened (the contact is open), the exchanger must be replaced.
Loc 16	Flue gases maximum temperature. **WARNING! If the lock is repeated more than once a day, turn off the appliance and contact a qualified service centre.** **NOT ATTEMPT TO REPAIR THE APPLIANCE.**	Check there is no air in the central heating circuit; bleed the highest radiators;	Bleed the air from the boiler and from the highest central heating elements with respect to the boiler.
		Check the circulation pump is operating correctly;	If the pump is not working, it must be replaced.
		Check that the flue gas temperature is not more than 30°C above the return temperature;	If the difference between the return temperature and the flue gas temperature is above 30°C, contact a qualified service centre.
		Measure the boiler efficiency; it must correspond to value declared in the technical features.	If the efficiency does not correspond to the data at the end of the manual, the primary heat exchanger is probably dirty from the flue gas side or the water side. Clean and check efficiency again.
Loc 17	Software error on the command board		Replace the command board.
Loc 18	Software error on the command board		Replace the command board.
Loc 19	Software error on the command board		Replace the command board.
Loc 20	Flame present 10 seconds after gas valve is closed		Replace the gas valve or the command board.
Loc 21	Flame present before ignition		Replace the gas valve or the command board.

Loc 22	Flame lost three times	Check that the ionisation current is above 4 (see section 8.17) Check that the flue gas outlet is properly protected against obstructions caused by gusts of wind	If the ionisation current is not over 4, check the CO2 (see section 6.7) and restore it to the correct value. Check the ionisation spark plug and replace it if necessary. Check the integrity of the ionisation current electric circuit cables. If the flue gas outlet is on a vertical wall it must be protected by a windproof grill; if the flue gas outlet is on the roof, check that it is not in a area where there is flowback, and that any windproof chimney that may be provided is really effective
Loc 23	Software error on the command board		Replace the command board.
Loc 24	Software error on the command board		Replace the command board.
Loc 25	The two supply sensors measure temperatures that are at least 10°C different for more than 60 seconds.	Check that the electrical resistance of the two sensors matches the graph in section 8.19;	If either or both of the sensors are not within the correct values, replace them;
Loc 26	Software error on the command board		Replace the command board.
Loc 27	Too many system loads in one hour	Check the pressure switch calibration pressure. “FILL” must appear when the pressure drops below 0.6 bar and disappear when the pressure rises above 1.5 bar; check that there are no water leaks from the central heating system	If the pressure switch is not calibrated correctly, it must be replaced. If the system has a leak, it must be repaired.
Loc 28	System filling time too long	Check the pressure switch calibration pressure. “FILL” must appear when the pressure drops below 0.6 bar; check that there are no water leaks from the central heating system	If the pressure switch is not calibrated correctly, it must be replaced. If the system has a leak, it must be repaired.
Loc 29	Software error on the command board		Replace the command board.
Loc 30	Software error on the command board		Replace the command board.
Loc 31	Software error on the command board		Replace the command board.
Loc 32	Software error on the command board		Replace the command board.
Loc 33	Software error on the command board		Replace the command board.
Loc 34	Software error on the command board		Replace the command board.
Loc 35	Software error on the command board		Replace the command board.
Loc 36	Software error on the command board		Replace the command board.
Loc 37	Software error on the command board		Replace the command board.
Loc 38	Software error on the command board		Replace the command board.

7.16.2 - Diagnostics: errors “Err”

Error	Error description	Checks	Solutions
Err 100	Software error on the command board		Replace the command board.
Err 101	Software error on the command board		Replace the command board.
Err 102	Software error on the command board		Replace the command board.
Err 103	Software error on the command board		Replace the command board.
Err 104	Software error on the command board		Replace the command board.
Err 105	The delivery temperature exceeds 95°C with the gas valve closed	Check that the electrical resistance of the two supply sensors matches the graph in section 8.19. Check that the gas valve closes the gas correctly when the burner switches off.	If one of the two sensors does not match, the double supply sensor must be replaced. The gas valve must be replaced if it does not close correctly.
Err 106	Software error on the command board		Replace the command board.
Err 107	Software error on the command board		Replace the command board.
Err 108	Software error on the command board		Replace the command board.
Err 109	Software error on the command board		Replace the command board.
Err 110	Software error on the command board		Replace the command board.
Err 111	0-10 V input polarity reversed Software error on the command board	Check the polarity input 0-10 V	Restore correct polarity Replace the command board.
Err 112	Software error on the command board		Replace the command board.
Err 113	0-10 V input polarity reversed Software error on the command board	Check the polarity input 0-10 V	Restore correct polarity Replace the command board.
Err 114	Flame detected at a moment when it should not be		Replace the gas valve or the command board.
Err 115	Low central heating water pressure	Check the pressure switch calibration pressure. “FILL” must appear when the pressure drops below 0.6 bar; check that there are no water leaks from the central heating system.	If the pressure switch is not calibrated correctly, it must be replaced. If the system has a leak, it must be repaired.
Err 116	Central heating water pressure sensor error	Check the pressure switch calibration pressure. “FILL” must appear when the pressure drops below 0.6 bar; check that there are no water leaks from the central heating system.	If the pressure switch is not calibrated correctly, it must be replaced. If the system has a leak, it must be repaired.
Err 117	Software error on the command board		Replace the command board.
Err 118	Software error on the command board		Replace the command board.
Err 119	Return sensor circuit (1007) open	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command board.
Err 120	Supply sensor circuit 1 (1001) open	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command board.

Err 121	Supply sensor circuit 2 (1005) open	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command board.
Err 122	Domestic hot water sensor circuit (1002) open	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command and control board.
Err 123	Flue gas sensor circuit 1 (1006) open	Check that the electrical resistance of the flue gas sensor 1006 matches the graph in section 8.19 Check that the wires between the board and the double flue gas sensor are connected correctly	If the sensor does not match, the double flue gas sensor must be replaced. If the wires are not connected correctly, the connections must be restored.
Err 124	Flue gas sensor circuit 2 (1014) open (N/A)	Check that the electrical resistance of the flue gas sensor 1014 matches the graph in section 8.19 Check that the wires between the board and the double flue gas sensor are connected correctly	If the sensor does not match, the double flue gas sensor must be replaced. If the wires are not connected correctly, the connections must be restored.
Err 125	External temperature sensor circuit (1004) open	Check that the electrical resistance of the external temperature sensor (1004) matches the graph in section 8.20 Check that it has been connected correctly	If the sensor does not match, it must be replaced. If the wires are not connected correctly, the connections must be restored.
Err 126	Return sensor circuit (1007) in short circuit condition	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command and control board.
Err 127	Supply sensor circuit 1 (1001) in short circuit condition	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command and control board.
Err 128	Supply sensor circuit 2 (1005) in short circuit condition	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command and control board.
Err 129	Domestic hot water sensor circuit (1002) short circuit	Check that the electric resistance of the sensor matches the graph in section 8.19. Check the electric cables for connection between the sensor and the command board.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command and control board.
Err 130	Flue gas sensor circuit 1 (1006) short circuit	Check that the electrical resistance of the flue gas sensor 1006 matches the graph in section 8.19 Check that the wires between the board and the double flue gas sensor are connected correctly	If the sensor does not match, the double flue gas sensor must be replaced If the wires are not connected correctly, the connections must be restored
Err 131	Flue gas sensor circuit 2 (1014) short circuit (N/A)	Check that the electrical resistance of the flue gas sensor 1014 matches the graph in section 8.19 Check that the wires between the board and the double flue gas sensor are connected correctly	If the sensor does not match, the double flue gas sensor must be replaced If the wires are not connected correctly, the connections must be restored
Err 133	Incorrect electrical mains frequency	Check that the electrical frequency is 50 Hz	If the frequency is not 50 Hz, contact your electricity supplier If the frequency is 50 Hz, replace the command board
Err 134	RESET key pressed too many times in short period	Wait 5 seconds after each press of the RESET key	
Err 135	Software error on the command board		Replace the command board.
Err 136	Software error on the command board		Replace the command board.
Err 137	Software error on the command board		Replace the command board.
Err 138	Software error on the command board		Replace the command board.

Err 139	Software error on the command board		Replace the command board.
Err 140	Software error on the command board		Replace the command board.
Err 141	Software error on the command board		Replace the command board.
Err 142	Software error on the command board		Replace the command board.
Err 143	Software error on the command board		Replace the command board.
Err 144	Software error on the command board		Replace the command board.
Err 145	Software error on the command board		Replace the command board.
Err 146	Software error on the command board		Replace the command board.
Err 147	Software error on the command board		Replace the command board.
Err 148	Software error on the command board		Replace the command board.
Err 149	Software error on the command board		Replace the command board.
Err 150	Software error on the command board		Replace the command board.
Err 151	Software error on the command board		Replace the command board.
Err 152	Software error on the command board		Replace the command board.
Err 153	Software error on the command board		Replace the command board.
Err 154	Software error on the command board		Replace the command board.
Err 155	Software error on the command board		Replace the command board.
Err 156	Software error on the command board		Replace the command board.
Err 157	Software error on the command board		Replace the command board.
Err 158	Software error on the command board		Replace the command board.
Err 159	Software error on the command board		Replace the command board.
Err 160	Software error on the command board		Replace the command board.
Err 161	Software error on the command board		Replace the command board.
Err 162	Fill alert	The pressure is too low. The request is interrupted but no error must be stored at this time	
Err 163	Software error on the command board		Replace the command board.
Err 164	Software error on the command board		Replace the command board.
Err 165	Supply current too low	Power supply current too low for more than 60 seconds	
Err 166	Supply current too high	Power supply current too high for more than 60 seconds	

7.16.3 - Diagnostics: alarms “AttE”

