

INSTALLATION, OPERATING AND MAINTENANCE MANUAL

WALL-MOUNTED GAS
CONDENSING WATER
HEATERS

AGUADENS

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1 - GENERAL SAFETY RECOMMENDATIONS

If you smell gas

1. - Close the gas cock.
2. - Ventilate the room.
3. - Do not switch on any electric device, telephone included.
4. - From another room, call a professionally qualified technician immediately 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 or highly flammable materials such as paper, solvents, paints, etc...in the same room where the appliance is installed.

Installation, modifications

- ☞ The gas appliance must be installed, calibrated or modified by professionally qualified staff, in compliance with National and local Standards, as well as the instructions in this manual.
- ☞ Incorrect installation or poor maintenance can cause injury/damage to persons, animals or objects, for which the manufacturer cannot be deemed liable.
- ☞ The appliance must be connected to an approved flue system. Failure to comply with this regulation can lead to serious risks for people and animals
- ☞ A domestic hot water temperature level exceeding 51°C can cause permanent injury/damage to people, animals and objects. Special care should be taken to protect children, the elderly and those with special needs using non-accessible blending valves to limit the flow hot water temperature at outlets.
- ☞ The water heater flue system must not be modified by unqualified person.
- ☞ The flue system terminals should not be obstructed in any way.
- ☞ 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.
- ☞ We also highlight the importance of an annual scheduled maintenance contract with a professionally qualified technician.
- ☞ The end user must have maintenance performed on the appliance only by professionally qualified technicians in accordance with this manual and in full compliance with both local and national standards.
- ☞ Before performing any cleaning or maintenance, disconnect the appliance from the mains power supply.
- ☞ After having performed any cleaning or maintenance works, make sure that all internal etc.
- ☞ This appliance is not intended for use by persons (including children) with reduced physical and sensory conditions or lack of experience and knowledge, unless they have been given supervision or instruction concerning 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 kept carefully by the user, for possible future consultation. If the appliance must 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 accessories or kits which might be added must be original Cosmogas products.

☞ This appliance must be intended only for the use for which it has been expressly declared: production of domestic hot water for civilian use.

☞ Any contractual and extra contractual liability of the manufacturer is excluded for damage caused by installation errors or errors in use and however due to failure to comply with the instructions given by the manufacturer or by failure to comply with applicable national and/or local laws.

☞ For safety reasons and respect for the environment, the packaging elements must be disposed of in the relevant separate waste collection centres.

In case of breakdown

In the case of appliance breakdown and/or malfunctioning, deactivate it and do not attempt any repairs. Contact a professionally qualified technician only. If components must be replaced for repair to be successful, only use original spare parts. Failure to comply with the above can jeopardise the safety of the appliance.

Professionally qualified technician.

Professionally qualified technicians with certified training covering gas boilers and/or gas water heaters as envisioned by the law.

Technical drawings

All drawings in this manual relating to electrical wiring, hydraulic and gas layouts are purely indicative. The external services such as electrical cable types and sizes, water services pipes and gas services must always be checked by a professionally qualified technician or engineer to verify compliance with all relevant standards, Laws and codes of good practice.

Carbon Monoxide.

Every year deaths and serious injuries occur due to carbon monoxide poisoning. This tragedies are avoidable if certain preventative measures such as the following are undertaken:

☞ Ensure that all boilers, water heaters, room heaters, stoves and hobs which burn oil, natural gas, LP gas, coal, peat, wood and wood pallets are serviced regularly. Servicing is needed at least once per year to ensure safety. the service person should be qualified and trained to service the specific types of appliance

☞ If an appliance is fitted in a dwelling, then a carbon monoxide detector should always be fitted. There are two types available: a simple detector works like a fire alarm to emit a loud noise and flashing light if carbon monoxide is detected or a more sophisticated version which will also switch off the appliance to provide more safety.

1 - GENERAL SAFETY RECOMMENDATIONS

1.1 - National laws and regulations

- M.D. n°37 dated 22/01/2008 (former Law n°46 dated 05/03/90)
- Law n°10 dated 09/01/91
- Presidential Decree n°412 dated 26/08/93
- Presidential Decree n°551 dated 21/12/99
- Legislative Decree n° 192 dated 19/08/05
- Legislative Decree n° 311 dated 29.12.06
- UNI 7129 Standard
- UNI 7131 Standard
- UNI 11071 Standard
- IEC 64-8 Standard

All the gas appliances must be installed by a competent and qualified person, in accordance with relevant clauses of applicable standards and recommendations. These include but may not be limited to the following:

- I.S. 813 Domestic gas installations.
- I.S. 820 Non-Domestic gas installations.
- IEE Wiring Regulations.
- BS 5546:2010 - Specification for installation and maintenance of gas-fired water-heating appliances of rated input not exceeding 70 kW net.
- BS 5440-2:2009 - Flueing and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases) specification for the installation and maintenance of ventilation provision for gas appliances.
- BS 6644:2011 - Specification for the installation and maintenance of gas-fired hot water boilers of rated inputs between 70 kW (net) and 1.8 MW (net) (2nd and 3rd family gases).
- BS 6891:2005+A2:2008 - Installation of low pressure gas pipework of up to 35 mm (R1 1/4) in domestic premises (2nd family gas) specification.
- BS 5482-1:2005 - Code of practice for domestic butane and propane gas burning installations. Installations at permanent dwellings, residential park homes and commercial premises, with installation pipework sizes not exceeding DN 25 for steel and DN 28 for corrugate stainless steel or copper.
- BS 5482-2:AMD 12046: June 2001 - Domestic butane and propane gas burning installations. Installations in caravans and non-permanent dwellings.
- BS 5482-3:2005 - Domestic butane and propane gas burning installations. Installations in boats yachts and other vessels.
- Building regulations issued by Department of the Environment and Building Standards Regulations.
- Gas safety (Installation and Use) Regulations current issue.
- BS 6700 - Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their cartilages - Specification.
- UK Health and safety at work Act.

- All relevant Building Regulations.
- Local Water Bye Laws.
- Water Regulations.
- Health & Safety legislation.

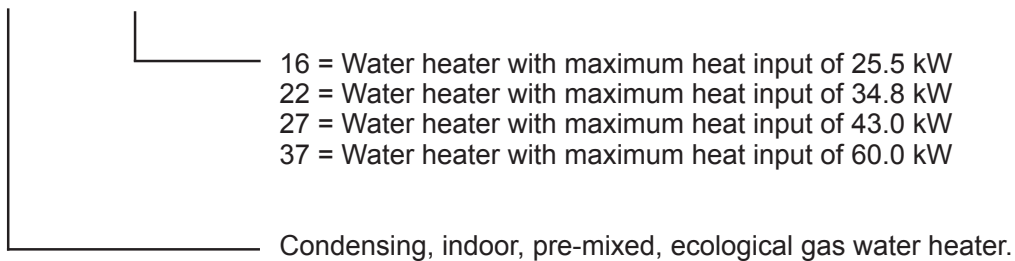
Failure to install this appliance correctly could lead to prosecution. It is your own interest and that of safety to ensure that the law is complied with. Manufacturer's instructions must not be interpreted as over-riding statutory obligations under any circumstances.

2.1 - Presentation

Congratulations! You have purchased one of the best products on the market. Each individual part is proudly designed, produced, tested and assembled within the COSMOGAS establishment, thus guaranteeing the best quality control. This product has been developed thanks to the COSMOGAS who pay the highest respect to the environment with class 5 classification as being the last polluting as envisioned by EN297 (and EN 483) Technical Standards. COSMOGAS place great importance to the end-of-life cycle for their appliances with all of components being easily separated for recycling.

2.2 - Model overview

AGUADENS XX



2.3 - Manufacturer

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

2.4 - Symbols key



ATTENTION !!!

Electric shock hazard. Failure to comply with these recommendations can jeopardise the good working order of the appliance or cause serious damage to persons, animals or objects.



ATTENTION !!!

General hazard. Failure to comply with these recommendations can jeopardise the good working order of the appliance or cause serious damage to persons, animals or objects.

 Important indication symbol.

2.5 - Maintenance

It is recommended to perform regular yearly maintenance of the appliance for the following reasons:

- to maintain a high yield and manage the domestic hot water plant economically (with low fuel consumption);
- to achieve a high level of safety;
- to maintain the level of environmental compatibility of the combustion high;

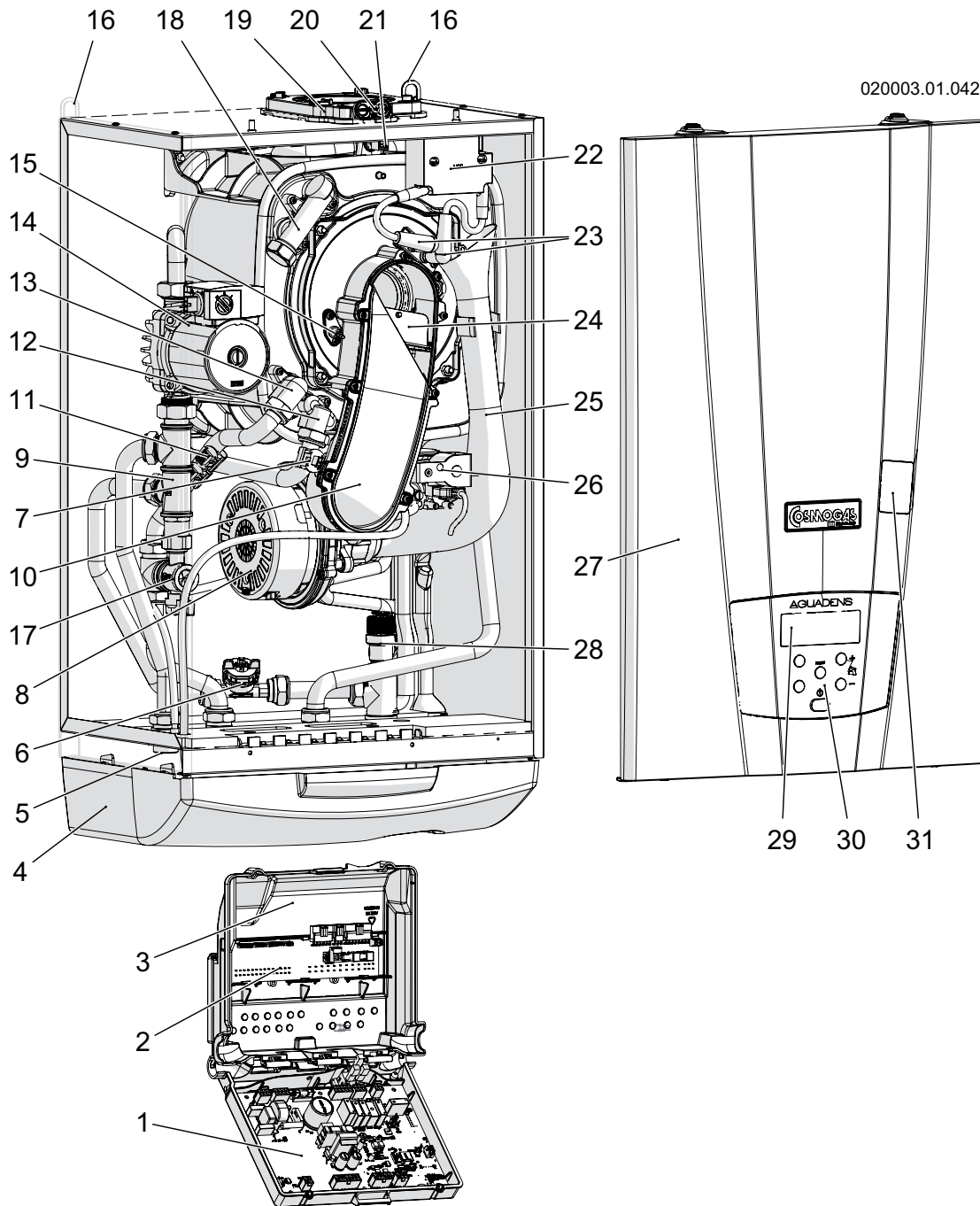
Offer your customer a scheduled maintenance contract.

2.6 - Warranty

see chapter 13.

3 - MAIN COMPONENTS

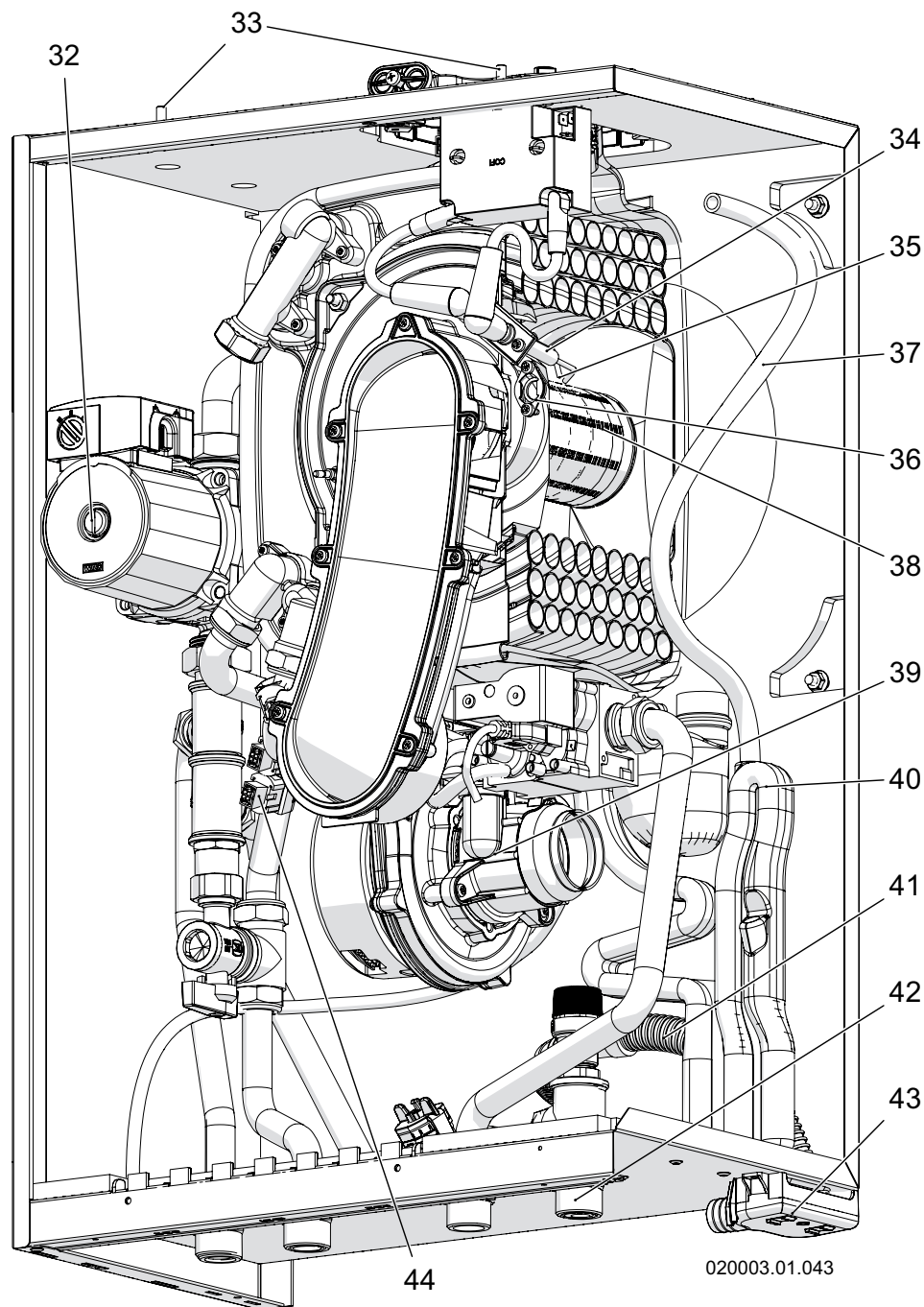
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- | | |
|---|---|
| <ul style="list-style-type: none"> 1 - Command and control board 2 - Electric connections board 3 - Electric control board box 4 - Lower cover 5 - Recirculation fitting cap 6 - Water flow rate measuring device 7 - Cold water inlet temperature sensor (1007) 8 - Fan 9 - Non-return valve 10 - Air/gas manifold 11 - Double D.H.W. output sensor (1001 and 1005) 12 - Cold water inlet fitting 13 - D.H.W. outlet fitting 14 - Recirculation Pump 15 - Detection electrode | <ul style="list-style-type: none"> 16 - Wall fixing brackets 17 - Secondary return manual control valve 18 - Conveying fitting 19 - Combustion air and exhaust flue connection 20 - Combustion analysis points 21 - Double exhaust flue temperature sensor (1006 and 1014) 22 - Spark generator 23 - Ignition cables 24 - Combustion gases non-return valve. 25 - Air inlet manifold 26 - Gas valve 27 - Front casing 28 - Safety valve 29 - Display 30 - Control board 31 - Gas valve adjustment service access hatch |
|---|---|

Figure 3.1 - Water heater internal components

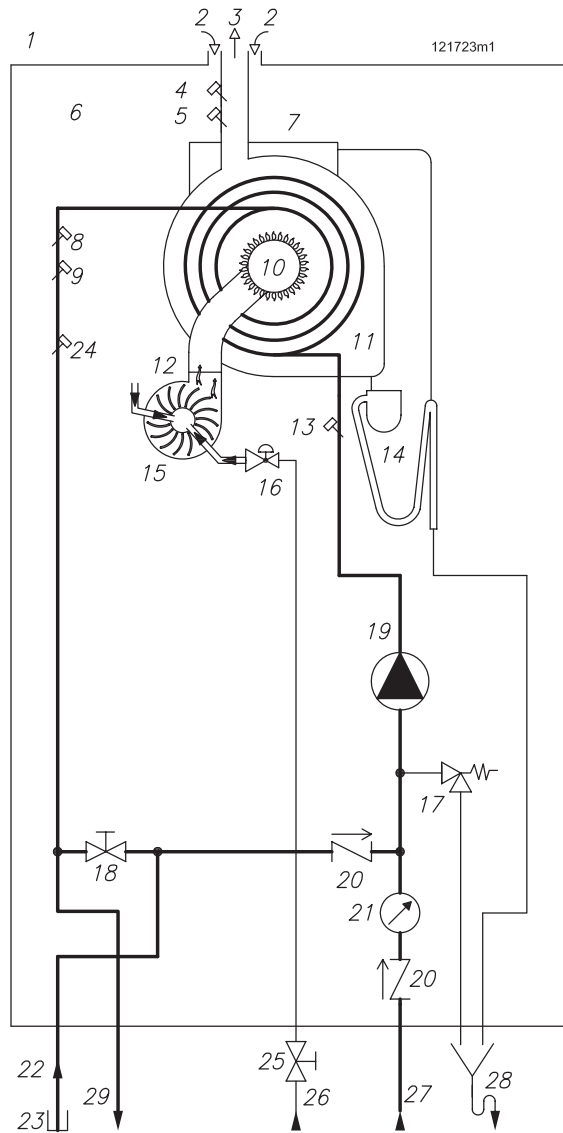
3 - MAIN COMPONENTS



- 32 - Pump air vent
- 33 - Front casing fixing tabs
- 34 - Left ignition electrode
- 35 - Right ignition electrode
- 36 - Gas burner viewing port
- 37 - Flue condensate collection collar drain pipe (connected to siphon)
- 38 - Burner
- 39 - Air/gas mixing unit
- 40 - Condensate drain siphon
- 41 - Safety valve drain pipe
- 42 - Non-return valve
- 43 - Condensate collection tank
- 44 - Domestic hot water temperature sensor (100^oC)

Figure 3.1 - Water heater internal components

4 - OPERATION



Key to figure 4.1:

- 1 = Water heater
- 2 = Combustion air intake spigot
- 3 = Exhaust flue spigot
- 4 = Exhaust flue temperature sensor 1 (Par. 1006)
- 5 = Exhaust flue temperature safety sensor 2 (Par. 1014)
- 6 = Sealed chamber
- 7 = Water collection tub
- 8 = D.H.W. outlet temperature sensor 1 (Par. 1001)
- 9 = D.H.W. outlet temperature safety sensor 2 (Par. 1005)
- 10 = Burner
- 11 = Titanium plated stainless steel VRC type heat exchanger
- 12 = Fan
- 13 = Cold water inlet temperature sensor (Par. 1007)
- 14 = Condensate collection siphon with sediment decanter
- 15 = Air/gas mixer
- 16 = Pneumatic gas valve
- 17 = Safety valve
- 18 = Secondary return manual control valve
- 19 = Recirculation pump
- 20 = Non-return valve
- 21 = Water flow rate measuring device
- 22 = Secondary return connection
- 23 = Secondary return blanked connection
- 24 = Domestic hot water sensor (Par. 1002)
- 25 = Gas isolation valve
- 26 = Gas inlet
- 27 = Domestic cold water inlet
- 28 = Safety valve condensate drain collector
- 29 = Domestic hot water outlet

Figure 4.1 - Hydraulic layout

AGUADENS

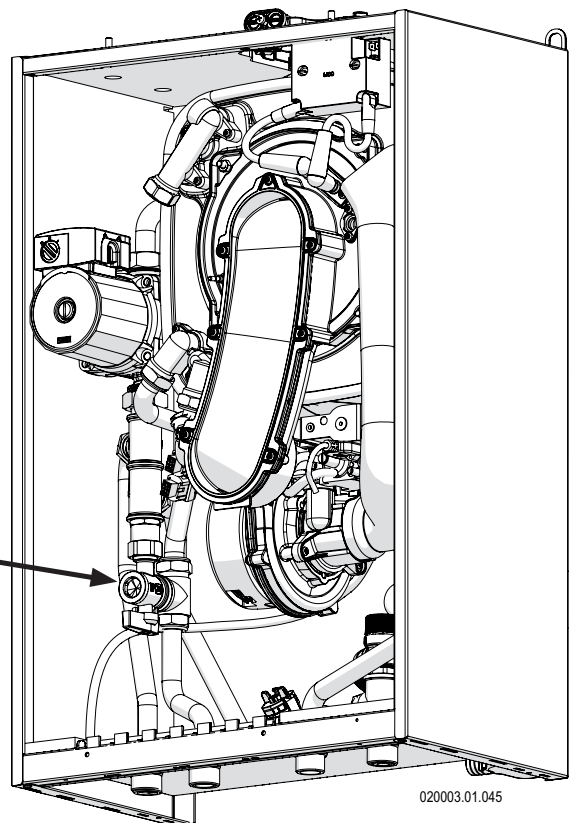
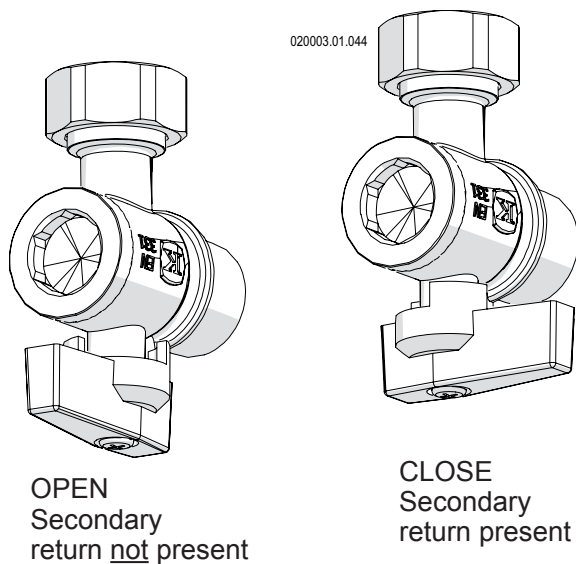


Figure 4.2 - Secondary return manual control valve

4 - OPERATION

4.1 - Operation and intended use of the appliance

This product is a condensing gas appliance, intended for the production of domestic hot water for use by people. Consider the D.H.W. circulation pump performance curves as detailed in paragraph 4.2 and as illustrated in figure 4.3.

The temperature of the domestic hot water can be adjusted by following the relevant procedure in chapter 7.5.

- ☞ This appliance must be connected to a domestic hot water distribution system which has adequately sized pipes to convey the correct water volume and all pipes should be fitted with good quality insulation to optimise the performance of the water heater.
- ☞ Before installation of the domestic cold and hot water services should be flushed thoroughly in order to remove any residues or impurities which could compromise the good working order of the appliance.

- ☞ This appliance is not suitable for installation outdoors. It must not be exposed to temperature below zero or temperature above 50°C. Select a suitable sheltered location for the appliance.
- ☞ This appliance must be installed in a location which will not cause damage to objects or property in the event of water leaking from within the appliance or connections at the appliance.
- ☞ Check figure 5.1 concerning the minimum safety distances for installation and future maintenance.

4.2 - D.H.W. circulation pump performance curves

The pump curves as shown in figure 4.3 outline the performances which can be archived. It is the designer's responsibility to ensure that the available pump head pressure will achieve the desired results.

Key to figure 4.3

- I = Aguadens 16
- II = Aguadens 22 and Aguadens 27
- III = Aguadens 37

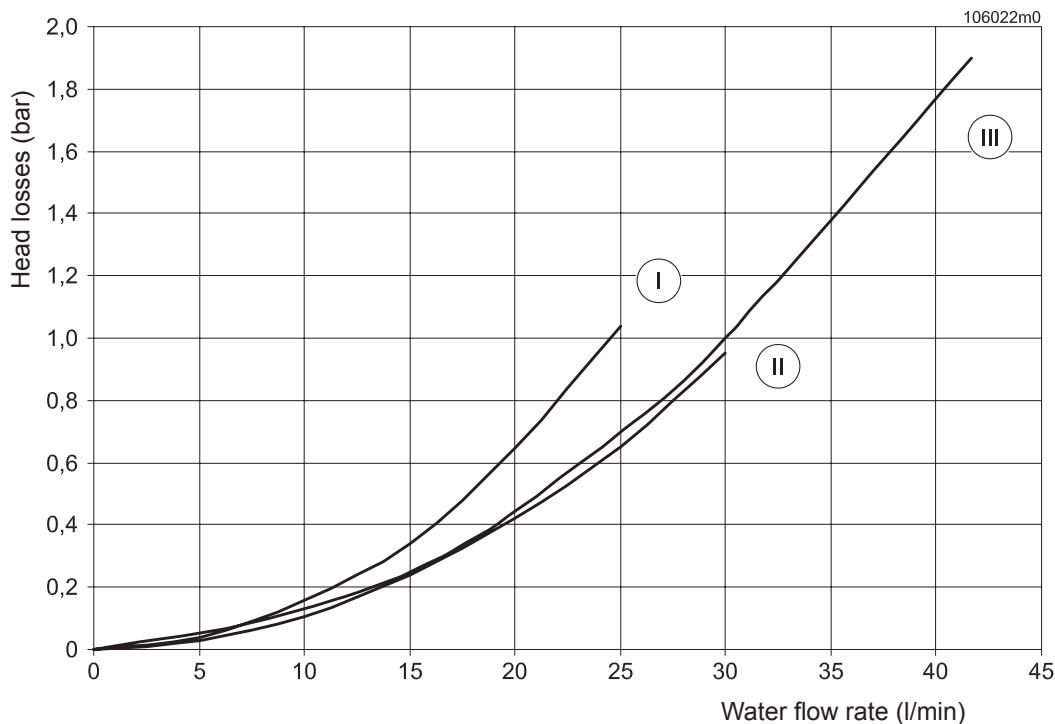


Figure 4.3 - Curve of the domestic water circuit losses

4.3 - Examples of installation

In figures 4.4, 4.5, 4.6, 4.7, 4.8 and 4.9 you can see some examples of installation.

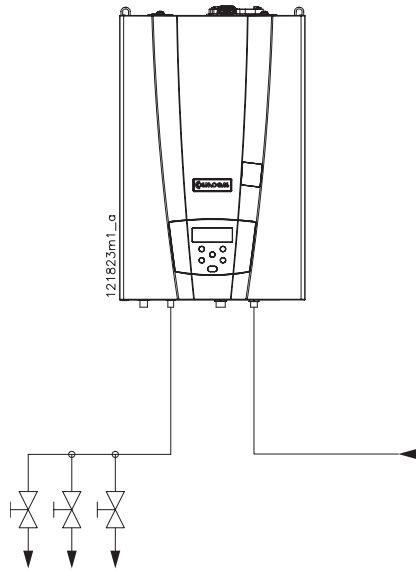


Figure 4.4 - Example of installation basic

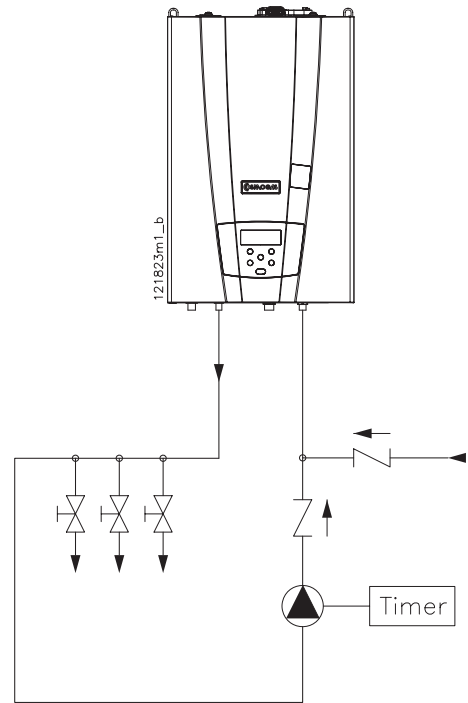


Figure 4.5 - Example of installation with recirculation and external pump

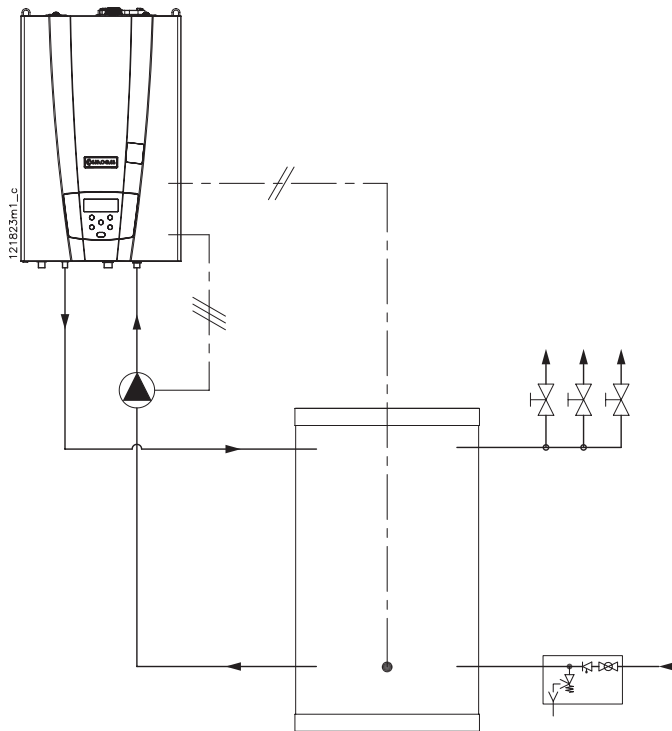


Figure 4.6 - Example of installation with storage tank

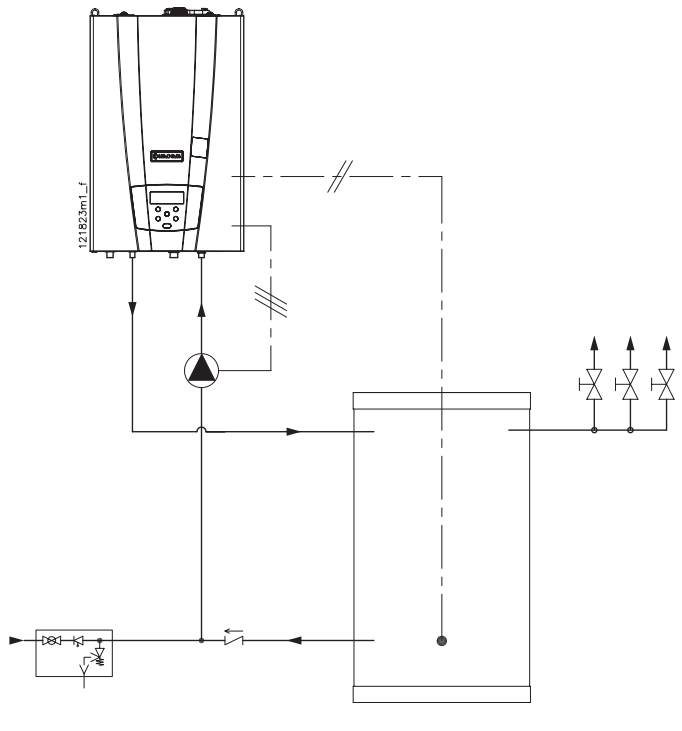


Figure 4.7 - Example of installation with storage tank with supply direct to the water heater

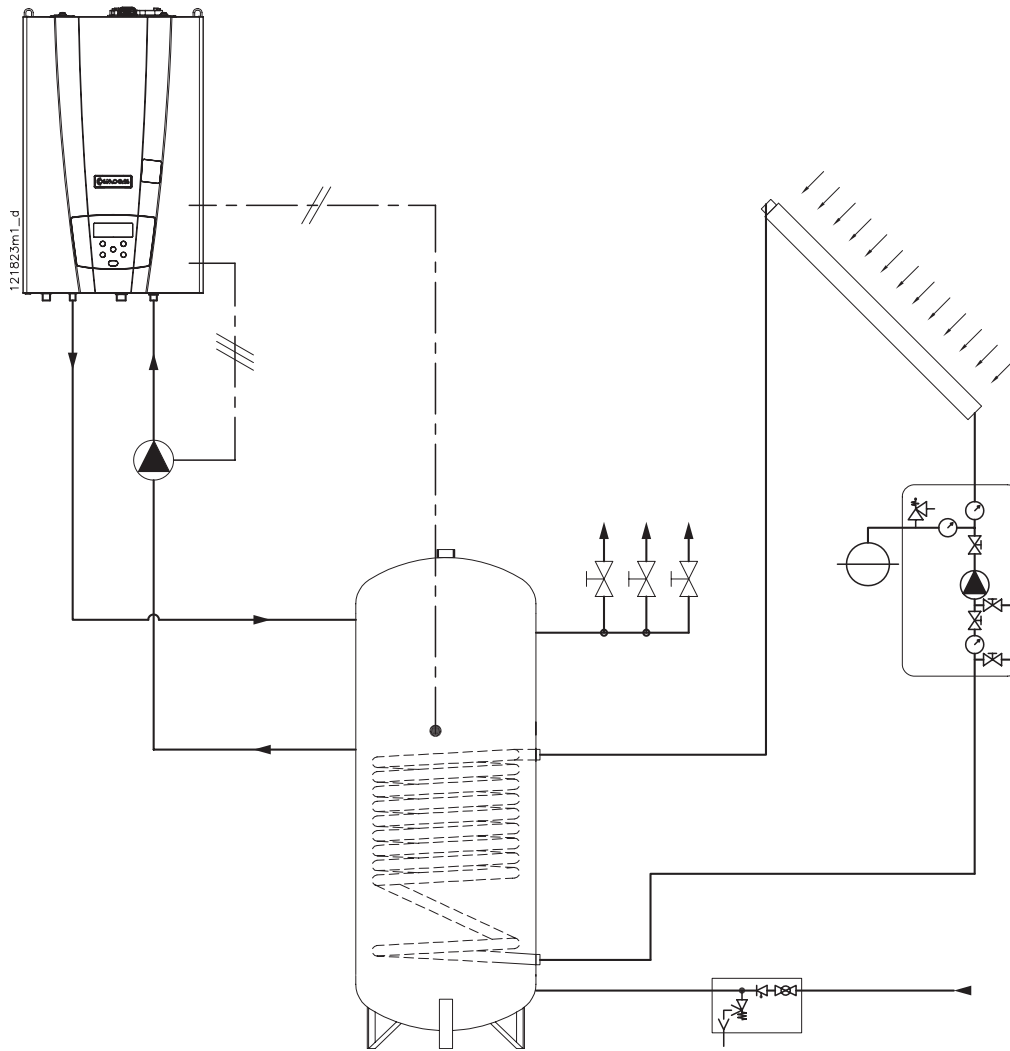


Figure 4.8 - Example of installation with solar panel and storage tank

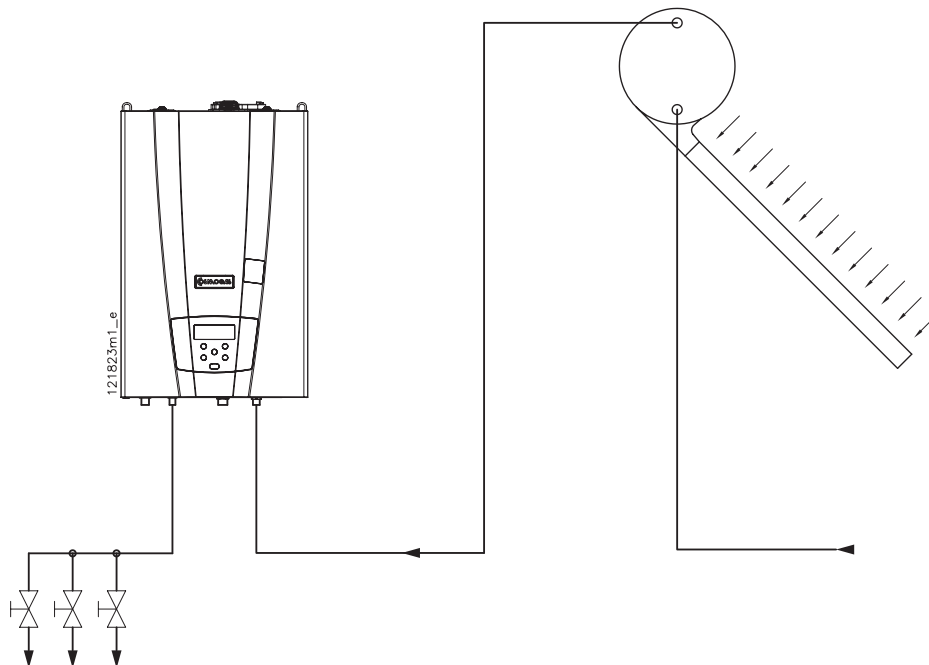


Figure 4.9 - Example of installation with solar panel

5 - INSTALLATION

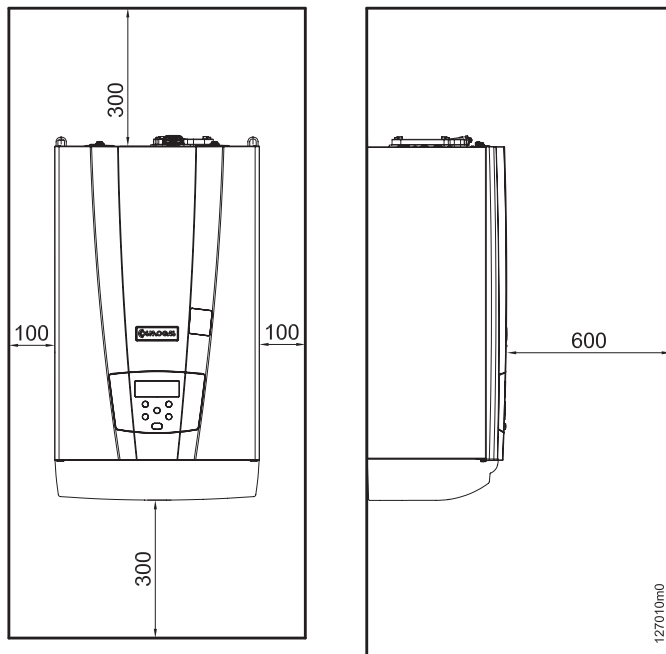
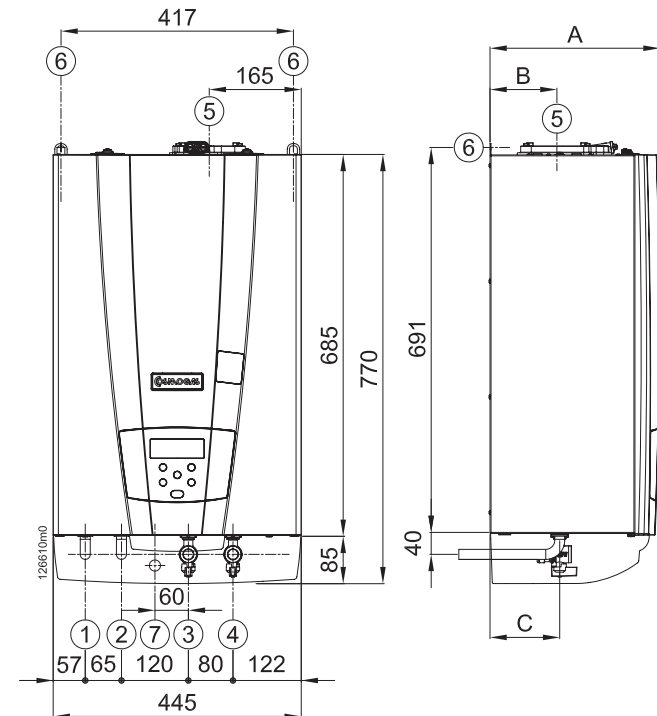


Figure 5.1 - Minimum safety distances



- 1 - 3/4" recirculation
- 2 - 3/4" D.H.W. outlet
- 3 - 3/4" gas inlet
- 4 - 3/4" cold water inlet
- 5 - Fumes exhaust/Air intake
- 6 - Support attachments
- 7 - Ø20 condensate drain

- A = 305 mm (MODELS 16-22-27) - 484 mm (MODEL 37)
- B = 120 mm (MODELS 16-22-27) - 175 mm (MODEL 37)
- C = 125 mm (MODELS 16-22-27) - 304 mm (MODEL 37)

Figure 5.2 - Dimensions and attachments centre to centre distances

5.1 - Opening the packaging

The appliance is supplied in cardboard packaging. Open following the instructions given on the flaps of the packaging itself.

5.2 - Dimensions and minimum safety clearances

It is necessary to leave free spaces around the appliance as illustrated in figure 5.1 both for installation and maintenance.

5.3 - Choosing suitable installation location



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

The appliance must be installed in a suitable room taking into account the following factors:

- connection of the exhaust/air intake pipes;
- connection of the gas supply pipe;
- connection to the cold water supply;
- connection of the domestic hot water supply;
- electrical connection;
- connection of the siphon and safety valve to a suitable drain;

5.4 - Mounting the appliance

Refer to figure 5.3:

- 1.- place the paper template, provided with the appliance, against the wall;
- 2.- check that the template is square;
- 3.- mark the holes for the plugs and hydraulic fittings on the wall;
- 4.- remove the paper template;
- 5.- make the holes "A" and introduce the wall plugs "B";
- 6.- hang the appliance on the plugs "C"
- 7.- make the appliance hydraulic and gas connections;
- 8.- make the hydraulic fittings.

5.5 - Domestic hot and cold water



ATTENTION !!! If water hardness exceeds 25°F (250 mg/l) a polyphosphates water softener must be installed on the incoming cold water supply (see paragraph 5.10).



ATTENTION !!! Install a filter with mesh no wider than 0.5 mm² in the domestic cold water inlet.



ATTENTION !!! The domestic hot water piping materials and fittings must be capable of withstanding temperatures of a least 95°C and 10 bar pressure. These circuits must be protected with suitable expansion together with both temperature and pressure relief safety devices in accordance with all relevant safety standards.

In figure 5.2 the service and maintenance valves are not shown. Hydraulic and gas connections should be fitted with isolation valves to accommodate service and maintenance works.

5.6 - Gas



ATTENTION !!! It is prohibited to operate the appliance with the incorrect gas type. Check the data label on the appliance for Natural gas (G20) or Propane gas (G31) to ensure that the correct appliance is being installed.



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

Two situations are possible:

- A - the gas and supply pressure correspond to the adjustment of the appliance. In this case, it can be connected;
- B - the gas and supply pressure do not correspond to the adjustment of the appliance. In this case, the appliance must be converted to the type of gas and supply pressure corresponding to those of the supply available.

The appliance is provided with the relevant gas conversion kit.

☞ Before the gas pipes are purged it is essential to ensure that the internal surfaces are clean and free of metal or plastic filings or any other solid pieces or liquids;

☞ An isolation valve must be installed on the gas supply pipe adjacent to the appliance;



ATTENTION !!! Before supplying gas to the appliance, it is essential that the gas pipes have been pressure tested in accordance with the most recent applicable gas standards.

☞ to prevent damage to the appliance gas valve, the supply pressure should not exceed 50 mbar under any circumstances;

☞ if the gas pipe-work must be tested in excess of 50 mbar, ensure that the appliance is fully isolated.

Figure 5.2 shows the position and the diameter of the gas connection on the appliance. Ensure that the gas service pipe-work is adequately sized to provide the maximum volume flow rate at the required minimum pressure.

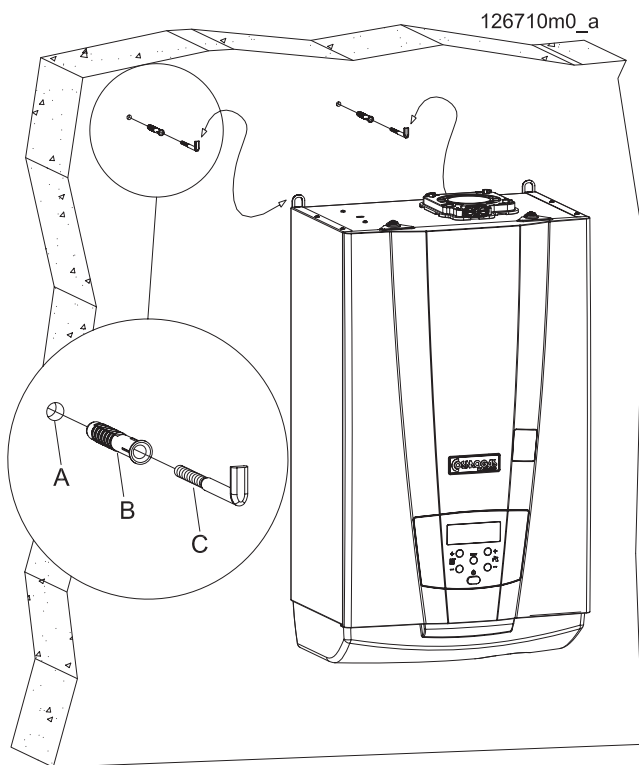


Figure 5.3 - Appliance wall fixing detail

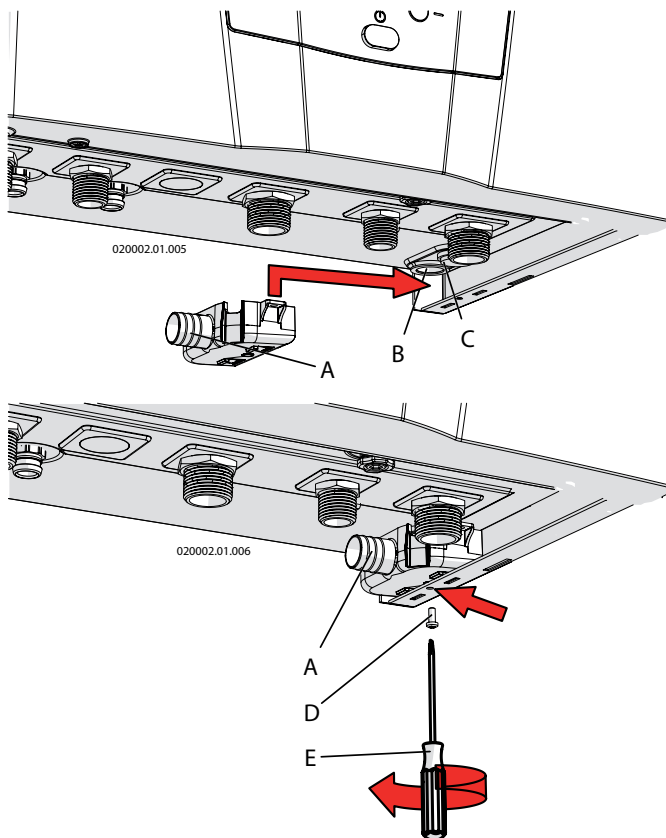


Figure 5.4 - Safety valve drain and condensate drain connection

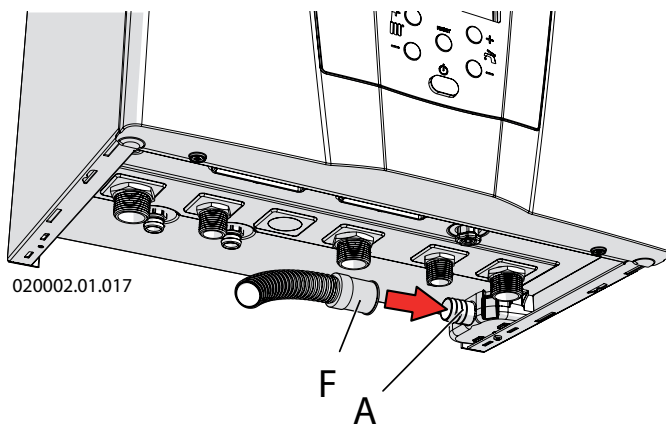


Figure 5.5 - Condensate drain pipe

5.7 - Condensate drain

There is a siphon inside the appliance for the evacuation of condensate (see figure 3.1 detail "40") and to prevent combustion products from escaping, whose end corresponds to the pipe "B" in figure 5.4. This termination must be conveyed into an anti-odour siphon (figure 5.8 detail "G") to prevent bad odours returning into the environment (the anti-odour siphon "G" is supplied on request). The tank "A" is mounted in the factory as indicated in figure 5.4, the exhaust pipe "F" is mounted in the factory as indicated in figure 5.5. In particular, the condensate discharge must comply with the following:

- ☞ for room used for residential purposes and for office 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 (siphon prepared within appliance) and to prevent the return of bad odours from the sewer (detail "G" in figure 5.8). If the room used for office purposes has less than 10 users, before connection with the domestic waste drain, a condensate neutraliser is good practice (see chapter 9 for the value of acidity of the condensate and the quantities).
- ☞ be connected to a plastic (not copper) drain pipe with a minimum internal pipe diameter equal to or greater than 13 mm;
- ☞ be installed in a way to prevent the liquid from freezing; therefore pay attention to any external passings. It is prohibited to drain into gutters or drainpipes;
- ☞ to slope continuously towards the drain point, avoid high points, which could pressurise the pipe;

5.8 - Safety valve

The appliance is protected against overpressures by a safety valve calibrated to 10 bar (see figure 3.1 detail "28"). The safety valve drain (detail "C" in figure 5.4), along with the condensate drain (detail "B" in figure 5.4) must be conveyed to a pipe "F" (see figure 5.5) with minimum internal diameter of 13 mm. The pipe "F" must be then taken to the anti-odour siphon (detail "G" figure 5.8). This drain with siphon is used to prevent overpressures if the valve is opened and makes it possible for the user to check the eventual intervention. The pipe "F" in figure 5.5 is supplied by standard along with the tank "A" in figure 5.4. The anti-odour siphon "G" in figure 5.8 is provided on request.



ATTENTION !!! If not connected to the drain, whenever the safety valve should intervene, it could cause damage to persons, animals or objects.

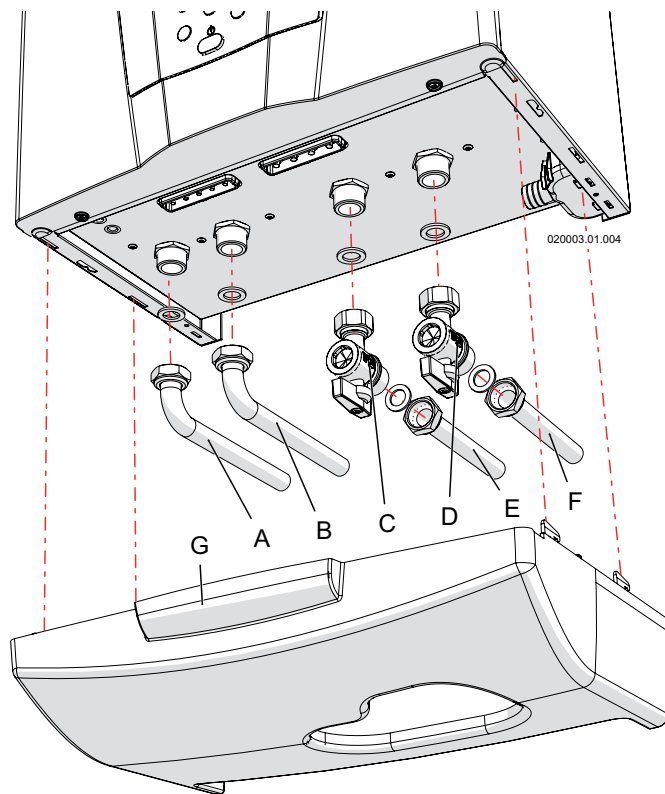


Figure 5.6 - Water and gas connections

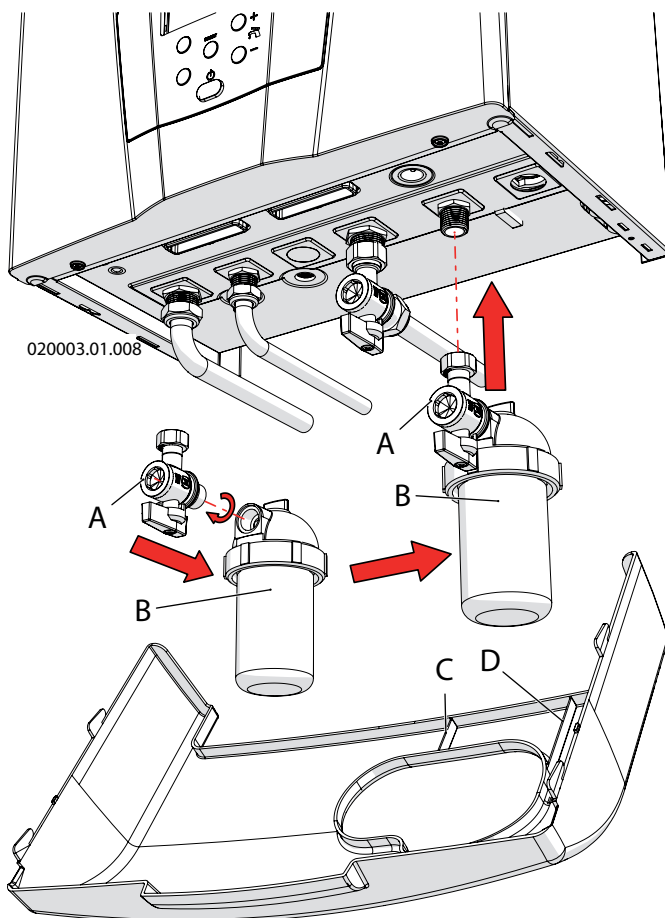


Figure 5.7 - Polyphosphates softener (on request)

5.9 - Hydraulic and gas connections

The appliance is supplied as per standard with the fittings illustrated in figure 5.6, where:

A = Ø 18 recirculation

B = domestic hot water Ø 18

C = 3/4" gas isolation valve (EN 331 type-approved)

D = 1/2" domestic cold water isolation valve

E = gas Ø 18

F = domestic cold water Ø 18

Once the hydraulic and gas connections have been made, proceed with assembly of the lower cover "G" as indicated in figure 5.6.

5.10 - Water softener (on request)

If the appliance is installed in a geographical area where domestic water has hardness exceeding 25°F (250 mg/l), a polyphosphates softener must be installed on the cold water supply (see figure 5.7 detail "B"), in order to safeguard the appliance from any lime scale deposits.

Proceed as follows for installation (refer to figure 5.7):

- 1.- connect the softener "B" to the isolation valve "A";
- 2.- mount the isolation valve "A" to the appliance fitting;
- 3.- proceed with the installation of the cold water inlet pipe into the fitting behind the softener "B";
- 4.- before re-mounting the lower cover, it is necessary to cut out the plastic section between "C" and "D" to accommodate the softener "B".



ATTENTION !!! Please note that if the water hardness levels are likely to be extremely high, it would be essential to consult with a water softening specialist who may recommend a more sophisticated system. In this regard, we would recommend that the incoming water supply should be tested in advance of any decision to purchase the appliance.