Alarm	Alarm description	Checks	Solutions
AttE 200	Lost cascade communication	System with appliances in a cascade. The cascade management system has lost the connection with one of the appliances. Possible causes: a - one of the appliances in the cascade is OFF; b - the communication BUS between the appliances (A-Link) is interrupted in one or more points; c - parameters 4184 and/or 4147 are not set according to the rules in section 5.15; d - the S4 switches are not positioned as described in section 5.15;	a - switch the appliance off by resolving the problem that caused it to shut down; b - restore the BUS communication between the appliances; c - set parameters 4184 and/or 4147 correctly, according to the rules in section 5.15 d - position the S4 switches as described in section 5.15.
AttE 201	Protective anode active	N/A	Replace the command and control board
AttE 202	Connected appliance recognition error	N/A	Replace the command and control board
AttE 203	Communication lost with appliance connected in cascade	N/A	Replace the command and control board
AttE 204	External sensor error (contact open or short-circuited)	Check the electrical resistance of the sensor; Check that it has been connected correctly.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command and control board.
AttE 205	Cascade probe error (contact open or short-circuited)	Check the electrical resistance of the sensor; Check that it has been connected correctly.	If the electric resistance does not match, replace it. If the electric circuit is damaged, repair it. Where neither of the two previous cases apply, replace the command and control board.
AttE 206	Cascade probe error (contact open or short-circuited)	N/A	Replace the command and control board

8.1 - General recommendations

Perform regular yearly maintenance on the central heating system for the following reasons:
- to maintain high efficiency and save fuel;
- to maintain a high level of safety;
- to maintain the high level of combustion environmental compatibility;

In order to maintain the frequency of maintenance, there is a parameter 2203 in the installer menu (see section 7.15), which is used to activate the maintenance call (Service), along with parameter 2204 which is used to set the operating days that must elapse between one call and the next.
The control system identifies the operating days, checking the burner activity time.
Proceed as follows to activate the call service:
1.- Access the Installer profile (see section 7.15) and set parameter 2203 to On;
2.- Access parameter 2204 and set the boiler operating days which must elapse between one call and the next.

The call will be executed with the message "SEr" on the display. To remove the message "SEr" and renew the call period, do as follows:
1.- Access the "Installer" profile;
2.- Access parameter 2203 and set it to rSt.

The call time has now been reset and the message "SEr" appears on the display.

WARNING! Appliance maintenance must be carried out only by a professionally qualified technician.

WARNING! During maintenance operations, to ensure the appliance operates correctly, check its condition and operation, and check for any water leaks from any of the air vent valves on the appliance.

WARNING! Before any maintenance work, disconnect the appliance from the electrical power supply, using the relevant switch nearby.

WARNING! Before any maintenance operation turn off the gas cock

8.2 - Maintenance protocol

- Clean the burner and the primary heat exchanger (flue gas side); check the condition of the thermal insulators and seals (See section 8.5);
- Check the system water pressure; check for leaks (See section 8.2.1);
- Check the gas supply pressure; check for gas leaks (Follow sections 6.6 and 8.2.2);
- Check and clean the condensate drain system (See section 8.9);
- Check the condition of the safety valve (See section 8.2.3);
- Check the condition of the safety and control devices (See section 8.2.4);
- Check the condition of the electrical system (See section 8.2.5);
- Check the burner is calibrated correctly in DHW and heating mode (See section 6.7);
- Check the operation of the main switch and the temperature setting in DHW and heating mode (See sections 8.2.6 and 8.2.7);
- Check that the no gas device is triggered and check the intervention time (See section 8.2.8);
- Check the condition of the air intake and flue gas outlet system (See section 8.2.9);
- Check the ignition and detection electrodes (See sections 8.2.10 and 8.6);
- Check the condition and operation of the air vent valves (See section 8.2.11);
- Check the appliance efficiency (See section 8.18);

8.2.1 - Checking the system water pressure and any leaks

1. - Check that the system is full of water and pressurised as reported in section 9 “Technical data”. Check the system when cold and after each time the system is filled.
2. - Check for leaks in the hydraulic connections.

WARNING! Remove any leaks from the system or the appliance. Continuously adding new water leads to increased minerals that reduce the cross-section of the passage, decreasing heat exchange and causing the heat exchangers to overheat. All of this leads to failures and reduces the appliance life.

8.2.2 - Checking the gas pressure and any leaks

1.- Check the gas supply pressure is correct, as stated in section 9 “Technical data”.
2. - Make sure there are no gas leaks in the system;
3. - Check for gas leaks using a leak detector (bubble or similar) or an equivalent system, thoroughly checking the entire gas route from the meter to the appliance.

WARNING! Do not carry out these checks in the presence of naked flames.

8.2.3 - Checking the condition of the safety valve

1. - Visually check that the safety valve does not have any obstructions in the drain pipe, signs of corrosion, physical damage, water marks or signs of rust.
2. - In the event of obstructions in the drain pipe proceed with cleaning the pipe; in the event of other damage indicated above proceed with replacing the valve.

8.2.4 - Checking the condition of the safety and control devices

1. - Check any interventions of the safety and control devices by consulting the appliance diagnostics;
2. - Visually check that the safety and control devices show no signs of corrosion or physical damage;
3. - In the event of damage as indicated above, replace the devices.

8.2.5 - Checking the condition of the electrical system

1. - Access the internal electrical components as per section 8.3.
2. - Visually check that the cables are correctly housed in the relative cable glands, and that the plug-in connections are fixed correctly and do not show signs of blackening or burns.
3. - In the event of damage as indicated above, replace the damaged cables.

8.2.6 - Checking the operation of the main switch

1. - Check that the appliance is switched off when the main switch is set to OFF and vice versa that the appliance is switched on when it is turned ON.
2. - In case of a malfunction, replace the switch.

8.2.7 - Checking the correspondence of the adjusted temperatures in the heating and domestic hot water systems

1. - Check the correspondence between the real and set temperatures in heating mode and in DHW mode.
2. - If the temperatures do not correspond, replace the interested sensor. If the problem persists, replace the command and control board.

8.2.8 - Checking if the device is triggered in the event of gas failure

1. - Check that after attempts to start the appliance, with the gas shut-off valve closed, the appliance goes into lockout mode and the “Loc 1” message appears on the display.
2. - If the lockout message does not appear, replace the command and control board.

8.2.9 - Checking the condition of the air intake and flue gas outlet ducts

1. - Check that the air intake and flue gas outlet ducts are not obstructed, and show no signs of corrosion, physical damage, water marks or signs of rust.
2. - Make sure the externally assembled intake grids and flue gas outlet terminals do not have any residue and are clean.

8.2.10 - Checking the ignition and detection electrodes

1. - Remove the burner fan unit (as shown in section 8.4).
2. - Clean any material build-up from the electrodes.
3. - Make sure the electrodes are in the correct position as shown in section 8.6.

8.2.11 - Checking the condition of the air vent valves

1. - Visually check that the air vent valves are not obstructed in the drain pipe, and show no signs of corrosion, physical damage, water marks or signs of rust.
2. - In the event of obstructions in the drain pipe, clean the pipe; in the event of other damage indicated above, replace the valve.

8.3 - Dismantling of casing and access to internal components

WARNING! If the cover is installed externally, remove it following the instructions in section 5.18 of this manual.

To dismantle the casing, proceed as follows (refer to Figure 8-1):

1.- Undo screws “A”;
2.- Pull the lower part of the front-piece “B” forward and then slide it up until it is released from the guides “C”;

To access the command and control board:

1.- Turn the control panel “D” towards the front;
2.- Open the control panel “D” using closing mechanism “G”

To access the electrical connections board:

1.- Turn the control panel “D” towards the front;
2.- Slide cover “E” out using the closing flaps “F”;

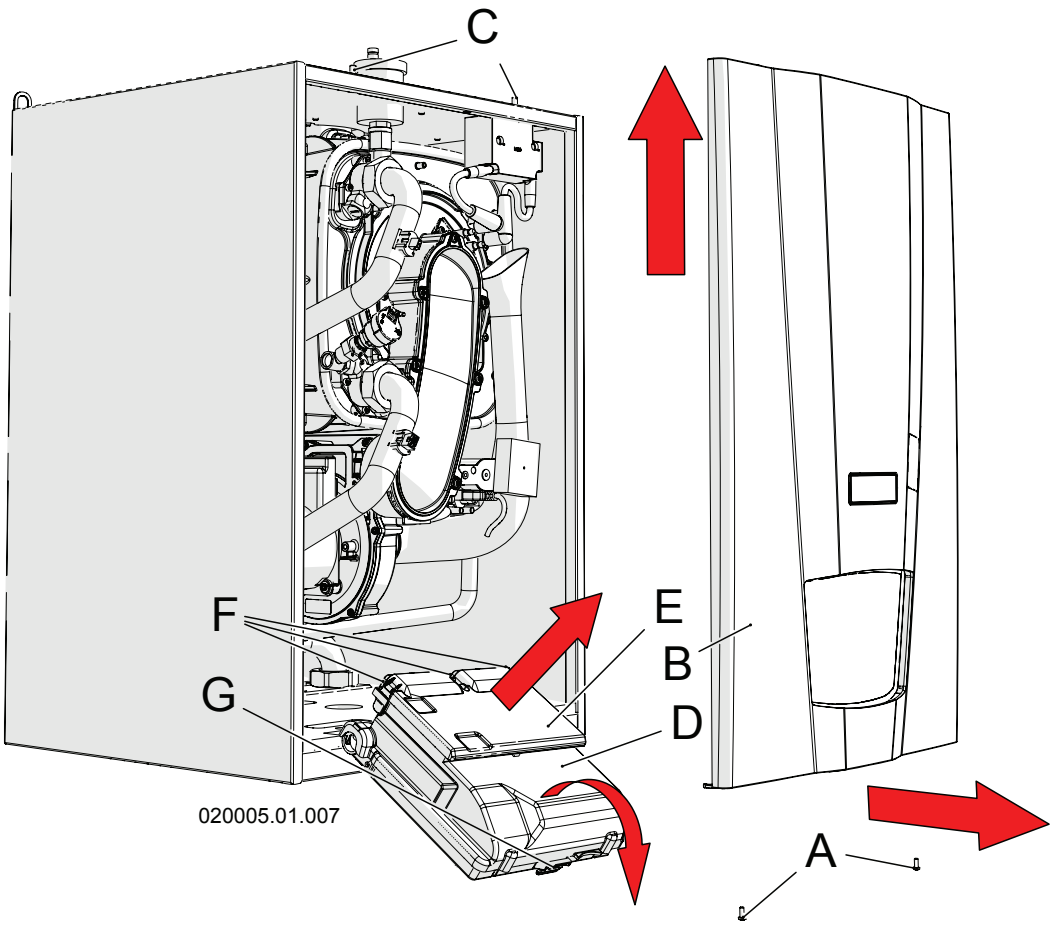
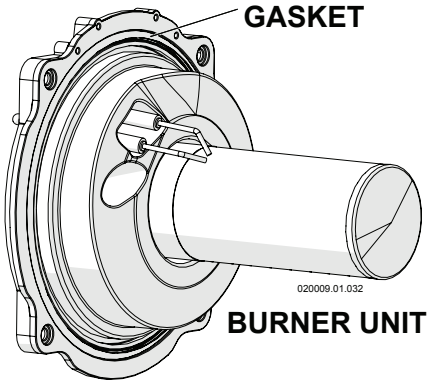