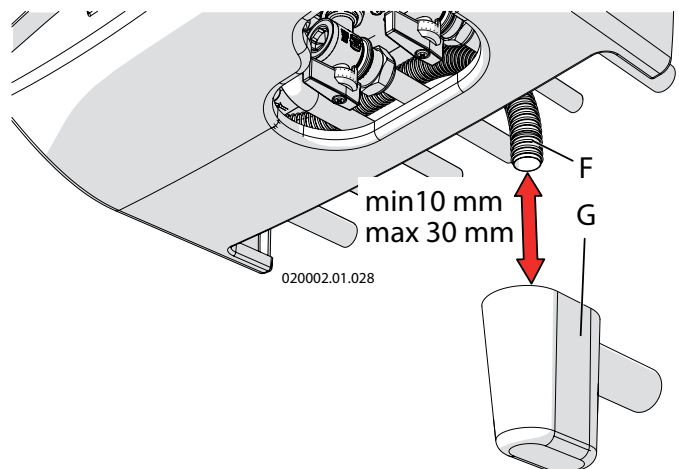


Figure 5.8 - Siphon funnel (on request)

5 - INSTALLATION

5.11 - Electrical connections



ATTENTION !!! The appliance is only electrically safe when it has been correctly connected to an efficient earth circuit, performed as envisioned by the current Safety Standards.

This fundamental safety requirement must be met. If in doubt, request a thorough control of the electric plant by a professionally qualified technician.

- ☞ Have a professionally qualified technician check that the electric plant is suitable for the electric power required by the appliance, indicated on the plate.
- ☞ The appliance must be connected to the mains electricity using a cable coupler. The use of adapters, multiple sockets, extensions, etc. is not allowed.
- ☞ The appliance must be connected to the mains electricity using a three-polar electric cable, with double isolation, minimum section of 1.5 mm² and resistant to a minimum temperature of 70°C (characteristic T).

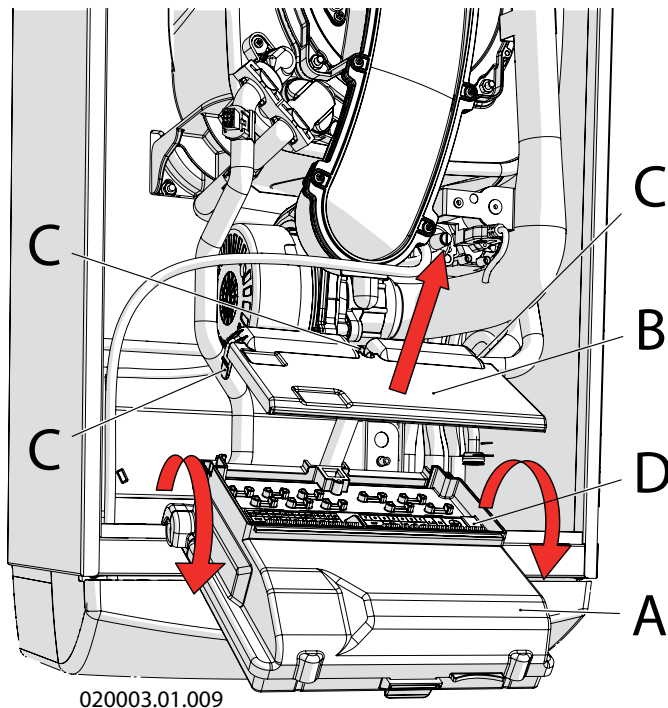
☞ For connection to mains electricity, a bi-polar switch must be envisioned in the vicinity of the appliance with a contacts opening distance of at least 3mm, as envisioned by the current regulations on the subject.

☞ Respect the polarity between the neutral phase during connection of the appliance.

☞ Make sure that the water plant pipes are not used as earth points for the electric or telephone plant. This piping is not suitable for this purpose, moreover, serious corrosion damage would occur in a very short time, on the appliance, piping and radiators.



ATTENTION !!! the appliance is not protected against the effects caused by lightning.



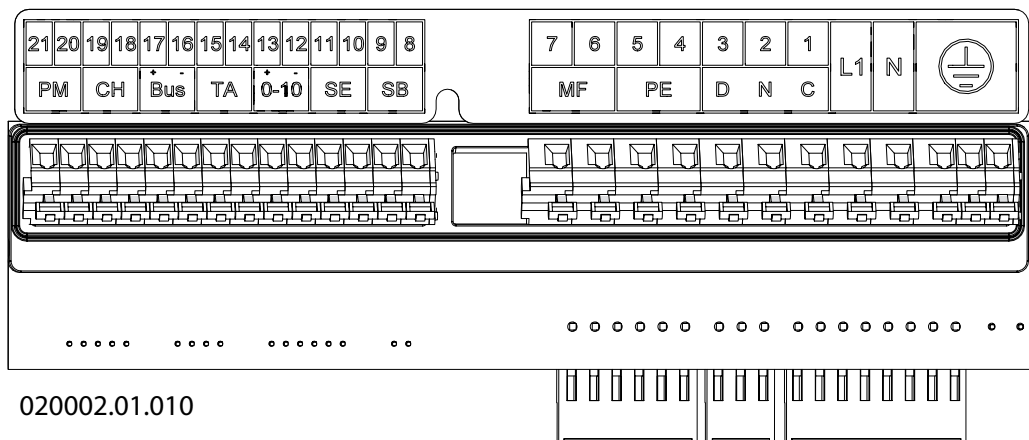
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Key for figure 5.9

- A = Commands board box;
- B = Electric connections board lid;
- C = Connections lid closing flaps;
- D = Electric connections board;

Key for electric contacts

- PM = Not used
- CH = Not used
- BUS = Not used
- TA = Not used
- 0-10 = Not used
- SE = Not used
- SB = Storage tank sensor (if present)
- MF = Multi-function output
- PE = Boiler pump (if present)
- DN = Not used
- (2 = Neutral; 3 = Line)
- L1 = Appliance power supply line
- N = Appliance power supply neutral
- EARTH SYMBOL = Earth contacts



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Figure 5.9 - Electric connections

5 - INSTALLATION

5.11.1 - Power supply cable connection

Proceed as follows to connect the power supply cable (refer to figure 5.9):

- 1.- use a three-polar cable with double isolation, with minimum section of 1.5 mm²
- 2.- remove the casing from the appliance following the relevant instructions in paragraph 8.2;
- 3.- rotate the panel "A" towards the front of the appliance;
- 4.- operate on the flaps "C" and open the lid "B" as indicated by the arrow;
- 5.- lay the power supply cable through the fairlead in proximity of the contacts "L1", "N" and earth symbol;
- 6.- strip the cable, making sure to keep the earth cable (yellow green) 20 mm longer than the other two;
- 7.- connect the yellow-green cable to the earth terminals (see symbol)
- 8.- connect the brown cable (Phase) to the terminals L1
- 9.- connect the blue cable (Neutral) to the terminals N

5.12 - D.H.W. buffer tank hydraulic layout

The hydraulic connection must be made as in figure 5.10. Proceed as follows for the electric connection (refer to the figure 5.9):

- 1.- disconnect the electric power supply from the appliance;
- 2.- disconnect and remove the temperature sensor (detail "44" in figure 3.1) from the domestic hot water outlet pipe;
- 3.- lay a bi-polar electric cable with minimum section of 1.5 mm², which goes from the appliance to the storage tank temperature sensor and connect it to the appliance at terminals "8" and "9" (SB);

- 4.- connect the other end of the cable to the storage tank temperature sensor;
- 5.- introduce the temperature sensor inside the storage tank sample point (see figure 5.10 detail "8").
- 6.- Connect the electric power of the storage tank pump (see figure 5.10 detail "7") to "PE" terminals of the water heater.

The AGUADENS appliances can be connected to a storage tank even following installation. In this case, the parameter $30\ 12'$ must be set at the value of 1.

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



ATTENTION !!! A domestic hot water temperature level exceeding 51°C can cause permanent injury/damage to persons, animals and objects. Children, the elderly and disabled must be protected against the potential risks of scalding, by introducing devices that limit the temperature of use of domestic hot water to utilities.

5.12.1 - Anti- legionella precaution

If the appliance is connected to a storage tank for the preparation of domestic hot water, a disinfection cycle is envisioned against the legionella bacterium. This cycle envisions taking the storage tank to a temperature of 60°C (temperature at which the legionella bacteria dies) at least every week. It is for this reason that the water (at certain times) can reach the utilities at a higher temperature than set with the relative command.



ATTENTION !!! A domestic hot water temperature level exceeding 51°C can cause permanent injury/damage to persons, animals and objects. Children, the elderly and disabled must be protected against the potential risks of scalding, by introducing devices that limit the temperature of use of domestic hot water to utilities.

5.12.2 - External secondary return configuration

If the appliance is envisioned with external recirculation unit, the recirculation cut-off valve (detail of figure 4.2) must be turned to the closed position.

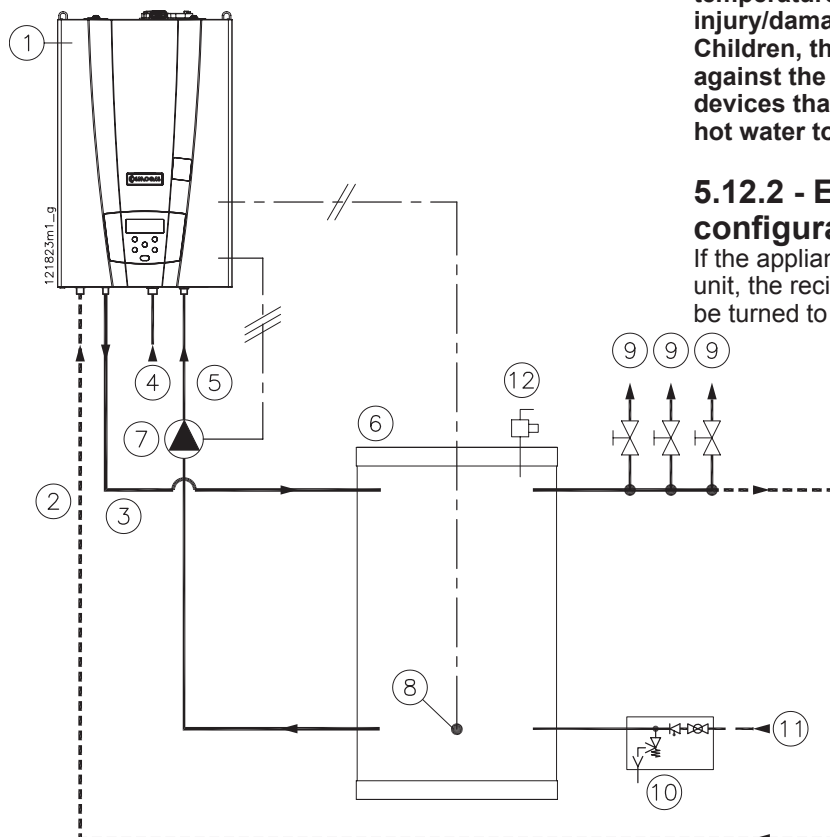


Figure 5.10 - water connection to the storage tank

KEY

- 1 AGUADENS water heater
- 2 Recirculation (if activated) *
- 3 Domestic hot water outlet
- 4 Gas inlet
- 5 Cold water
- 6 Storage tank
- 7 Storage tank load pump
- 8 Storage tank sensor
- 9 Domestic utilities
- 10 Hydraulic safety unit (by the installer)
- 11 Cold water inlet
- 12 Some state require this safety pressure-temperature relief valve

* The recirculation line is not mandatory.

5.13 - Flue systems



ATTENTION !!! The relevant national and local regulations must be strictly adhered to when installing the exhaust flue and combustion air pipes.



ATTENTION !!! The exhaust flue gases from the appliance can reach 90°C in certain conditions. Therefore, the plastic flue components must be capable of withstanding high temperatures and they must be approved for these specific appliance.



ATTENTION !!! This appliance is the “condensing” type. The polypropylene materials used in the manufacture of plastic exhaust flue system which are approved for use are designed to prevent corrosion which would otherwise be caused to the acidity of the condensate. AISI316 stainless steel exhaust flue system can also be designed for this purpose.

Regarding this, remember that the appliances of this type must have exhaust and intake pipes supplied by the manufacturer of the appliance itself. Other types of pipes, if used, must however be type-approved for this intended use. The types of exhaust for which the appliance is approved are given in the features table at the end of the manual under “type” and on the features plate affixed to the appliance, also under “type”. The symbols used to define exhaust is reported below:

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



ATTENTION !!! If the appliance is installed with the B23 type exhaust, it will take in air for combustion from the surrounding environment. Therefore, all precautions must be taken regarding ventilation of the rooms, which are prescribed by the national and/or local Standards.

- C13, coaxial in vertical wall

- C33, coaxial at the roof

- C43, separated with exhaust in flue, combined with intake in common channel.



ATTENTION !!! The appliances installed in type C43 must only be connected to conventional flues.

- C53, separated with exhaust on roof and intake on wall or however, in two potentially different pressure points.

- C63, the appliance can be fitted to type-approved exhaust and intake pipes of other brands.



ATTENTION !!! With the C63 type exhaust, 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 flue exhaust.

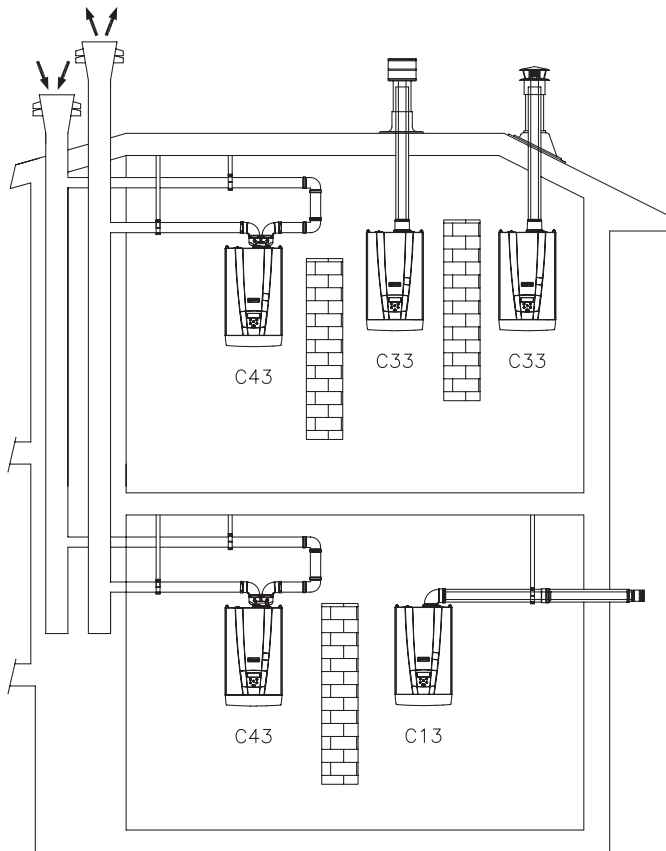
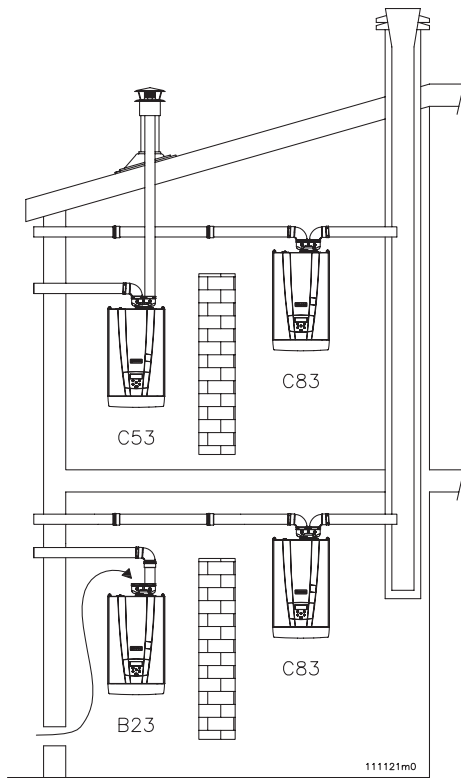


Figure 5.11 - Exhaust/intake systems

5 - INSTALLATION

During operation, especially in winter, a plume will be visible as the water vapour in the exhaust gases come into contact with the outside air. This plume should not cause any concern however the installer should discuss the matter with the customer prior to commencement of the installation in case the aesthetical impact of this plume might cause a problem.

5.13.1 - Exhaust flue with independent combustion air grille type B23

In the case of B23 type combustion agent air/fumes exhaust systems, it is indispensable that the rooms in which the appliances are installed have at least as much air as that required by combustion and ventilation of the room. It is therefore good practice to remember that the combustion of 1 m³ of gas requires 11 cm³ 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 away from sources of pollution, such as: vents of dubious origin, airborne industrial exhaust etc.

The ventilation openings must meet the following requirements:

- ☞ have sections with net passage of at least 6 cm² for every kW of heat input installed, with minimum of 100 cm²;
- ☞ be realised in a way that the opening inlets both inside and outside the wall cannot be blocked;
- ☞ be protected for example with grids, metal meshes, etc. The net section of the passage must not be reduced by these elements;
- ☞ be situated at a height more or less of the floor and such not to disturb the correct operation of the combustion products exhaust devices. Where this position is not possible, the section of the ventilation openings must be increased by at least 50%.

The flow of air can also be obtained from an adjacent room as long as:

- ☞ it has direct ventilation, in compliance with the previous points;
- ☞ only this gas appliance is installed in the room to be ventilated;
- ☞ the adjacent room is not a bedroom;
- ☞ the adjacent room is not a common part of the building;
- ☞ the adjacent room is not an environment with fire hazard, such as a hangars, garages, combustible materials warehouse, 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 the presence in the room of another appliance operating with any type of fuel, a fireplace and any other intake device for which an adequate air intake has not been envisioned);
- ☞ the flow of air from the adjacent room to that to be ventilated can take place freely through permanent openings with total net section not less than that indicated at the start of this chapter.

In rooms where gas appliances are installed, it may become necessary, as well as the input of combustion agent air, also to evacuate the stale air, with resulting 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 exhaust pipe in the room, it must be capped;
- b) The ventilation opening of 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. To this end, that stated above must be verified by draft testing, running the fan or extractor hood at its maximum power and the gas appliance at the maximum and minimum power.



Flue terminal location

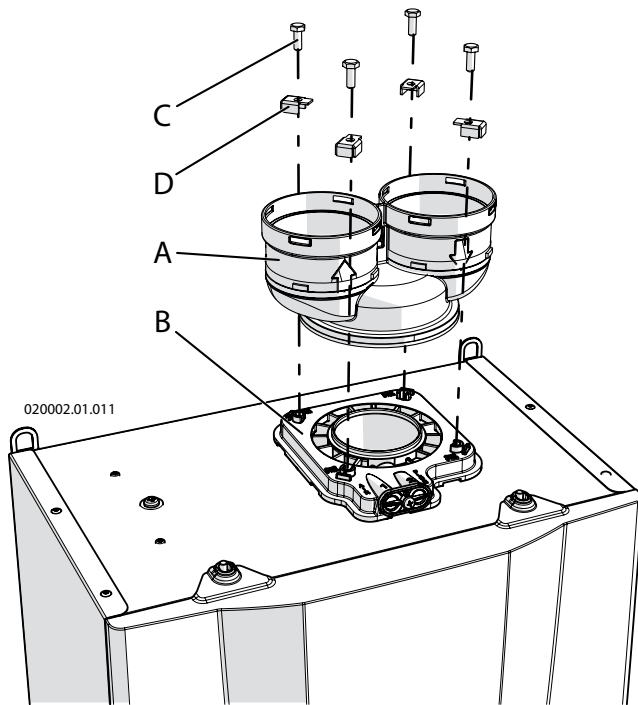


Figure 5.12 - Installation of the "80/80PP Split" System

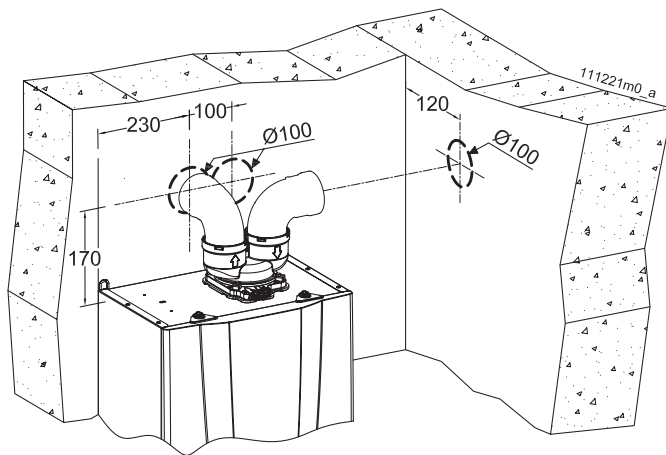


Figure 5.13 - Clearance

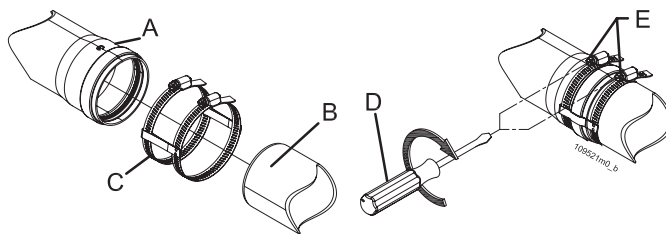


Figure 5.14 - Fixing the exhaust and intake pipes

5.13.2 - "Split 80/80PP" System (polypropylene) (Type C43; C53; C83) AGUADENS 16-22-27

The appliance is supplied as per standard without fittings for the connection of the fumes exhaust/air intake. To connect it to a "80/80PP Split" system, the relevant kit must be requested and must be installed as in figure 5.12. Fitting "A" can rotate freely by 360°, guaranteeing optimum installation versatility.

- ☞ On the exhaust flue side, it is mandatory to install polypropylene plastic pipes or AISI 316L stainless steel which are resistant to damage from condensation.
- ☞ Take particular care with the installation of pipes in the part that passes through the wall to the outside. The normal maintenance operations must always be possible, therefore install the pipes in a sheath so that they can slide out.
- ☞ The horizontal exhaust flue pipes must always have an inclination of 2% with the fall back towards the appliances as opposed to the wall terminal.
- ☞ The appliance is already set-up to collect the condensate, which must be fitted to a drain pipe (see chapter 5.7).

! ATTENTION !!! This condensate drain is designed to make all liquid produced flow from a single appliance. If several appliances are installed, each one must envision its own condensate drain.

The fumes exhaust/air intake system can be extended up to a maximum distance as indicated in chapter 9. Every 90° bend has a loss equivalent to 1 metre of linear pipe. Every 45° bend has a loss equivalent to 0.5 m of linear pipe.

! ATTENTION !!! The exhaust flue terminal must be appropriately protected against the effects of the wind (see also 7.11.1 error L 0 C 2 0).

! ATTENTION !!! Mechanically secure the joints between the various component elements of the exhaust and intake pipe, through the use of fixing systems or equivalent systems. See figure 5.14

! ATTENTION !!! The temperature of the exhaust pipe can reach 90°C during operations. If it must pass through a wall that is sensitive to these temperatures, insert a protective heat-isolation sheath.

! ATTENTION !!! If the air intake and fumes exhaust terminals are positioned in the same wall, they must remain at a minimum distance of 1 metre.

! ATTENTION !!! The exhaust and intake pipes must be appropriately sustained via rigid brackets positioned no more than 1 metre from each other. The brackets must be fixed to rigid walls that can support the weight of the pipe itself.

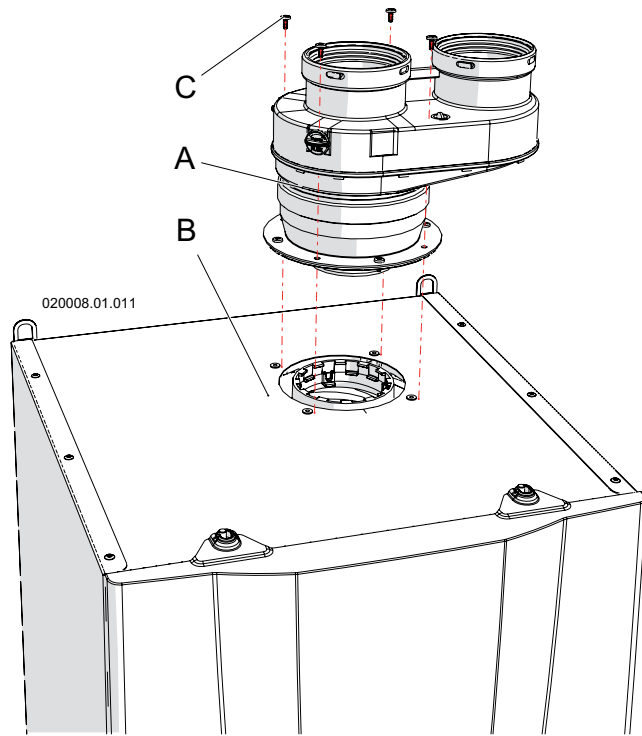


Figure 5.15 - Installation of the "80/80PP Split" System

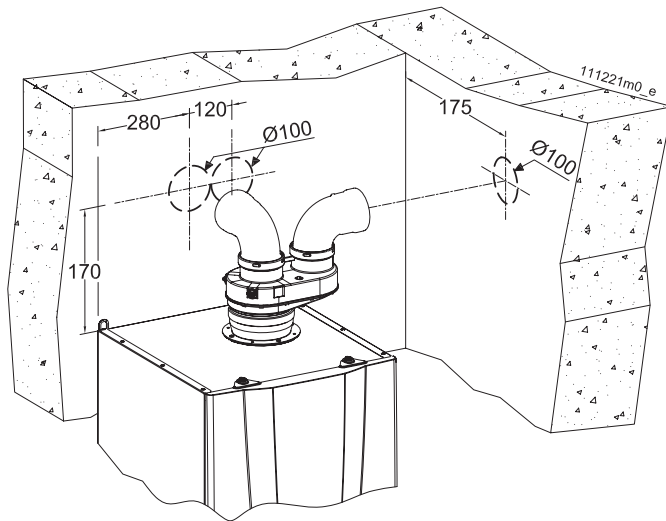


Figure 5.16 - Clearance

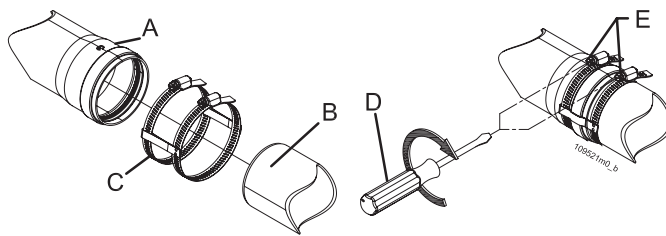


Figure 5.17 - Fixing the exhaust and intake pipes

5.13.3 - "Split 80/80PP" System (polypropylene) (Type C43; C53; C83) AGUADENS 37

The appliance is supplied as per standard without fittings for the connection of the fumes exhaust/air intake. To connect it to a "80/80PP Split" system, the relevant kit must be requested and must be installed as in figure 5.15. Fitting "A" can rotate freely by 360°, guaranteeing optimum installation versatility.

- ☞ On the exhaust flue side, it is mandatory to install polypropylene plastic pipes or AISI 316L stainless steel which are resistant to damage from condensation.
- ☞ Take particular care with the installation of pipes in the part that passes through the wall to the outside. The normal maintenance operations must always be possible, therefore install the pipes in a sheath so that they can be slid out.
- ☞ The horizontal exhaust flue pipes must always have an inclination of 2% with the fall back towards the appliance as opposed to the wall terminal.
- ☞ The appliance is already set-up to collect the condensate, which must be fitted to a drain pipe (see chapter 5.7).

! ATTENTION !!! This condensate drain is designed to make all liquid produced flow from a single appliance. If several appliances are installed, each one must envision its own condensate drain.

The fumes exhaust/air intake system can be extended up to a maximum distance as indicated in chapter 9. Every 90° bend has a loss equivalent to 1 metre of linear pipe. Every 45° bend has a loss equivalent to 0.5 m of linear pipe.

! ATTENTION !!! The exhaust flue terminal must be appropriately protected against the effects of the wind (see also 7.11.1 error L 0 C 20).

! ATTENTION !!! Mechanically secure the joints between the various component elements of the exhaust and intake pipe, through the use of fixing systems or equivalent systems. See figure 5.17

! ATTENTION !!! The temperature of the exhaust pipe can reach 90°C during operations. If it must pass through a wall that is sensitive to these temperatures, insert a protective heat-isolation sheath.

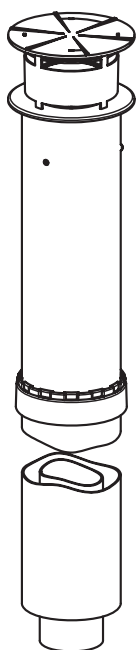
! ATTENTION !!! If the air intake and fumes exhaust terminals are positioned in the same wall, they must remain at a minimum distance of 1 metre.

! ATTENTION !!! The exhaust and intake pipes must be appropriately sustained via rigid brackets positioned no more than 1 metre from each other. The brackets must be fixed to rigid walls that can support the weight of the pipe itself.

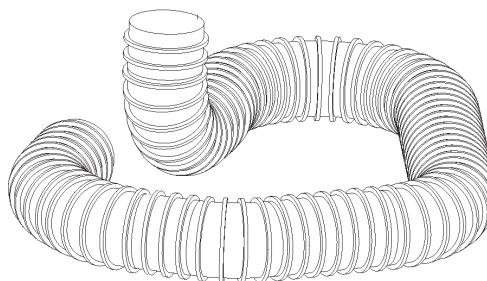
5.13.4 - "Split 80/80PP" System (Type C43; C53; C83): accessories available

To make the "80/80PP split" fumes exhaust/air intake system, we propose some of the most common accessories available; remember that a wide range can be consulted in the relevant catalogue: (the number after the code is used to recall the piece in the following drawings)

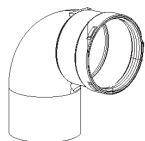
- 62617306 - N° 10 PP roof terminal
- 62617244 - N° 12 90° bend M/F PP
- 62617255 - N° 29 converts for pitched roofs from 15° up to 25°
- 62617236 - N° 11 extension M/F PP
- 62617249 - N°18 anti-slip bands for extensions PP
- 62617240 - N° 14 flexible hose M.F. PP L=20m
- 62617241 - N°16 spacer for flexible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



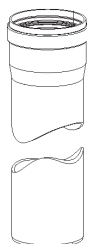
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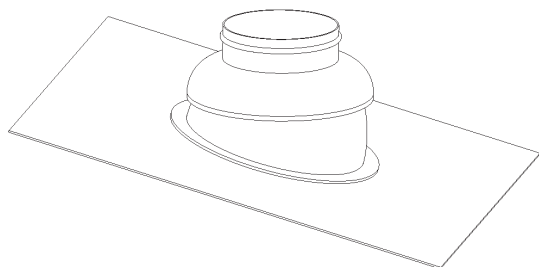
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COD. 62617244



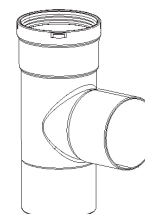
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COD. 62617255



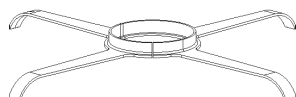
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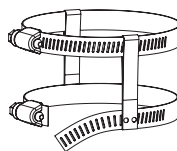
COD. 62617242



COD. 62617246



COD. 62617241



COD. 62617249

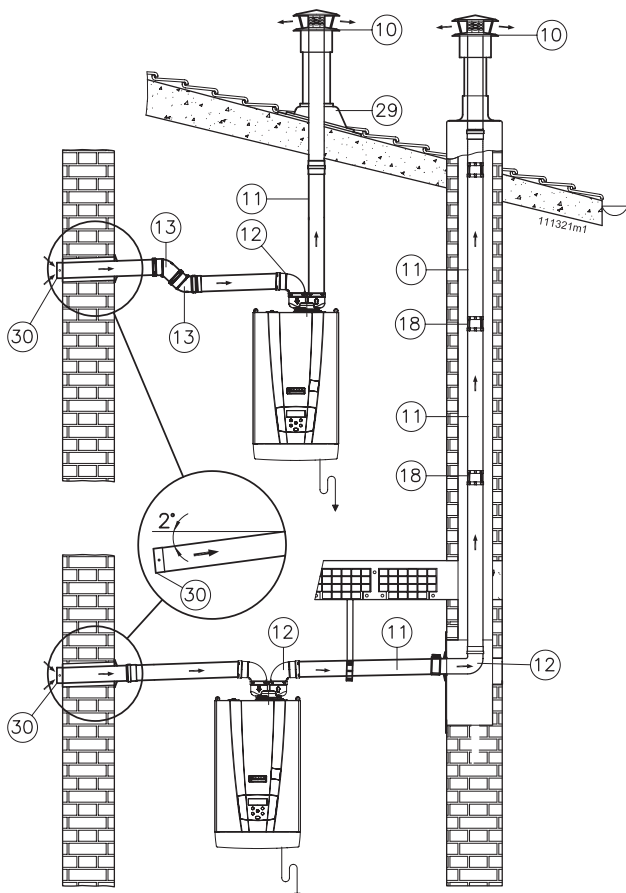


Figure 5.18 - Example of "80/80 PP System" installation

5.13.5 - "Split 80/80PP" System (Type C43; C53; C83): installation examples

In figure 5.18 two examples of installation are given:

- exhaust into chimney with collection of condensate inside the appliance itself.

The horizontal part of the fumes exhaust must slope towards the appliance.

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

- exhaust to the outside directly with the appliance pipes with condensate collection inside the appliance itself.

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

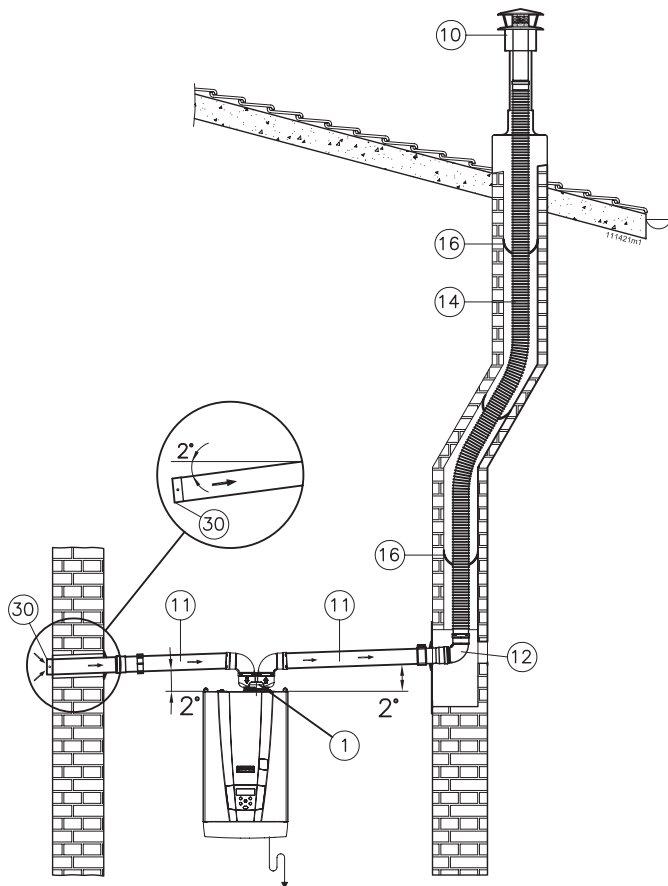


Figure 5.19 - Example of "80/80 PP System" installation

In figure 5.19 it is possible to see a separated type of fumes exhaust, where fumes exhaust was realised with flexible hose in polypropylene for piping of technical cells.

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

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

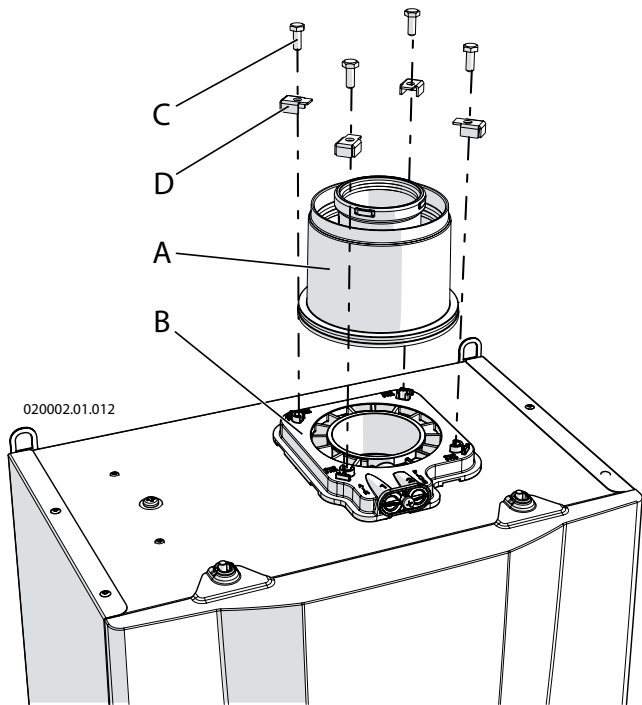


Figure 5.20 - Installation of vertical coaxial system

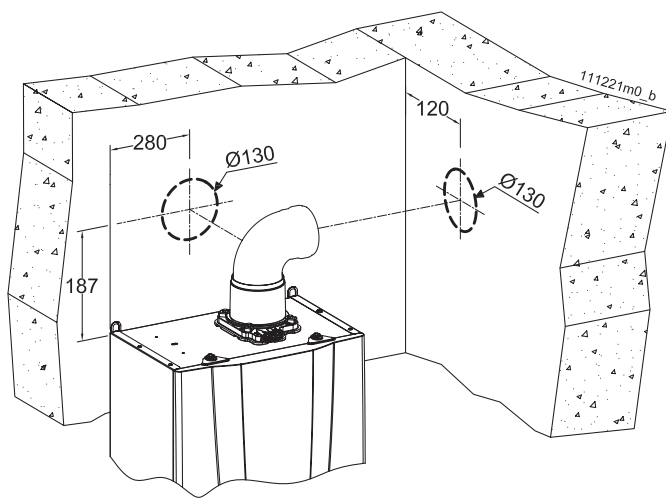


Figure 5.21 - Quotes and hole centre to centre distances for coaxial drain pre-installation

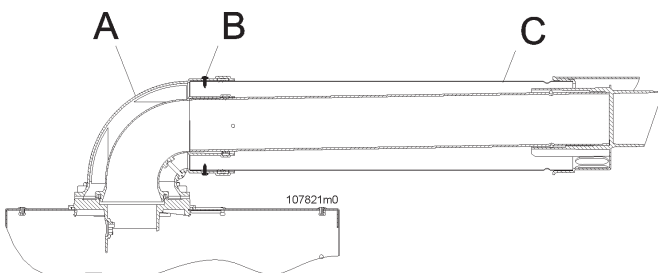


Figure 5.22 - Positioning the coaxial pipe

5.13.6 - “60/100PP vertical coaxial” System (polypropylene) (C13; C33 Type)

AGUADENS 16-22-27

The appliance is supplied as per standard without fittings for the connection of the fumes exhaust/air intake. To connect it to a vertical 60/100 system, the relevant kit must be requested and must be installed as in figure 5.20.



ATTENTION !!! Scrupulously follow the installation phases of the coaxial pipe as illustrated in figure 5.22. In particular:

- 1.- introduce the coaxial pipe “C” inside the bend “A”;
- 2.- fix the external pipe using the stainless steel self-threading screws “B”.



ATTENTION !!! The coaxial exhaust and intake pipes must be appropriately sustained via rigid brackets positioned no more than 1 metre from each other. The brackets must be fixed to rigid walls that can support the weight of the pipe itself.



ATTENTION !!! Once these operations have been performed, check that the exhaust/intake terminal is exposed to the outdoors with the tolerances given in figure 5.26

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

☞ The horizontal exhaust flue pipes must always have an inclination of 2% with the fall back towards the appliances as opposed to the wall terminal.

☞ The combined exhaust/air intake pipe can be extended up to a maximum distance as indicated in the table in chapter 9 at the end of the manual. Every 90° bend has a loss equivalent to 1 metre of linear pipe. Every 45° bend has a loss equivalent to 0.5 m of linear pipe.

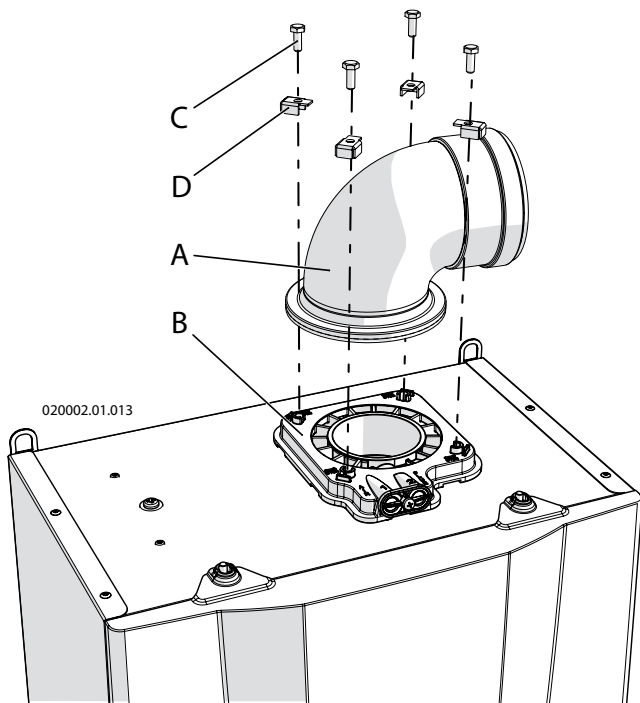


Figure 5.23 - Installation of horizontal coaxial system

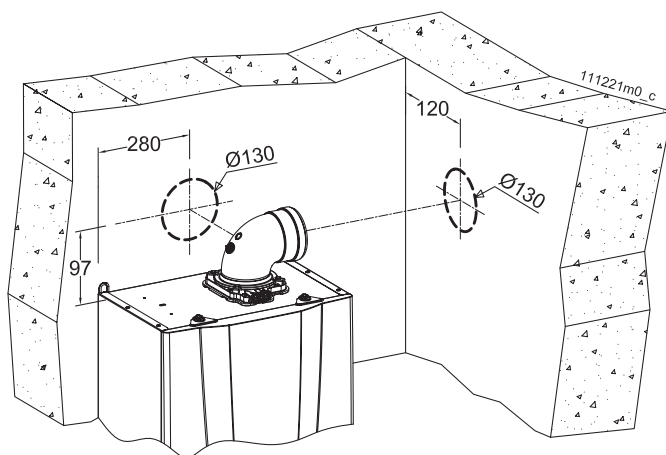


Figure 5.24 - Quotes and hole centre to centre distances for coaxial drain pre-installation

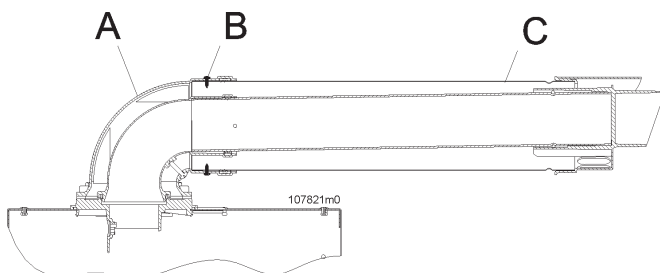


Figure 5.25 - Positioning the coaxial pipe

5.13.7 - "60/100PP horizontal coaxial" System (polypropylene) (C13; C33 Type) AGUADENS 16-22-27

The appliance is supplied as per standard without fittings for the connection of the fumes exhaust/air intake. To connect the appliance to a 60/100 coaxial system, request the relevant kit and install it as in figure 5.23.



ATTENTION !!! Scrupulously follow the installation phases of the coaxial pipe as illustrated in figure 5.25. In particular:

1. - introduce the coaxial pipe "C" inside the bend "A";
2. - fix the external pipe using the stainless steel self-threading screws "B".



ATTENTION !!! The coaxial exhaust and intake pipes must be appropriately sustained via rigid brackets positioned no more than 1 metre from each other. The brackets must be fixed to rigid walls that can support the weight of the pipe itself.

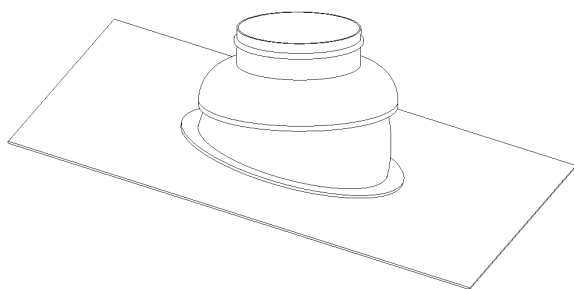


ATTENTION !!! Once these operations have been performed, check that the exhaust/intake terminal is exposed to the outdoors with the tolerances given in figure 5.26

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

☞ The horizontal exhaust flue pipes must always have an inclination of 2% with the fall back towards the appliances as opposed to the wall terminal.

☞ The combined exhaust/air intake pipe can be extended up to a maximum distance as indicated in the table in chapter 9 at the end of the manual. Every 90° bend has a loss equivalent to 1 metre of linear pipe. Every 45° bend has a loss equivalent to 0.5 m of linear pipe.



COD. 62617255

5.13.8 - "60/100PP Coaxial" System: accessories available

The following accessories are available on request to make the 60/100 coaxial fumes exhaust/air intake system:

(the number after the code is used to recall the piece in the following drawings)

62617255 - N° 2 converts for pitched roofs from 5° to 25° extension L = 1000 mm

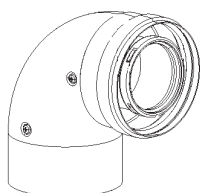
62617234 - N° 1 90° coaxial bend M/F PP

62617252 - N° 6 45° coaxial bend M/F PP

62617231 - N° 7 Coaxial extension L 1m PP

62617304 - N° 3 coaxial PP roof terminal

62617232 - N° 5 coaxial PP wall terminal



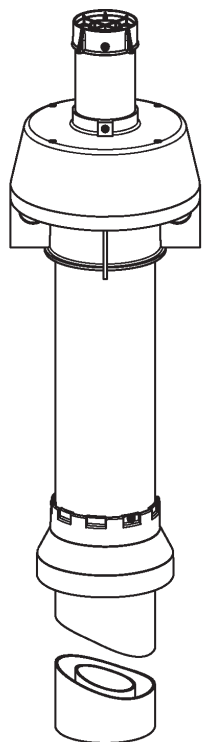
COD. 62617234



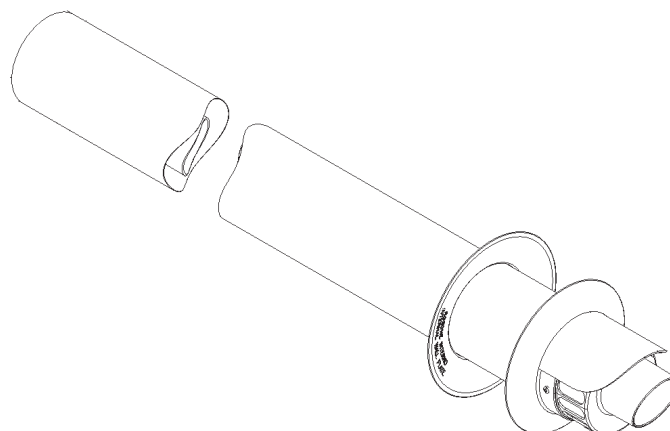
COD. 62617252



COD. 62617231



COD. 62617304



COD. 62617232

5.13.9 - "60/100PP Coaxial" System: installation examples

When a coaxial exhaust is made (see figure 5.26), both vertical and horizontal, the exhaust pipe slope upwards in a way to make the condensate flow into the appliance.



ATTENTION !!! The horizontal terminal must be protected against the accidental return of rain water. To do this, gables must be installed (or projections or balconies or relevant protections) with the minimum dimensions given in figure 5.26

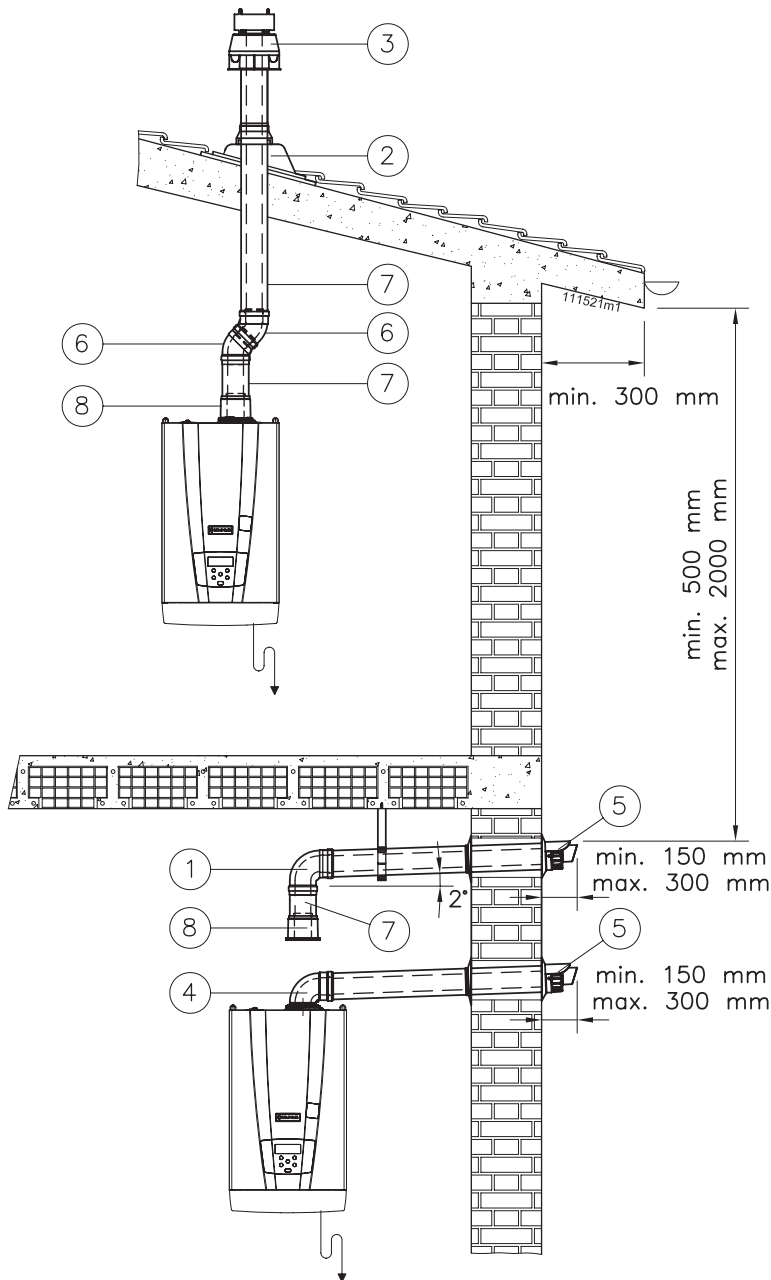


Figure 5.26 - Examples of coaxial pipe installations

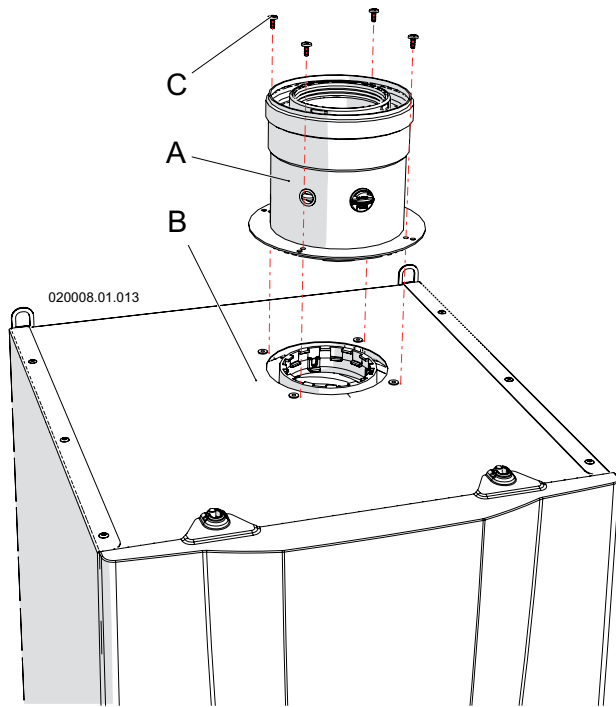


Figure 5.27 - Installation of vertical coaxial system

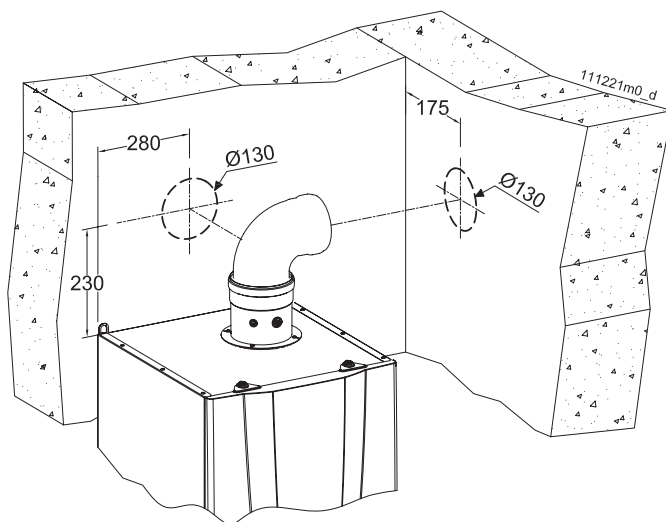


Figure 5.28 - Quotes and hole centre to centre distances for coaxial drain pre-installation

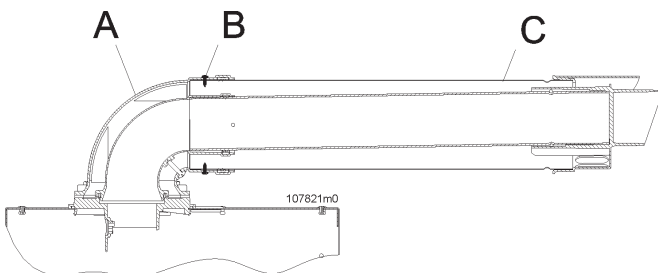


Figure 5.29 - Positioning the coaxial pipe

5.13.10 - “80/125PP vertical coaxial” System (polypropylene) (C13; C33)

AGUADENS 37

The appliance is supplied as per standard without fittings for the connection of the fumes exhaust/air intake. To connect it to a vertical 80/125 system, the relevant kit must be requested and must be installed as in figure 5.27.



ATTENTION !!! Scrupulously follow the installation phases of the coaxial pipe as illustrated in figure 5.29. In particular:

- 1.- introduce the coaxial pipe “C” inside the bend “A”;
- 2.- fix the external pipe using the stainless steel self-threading screws “B”.



ATTENTION !!! The coaxial exhaust and intake pipes must be appropriately sustained via rigid brackets positioned no more than 1 metre from each other. The brackets must be fixed to rigid walls that can support the weight of the pipe itself.



ATTENTION !!! Once these operations have been performed, check that the exhaust/intake terminal is exposed to the outdoors with the tolerances given in figure 5.30

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

☞ The horizontal exhaust flue pipes must always have an inclination of 2% with the fall back towards the appliances as opposed to the wall terminal.

☞ The combined exhaust/air intake pipe can be extended up to a maximum distance as indicated in the table in chapter 9 at the end of the manual. Every 90° bend has a loss equivalent to 1 metre of linear pipe. Every 45° bend has a loss equivalent to 0.5 m of linear pipe.

5.13.11 - "80/125PP Coaxial" System: accessories available

The following accessories are available on request to make the 80/125 coaxial fumes exhaust/air intake system:
(the number after the code is used to recall the piece in the following drawings)

62617255 - N° 2 converts for pitched roofs from 5° to 25°
extension L = 1000 mm

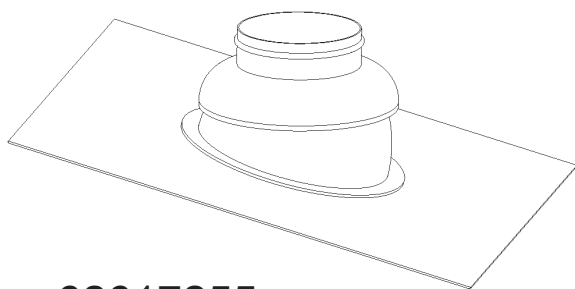
62617321 - N° 1 90° coaxial bend M/F PP

62617322 - N° 6 45° coaxial bend M/F PP

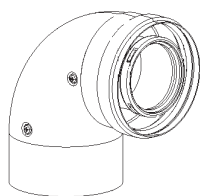
62617323 - N° 7 Coaxial extension L 1m PP

62617325 - N° 3 coaxial PP roof terminal

62617324 - N° 5 coaxial PP wall terminal



62617255



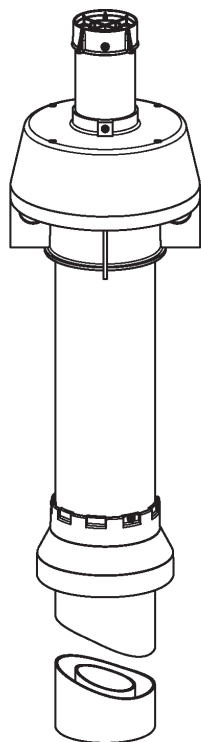
62617321



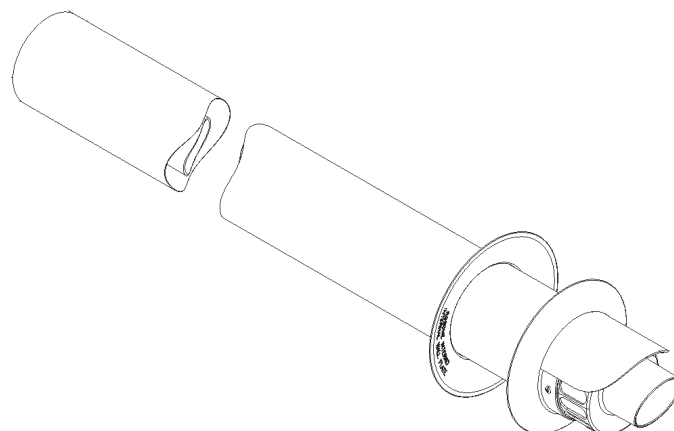
62617322



62617323



62617325



62617324

5.13.12 - "80/125PP Coaxial" System: installation examples

When a coaxial exhaust is made (see figure 5.30), both vertical and horizontal, the exhaust pipe slope upwards in a way to make the condensate flow into the appliance.