Figure 8-1 – Removing the casing and opening the control panel

8.4 - Dismantling the burner fan assembly

Proceed as follows to remove the burner fan unit (refer to figure 8-2 when not specified otherwise):

1.- Access the internal components following section 8.3;
2.- Remove the air manifold (detail “C” in figure 6-2) rotating it towards the outside of the boiler and then pulling it towards the right (see figure 6-2);
3.- Unscrew nut “C” from valve “D”;
4.- Disconnect cables “B” and the detection cable from the ignition and detection electrodes (details “8”, “36” and “37” in figures 3-1 and 3-2);
5.- Unscrew the four nuts “E”;
6.- Extract the assembly “F” as per figure;



WARNING! The gasket ensures the combustion chamber is sealed. If the gasket is damaged DO NOT reuse it, it must be replaced along with the burner unit. Consult the manufacturer for information on replacing it.

8.5 - Cleaning the burner and the primary heat exchanger (flue gas side)

To correctly clean the burner and heat exchanger body (fumes side), proceed as follows (refer to figure 8-2 when not specified otherwise):

1.- Access the internal components following section 8.3;
2.- Remove the burner unit following section 8.4;
4.- Pass a cylindrical brush with plastic bristles around inside the combustion chamber “G”
5.- Using a suction device, suck up the unburnt residues found inside the combustion chamber “G”;
6.- with the same extractor, clean the surface of the burner and around the electrodes;
7.- reassemble the parts in reverse order;
8.- turn on the gas cock;
9.- restore the electric power supply.
10.- check that there are no gas leaks between the joints that were removed;

WARNING! Test the gas seal using a soap and water solution only. The use of naked flames is prohibited.

WARNING! Every time the burner and the primary heat exchanger are cleaned, check that thermal insulation elements “H” and “L” are in good order. If necessary, replace them along with burner gasket “M”. Request the kit with code 62632006.

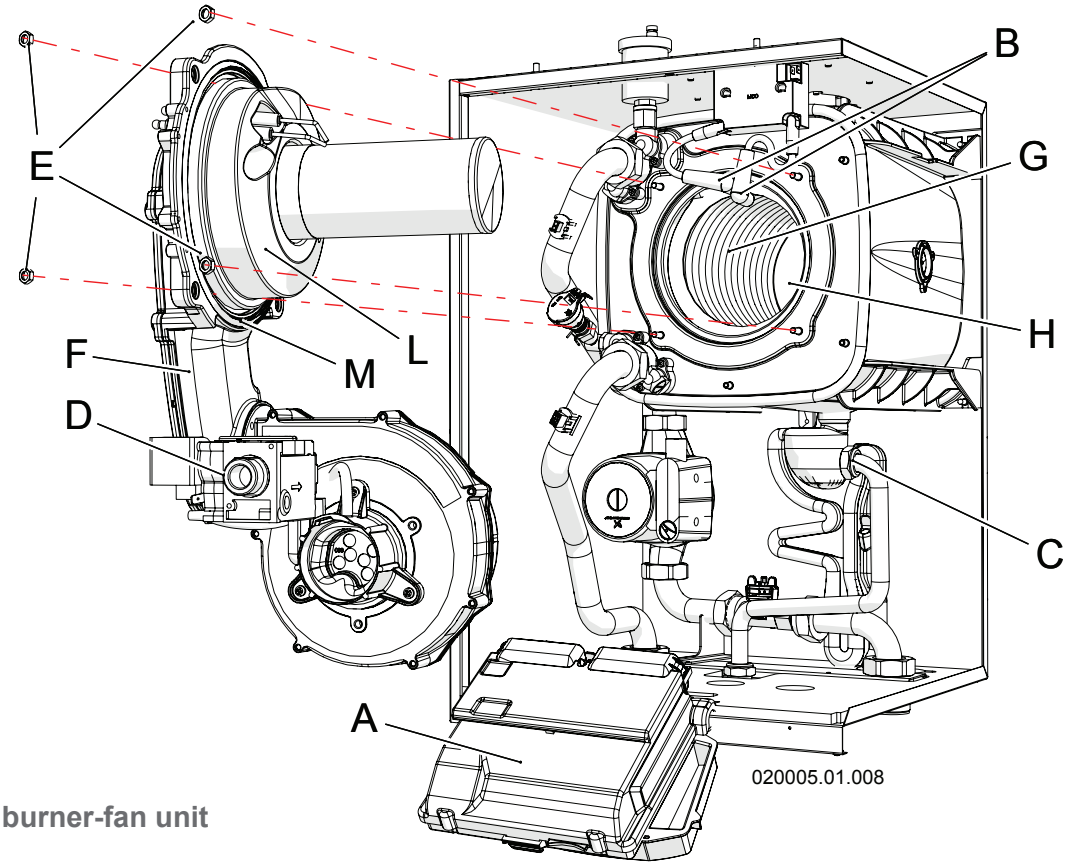


Figure 8-2 – Removing the burner-fan unit

8.6 - Correct positioning of ignition and ionisation electrodes

For the appliance to work well, the electrodes must be positioned correctly (refer to figure 8-3):

- the distance between ignition electrodes “A” and “B” must be between 2.0 and 2.5 mm;
- the distance of the ignition electrodes from the surface of the burner must be between 5 and 5.5 mm;
- the distance of the ionisation electrode from the surface of the burner must be between 5.5 and 6.5 mm.

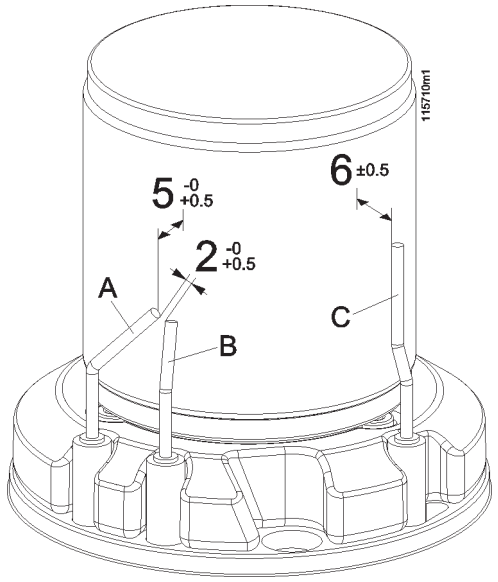


Figure 8-3 – Positioning the electrodes on the burner

8.7 - Dismantling the ignition and detection electrodes

If the ignition and/or detection electrodes need replacing, proceed as follows:

1.- Close the gas supply;
2.- Turn off electricity to the boiler;
3.- Access the components inside the appliance, following section 8.3;
4.- Remove the burner fan unit as shown in section 8.4;
5.- Disassemble the electrodes to be replaced “B” or “E” by means of screws “A” or “D” in figure 8-4, taking care to remove seals “C” and “F”;
6.- Assemble the new electrodes with the new gaskets “C” and “F” supplied with the replacement kits;
7.- Check the electrodes are in the correct position as per section 8.6;
8.- Refit the rest of the components in reverse order;
9.- Open the gas cock;
10.- Connect the boiler to the electric power supply;
11.- Check for any gas leaks using the relevant tools;

WARNING! Test the gas seal using a soap and water solution only. The use of naked flames is prohibited.

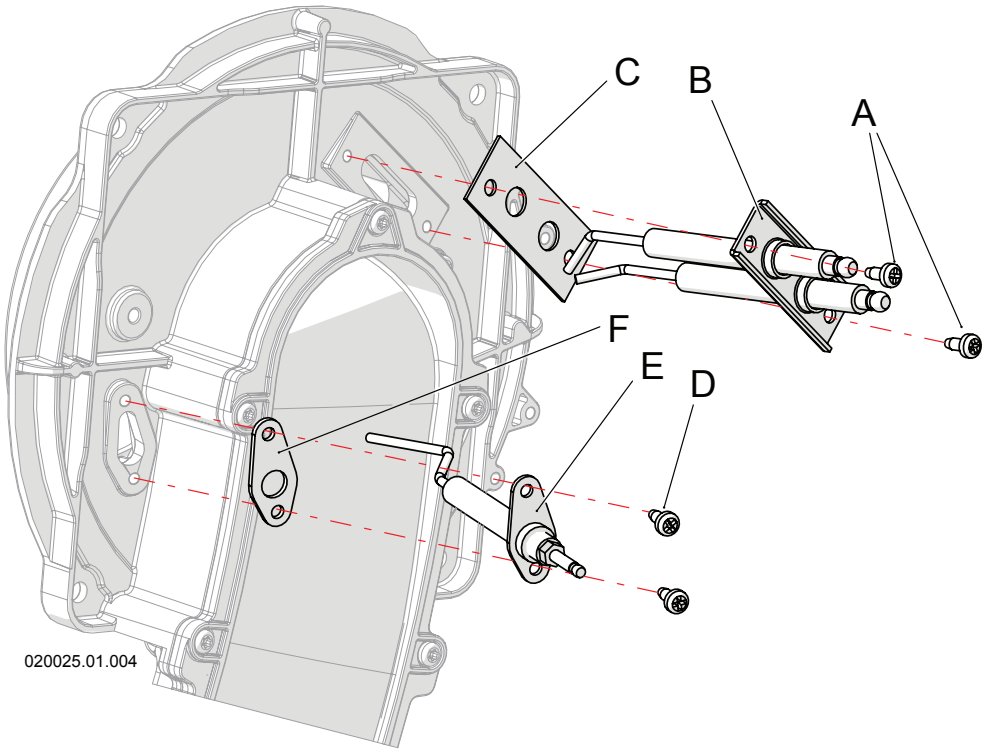


Figure 8-4 – Removing the electrodes

8.8 - Dismantling and replacing the gas valve

If the gas valve needs replacing, proceed as follows:
Refer to figure 8-5 when not specified otherwise.