ATTENTION !!! The horizontal terminal must be protected against the accidental return of rain water. To do this, gables must be installed (or projections or balconies or relevant protections) with the minimum dimensions given in figure 5.30

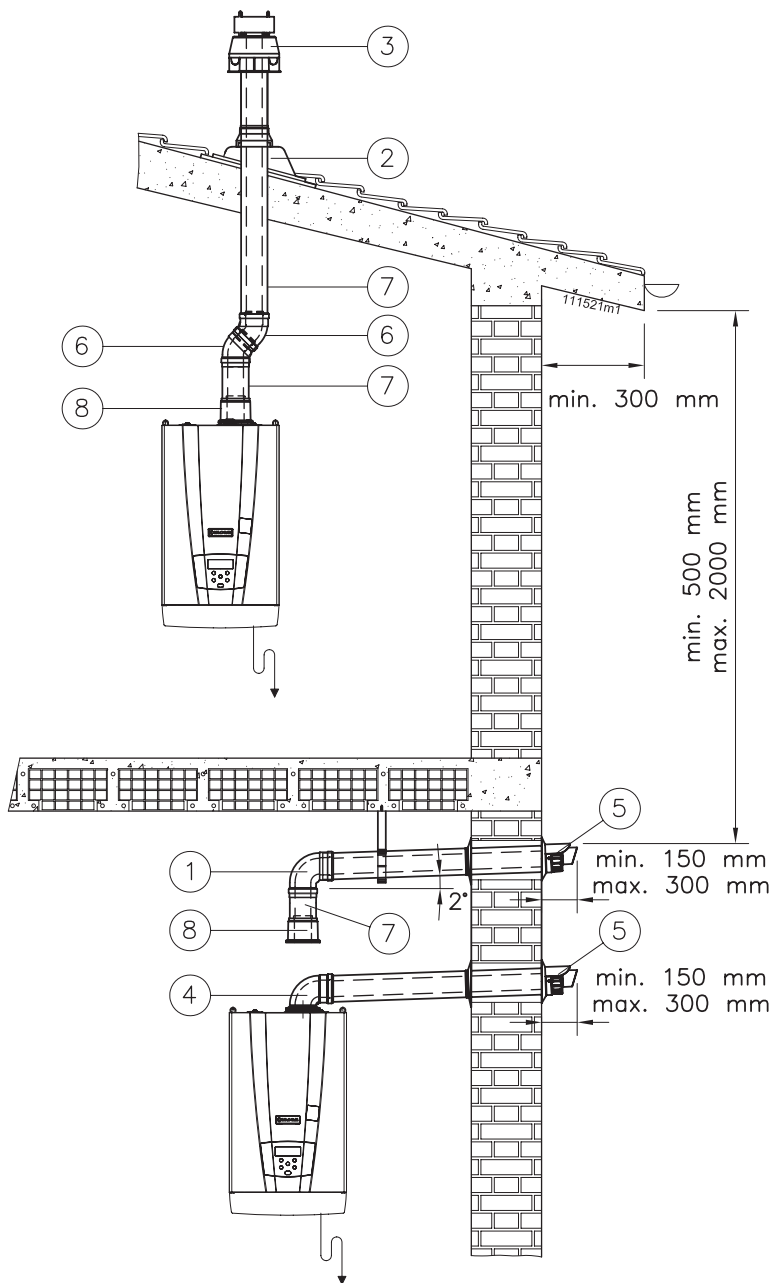


Figure 5.30 - Examples of coaxial pipe installations

6 - OPERATING

6.1 - Operating

Before starting the appliance up, it is necessary to carry out the following.

6.1.1 - User instructions

Instruct the user regarding correct use of the appliance and the plant in general. In particular:

- ☞ Give the installation and user manual and all documentation contained in the packaging to the user.
- ☞ Instruct the user concerning the special measures for the exhaust of burned gases, informing them that they must not be modified.
- ☞ Inform the user regarding the correct adjustment of the temperatures settings.

6.1.2 - Filling the condensate drain siphon

The siphon found inside the appliance (see figure 3.1 detail "40"), must be filled with water to create the water head able to prevent the fumes escaping from pipe "F" in figure 5.8. Proceed as follows to do this:

(refer to figure 6.1)

- 1.- loosen the screw "E";
- 2.- remove the lid "D" and the gaskets "C";
- 3.- introduce a rubber hose into the opening "B" (do not confuse with "A") and the other end of the hose into the funnel;
- 4.- use the funnel to slowly pour about 200 cm³ (a glass) of water;
- 5.- re-mount everything in reverse order.

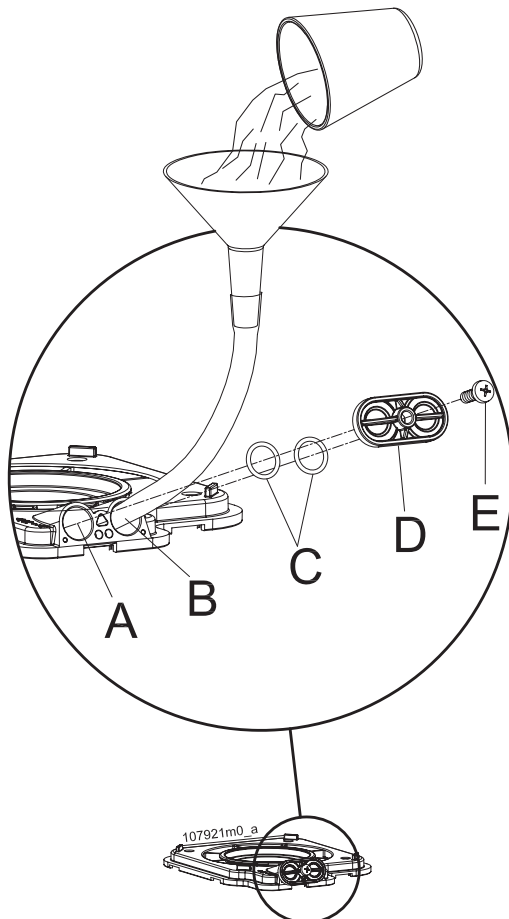


Figure 6.1 - Filling the condensate drain siphon



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

6.2 - General recommendations regarding the supply of gas

For commissioning of the appliance, have a professionally qualified technician perform the following checks:

- ☞ That the appliance is powered by the type of fuel for which it is set-up.
- ☞ That the gas supply pressure (with appliance operating and at a standstill) is within the maximum and minimum values indicated in the table in chapter 9 at the end of the manual.
- ☞ That the supply plant has all safety and control parts envisioned by the current national and local Standards.
- ☞ That the exhaust flue terminal discharge terminal and the combustion agent air intake terminal are free from any obstruction.
- ☞ That the exhaust flue terminal and combustion agent air intake terminal are positioned outside the building.
- ☞ That the condensate drain connection is connected.



ATTENTION !!! If you smell gas:

- A - Do not switch on any electric device, telephone included or any object that can cause sparks;**
- B - Immediately open doors and windows causing a current of air that quickly cleans the gas from the room;**
- C - From another room, or from a neighbour's, 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 regulated.

There is a label on the front of the appliance certifying the gas supply type and pressure for which it is adjusted.

The appliance may have the following 2 types of wording:

2H-G20-20mbar NATURAL GAS

means that the appliance is adjusted to operate with H type gas of the second family (natural gas) at a supply pressure of 20 mbar.

3P-G31-37mbar LP GAS

means that the appliance is adjusted to operate with type P gas (Propane, also called LP Gas) of the third family, at a supply pressure of 37 mbar.

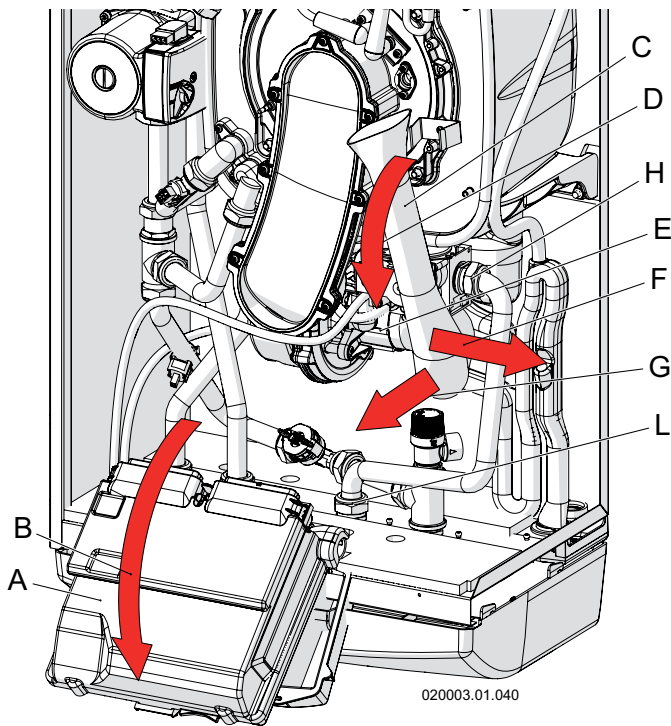


Figure 6.2 - Removing the air manifold

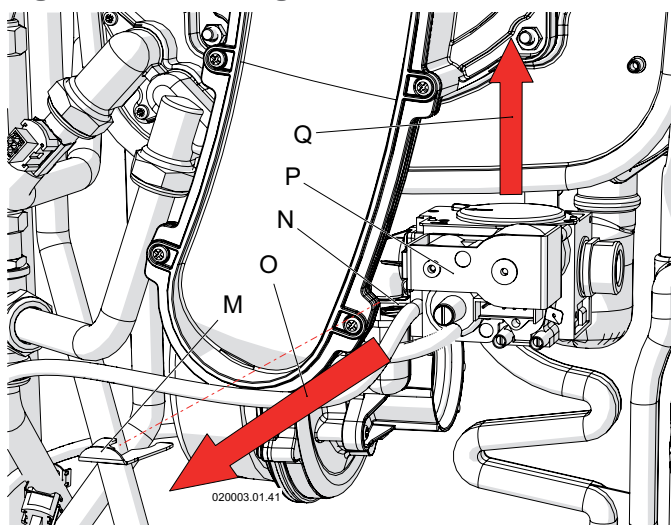


Figure 6.3 - Removing the gas valve

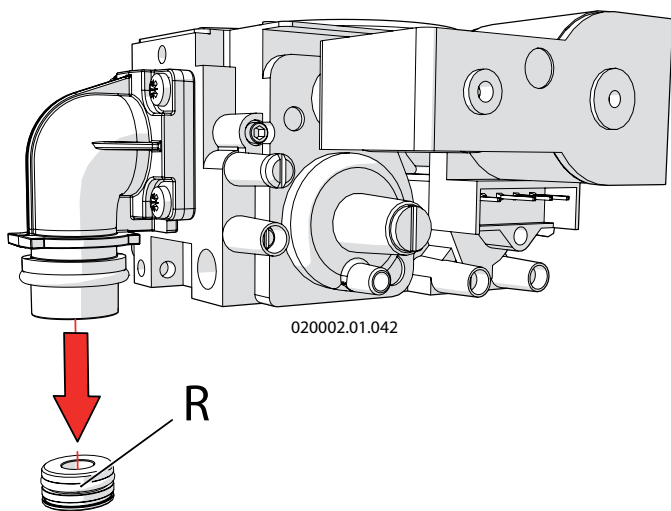


Figure 6.4 - Replacing the gas nozzle

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



ATTENTION !!! Read these instructions carefully before changing the gas:

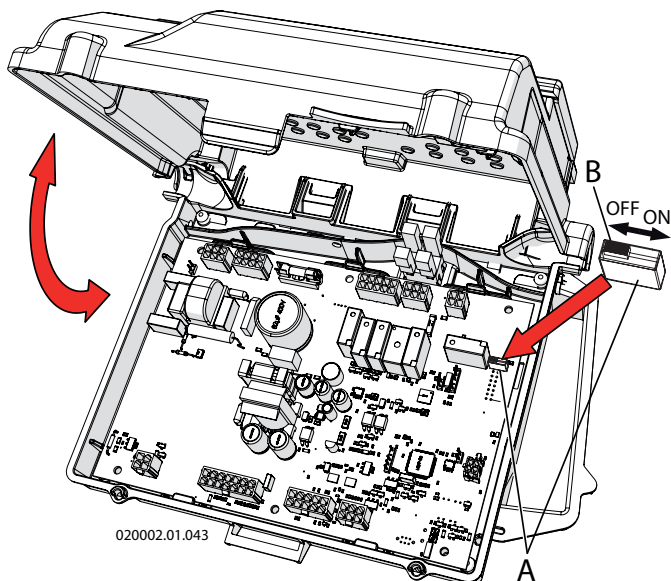
- The gas appliance must be installed, calibrated or modified by specialised staff in compliance with legal terms;
- Check and be certain that the type of gas which is powering the appliance is compatible with the adjustment kit in your possession;
- Do not power the appliance with gases different from those envisioned.

Follow the instructions given below to change the gas:

- 1 - disconnect the electric power supply upstream from the appliance;
- 2 - open the appliance casing as reported in chapter 8.2;
- 3 - access the control and command board as reported in chapter 8.2;
- 4 - move the microswitch "B" from left to right to the "ON" position (see figure 6.5);
- 5 - apply electric power to the appliance;
- 6 - the parameter **3001** will appear on the appliance's visual display, followed by its value;
- 7 - using the + and - keys, access the parameter **3002**;
- 8 - press the RESET key to make the **3002** parameter flash;
- 9 - using the + and - keys, set the value of the parameter **3002** to the new corresponding value according to the table in figure 6.7.
- 10 - press the RESET key to confirm the modification.
- 11 - remove voltage from the appliance, re-position the microswitch "B" from right to left in "OFF" position (see figure 6.5).
- 12 - close the gas supply;
- 13 - remove the air manifold making sure to turn it externally and then slide it out of the fan inlet (see figure 6.2, detail "C");
- 15 - remove the gas inlet pipe via the two fittings (see figure 6.2, details "H" and "L");
- 16 - remove the clamping spring "M" from the seat "N" releasing the valve "P" (See figure 6.3);
- 17 - slide the gas valve "P" out upwards;
- 18 - replace the gas nozzle "R" (see figure 6.4) with an appropriate one according to that stated in figure 6.7 under "Diameter of the gas nozzle";
- 19 - remount the gas valve (see figure 6.3, detail "P"), making sure to reposition the spring "M".
- 20 - remove the gas supply pipe via the two fittings (see figure 6.2, details "H" and "L");
- 21 - re-mount the air manifold (see figure 6.2, detail "C");
- 22 - open the gas isolation valve;
- 23 - check for gas leaks an all joints.



ATTENTION !!! Perform the gas leak test according to that established by the current Standard and only using soapy water. The use of naked flames is prohibited.



B – Microswitch

Figure 6.5 - Positioning the microswitch



ATTENTION !!! If you smell gas:
A - Do not switch on any electric device, telephone included or any object that can cause sparks;
B - Immediately open doors and windows causing a current of air that quickly cleans the gas from the room;
C - From another room, or from a neighbour's, immediately call a professionally qualified technician or the gas supply company. Call the Fire Service if the former are not available.

- 24.- check the supply gas pressure, following the procedure in paragraph 6.6;
- 25.- open the CO₂ adjustment screw completely (see figure 6.14 detail "A");
- 26.- control and adjust the CO₂, following the procedure in paragraph 6.8;
- 27.- instead of the label that identified the old state of adjustment, apply the sticker onto the front casing of the appliance (see figure 6.6), certifying the appliance's new state of adjustment, as follows: apply label "B" if the appliance has been converted from NATURAL GAS to LP GAS; apply label "A" if the appliance has been converted from LP GAS to NATURAL GAS.

| | | | |
|---|-----------------------------|---|----------------------------|
| A | IT - FR - ES - PT - GB - IE | B | IT-FR-ES-PT-GB-IE-DE-BE-NL |
| Apparecchio regolato per gas: Appareil réglé pour gaz: Aparato regulado por gas: Aparelho regulado por gas: Appliance set for gas type: | | Apparecchio regolato per gas: Appareil réglé pour gaz: Aparato regulado por gas: Aparelho regulado por gas: Appliance set for gas type: | |
| 2H-G20-20mbar 2E+-G20/G25-20/25mbar | | 3B/P-G30/G31-30mbar 3P-G31-37mbar | |
| GAS METANO GAZ NATUREL GAS NATURAL GAS NATURAL NATURAL GAS | | GAS GPL GAZ GPL GAS GLP GAS GLP LP GAS | |
| C | FR-DE-BE | D | FR-DE-NL |
| Appareil réglé pour gaz: Apparat reguliert für gas: Appliance set for gas type: | | Appareil réglé pour gaz: Apparat reguliert für gas: Appliance set for gas type: | |
| 2Es-G20-20mbar 2E-G20-20mbar 2E(s)B-G20-20mbar | | 2Ei-G25-25mbar 2L-G25-25mbar 2LL-G25-20mbar | |
| GAS NATUREL (LACQ) ERDGAS E | | GAS NATUREL (GRONINQUE) ERDGAS LL NATURAL GAS | |




Figure 6.6 - Labels certifying the new status of adjustment of the appliance



| Model | Type of gas | Setting parameter 3002 | Gas supply minimum pressure (mbar) | Gas supply maximum pressure (mbar) | Gas nozzle diameter (mm) | CO ₂ Maximum power (%) | CO ₂ Minimum power (%) | O ₂ Maximum power (%) | O ₂ Minimum power (%) |
|-------|-------------|----------------------------------|------------------------------------|------------------------------------|--------------------------|-----------------------------------|-----------------------------------|----------------------------------|----------------------------------|
| 16 | NAT | 50 | 15 | 27 | 4,9 | 9,0 ± 0,3 | 8,5 ± 0,2 | 4,8 ± 0,2 | 5,5 ± 0,2 |
| | LPG | 51 | 25 | 45 | 3,7 | 10,5 ± 0,3 | 10,0 ± 0,2 | 4,8 ± 0,2 | 5,6 ± 0,2 |
| 22 | NAT | 52 | 15 | 27 | 6,7 | 9,0 ± 0,3 | 8,5 ± 0,2 | 4,8 ± 0,2 | 5,5 ± 0,2 |
| | LPG | 53 | 25 | 45 | 5,2 | 10,5 ± 0,3 | 10,0 ± 0,2 | 4,8 ± 0,2 | 5,6 ± 0,2 |
| 27 | NAT | 54 | 15 | 27 | 8,0 | 8,7 ± 0,3 | 8,3 ± 0,2 | 4,7 ± 0,2 | 5,4 ± 0,2 |
| | LPG | 55 | 25 | 45 | 6,0 | 10,1 ± 0,3 | 9,9 ± 0,2 | 4,7 ± 0,2 | 5,5 ± 0,2 |
| 37 | NAT | 54 | 15 | 27 | 10,0 | 8,7 ± 0,3 | 8,3 ± 0,2 | 4,7 ± 0,2 | 5,4 ± 0,2 |
| | LPG | 55 | 25 | 45 | 6,5 | 10,1 ± 0,3 | 10,8 ± 0,2 | 4,7 ± 0,2 | 5,8 ± 0,2 |

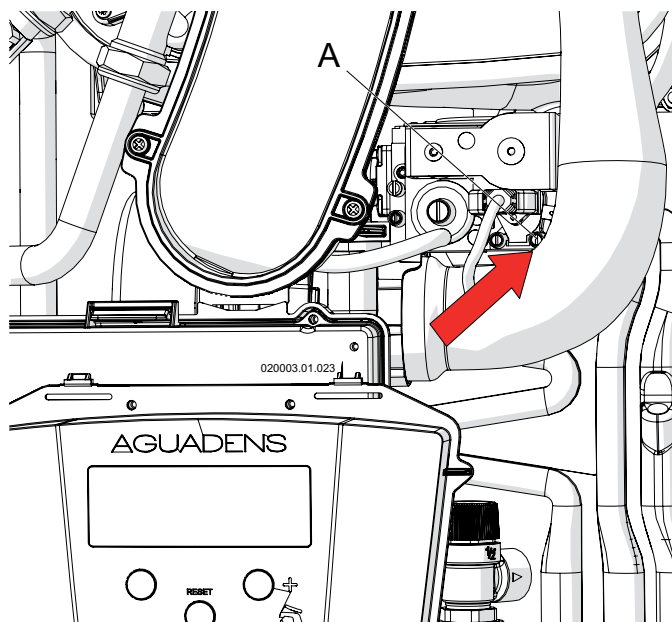
Figure 6.7 - Correspondence table for the parameter **3002** and the operating values

6.5 - Ignition

- 1.- open the gas isolation valve;
- 2.- power the appliance electrically;
- 3.- adjust the temperature desired for the domestic hot water

service using the  + and  keys. The icon  , present on the display will inform regarding the operating state of the domestic hot water service:

- a) fixed  icon: domestic hot water inactive (no-one is withdrawing domestic hot water, or in the case of a storage tank, the delivery temperature as been reached)
- b) flashing  icon: domestic hot water is being withdrawn.



A - Gas inlet pressure point.

Figure 6.8 - Gas valve

6.6 - Measurement and adjustment of gas pressure adjustment

The gas supply pressure must correspond to that stated in the table in chapter 9 at the end of the manual.

For its verification, proceed as follows:

- 1.- close the gas isolation valve;
- 2.- access the components inside the appliance, following the procedure in paragraph 8.2;
- 3.- loosen the pressure point "A" (see figure 6.8);
- 4.- connect to a manometer with resolution of at least 0.1 mbar (1 mmH₂O);
- 5.- open the gas isolation valve;
- 6.- check that the pressure does not exceed the value given in the table in chapter 9 under "gas supply maximum pressure";
- 7.- open the domestic hot water tap to maximum;
- 8.- wait for the temperature of the water heater to stabilise;
- 9.- check that the pressure does not drop to a lower value than the "gas supply minimum pressure" given in the table in table 9. If the supply pressure does not respect the values described, operate upstream from the appliance in order to take it back within the minimum and maximum field;
- 10.- close the domestic hot water tap;
- 11.- close the pressure point "A" in figure 6.8;
- 12.- check for gas leaks an all joints.



ATTENTION !!! Perform the leak test using a soap and water only. The use of naked flames is prohibited.

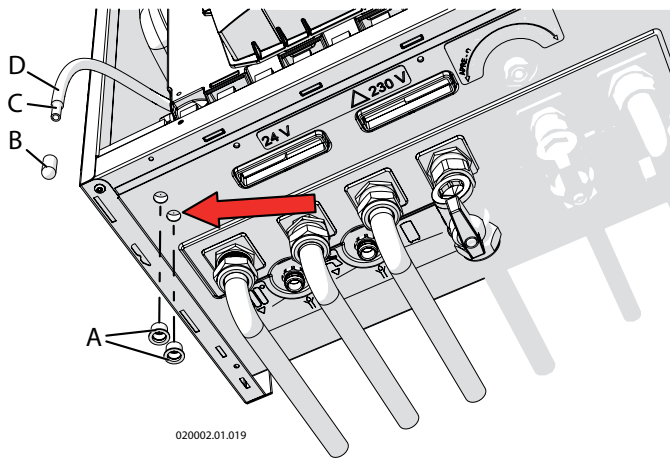


Figure 6.9 - Combustion agent air pressure point

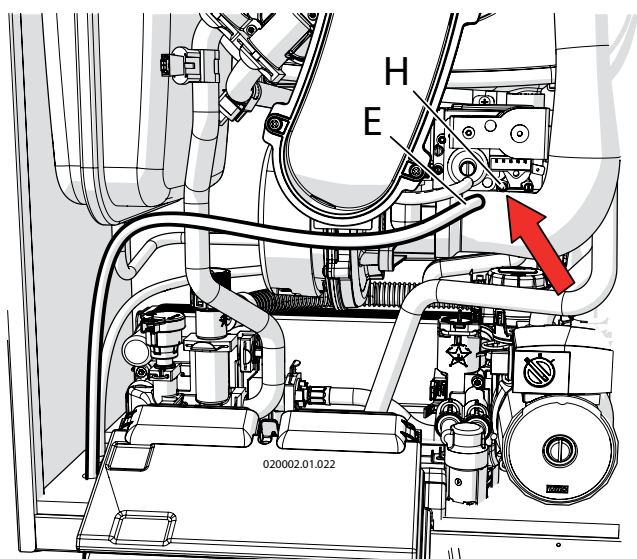


Figure 6.10 - Combustion agent air pressure point

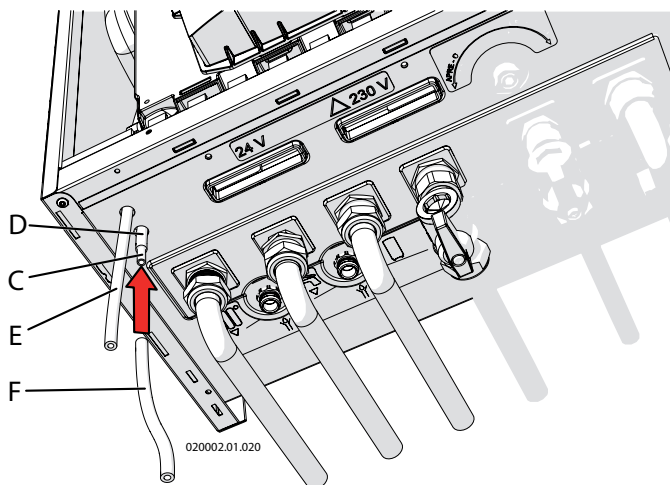


Figure 6.11 - Controlling combustion air pressure

6.7 - Measurement of combustion air pressure

As the appliance has an air/gas ratio fixed in the factory, the gas pressure at the burner is controlled indirectly by measuring the pressure of the combustion air inside the appliance and must correspond to that stated in the table in chapter 9, under "Combustion agent air pressure".

Proceed as follows for the check (refer to the Figures from 6.9 to 6.12):

- 1.- use a differential manometer with precision of at least 0.1 mbar (1 mmH₂O);
- 2.- close the gas isolation valve;
- 3.- open the appliance casing following paragraph 8.2;
- 4.- remove the caps "A" (see figure 6.9);
- 5.- take the flexible hose "D", which is found inside the appliance and remove the cap "B" (see figure 6.9);
- 6.- insert the pipe "D" inside the hole indicated by the arrow in figure 6.9;
- 7.- loosen the pressure point "H" in figure 6.10;
- 8.- take a silicone pipe with external diameter of 10 mm and internal diameter of 7mm (detail "E" in figure 6.10) and introduce it into pressure point "H";
- 9.- insert pipe "E" into the hose as indicated in figure 6.11;
- 10.- connect the manometer to the two pipes "E" and "F" as illustrated in figure 6.12, making sure to connect the pipe "E" to the negative pressure point and tube "F" to the positive pressure point;
- 11.- **close the casing "B" in figure 8.1. It is indispensable to have a reliable measurement;**
- 12.- switch the appliance on;
- 13.- press the and RESET keys simultaneously for more than 5 seconds to enter the "installer" menu confirmed by the icon appearing on the display.
- 14.- using the and keys, access the parameter **20 10**;
- 15.- press the RESET key to enter the parameter and use the and keys, to modify the value to **FAR**;
- 16.- press the RESET key to confirm the modification. Now just the fan will operate at maximum speed for 10 minutes.
- 17.- compare the pressure value read on the manometer with that given in the table in table 9, "Combustion air pressure". If the pressure is at a lower value, check that there are no obstructions in the combustion air/exhaust flue pipes or that the combustion air/exhaust system does not exceed the parameters as detailed in table 9 entitled combustion air/exhaust pipe max. length for the relevant type;
- 18.- Once the control has ended, press the RESET key again to enter parameter **20 10** and via the and keys, change the value to **OFF**;
- 19.- press the RESET key to confirm the modification;
- 20.- hold the RESET key down for 5 seconds to exit the "installer" menu.