1.- Close the gas supply;
2.- Turn off electricity to the boiler;
3.- Access the components inside the appliance, following section 8.3;
4.- Detach the power cable from gas valve “D”;
5.- Remove the gas inlet pipe via the two fittings “A” and “B”;
6.- Remove the clamp spring “C”, releasing gas valve “D”;
7.- Slide off the gas valve “D” upwards;
8.- Using screws “F”, remove bend “G” from the gas valve;
9.- Fit bend “G” on the new gas valve, taking care to position gasket “H” (supplied in the kit) correctly in the kit; the one removed previously can be disposed of;
10.- Fit the appliance back together by performing the operations above in reverse order;
11.- Open the gas cock;
12.- Connect the boiler to the electric power supply;
13.- Check for any gas leaks using the relevant tools;

WARNING! Test the gas seal using a soap and water solution only. The use of naked flames is prohibited.

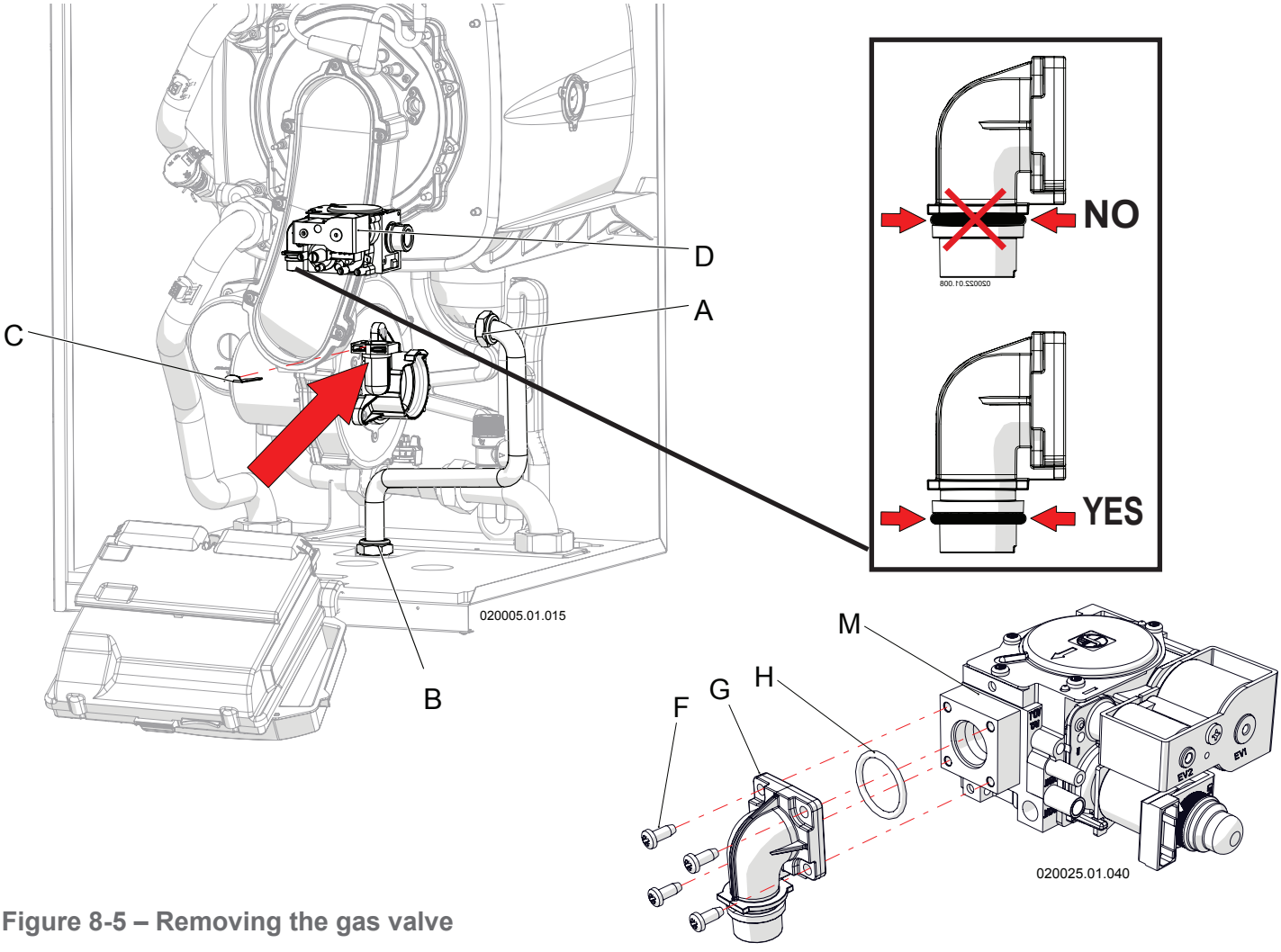


Figure 8-5 – Removing the gas valve

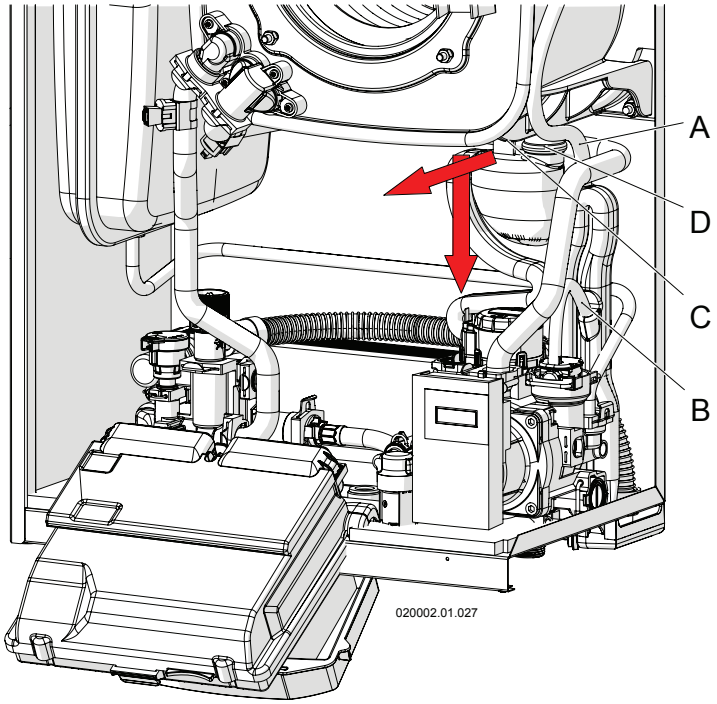


Figure 8-6 – Removing the condensate collection siphon

8.9 - Cleaning the condensate conveyor siphon

For correct cleaning of the collection siphon and conveying of the condensate produced by combustion, operate as follows (refer to the figures 8-6, 8-7 and 8-8):

1.- With the boiler on, force the heating to its maximum, following the procedure described in section 8.16 so that the burner runs at maximum power and the level of liquid inside the siphon tank “D” lowers (see figure 8-6). Then turn off the boiler and disconnect it from the power supply;
2.- Access the internal components as described in section 8.3;
3.- Remove the burner fan unit as described in section 8.4;
4 - Cover the electric system and pump unit with a cloth to protect them from any water residue inside the siphon to be removed;
5.- Slide support “C” outwards from the holding support;
6.- Slide tank “D” downwards carefully as it is full of condensate water which could leak;
7.- Extract the siphon by moving it outwards (see figure 8-7), taking care to disconnect the collection pipes for the water coming from the upper part of the appliance and from the air vent valve.
8.- Clean the decanting tank “D”;
9.- Refit everything in reverse order, making sure gasket “E” is put back in the relevant place and that end “G” is correctly inserted into housing “H”;
10.- Restore the level of liquid inside the siphon, following the procedure in section 6.1.2.

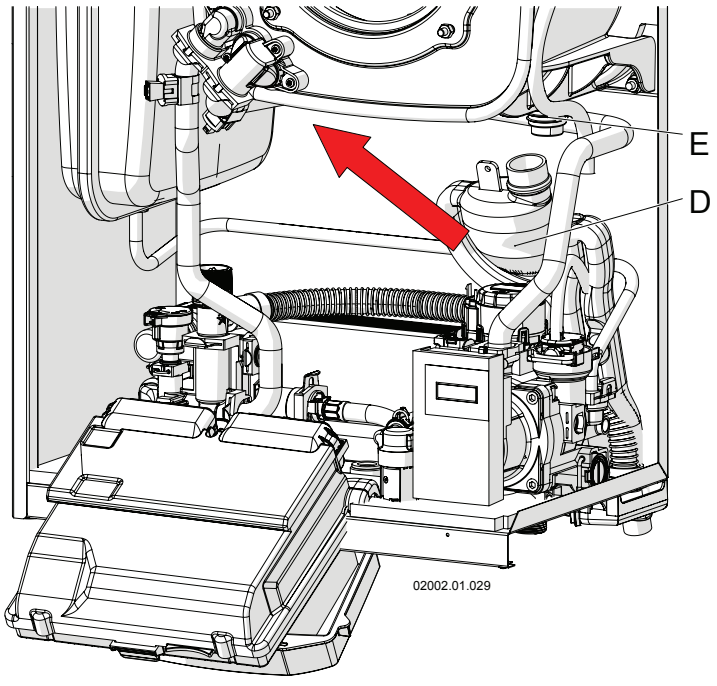


Figure 8-7 – Removing the condensate collection siphon

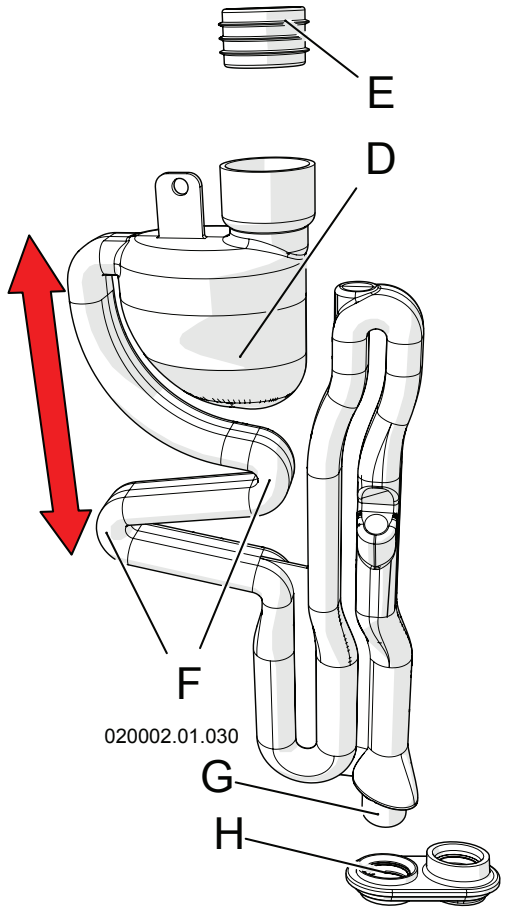


Figure 8-8 – Condensate collection siphon

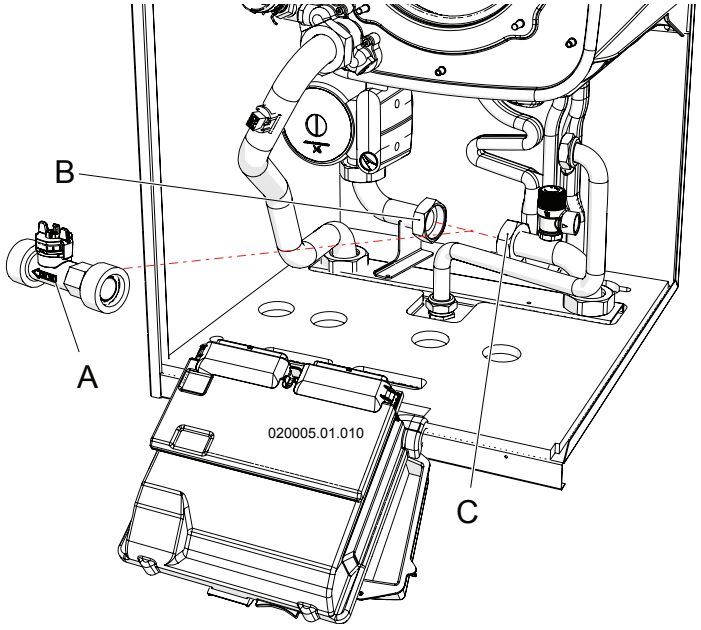


Figure 8-9 – Removing the flow meter

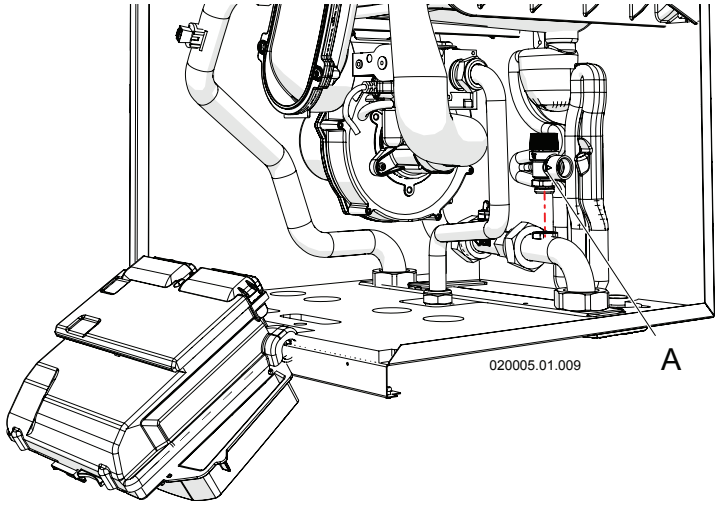


Figure 8-10 – Removing the safety valve

8.10 - Removing the flow meter

The flow meter is used to measure the water flow rate inside the boiler. If it needs to be replaced, proceed as follows (refer to figure 8-9):

1.- Empty the water from the boiler, following the procedure in section 8.15;
2.- Access the components inside the appliance, following section 8.3;
3.- Remove the burner unit as described in section 8.4;
4.- Unscrew fittings “B” and “C”;
5.- Take out flow meter “A” paying attention to the direction of orientation of the flow, as shown by the arrow printed on the flow meter;
6.- Replace the flow meter;
7.- During assembly pay attention to the correct positioning of the flow meter (step shown in point 5).

8.11 - Removing the safety valve

The safety valve (detail “A” in figure 8-10) protects the appliance against overpressure. If it needs to be replaced, proceed as follows (refer to figure 8-10):

1.- Empty the water from the boiler, following the procedure in section 8.15;
2.- Access the components inside the appliance, following section 8.3;
3.- Remove the burner unit as described in section 8.4;
4.- Disconnect the drain pipe from the safety valve, loosening the sealing spring;
5.- Loosen the fitting that attaches the safety valve to the pipe;
6.- Remove safety valve “A” by taking it upwards and replace it, returning its outlet pipe to its former position.

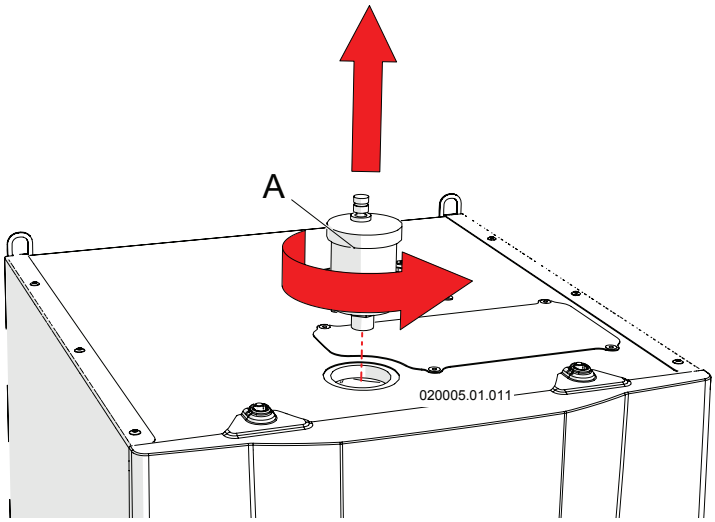


Figure 8-11 – Removing the air vent valve

8.12 - Removing the air vent valve

Refer to figure 8-11 and proceed as follows:
1.- Close the system fill cock provided by the installer;
2. - Take the system pressure to zero;
3.- Access the components inside the appliance, following section 8.3;
4.- Undo and slide air vent valve “A” upwards to extract it. Proceed with replacing it;

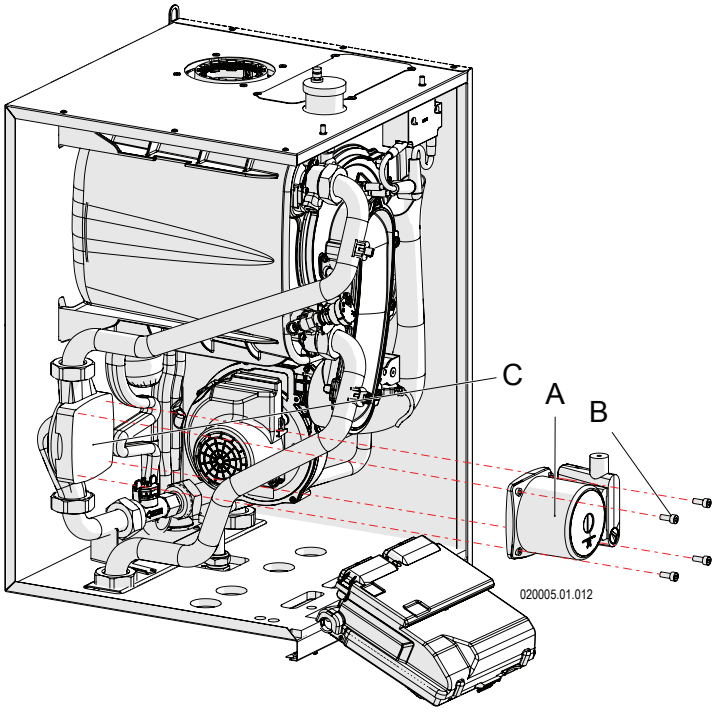


Figure 8-12 – Replacing the pump motor

8.13 - Replacing the pump motor

If the circulation pump needs replacing, operate as follows (refer to figure 8-12):
1.- Empty the central heating circuit, following the procedure in section 8.15;
2.- Access the components inside the appliance, following section 8.3;
3.- Disconnect the pump’s power supply cable;
4.- Undo screws “B”;
5.- Extract pump “A” by sliding it outwards;
6.- Replace it taking care to correctly position the internal gasket and reconnect the power supply cable.