At the end of the control, remove the tube "E", close the holes indicated by the arrow using the previously-removed caps "A", close the pipe "D" using cap "B" and close the pressure point "H" again as in figures 6.9 and 6.10.

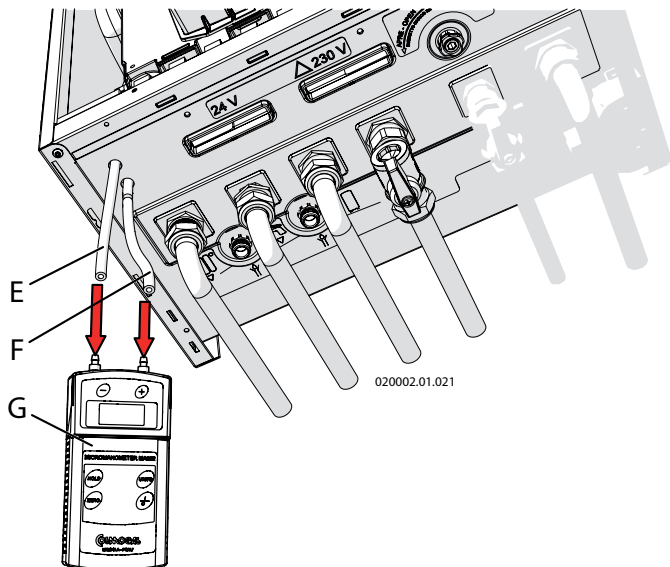


Figure 6.12 - Controlling combustion agent air pressure

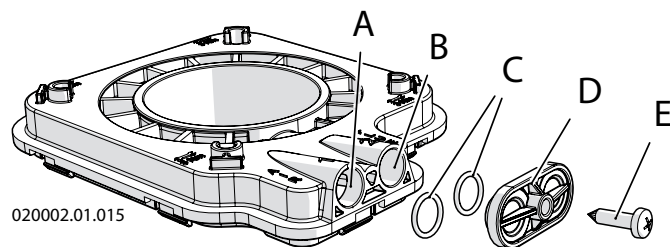
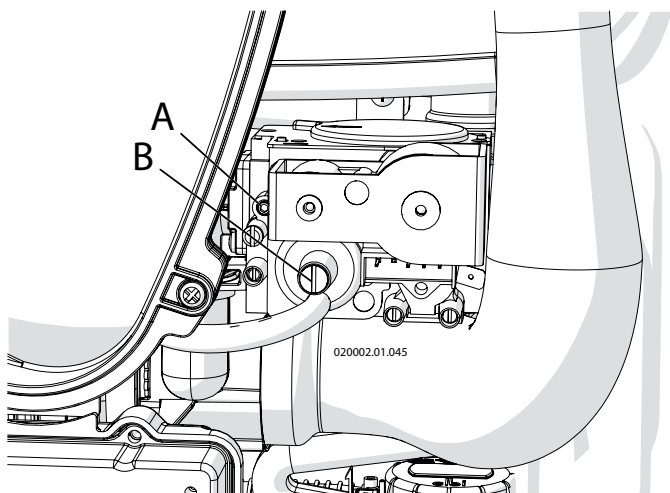


Figure 6.13 - Combustion analysis points







A - CO2 regulation screw

Figure 6.14 - Gas valve



6.8 - Measurement and adjustment of CO2 levels

The appliance in normal operating mode and for altitudes within 1000 m, must have a CO₂ (carbon dioxide) level in the exhaust flue gases within the parameters as detailed in paragraph 9. A value which is different to those detailed can cause malfunctions and is strictly prohibited. Combustion analysis must be performed to check and eventually adjust this value. Proceed as follows:

- 1.- check a combustion analyser to the appropriate point on the fumes exhaust fitting "B" in figure 6.13;
- 2.- open the domestic hot water tap fully;
- 3.- wait for the CO₂ measurement to stabilise;
- 4.- compare the value measured with that given in the table in figure 6.7, "CO₂ maximum power". If the value measured is offset from the value read, it must be taken back within the value given in the table in figure 6.7. proceeding as follows:
 - a) turn screw "A" clockwise as in figure 6.14 to decrease the level of CO₂;
 - b) turn screw "A" anti-clockwise as in figure 6.14 to increase the level of CO₂;
- 5.- once the check has been completed, seal the screw "A" in figure 6.14 with red pain or something similar;
- 6.- press the RESET key again to enter the parameter **20 10** and use the  and  keys, to modify the value to **LOW**;
- 7.- press the RESET key to confirm the modification. Now the burner will operate at minimum power for 10 minutes.
- 8.- wait for the CO₂ measurement to stabilise;
- 9.- the value of CO₂ at minimum power must correspond;
- 10.- once the check has been completed, seal the screw "B" in figure 6.14 with red pain or something similar;
- 11.- press the RESET key again to enter the parameter **20 10** and use the  and  keys, to modify the value to **OFF**;
- 12.- press the RESET key to confirm the modification.
- 13.- hold the RESET key down for 5 seconds to exit the "installer" menu.
- 14.- close the previously-opened domestic hot water tap.

6.9 - Adjusting the domestic hot water flow rate

The appliance is fitted with a domestic hot water maximum flow rate adjuster. However, if the appliance is installed in a geographical area where the temperature of the cold water is very low, the flow rate of domestic hot water that passes inside the appliance may have to be reduced. It is therefore good practice to perform this adjustment:

- 1.- switch the appliance on;
- 2.- using the  + and  keys, adjust the temperature of the domestic hot water to 48 - 50°C;
- 3.- open the domestic hot water tap fully. In the case of a single lever mixer, the position must be completely on "HOT";
- 4.- wait 3 minutes for the temperature to stabilise;
- 5 - if the water temperatures too cold, the flow rate must be reduced via the selector "A" in figure 6.15, until the desired temperature is reached.

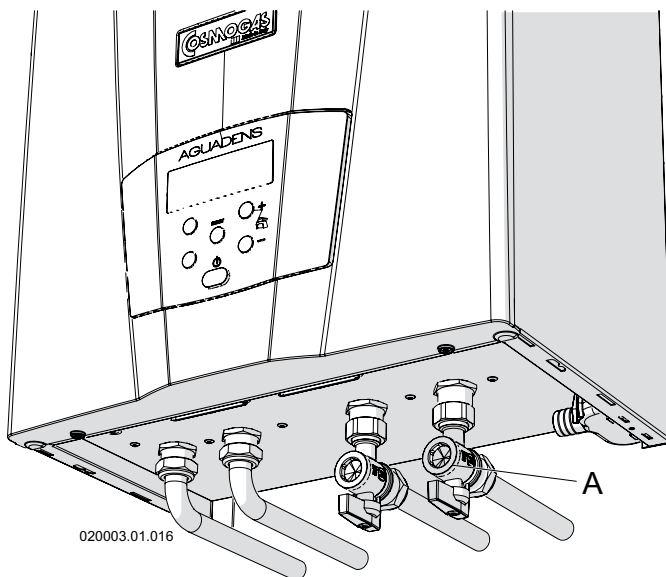


Figure 6.15 - domestic hot water flow rate selector

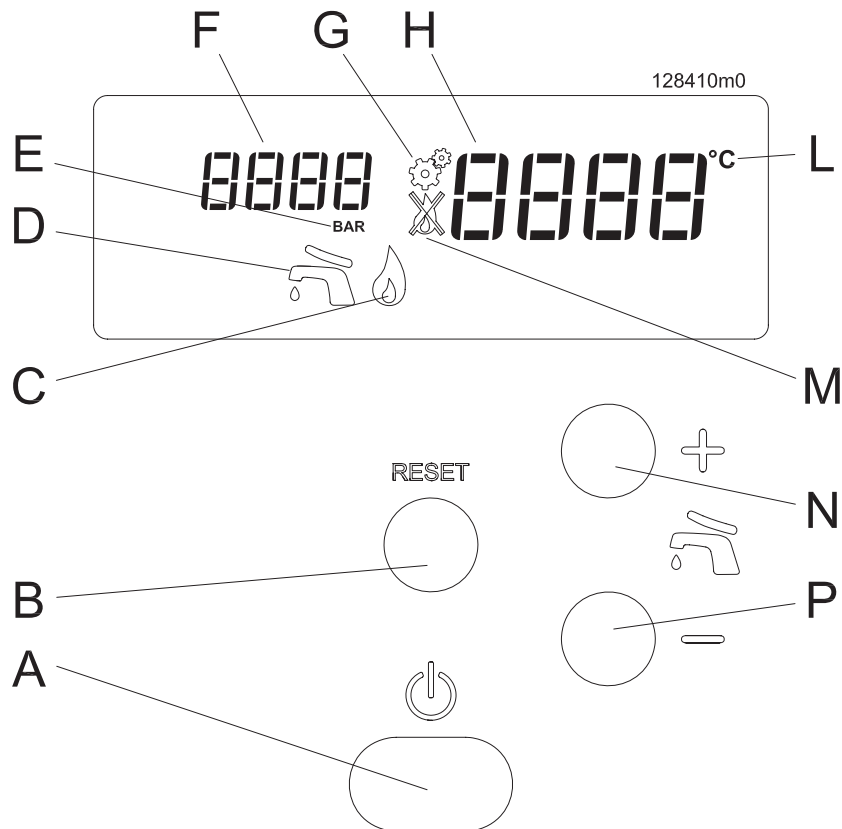


Figure 7.1 - Control board
Key for figure 7.1

- A - On/off switch
- B - Reset Key
- C - Burner status (the burner is on when this icon is present)
- D - State of the domestic water service:
 Icon off = domestic water off
 Icon on = domestic water active but not operating
 Icon flashing = domestic water active and operating
- E - Unit of measurement of the pressure displayed
- F - Heating plant pressure or indicator of the various parameters inside the various menus
- G - Icon for entry into the "Installer" menu
- H - Domestic hot water temperature or indicator of the values assumed by the various parameters
- L - Unit of measurement of the temperature displayed
- M - Appliance blocked (see paragraphs 7.11.1 and 7.11.2 for the diagnostics)
- N - Key for switching on and increasing the temperature of the domestic hot water or for scrolling and changing the value of the parameters
- P - Key for reducing the temperature of the domestic hot water (below minimum, the domestic hot water is switched OFF) or for scrolling and changing the value of the parameters

7.1 - Valve positions

- The gas isolation valve must be open;
- Any service valves which are fitted on the cold and hot water supply pipes must be open.

7.2 - Display

During operation the display shows the appliance operating state as well as other information as indicated in chapter 7.11 (Diagnostics). Other parameters can be consulted through the "User menu" (see paragraph 7.9), which are useful for understanding operation of the appliance and to control the latest blocks or errors occurring.

After 5 minutes of normal operation, the display switches off completely to save energy. Just press any key to switch it back on.

In the case of any anomaly, the display switches back on automatically. This function can be modified by following chapter 7.8 (Energy saving).

7.3 - Ignition procedure

- 1.- open the gas isolation valve;
- 2.- power the appliance electrically;
- 3.- adjust the temperature of the domestic hot water as per chapter 7.5.

The command and control equipment will switch the burner on. If ignition does not take place within 20 seconds, (the appliance automatically re-attempts ignition 3 times), it blocks and the visual display will show **L 0 c 1**.

Press the RESET key to restore the normal operating conditions.

The appliance will automatically attempt a new ignition.





ATTENTION !!! If shutdown due to blocking is repeated frequently, contact a qualified technician to reset the normal operating conditions.

7.4 - "User menu"

Entry into the "User menu" is highlighted by the visual display "F", in figure 7.1, which indicates parameters that can assume

values from **1001** to **1999**. To enter the "User menu":



- 1.- hold the RESET key down for 2 seconds until the visual display "F" shows **1001**;
- 2.- press the  and  keys to scroll the parameters situated inside the user menu;
- 3.- hold down the RESET key for more than 2 seconds to exit the "User menu";


If no key is pressed for more than 60 seconds, the menu is exited automatically.

The parameters in paragraph 7.9 can be queried in this menu.

7.5 - Adjustment of domestic hot water temperature

The temperature of the domestic hot water is adjusted by

operating on the  and  keys. On pressing one of the two keys, the visual display "H" in figure 7.1 will start to flash and show the temperature that is being set. The range of adjustment for the temperature of the domestic hot water goes from 40°C to 60°C or from 40°C to 70°C if there is a storage tank present.

By holding the  key down also below 40°C, **OFF** will appear to indicate switch-off of the domestic hot water service, also highlighted by switch-off of the icon "D" in figure 7.1.

7.6 - Pump control features

To safeguard the lifespan of the appliance, improve the comfort generated and increase energy saving, timings have been introduced during operation.

These timings are:

- Pump post-circulation: every time the domestic hot water service ends, the pump continues to operate for 2 minutes;
- Pumps anti-block: every 24 hours the recirculation pump and the storage tank loading additional pump (if present) are forced;
- Anti-legionella; if the appliance is connected to a storage tank for preparation of the D.H.W., every seven days the latter is forced to a temperature of 60°C to disinfect against the legionella bacteria. This function activates also two hours after the appliance has been powered electrically.

7.7 - Pumps anti-block

The pump switches on once every 24 hours for 15 seconds during the summer period in order to prevent any deposits that may block it.

The storage tank loading pump (if present) is activated at the same time for the same reason.

7.8 - Display Energy Saving mode

To reduce the consumption of display energy, it will switch off automatically after 5 minutes from the last operation performed. This function can be deactivated or the time

modified via parameter **2 100** present in the "Installer menu"

(see chapter 7.10). If the parameter is set at **OFF**, the display will remain on constantly.

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7.9 - “User menu” Parameters

To access the “User menu” follow that reported in paragraph 7.4.

The following parameters can be queried in this menu:

| Parameter | Parameter Description | M.U. |
|-----------|---|---|
| 1001 | Domestic hot water outlet temperature 1 | °C |
| 1002 | Domestic hot water outlet temperature (or storage tank temperature, if present) | °C |
| 1003 | No function | / |
| 1004 | No function | / |
| 1005 | Domestic hot water outlet temperature 2 (safety sensor) | °C |
| 1006 | Exhaust flue temperature | °C |
| 1007 | Cold water inlet temperature | °C |
| 1008 | Ionisation current | uA |
| 1009 | Status of the pump inside the appliance | ON/OFF |
| 1010 | No function | / |
| 1011 | No function | / |
| 1012 | No function | / |
| 1013 | No function | / |
| 1014 | Exhaust flue temperature 2 (safety sensor) | °C |
| 1040 | Current rotation speed of the fan | rpm |
| 1041 | Fan rotation speed on ignition | rpm |
| 1042 | Fan rotation speed in minimum power mode | rpm |
| 1043 | Fan rotation speed in maximum power mode | rpm |
| 1051 | Latest block condition recorded (Loc) (see chapter 7.11.1) | / |
| 1052 | Latest error condition recorded (Err) (see chapter 7.11.2) | / |
| 1053 | Number of times the burner has lost the flame | n° |
| 1055 | Number of failed burner ignitions | n° |
| 1056 | No function | / |
| 1057 | Number of hours worked in domestic hot water mode | h x 10 |
| 1058 | Number of burner working days | days |
| 1059 | Interval of time between the last two blocking errors (Err) | 1: value in minutes; 2: value in hours; 3: value in days; 4: value in weeks; |
| 1060 | Interval of time between the last two blocks (Loc) | |
| 1061 | Current rotation speed of the domestic hot water turbine | rpm |
| 1062 | Current domestic hot water flow rate | l/min |

7.10 - "Installer menu" & parameters



ATTENTION !!! The modification of these parameters could cause the appliance, and therefore the plant, to malfunction. For this reason only a technician that has the awareness and in-depth knowledge of the appliances can modify them.

The appliance command and control board makes this parameter menu available to the technician for the analysis of operation and adaptation of the appliance to the plant. Proceed as follows to enter the "Installer menu":

1.- hold the RESET and keys down simultaneously for 5 seconds until the **2001** parameter is displayed.

The symbol appears on the display to indicate the entry into the "Installer menu".

2.- the + and - keys can be used inside the menu to scroll the parameters;

3.- once the parameter of interest has been displayed, it can be modified as follows:

a.- press the RESET key to access the parameter (the visual display "H" in figure 7.1 will start to flash);

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

c.- press the RESET key to confirm the data modified and go back to the list of parameters;

4.- To exit the "Installer menu", hold down the RESET key for 5 seconds until the symbol disappears from the display.

If no key is pressed for more than 5 minutes, the menu is exited automatically. Any data variation that is not confirmed with the RESET key will be lost.



ATTENTION !!! Any variation to the parameters must be noted in the "Customised values" column present in the following table in order to facilitate the eventual replacement of the command and control board.

The following parameters can be changed or queried in this menu:


| Parameter | Parameter Description | M.U. | Setting range | Factory value | Customised values |
|-----------|---|------|--|---------------|-------------------|
| 2001 | No function | / | / | / | / |
| 2002 | No function | / | / | / | / |
| 2003 | No function | / | / | / | / |
| 2004 | No function | / | / | / | / |
| 2005 | No function | / | / | / | / |
| 2010 | Forcing of fan and burner | / | OFF = No forcing FAN = Forcing of fan only to max speed LOu = Forcing of burner to minimum power lgn = Forcing of burner to ignition power HlgH = Forcing of burner to maximum power rEg = Forcing of burner to maximum power | OFF | |
| 2011 | Forcing the pump | / | On = Pump on OFF = Pump off | OFF | |
| 2012 | No function | / | / | / | / |
| 2013 | No function | / | / | / | / |
| 2014 | Icons test on the display. By pressing the REST key, all of the icons on the display light up. By pressing the RESET key again to display goes back to normal operation | / | / | / | |
| 2020 | No function | / | / | / | / |
| 2021 | No function | / | / | / | / |
| 2022 | No function | / | / | / | / |
| 2023 | No function | / | / | / | / |
| 2024 | No function | / | / | / | / |
| 2027 | No function | / | / | / | / |

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|------|--|---------|---|------|---|
| 2040 | No function | / | / | / | / |
| 2041 | No function | / | / | / | / |
| 2042 | No function | / | / | / | / |
| 2043 | No function | / | / | / | / |
| 2060 | Domestic hot water minimum power level | % | Da 1 a 50 | 1 | |
| 2061 | Domestic hot water maximum power level | % | Da 1 a 100 | 100 | |
| 2062 | Post-circulation in domestic hot water mode | sec | Da 10 a 900 | 120 | |
| 2063 | Maximum time for loading storage tank | min | Da 0 a 60 | 60 | / |
| 2064 | Number of flow meter revs. for every litre of water | rpm/lit | Da 0 a 5 | 3,2 | |
| 2066 | Delay in the detection of the instantaneous domestic hot water | sec | Da 1 a 10 | 3 | |
| 2067 | Storage tank loading procedure | / | 0 = the storage tank is charged for the time set in parameter 2063; 1 = OFF, the domestic hot water does not have priority over heating; 2 = ON, the domestic hot water always has priority over heating; | 2 | |
| 2080 | Periodic maintenance meter (after RESET, the meter automatically goes back to ON) | / | ON = Periodic maintenance meter active; OFF = Periodic maintenance meter off; RESE = Meter reset | OFF | |
| 2081 | Periodic maintenance meter: maintenance request time | days | From 0 to 1000 | 1000 | |
| 2100 | Energy saving display | min | OFF = display always on From 1 to 30 = delay to switch-off in minutes. | 5 | |

7.11 - Diagnostics

During normal operation of the appliance, the visual display in figure 7.1 continuously shows the state of work of the appliance, via the following indications:

| Parameter | Parameter Description | Display on visual display "H" in figure 7.1 |
|---|--|--|
| <i>AFro</i> | Anti-freeze function active | Appliance temperature (°C) |
| <i>AtEtE</i> | Appliance not in block but in attention mode | Attention code (see chapter 7.11.3 for decoding) |
|  | Fixed on = Domestic hot water service on but not active On flashing = Domestic hot water service on and active | Domestic hot water temperature (°C) |
| <i>Loc</i> | Appliance blocked. To reset, press RESET . If the block occurs frequently, contact a professionally qualified technician | Block code (see chapter 7.11.1 for decode) |
| <i>Err</i> | Appliance in error mode. Functioning can only be restored by solving the cause of the anomaly. Contact a professionally qualified technician | Error code (see chapter 7.11.2 for decode) |
| <i>ALeS</i> | Anti-legionella function running (see chapter 5.12.1). It will end on reaching the water temperature of 60°C inside the storage tank. | Storage tank temperature (°C) |
| <i>SEr</i> | Maintenance request for the appliance | Appliance temperature (°C) |

7.11.1 - Diagnostics “Loc” block fault codes and potential solution

| Block | Block Description | Checks | Solutions |
|--------|--|---|---|
| Loc 0 | Internal memory error E2prom at command board | | Replace the command and control board. |
| Loc 1 | 1 No flame detection after three successive ignition attempts. | Control: Supply gas pressure (see chapter 6.6), sparks on the ignition electrodes (see chapter 8.5); correct combustion air pressure (see chapter 6.7); 220Vac 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 switches on and switches off at the end of the ignition attempt, check: that the ionisation current is at a value over 4 (follow the procedure in chapter 8.13) | the supply pressure is not correct, operate upstream from the appliance to restore it; if the pressure of the combustion air is not correct, operate on the air intake/fumes exhaust circuit to eliminate any obstructions. If the current at the gas valve is not 230Vac, the command and control board must be replaced. If the electric resistance of the gas valve is not 0.88 Kohm and 6.59 Kohm, the valve must be replaced. If the ionisation current is not over 4, the CO2 must be checked (follow chapter 6.8) and restore its correct value, check the ionisation electrode 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 | Internal safety relay failure at command board | | Replace the command and control board. |
| Loc 4 | Appliance in error mode for more than 20 hours | Control the last error displayed in the board. | Operate according to the last error displayed. |
| Loc 5 | Fan out of speed for more than 60 seconds | Check that it is powered at 300 Vdc. | If the fan is powered, it must be replaced, alternatively replace the command and control board. |
| Loc 6 | Software error inside the command board | | Replace the command and control board. |
| Loc 7 | Content of the memory E2prom inside the command board, not updated | | Replace the command and control board. |
| Loc 8 | Parameters inside the E2prom memory, incorrect | | Replace the command and control board. |
| Loc 9 | Software error inside the command board | | Replace the command and control board. |
| Loc 10 | Software error inside the command board | | Replace the command and control board. |
| Loc 11 | Not applicable | | |
| Loc 12 | Not applicable | | |
| Loc 13 | The appliance has reached 95°C | Check that the pump functions. | Restore water circulation or replace the command and control board. |
| Loc 14 | Exhaust flue maximum temperature. To unblock the error, contact a qualified after-sales centre, which must move switch “B” in fig. 6.5 and press the RESET key. Therefore, put the switch back in the original position. | Check that the pump is operating correctly; Measure that appliance performance; it must correspond to that declared in the technical features. | If the pump does not operate, it must be replaced. If the appliance is under-performing, the primary heat exchanger might be dirty either on the exhaust flue side or the domestic water side or both. Follow instructions in paragraph 8.4 and check again. |
| Loc 15 | Software error inside the command board | | Replace the command and control board. |
| Loc 16 | Software error inside the command board | | Replace the command and control board. |

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| | | | |
|--------|--|---|--|
| Loc 17 | Software error inside the command board | | Replace the command and control board. |
| Loc 18 | Flame present 10 seconds after gas valve is closed | | Replace the gas valve or the command and control board. |
| Loc 19 | Flame present before ignition | | Replace the gas valve or the command and control board. |
| Loc 20 | Flame lost three times | <p>Control: that the ionisation current is at a value over 4 (follow the procedure in chapter 8.13)</p> <p>Control: that the exhaust flue system is not being affected by high gusts of wind or nearby mechanically operated fans</p> | <p>If the ionisation current is not over 4, the CO2 must be checked (follow chapter 6.8) and restore the correct value. Check the ionisation electrode and replace it if necessary. Check the integrity of the ionisation current electric circuit cables.</p> <p>If a horizontal exhaust flue terminal is exposed to unusually high wind conditions or nearby mechanically operated fans then a suitable deflection shield or protection should be considered or an alternative location should be considered. The same approach should be taken for a vertical exhaust flue and in addition, check that downdraughts are not being encountered due to the proximity of higher roof profiles.</p> |
| Loc 21 | Not applicable | | |
| Loc 22 | Not applicable | | |
| Loc 23 | The D.H.W. outlet sensors measure the different temperatures for more than 60 seconds. | Check that the electrical resistance of the two sensors match the graphics in chapter 8.15; | If one of the two or both sensors do not have correct values, they must be replaced; |
| Loc 24 | The exhaust flue sensors measure the different temperatures for more than 60 seconds. | Check that the electrical resistance of the two exhaust flue sensors match the graphics in paragraph 8.15 | If one of the two sensors does not match the double exhaust flue sensor must be replaced |
| Loc 25 | Non applicable | | |
| Loc 26 | Non applicable | | |
| Loc 27 | Software error inside the command board | | Replace the command and control board. |
| Loc 28 | Software error inside the command board | | Replace the command and control board. |

7.11.2 - Diagnostics “E” error fault codes and potential solutions

| Error | Error Description | Checks | Solutions |
|--------|--|--|---|
| Err 30 | Software error inside the command board | | Replace the command and control board. |
| Err 31 | Software error inside the command board | | Replace the command and control board. |
| Err 32 | Software error inside the command board | | Replace the command and control board. |
| Err 33 | Software error inside the command board | | Replace the command and control board. |
| Err 34 | Software error inside the command board | | Replace the command and control board. |
| Err 35 | The supply temperature exceeds 110°C with the gas valve closed | <p>Check that the electrical resistance of the two supply sensors match the graphics in chapter 8.15.</p> <p>Check that the gas valve closes the gas correctly when the burner switches off.</p> | <p>If one of the two sensors does not match, the double supply sensor must be replaced.</p> <p>The gas valve must be replaced if it does not close correctly.</p> |
| Err 36 | Software error inside the command board | | Replace the command and control board. |
| Err 37 | Software error inside the command board | | Replace the command and control board. |
| Err 38 | Software error inside the command board | | Replace the command and control board. |
| Err 39 | Software error inside the command board | | Replace the command and control board. |
| Err 40 | Software error inside the command board | | Replace the command and control board. |
| Err 41 | Software error inside the command board | | Replace the command and control board. |
| Err 42 | Software error inside the command board | | Replace the command and control board. |
| Err 43 | Software error inside the command board | | Replace the command and control board. |
| Err 44 | Flame detected in a moment when it should not be present | | Replace the gas valve. |
| Err 45 | Not applicable | | |
| Err 46 | Not applicable | | |
| Err 47 | Not applicable | | |
| Err 48 | Software error inside the command board | | Replace the command and control board. |
| Err 49 | Cold water inlet sensor circuit(1007) open | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |
| Err 50 | Domestic hot water inlet sensor 1 circuit (1001) open | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |
| Err 51 | Domestic hot water inlet sensor 2 circuit (1005) open | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |
| Err 52 | Domestic hot water inlet sensor 2 circuit (1002) open | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |

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|--------|---|---|---|
| Err 53 | Fumes 1 sensor circuit (1006) open | <p>Check that the electrical resistance of the exhaust flue sensor 1006 matches the graphics in chapter 8.22</p> <p>Check that the wires between the board and the double exhaust flue sensor are connected correctly</p> | <p>If the sensor does not match, the double exhaust sensor must be replaced.</p> <p>If the wires are not connected correctly, the connections must be restored.</p> |
| Err 54 | Fumes 2 sensor circuit (1014) open | <p>Check that the electrical resistance of the exhaust flue sensor 1014 matches the graphics in paragraph 8.15</p> <p>Check that the wires between the board and the double exhaust flue sensor are connected correctly</p> | <p>If the sensor does not match, the double exhaust sensor must be replaced.</p> <p>If the wires are not connected correctly, the connections must be restored.</p> |
| Err 55 | Not applicable | | |
| Err 56 | Cold water inlet sensor circuit(1007) in short circuit condition | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |
| Err 57 | Domestic hot water inlet sensor 1 circuit (1001) in short circuit condition | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |
| Err 58 | Domestic hot water inlet sensor 2 circuit (1005) in short circuit condition | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |
| Err 59 | Domestic hot water inlet sensor 2 circuit (1002) in short circuit condition | Check that the electric resistance of the sensor matches the graphics in chapter 8.15. Check the electric cables for connection between the sensor and the command board. | If the electric resistance does not match, replace it. The electric circuit must be repaired if it is damaged. Without either of the two previous cases, replace the command and control board. |
| Err 60 | Fumes 1 sensor circuit (1006) in short circuit condition | <p>Check that the electrical resistance of the exhaust flue sensor 1006 matches the graphics in chapter 8.15</p> <p>Check that the wires between the board and the double exhaust flue sensor are connected correctly</p> | <p>If the sensor does not match, the double exhaust sensor must be replaced</p> <p>If the wires are not connected correctly, the connections must be restored</p> |
| Err 61 | Fumes 2 sensor circuit (1014) in short circuit condition | <p>Check that the electrical resistance of the exhaust flue sensor 1014 matches the graphics in chapter 8.15</p> <p>Check that the wires between the board and the double exhaust flue sensor are connected correctly</p> | <p>If the sensor does not match, the double exhaust sensor must be replaced</p> <p>If the wires are not connected correctly, the connections must be restored</p> |
| Err 62 | Not applicable | | |
| Err 63 | RESET key pressed too many times in a very brief period | | |

7.11.3 - Diagnostics “AttE” alarm fault codes and potential solutions

| Alarm | Description of the alarm | Checks | Solutions |
|---------|--------------------------|--------|-----------|
| AttE 65 | Not applicable | | |

8.1 - General recommendations

It is recommended to perform regular yearly maintenance of the appliance for the following reasons:

- to maintain high yield and therefore save fuel;
- to maintain a high level of safety;
- to maintain the level of environmental compatibility of the combustion high;

In order to maintain maintenance frequency, the parameter

2080 is present in the installer menu (see chapter 7.10), which is used to activate the maintenance call

(Service) along with parameter **2081** which is used to set the operating days and which must pass between one intervention and the next. The control system identifies the operating days, verifying the burner activity time.