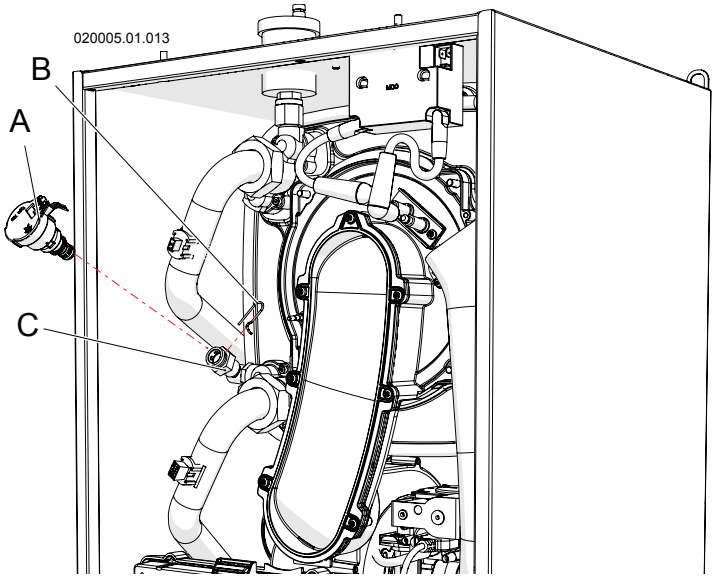


Figure 8-13 – Removing the central heating circuit pressure sensor

8.14 - Removing the central heating circuit pressure sensor

Proceed as follows, making reference to figure 8-13:
1.- Empty the central heating circuit, following the procedure in section 8.15;
2.- Access the components inside the appliance, following section 8.3;
3.- Disconnect the connection cable from sensor “A”;
4.- Remove the drive bar “B” as shown in the figure;
5.- Slide out and remove pressure sensor “A” from fitting “C”, as shown in the figure.
6.- Proceed with replacing the sensor, restoring the connections to as they were before.

8.15 - Emptying the boiler

To empty the appliance, proceed as follows:

1.- Generate a central heating request;
2.- Set the central heating temperature at the lowest value possible to cool the water inside the boiler;
3.- Switch the appliance off;
4.- Close the system fill cock provided by the installer;
5.- Connect a rubber hose to the drain cocks provided by the installer and take it to a sink drain or similar;
6.- open the drain cocks provided by the installer;
7.- Open the air vent valves of the heating elements. Start from the highest central heating elements and continue with the lowest.
8.- Once all of the water has been evacuated, close all of the heating element vent valves and the drain cocks provided by the installer.

WARNING! Do not salvage or reuse the water evacuated from the central heating circuit for any purpose as it could be polluted.

8.16 - Minimum and maximum power

To force operation at the appliance's minimum, maximum, set or ignition power, proceed as follows:

1.- Make sure that any cocks and thermostatic valves after the central heating circuit are open;

WARNING! When forcing the delivery temperature, it automatically sets itself at 93°C to dispose of as much of the heat generated by the boiler as possible. Check that the central heating system can support this temperature.

2.- Access parameter 0200, which can be viewed and changed from the "Installer profile" (see section 7.15);

3.- Set parameter 0200 to the following value:

a) LO to force the boiler to minimum power;

b) IGn to force the boiler to ignition power;

c) HI to force the boiler to maximum power;

d) rEG to force the boiler to the maximum central heating power, as set (Range Rated) in section 6.8, parameter 2014.

4.- To end forcing, set parameter 0200 to OFF and press the RESET key.

WARNING! If during forcing, the power supplied by the boiler is much higher than the power absorbed by the system, the boiler switches off continuously to reach the maximum temperature allowed (93°C).

☞ Forcing lasts 10 minutes, after which the appliance returns to normal operating conditions.

8.17 - Checking the ionisation current

In any operating status, including during checks on the minimum and maximum power stated in section 8.16, the ionisation current value can be consulted at parameter 1008 from any profile. This value must be between 4 and 8 uA (microampere).

8.18 - Checking combustion efficiency

According to national laws on gas appliances, it is necessary to periodically check the combustion efficiency; To do this, operate exactly as stated in section 6.7 and check, along with the CO2, the combustion efficiency, which must be over 96%.

8.19 - Water temperature measurement sensors

Various temperature sensors are positioned on the heat exchanger body. The electrical resistance between the two sensor contacts must correspond to figure 8-14.

The temperature sensors are: 1001, 1002, 1005, 1006, and 1007. Check their positioning in figures 3-1 and 3-2.

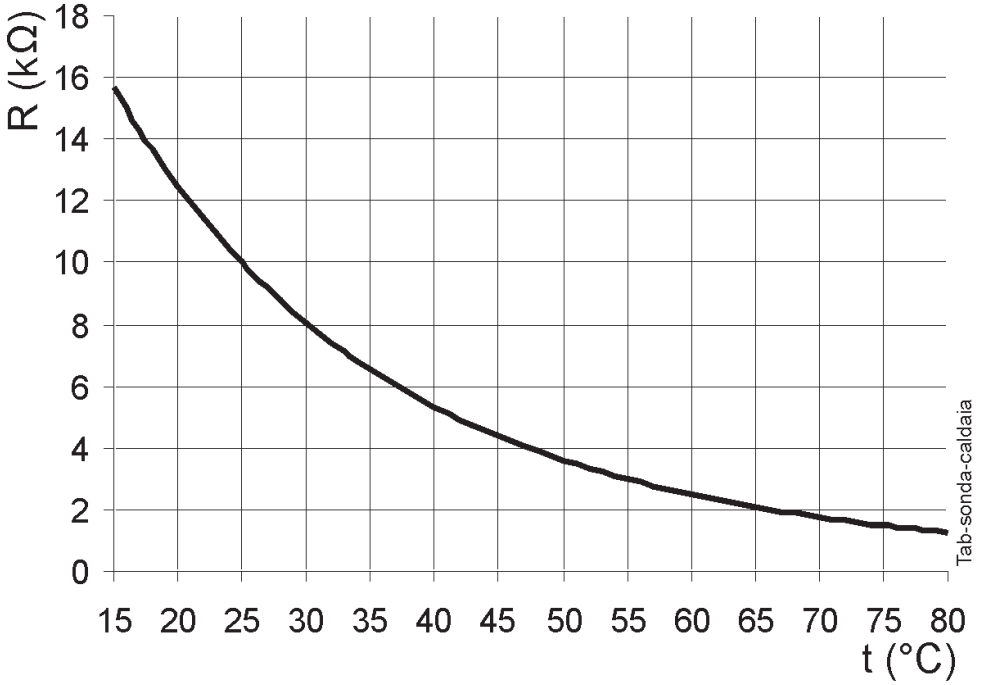


Figure 8-14 - Water sensors curve

8.20 - Outdoor temperature sensor

On request, the external temperature sensor can be connected to the boiler 1004 (see section 5.14.5). The electrical resistance between the two sensor contacts must correspond to that shown in figure 8-15.