Proceed as follows to activate the call service:

1.- access the Installer menu (see chapter 7.10) and set

parameter **2080** on **On**;

2.- access parameter **2081** and set the appliance operating days which must pass between one call and the next.

The call will be completed with **Ser** on the display. To

remove the wording **Ser** and renew the call period, operate as follows:

1.- access the "Installer menu";

2.- access the parameter **2080**, set it on **RESE** and press the RESET key.

3.- exit the Installer menu by pressing the RESET key for 5 seconds.

The call time is now renewed and **Ser** appears on the display.



ATTENTION !!! Appliance maintenance must only be performed by a professionally qualified technician.



ATTENTION !!! Before every maintenance operation, disconnect the appliance from the electric power supply, using the relevant switch in the vicinity.



ATTENTION !!! Close the gas isolation valve before any maintenance operation

8.2 - Casing removal

Proceed as follows to remove the casing (refer to figure 8.1):

- 1.- pull the lower cover "A" towards the front for approx. 10mm
- 2.- push the lower cover "A" downwards;
- 3.- loosen the screws "H";
- 4.- pull the lower part of the front-piece "B" towards the front and then slide it out upwards until it is released from the guides "C";

To access the command and control board:

- 1.- turn the command board "D" towards the front;
- 2.- open the commands board "D" by operating on closure "G";

To access the electric connections board:

- 1.- turn the command board "D" towards the front;
- 2.- slide lid "E" out by operating on the "F" closing flaps;

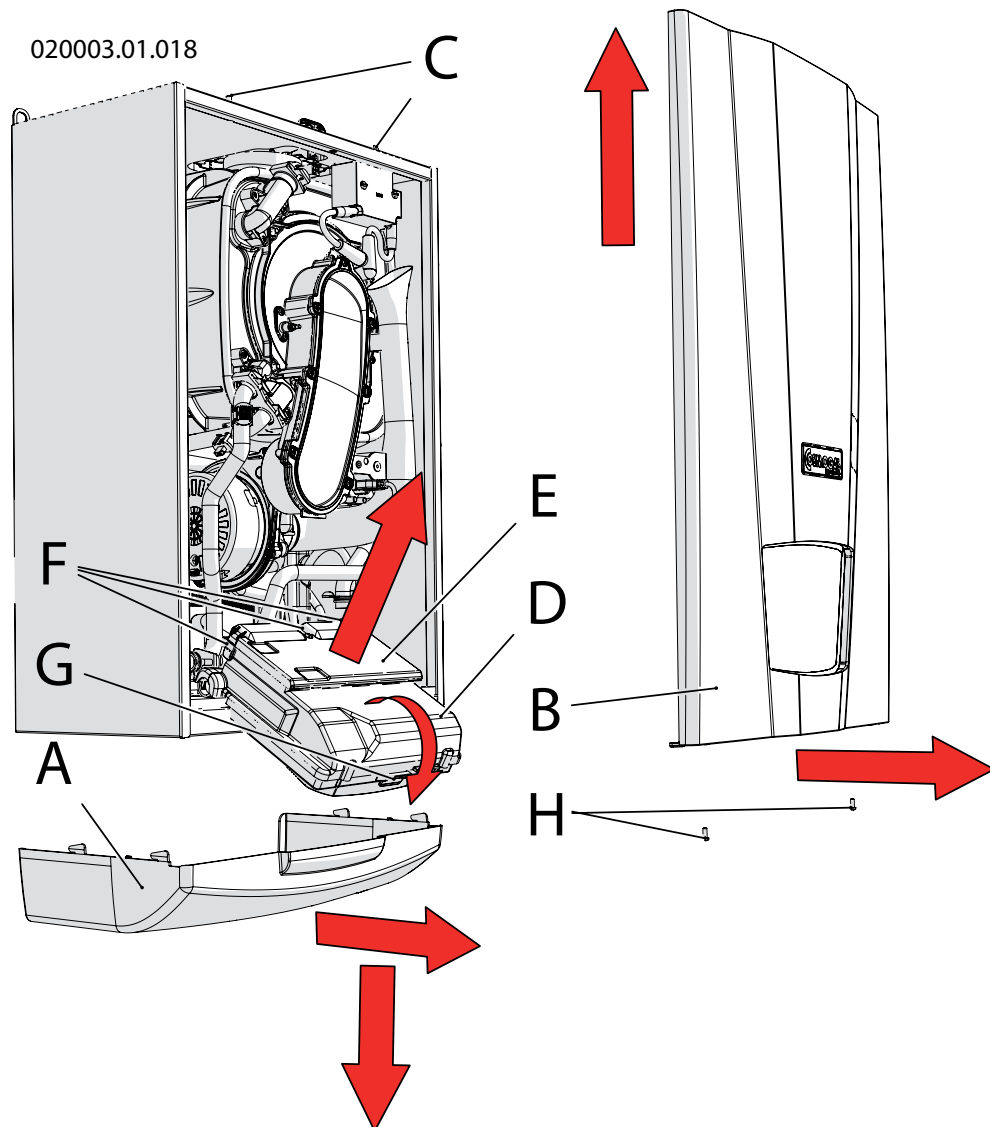


Figure 8.1 - removing the casing and opening of command board

8.3 - Burner and fan removal

Proceed as follows to remove the burner fan unit (refer to figure 8.2 when not differently specified):

- 1.- access the internal components following chapter 8.2;
- 2.- remove the air manifold (detail "C" in figure 6.2) rotating it towards the outside of the appliance and then pulling it towards the right (see figure 6.2);
- 3.- unscrew nut "C" from the valve "D";
- 4.- disconnect the cables "B" and the detection cable from the ignition and detection electrodes (details "15", "34" and "35" of figure 3.1);
- 5.- unscrew the four nuts "E";
- 6.- extract the group "F" as per figure;

8.4 - Gas burner and heat exchanger outer surface cleaning procedure

To correctly clean the burner and body of the heat exchanger (exhaust flue side), proceed as follows (refer to figure 8.2 when not differently specified):

- 1.- access the internal components following paragraph 8.2;
- 2.- remove the burner unit following chapter 8.3;
- 3.- pass a cylindrical brush with plastic bristles inside the combustion chamber
- 4.- use a suction device to remove the unburned residues present inside the combustion chamber;
- 5.- use the same suction device on the surfaces of the burner and around the electrodes;
- 6.- re-mount the components in reverse order;
- 7.- open the gas isolation valve;
- 8.- restore the electric power supply.
- 9.- check that there are no gas leaks on all internal joints;



ATTENTION!!! Perform the leak test using a soap and water only. The use of naked flames is prohibited.

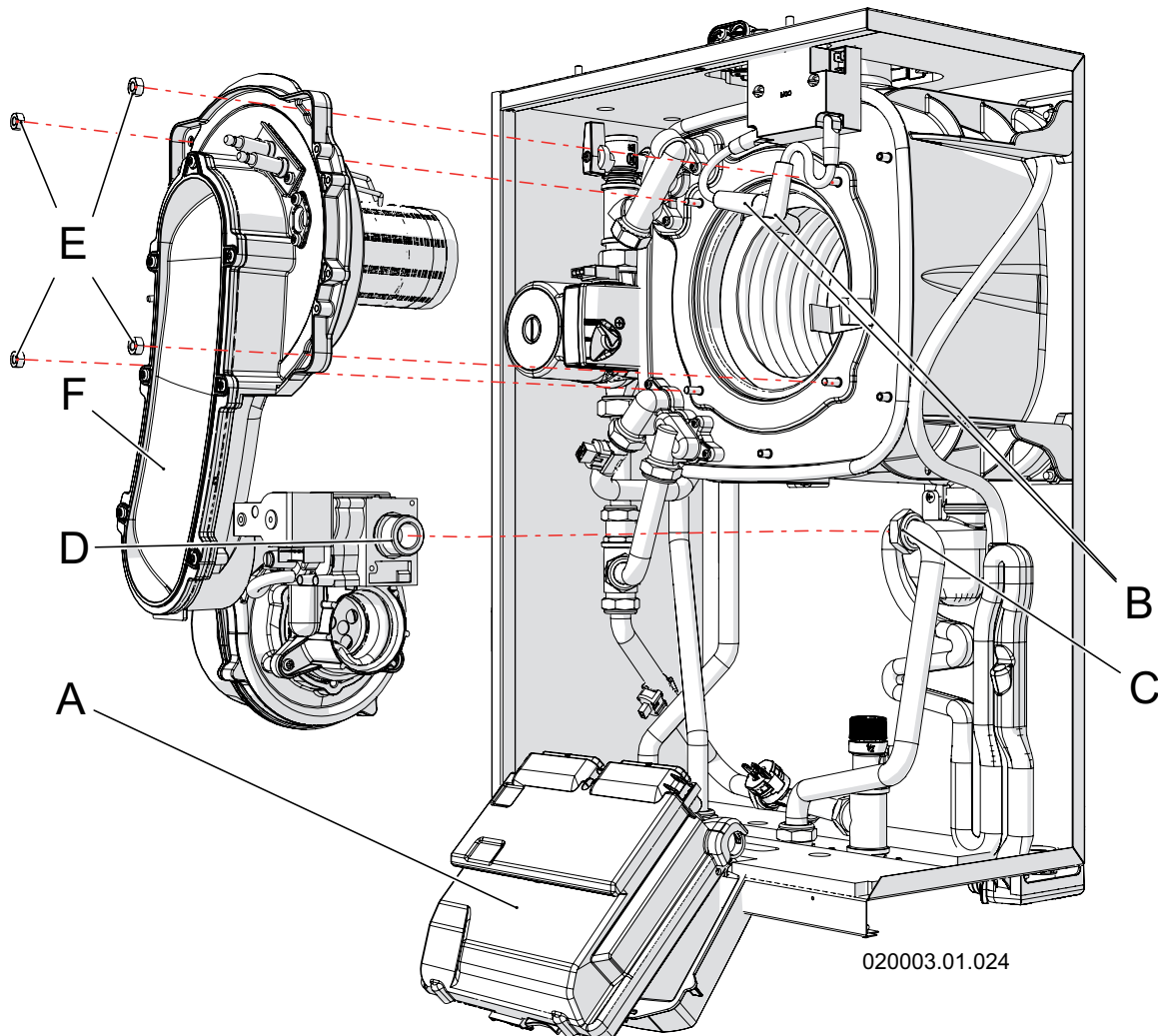


Figure 8.2 - Removing the burner fan unit

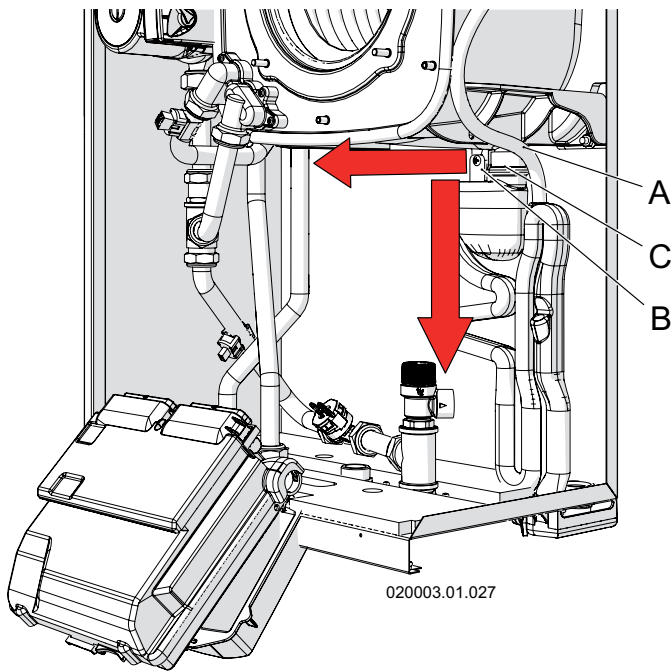


Figure 8.3 - Removal of the condensate collection siphon

8.5 - Condensate siphon cleaning procedure

For correct cleaning of the collection siphon and the conveying of the condensate produced by combustion, operate as follows (refer to the figures 8.3, 8.4 and 8.5):

- 1.- with the appliance on, open a domestic hot water tap or taps fully to force the burner to its maximum power and the level of the liquid present inside the siphon tank "D" lowers (see figure 8.4);
- 2.- access the internal components following paragraph 8.2;
- 3 - remove the burner fan unit following paragraph 8.3;
- 4 - cover the electric plant with a cloth to protect it from any residues of water inside the siphon to be removed.
- 5.- slide the support "C" outwards from the holding support;
- 6.- slide the tank "D" downwards, paying attention to the fact that it is full of condensate water and this could escape;
- 7.- extract the siphon outwards (see figure 8.6) paying attention to disconnect the collection pipes of the water coming from the upper part of the appliance and from the air vent valve.
- 8.- clean the decanting tank "D";
- 9.- re-mount everything in reverse order, paying attention to the gasket "E", which is put back in the relevant seat and that terminal "G" is introduced correctly in the seat "H";
- 10.- restore the level of liquid inside the siphon following the procedure in chapter 6.1.2.

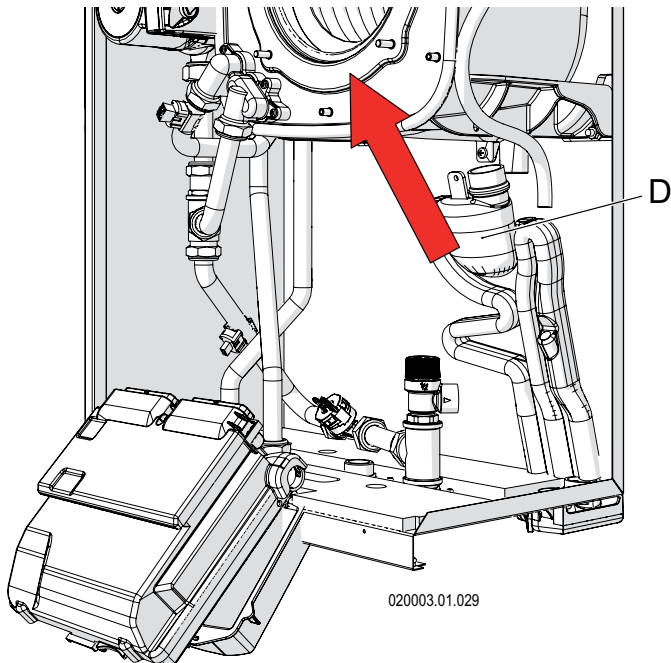


Figure 8.4 - Removing condensate collection siphon

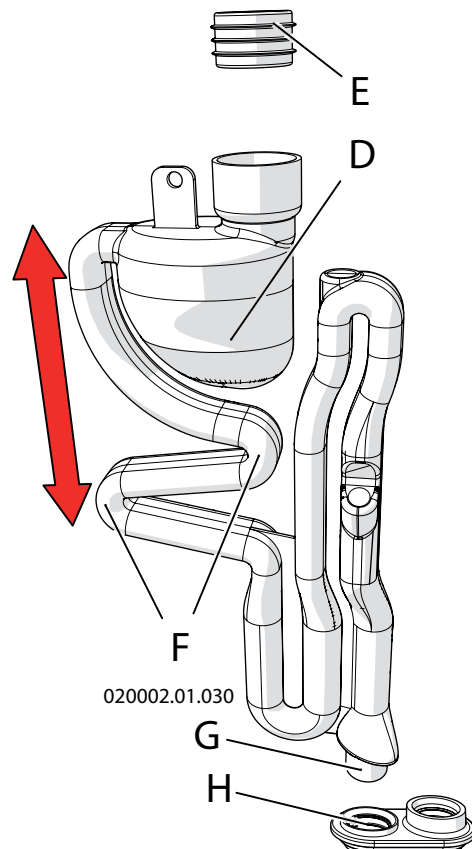


Figure 8.5 - Condensate collection siphon

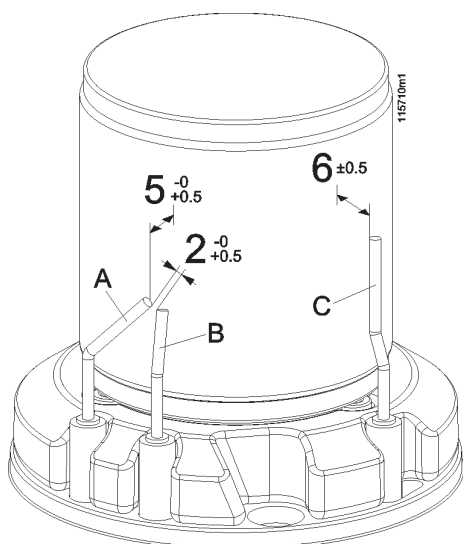


Figure 8.6 - positioning the electrodes on the burner

8.6 - Ignition and flame ionising electrode position

For good working order of the appliance, it is indispensable that the electrodes are positioned correctly (refer to figure 8.6):

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

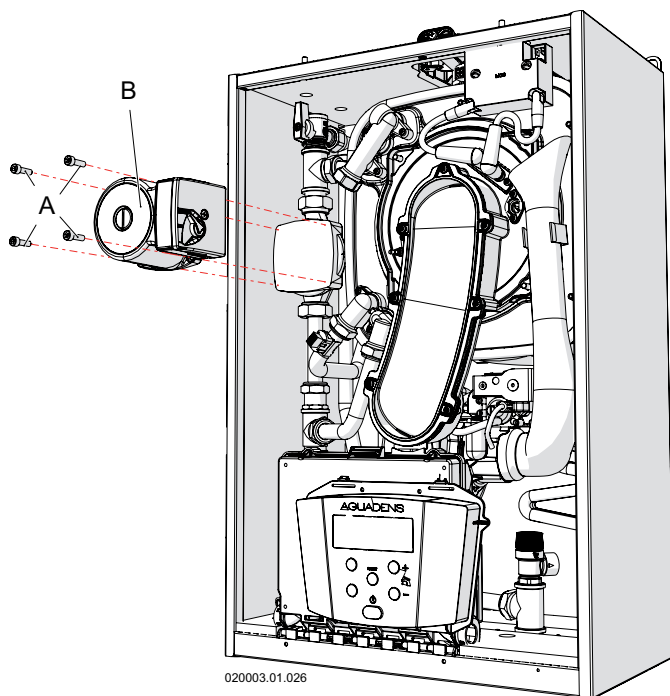
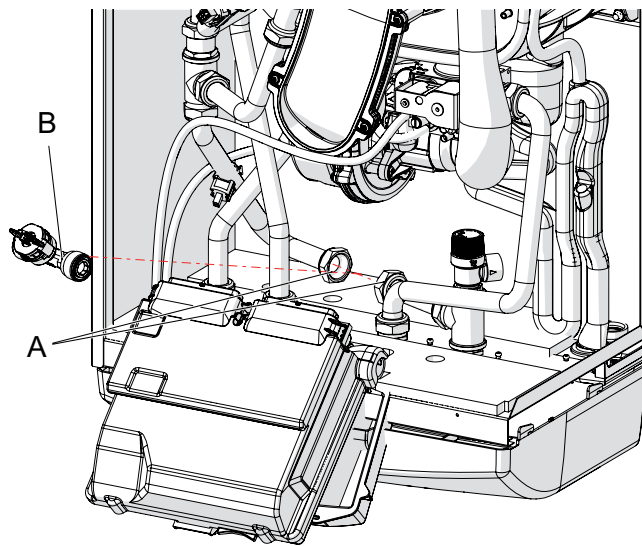


Figure 8.7 - Replacing the pump motor

8.7 - Circulation pump replacement procedure

Operate as follows if the pump must be replaced (refer to figure 8.7):

- 1.- empty the domestic hot water circuit, following the procedure in chapter 8.10;
- 2.- disconnect the electric power supply upstream from the appliance;
- 3.- access the components inside the appliance, following paragraph 8.2;
- 4.- disconnect the electric cables from the pump body.
- 5.- loosen the screws "A";
- 6.- extract the pump "B" outwards and replace it.



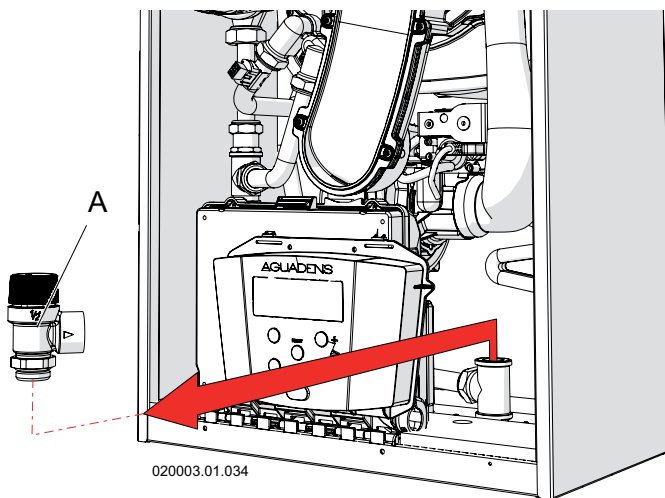
020003.01.036

Figure 8.8 - Removing the flow meter

8.8 - Domestic water flow meter replacement procedure

Proceed as follows, making reference to figure 8.8:

- 1.- empty the domestic hot water circuit, following the procedure in paragraph 8.10;
- 2.- disconnect the electric power supply upstream from the appliance;
- 3.- access the components inside the appliance, following paragraph 8.2;
- 4.- disconnect the cables from the flow meter (detail "B" in figure 8.8);
- 5.- unscrew the small disks "A", paying attention that the residual water from the pipes does not reach the control board;
- 6.- slide the flow meter "B" upwards and replace it.



020003.01.034

Figure 8.9 - Removing the safety valve

8.9 - Safety valve replacement procedure

The safety valve (detail "A" in figure 8.9) protects the appliance from over pressures. If it has to be replaced, proceed as follows (refer to figure 8.9):

- 1.- empty the domestic hot water circuit, following the procedure in paragraph 8.10;
- 2.- access the components inside the appliance, following paragraph 8.2;
- 3.- disconnect the drain pipe from the valve to be replaced "A";
- 4.- unscrew the lower fixing disk of valve "A";
- 5.- extract the safety valve "A" upwards;

8 - MAINTENANCE

8.10 - Procedure for draining the water heater

To empty the appliance from the domestic hot water side, proceed as follows:

- 1.- close the main cold water supply isolation valve;
- 2.- open all hot and cold water taps;
- 3.- make sure that at least one of these is at a height below the level of the appliance.

8.11 - Fan test mode procedure

Switch-on of the fan only can be generated, accessing the parameter `20 10` situated inside the "Installer menu" (see chapter 7.10) and set it on `FAN`. To go back to normal operating conditions, set parameter `20 10` again to `OFF`.

8.12 - Gas burner minimum and maximum performance test mode procedure

Appliance operation can be forced to its own minimum, maximum, adjusted or ignition power. Proceed as follows:

- 1.- access parameter `20 10` found in the "installer menu" (see chapter 7.10);
- 2.- set the parameter `20 10` at the following value:
 - a) `LOW` to force the appliance to minimum power;
 - b) `IGN` to force the appliance to ignition power;
 - a) `HIGH` to force the appliance to maximum power;
 - a) `REG` to force the appliance to maximum power.
- 4.- to end forcing, take the parameter `20 10` to the `OFF` value and press the RESET key.

8.13 - Checking the ionisation current

In any operating status, also during verifications of minimum and maximum power stated in paragraph 8.12, the ionisation current value can be consulted on parameter `1008` present in the "User menu" (table 7.9). This value must be between 1.5 and 3 uA (microampere) at minimum power and between 5 and 8 uA at maximum power.

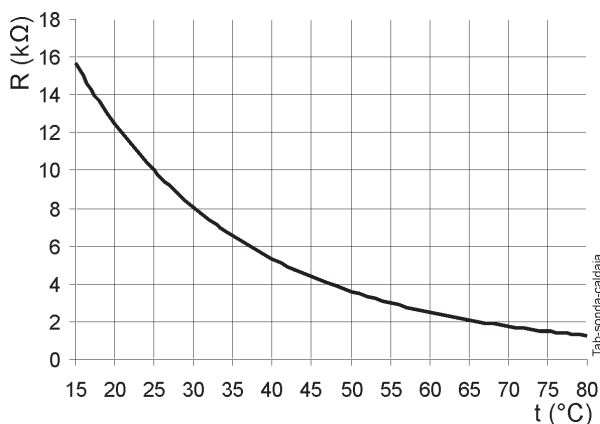


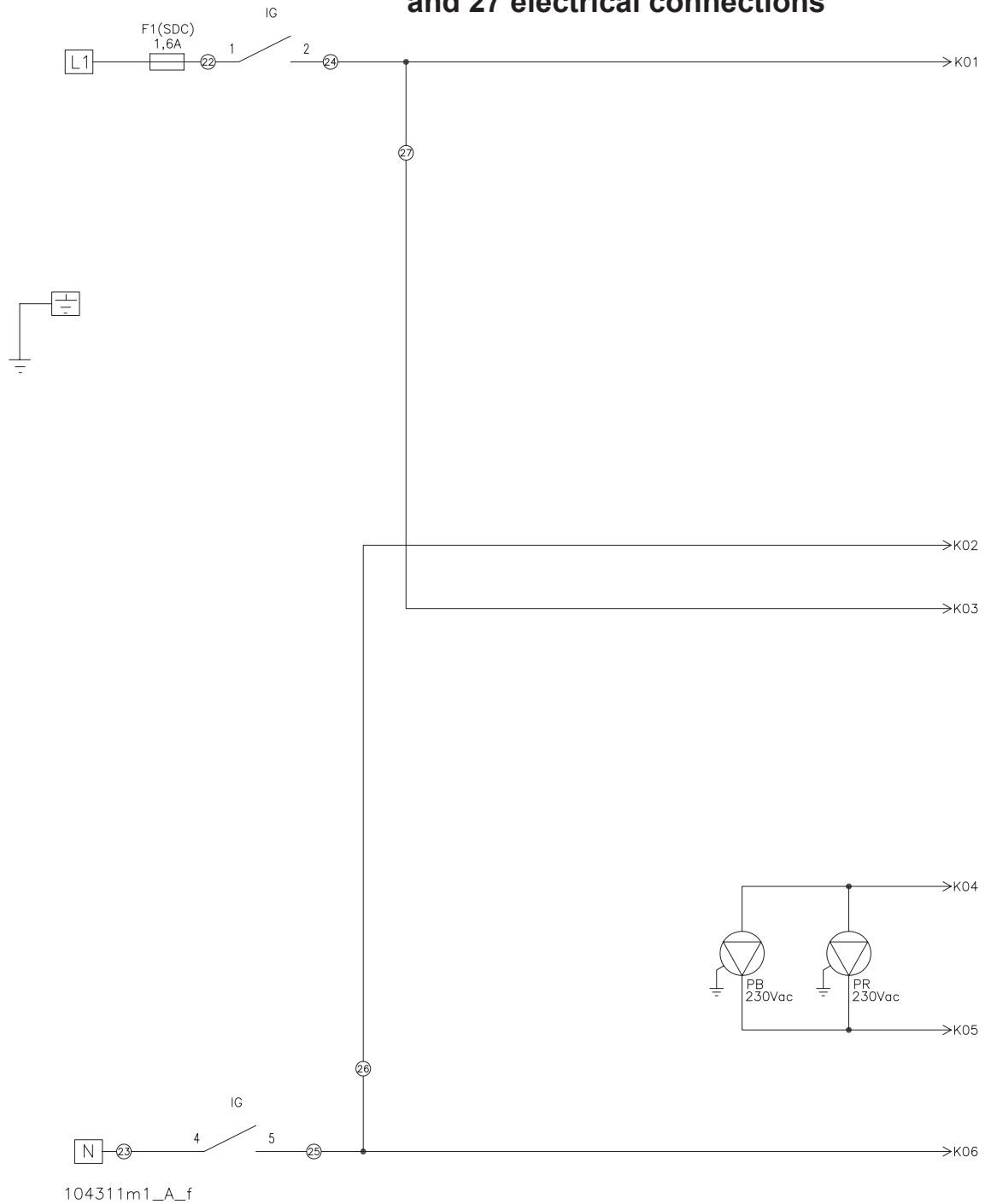
Figure 8.10 - Water sensors curve

8.14 - Water temperature measurement sensor testing procedures

The temperature sensors are positioned on the appliances' exchanger body. The electric resistance existing between the two contacts of the sensor, must correspond with that stated in figure 8.10.