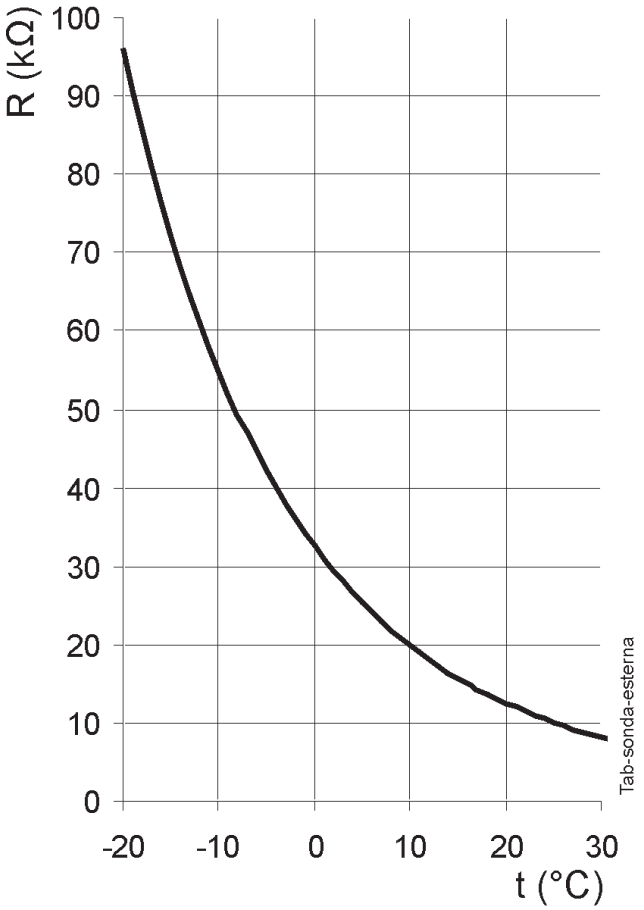


Figure 8-15 - Outdoor temperature sensor curve

8.21 - Wiring diagram

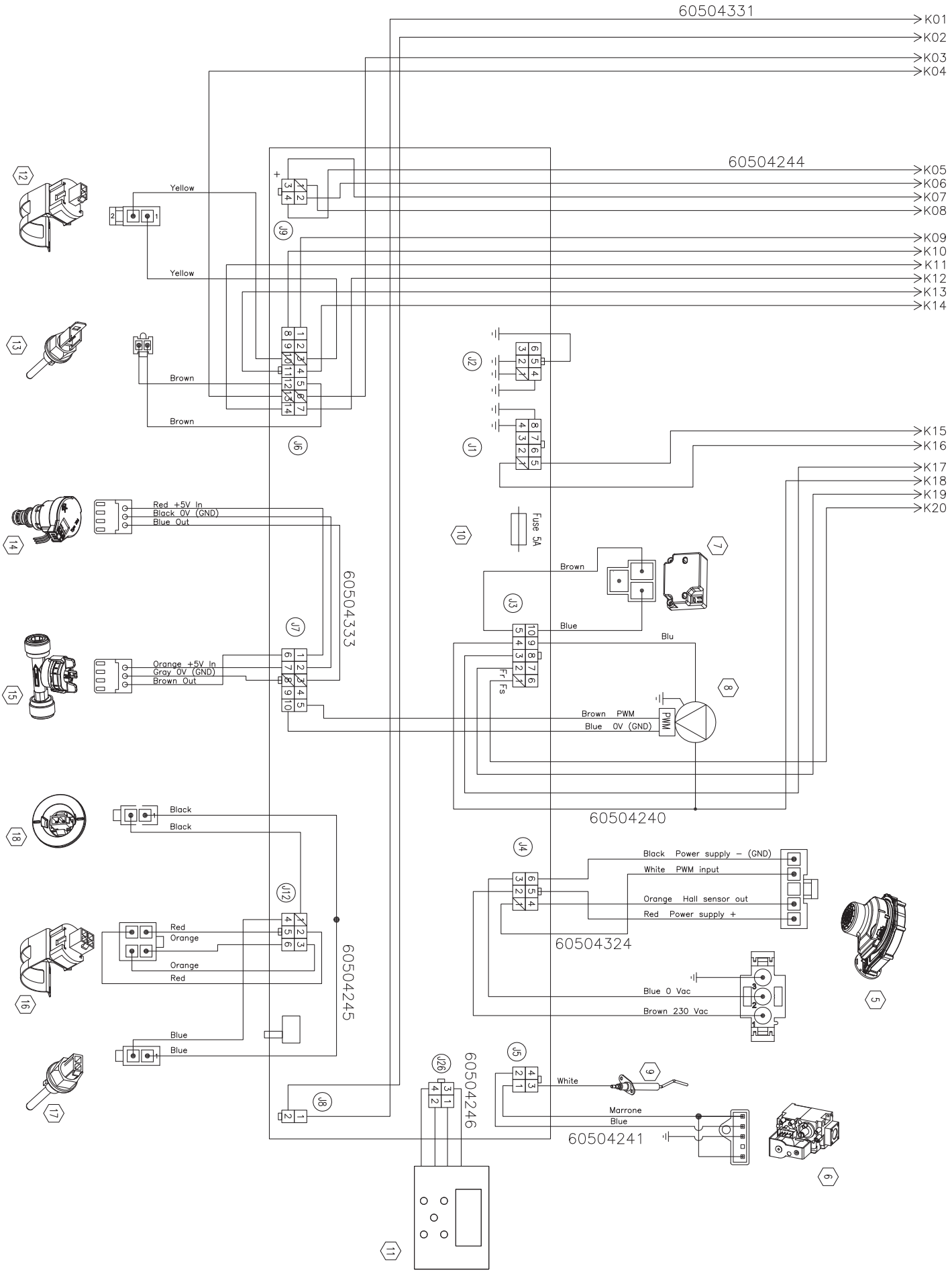
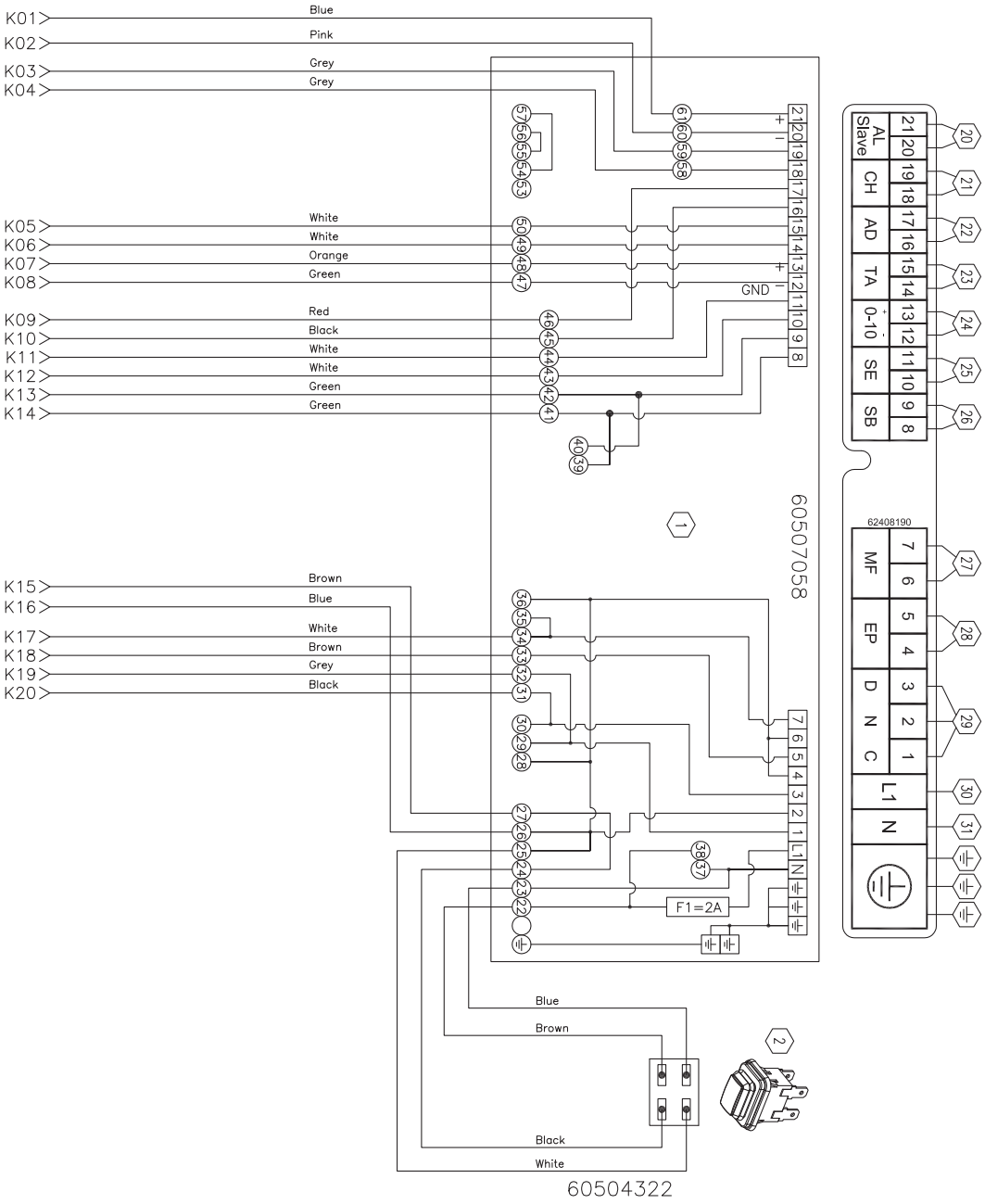
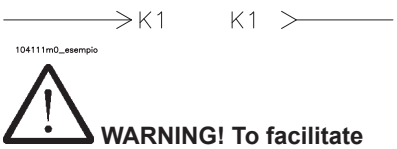


Figure 8-16 – Operating wiring diagram



1 - Electric connections board
2 - Master switch;
3 - DHW output sensor (1002) *
4 - Diverter valve
5 - Fan
6 - Gas valve
7 - Spark generator
8 - Pump
9 - Ionisation electrode
10 - Command and control board
11 - Display
12 - Return sensor (1007)
13 - Fumes temperature sensor (1006)
14 - Water pressure sensor (1033)
15 - Water pressure sensor (1062)
16 - Double supply temperature sensor
17 - Flue safety fuse
18 - Primary heat exchanger fuse
19 - System fill solenoid valve
20 - Slave appliance BUS
21 - Cascade sensor (1015)
22 - Master appliance BUS
23 - Room thermostat (TA) / CR04 remote control/ Cosmobit
24 - 0-10 VDC communication
25 - External sensor (SE)
hot water tank sensor26 - Storage tank sensor (SB) (1002) **
27 - Alarm output/ Automatic fill
28 - External pump
29 - External diverter valve
30 - Line
31 - Neutral

* Not present with storage tank;
** Only with storage tank;



WARNING! To facilitate consultation, K references are given in the wiring diagram followed by a number (see example above). This is to identify the correct follow-on of the cables on the next page.

9 - TECHNICAL DATA

MYDENS TECHNICAL DATA		UM	60A	60C
Type (Type of flue gas outlet/air intake)			B23; B23P; C13; C33; C43; C53; C63; C83; C93	
Category			II2H3P	II2H3P
EU type approval certificate (PIN)			0476CQ1097	0476CQ1097
Range Rated Boiler			APPROVED	APPROVED
Central heating max. heat input “Qn” PCI (PCS)		kW	57.8 (64.2)	57.8 (64.2)
Central heating min. heat input PCI (PCS)		kW	12.0 (13.3)	12.0 (13.3)
Central heating max. useful output power (80/60) “Pn”		kW	56.1	56.1
Efficiency at 100% load (80/60) PCI (PCS)		%	97.1 (87.5)	97.1 (87.5)
Min. useful output power (80/60)		kW	11.60	11.60
Efficiency at min. useful output power (80/60)		%	96.7 (87.1)	96.7 (87.1)
Central heating max. useful output power (50/30)		kW	60.9	60.9
Efficiency at central heating max. useful output power (50/30) PCI (PCS)		%	105.3 (94.9)	105.3 (94.9)
Min. useful output power (50/30)		kW	12.85	12.85
Efficiency at min. useful output power (50/30) PCI (PCS)		%	107.1 (96.5)	107.1 (96.5)
Efficiency at 30% of the load PCI (PCS)		%	107.0 (96.4)	107.0 (96.4)
Losses at the chimney, burner ON (80/60)		%	1	1
Losses at the chimney, burner OFF		%	0.1	0.1
Losses at the casing, burner ON (80/60)		%	0.1	0.1
Losses at the casing, burner OFF		%	0.05	0.05
Gas flow rate	G20	m^3/h	6.11	6.11
	G25	m^3/h	7.11	7.11
	G30	kg/h	4.55	4.55
	G31	kg/h	4.49	4.49
Gas supply pressure	G20	mbar	20	20
	G25	mbar	25	25
	G30	mbar	30	30
	G31	mbar	37	37
Gas supply minimum pressure	G20	mbar	17	17
	G25	mbar	20	20
	G30	mbar	25	25
	G31	mbar	25	25
Gas supply maximum pressure	G20	mbar	25	25
	G25	mbar	30	30
	G30	mbar	35	35
	G31	mbar	45	45
Primary heat exchanger water content		l	5.7	5.7
Minimum operating flow rate		l/h	2500	2500
DHW adjustment range with storage tank		°C	40 - 70	40 - 70
Design temperature		°C	95	95
Maximum central heating temperature		°C	80	80
Minimum central heating temperature		°C	20	20

9 - TECHNICAL DATA

MYDENS TECHNICAL DATA		UM	60A	60C
Maximum central heating pressure “PMS”		bar	4	4
Minimum central heating pressure		bar	0.5	0.5
Rated power supply voltage		V ~	230	230
Rated power supply frequency		Hz	50	50
Absorbed electrical power		W	140	230
Electrical protection rating			IPX4D	IPX4D
Burner electrical power		W	140	140
Electrical power absorbed by the pump		W	0	90
Air intake/ flue gas outlet pipe diameter (split)		mm	80	80
Air intake pipe max. length (split) (80)		m	10	10
Max. length of flue gas outlet duct (split) (80)		m	10	10
Minimum usable diameter of collective aspiration duct (type C93)		mm	100	100
Flue gas pipe diameter (coaxial) (80/125)		mm	80/125	80/125
Flue gas pipe max. length (coaxial) (80/125)		m	10	10
Equivalent length of a bend		m	1	1
Weighted CO (0% O2)	G20	ppm	15	15
Weighted NOx (0% O2) (Class 6 EN 15502) PCS	G20	mg/kWh	28	28
CO2 (%) at minimum/maximum power	G20	%	8.3 / 8.7	8.3 / 8.7
	G25	%	8.3 / 8.7	8.3 / 8.7
	G30	%	9.5 / 10.1	9.5 / 10.1
	G31	%	9.5 / 10.1	9.5 / 10.1
O2 (%) at minimum/maximum power	G20	%	6.1 / 5.4	6.1 / 5.4
	G25	%	5.8 / 5.0	5.8 / 5.0
	G30	%	6.8 / 5.9	6.8 / 5.9
	G31	%	6.4 / 5.5	6.4 / 5.5
Maximum recirculation of flue gas permitted in windy conditions		%	10	10
Maximum fumes temperature at boiler outlet		°C	80	80
Minimum fumes temperature at boiler outlet		°C	30	30
Δt fumes temperature/Return (at 100% of the load) (80/60)		°C	13	13
Δt fumes temperature/Return (at 30% of the load) (37/30)		°C	3	3
Maximum CO in exhaust flue gas		ppm	250	250
Mass flow of fumes at maximum power		g/s	27.2	27.2
Mass flow of flue gas at minimum power		g/s	5.9	5.9
Head available at outlet		Pa	60	60
Maximum temperature of the combustion agent air		°C	50	50
Maximum CO2 content in the combustion agent air		%	0.9	0.9
Maximum fumes temperature for overheating		°C	95	95
Max. negative pressure allowed in the flue gas outlet/air intake system		Pa	60	60
Condensate maximum flow rate		l/h	7.2	7.2
Condensate average acidity		pH	4	4
Operating room temperature		°C	0.5; + 50	0.5; + 50
Boiler weight		kg	47	51

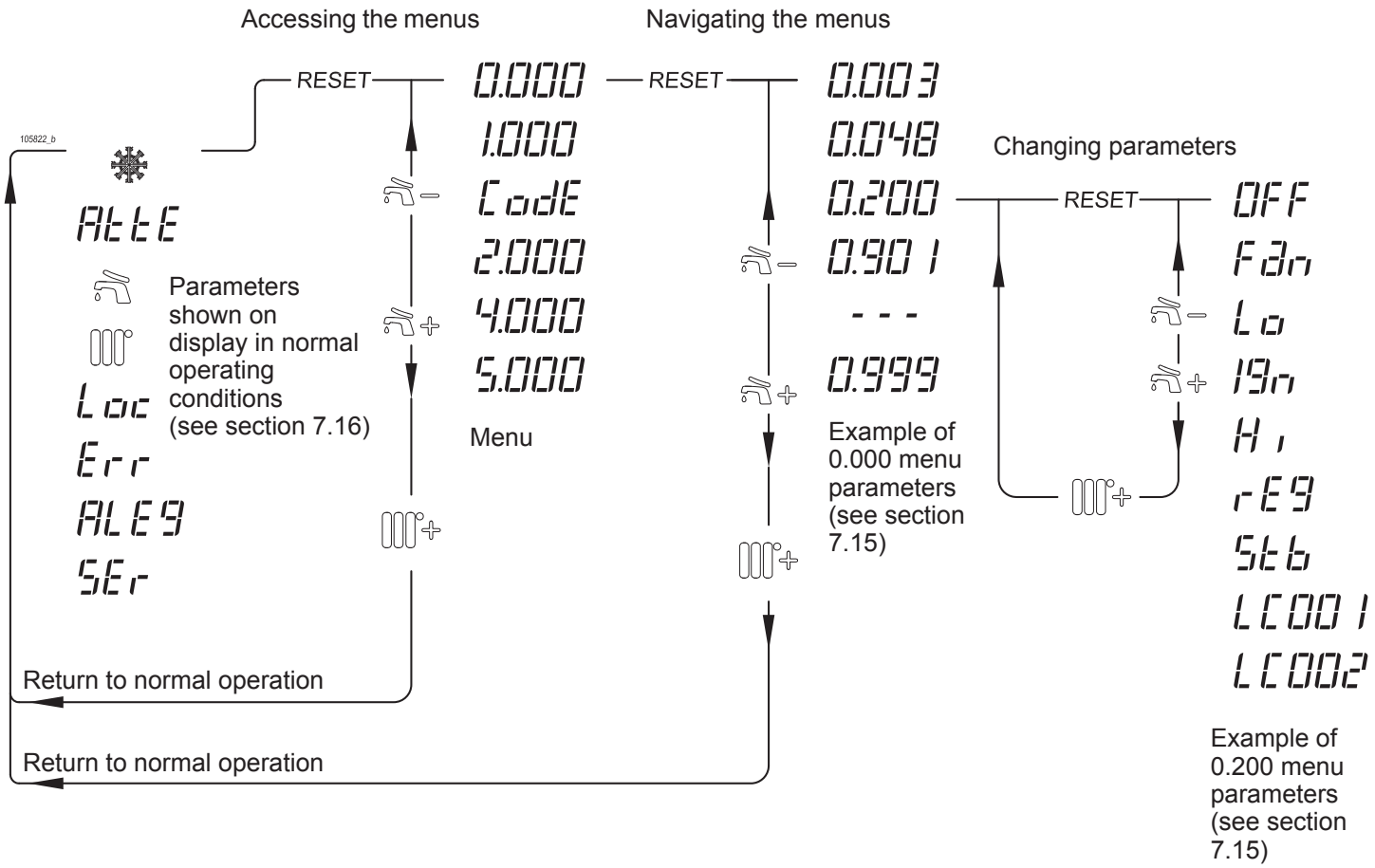


Figure 10-1 - Command menu diagram

The undersigned company **COSMOGAS S.r.L.**, with registered office in Via L. Da Vinci no. 16 - 47014 Meldola (FC) ITALY,

DECLARES

under its own responsibility that the product:

SERIAL No.	
MODEL	
PRODUCTION	

that is the subject of this declaration, complies with the model described in **EU** Type Test Certificate, issued by the notified body Kiwa Cermet Italia S.p.A., whose data are given in the table shown in the TECHNICAL DATA section under the heading " EC type approval certificate (PIN)", and fulfils the requirements of the EU Regulation on Gas Appliances, (**2016/426**), the Efficiency Directive, (**92/42/EEC** modified by **Reg. (EU) 813/2013**), the Low Voltage Directive, (**2014/35/EU**), and the Electromagnetic Compatibility Directive, (**2014/30/EU**).
Monitoring of the product was carried out by the notified body shown on form "C".

(The warranty number corresponds to the serial number)

This declaration is issued as stipulated by the aforementioned directives.

Meldola (FC) ITALY, (Date of construction).

Alessandrini Arturo
Sole Director

12 - PRODUCT FICHE

Name or brand of the supplier			COSMOGAS	
Supplier's model number			MYDENS	
			60A	60C
Condensing boiler			YES	YES
Low-temperature boiler			NO	NO
B1 boiler			NO	NO
Cogeneration space heater			NO	NO
Combination heater			NO	NO
Equipped with supplementary heater			NO	NO
Energy efficiency class			A	A
Item	Symbol	Unit		
Rated heat output	Pn	kW	56.1	56.1
Seasonal space heating energy efficiency	ηs	%	91	91
Useful output power at rated heat output in high-temperature regime (*)	P4	kW	56.1	56.1
Useful efficiency at rated heat output in high-temperature regime (*)	η4	%	87.5	87.5
Useful output power at 30% of rated heat output in low-temperature regime (**)	P1	kW	18.6	18.6
Useful efficiency at 30% of rated heat output in low-temperature regime (**)	η1	%	96.4	96.4

Auxiliary electricity consumption

At full load	elmax	kW	0.14	0.14
At partial load	elmin	kW	0.06	0.06
In standby mode	Psb	kW	0.005	0.005

Other factors

Standby heat loss	Pstby	kW	0.1	0.1
Ignition burner power consumption	Pign	kW	0	0
Annual energy consumption	QHE	GJ	107	107
Sound power level, indoors/outdoors	LWA	dB	64	66
Emissions of nitrogen oxides	NOx	mg/kWh	28	28

Domestic hot water parameters

Declared load profile			N/A	N/A
DHW production efficiency	ηwh	%	N/A	N/A
Daily consumption of electrical energy	Qelec	kWh	N/A	N/A
Annual consumption of electrical energy	AEC	kWh	N/A	N/A
Daily consumption of fuel	Qfuel	kWh	N/A	N/A
Annual consumption of fuel	AFC	GJ	N/A	N/A

According to Regulations (EU) no. 811/2013 and no. 813/2013.
N/A = Not applicable.
(*) High-temperature regime means 60°C return temperature and 80°C delivery temperature.
(**) Low-temperature regime for condensing boilers means 30°C, for low-temperature boilers, 37°C, and for other appliances, 50°C return temperature

To contact technical support

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