The temperature sensors are: `1001`, `1002`, `1003`, `1005`, `1006`, `1007` and `1014`, the positioning of which can be verified in figure 3.1.

8.15 - AGUADENS models 16, 22 and 27 electrical connections



104111m0_esempio

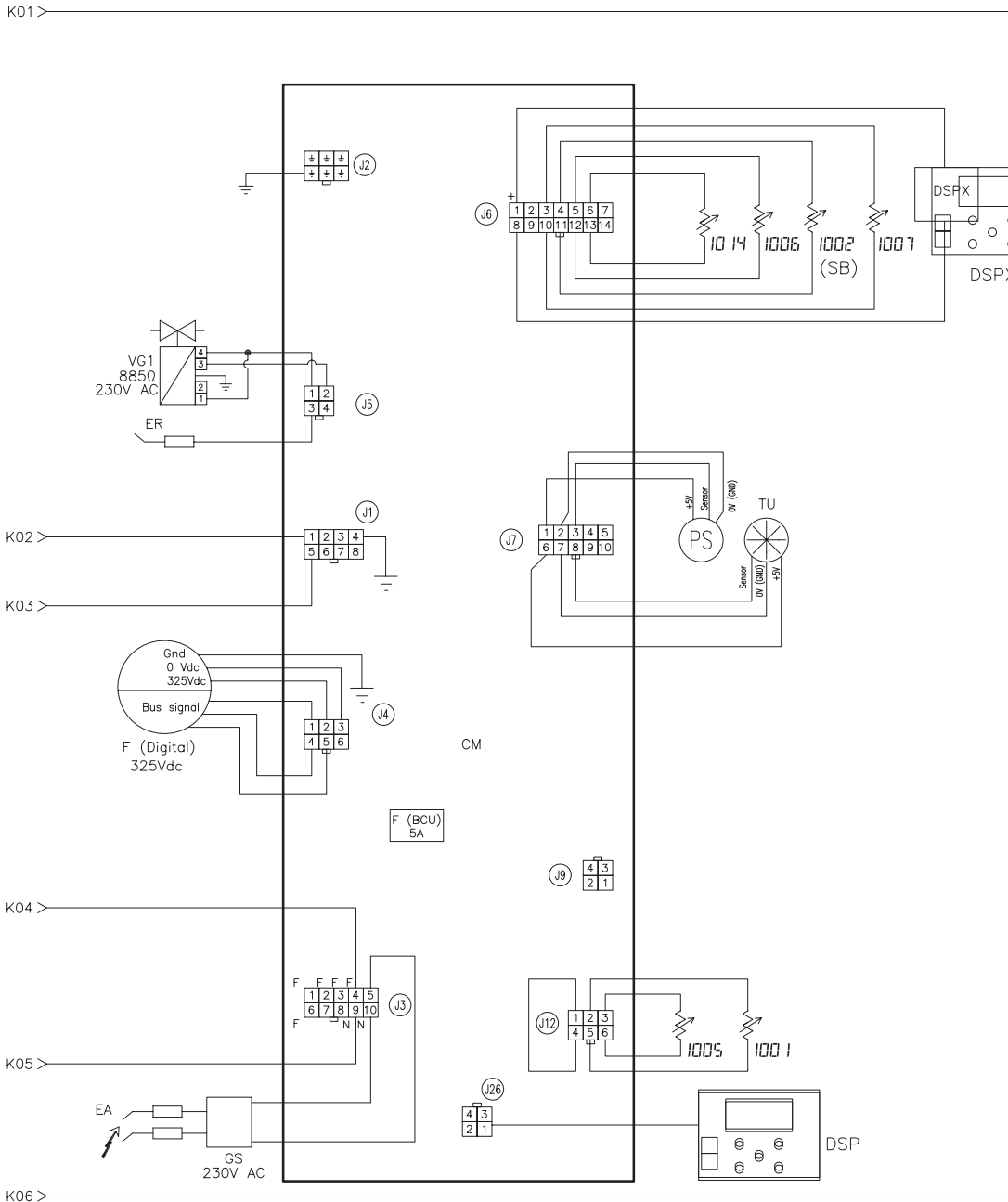
→ K1 K1 →

ATTENTION !!! To consult the wiring diagram correctly, references K are given followed by a number (see example above) to identify the correct follow-on of the cables in the next page.

- 1001 - D.H.W. outlet temperature sensor 1
- 1002 - D.H.W. outlet temperature sensor
- 1002 (SB) - Storage tank sensor (on request)
- 1005 - D.H.W. outlet temperature safety sensor 2
- 1006 - Exhaust flue sensor 1
- 1007 - Cold water inlet sensor
- 1014 - Exhaust flue safety sensor 2
- CM - Appliance control unit and flame control
- DSP - Display
- DSPX - Remote control (on request)
- EA - Ignition electrode
- ER - Detection electrode

Figure 8.11 - Operational wiring diagram

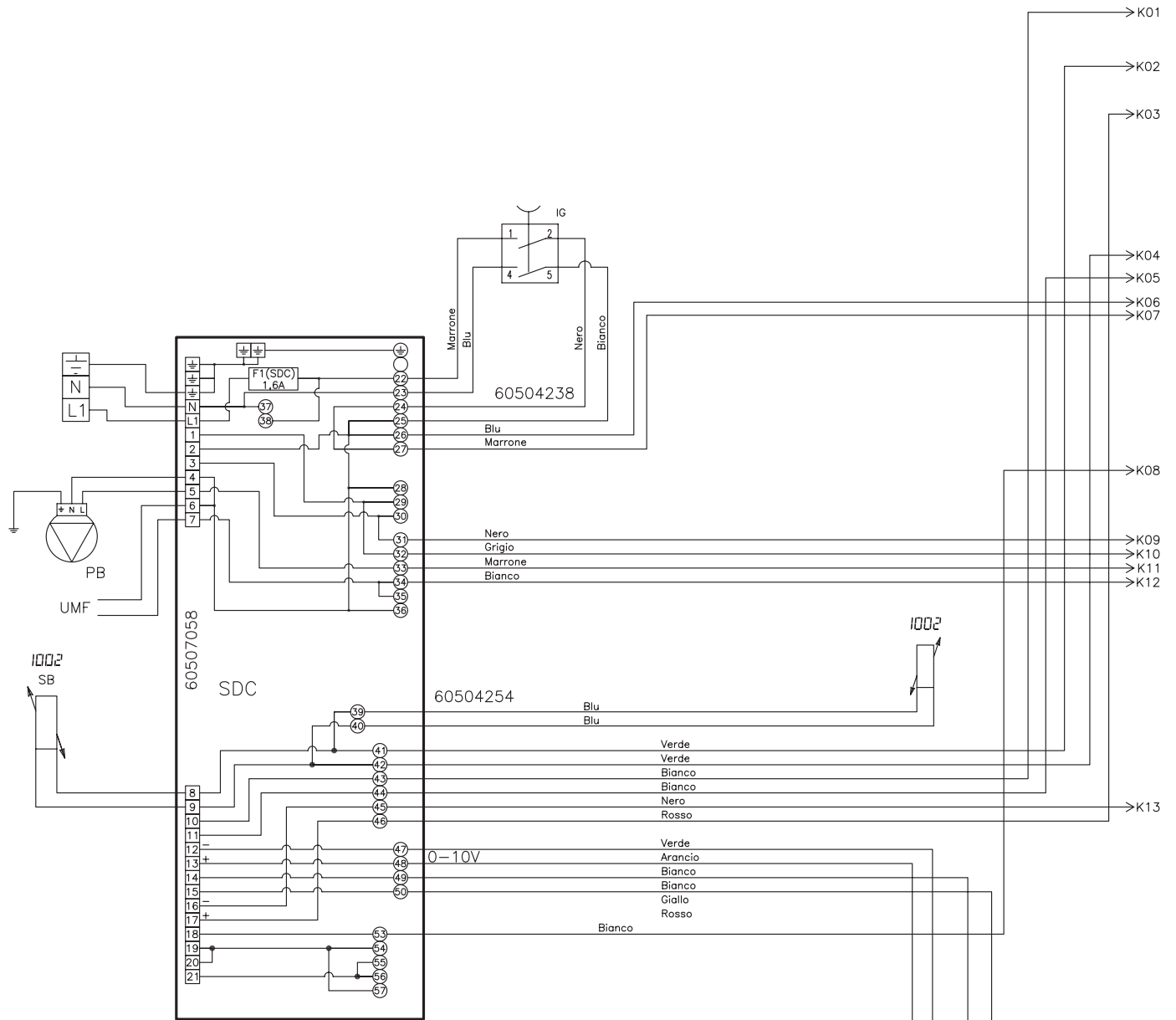
8 - MAINTENANCE



- F (Digital) - Digital fan
- F (BCU) - 5A fuse
- F1 (SDC) - 1.6A power supply fuse
- PB - Storage tank load aux. pump (on request)
- PR - Recirculation Pump
- GS - Spark generator
- IG - Master switch
- J1 - 8 pin Molex connector
- J12- 6 pin Molex connector
- J2 - 6 pin Molex connector
- J26- 4 pin Molex connector
- J3 - 10 pin Molex connector
- J4 - 6 pin Stelvio connector

- J5 - 4 pin Molex connector
- J6 - 14 pin Molex connector
- J7- 10 pin Molex connector
- J9- 4 pin Molex connector
- PB - Storage tank pump (on request)
- PS - Pressure sensor (present only in mod. 27)
- SDC- Connection board
- TU - Domestic hot water flow meter
- VG1- Gas Valve

8.16 - AGUADENS models 16, 22 and 27 internal multi-core wiring diagram

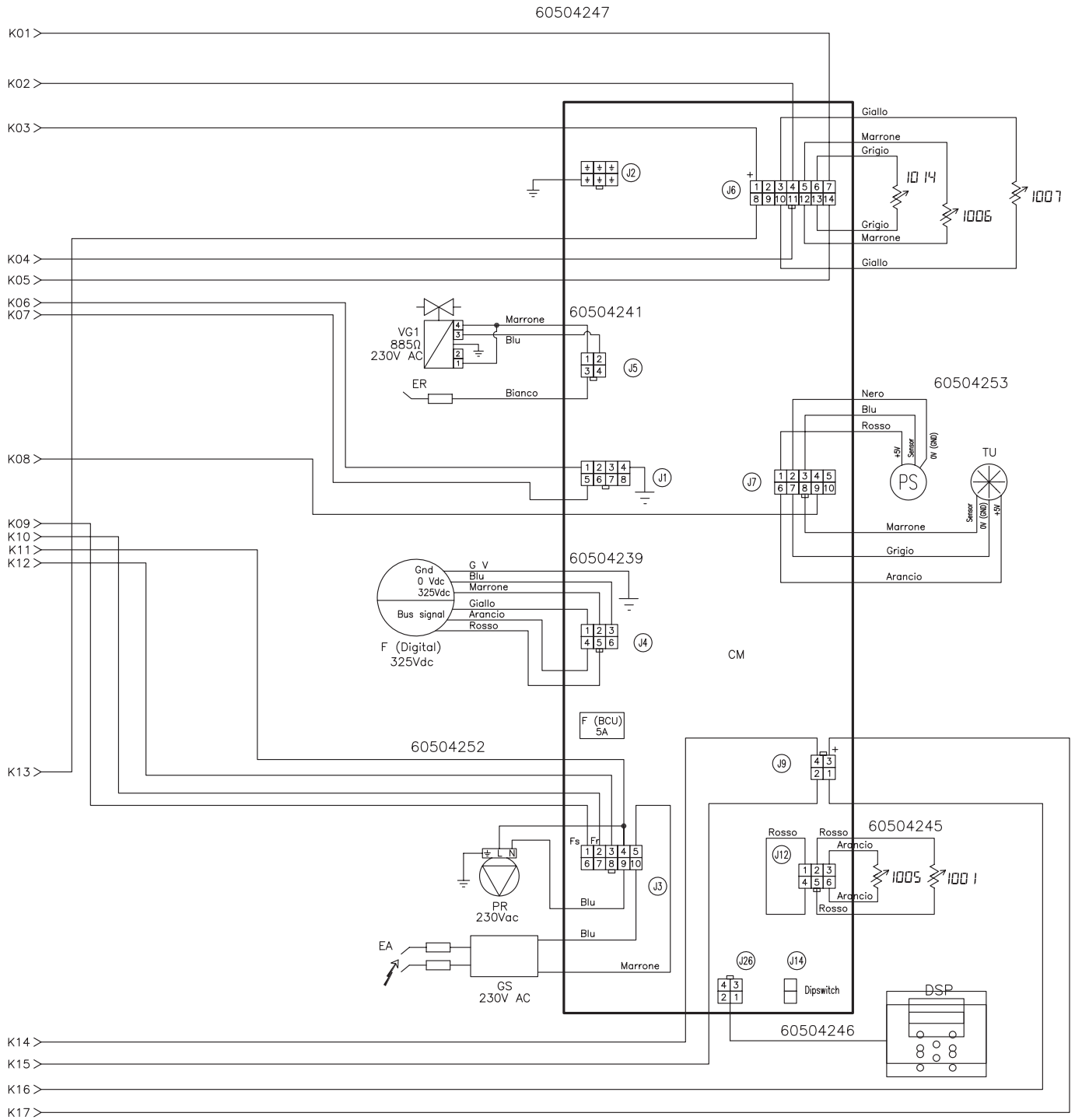


104311m1_A_m

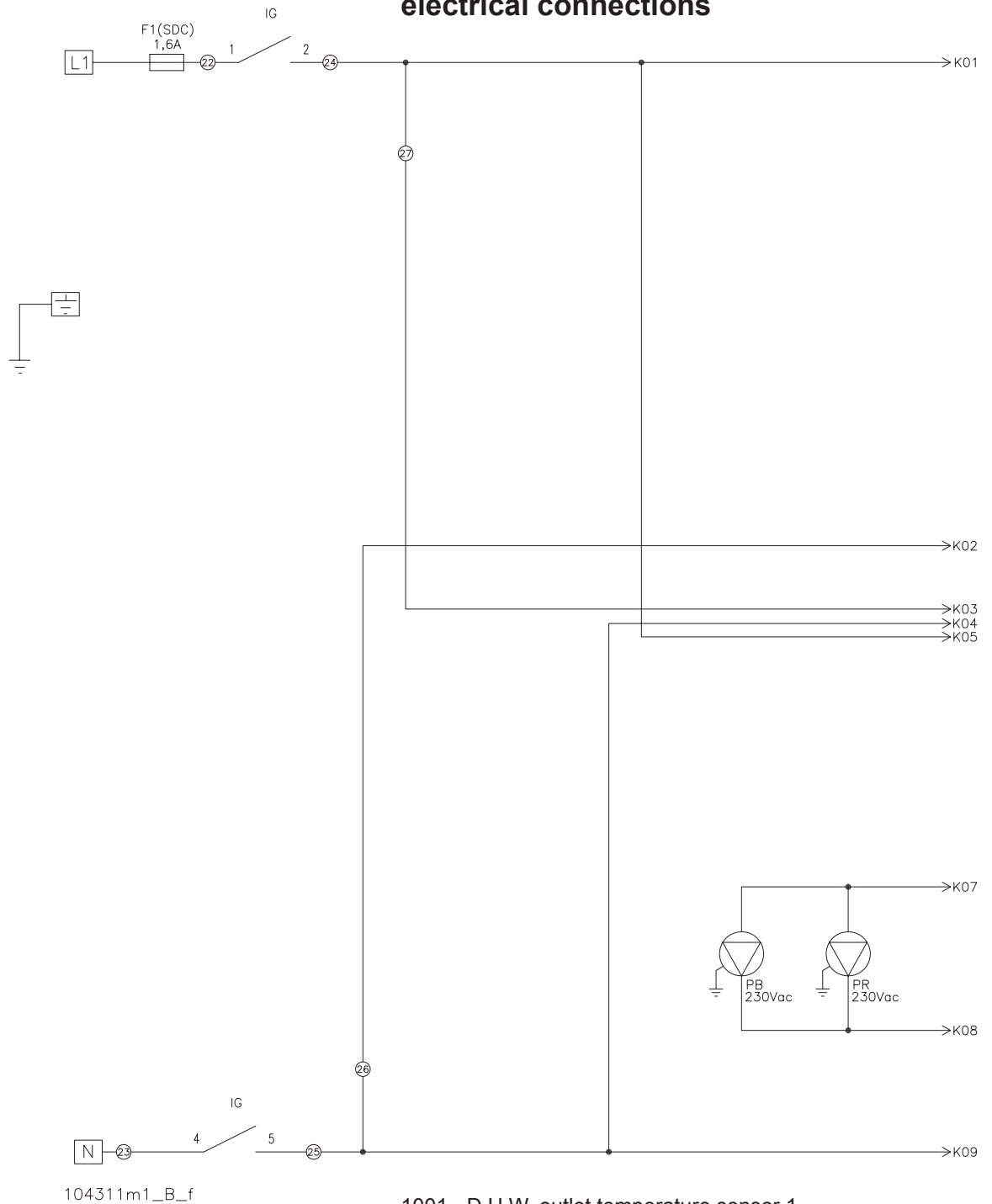
COLOR OF DIAGRAM CABLE
 ARANCIO = ORANGE
 BIANCO = WHITE
 BLU = BLUE
 GIALLO = YELLOW
 GIALLO/VERDE = YELLOW/GREEN
 GRIGIO = GREY
 MARRONE = BROWN
 NERO = BLACK
 ROSSO = RED
 VERDE = GREEN

Key - see key figure 8.11

Figure 8.12 - Multi-core colours wiring diagram




8.17 - AGUADENS model 37
electrical connections



104311m1_B_f

→ K1 K1 →

104111m0_esempio

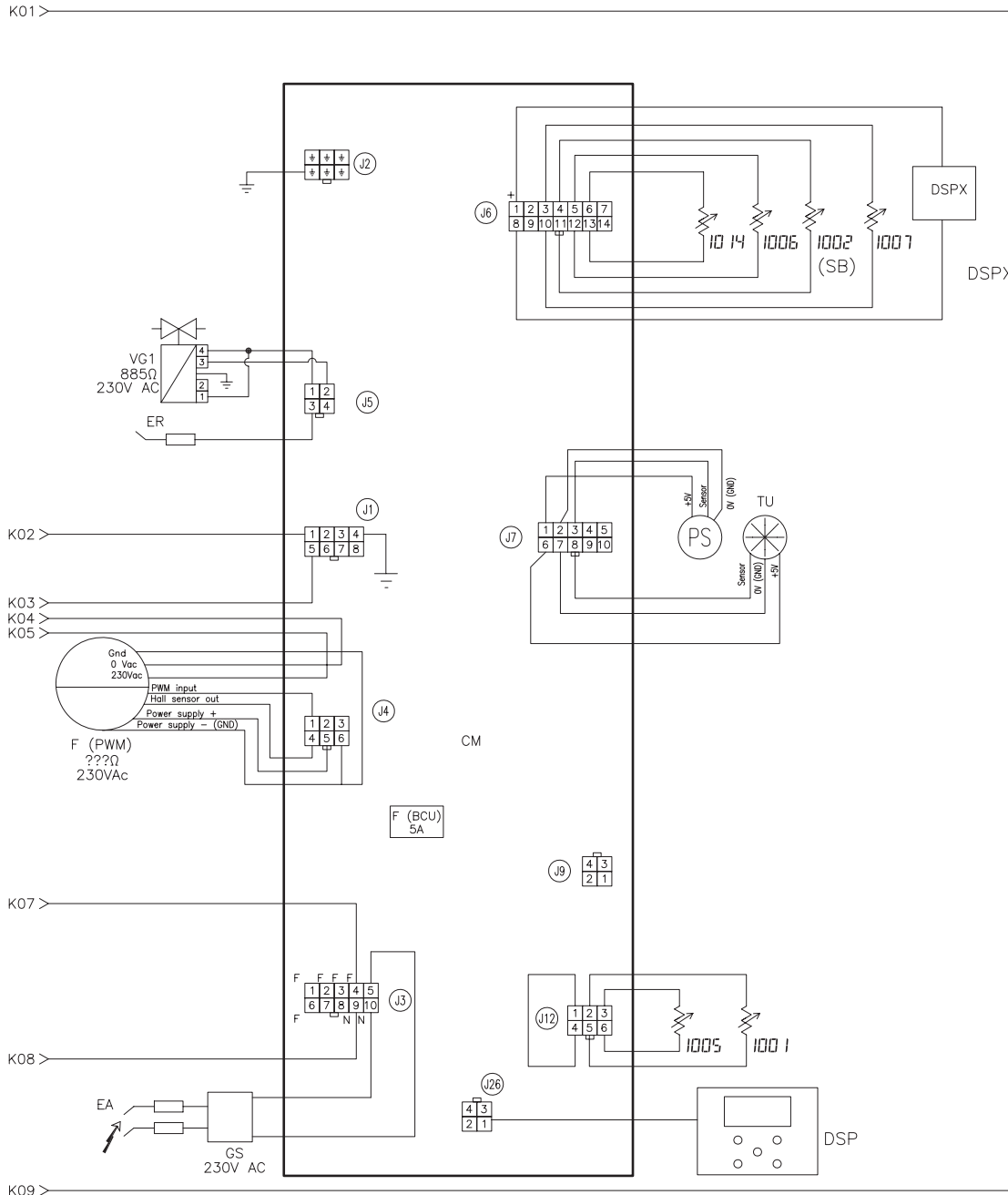


ATTENTION !!! To consult the wiring diagram correctly, references K are given followed by a number (see example above) to identify the correct follow-on of the cables in the next page.

- 1001 - D.H.W. outlet temperature sensor 1
- 1002 - D.H.W. outlet temperature sensor
- 1002 (SB) - Storage tank sensor (on request)
- 1005 - D.H.W. outlet temperature safety sensor 2
- 1006 - Exhaust flue sensor 1
- 1007 - Cold water inlet sensor
- 1014 - Exhaust flue safety sensor 2
- CM - Appliance control unit and flame control
- DSP - Display
- DSPX - Remote control (on request)
- EA - Ignition electrode
- ER - Detection electrode

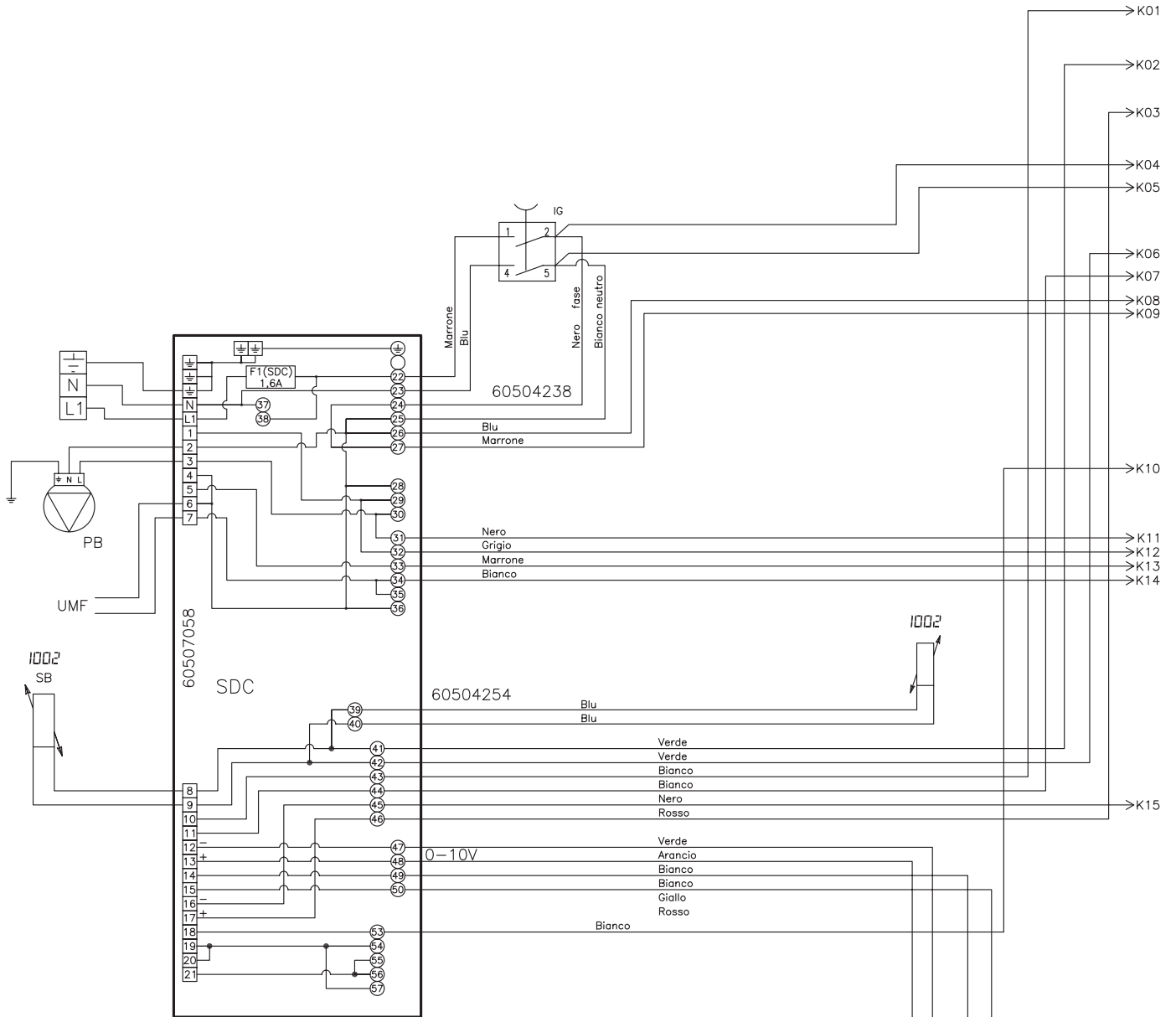
Figure 8.13 - Operational wiring diagram

8 - MAINTENANCE



- F (PWM) - PWM Fan
- F (BCU) - 5A fuse
- F1 (SDC) - 1.6A power supply fuse
- PB - Storage tank load aux. pump (on request)
- PR - Recirculation Pump
- GS - Spark generator
- IG - Master switch
- J1 - 8 pin Molex connector
- J12- 6 pin Molex connector
- J2 - 6 pin Molex connector
- J26- 4 pin Molex connector
- J3 - 10 pin Molex connector
- J4 - 6 pin Stelvio connector
- J5 - 4 pin Molex connector
- J6 - 14 pin Molex connector
- J7- 10 pin Molex connector
- J9- 4 pin Molex connector
- PB - Storage tank pump (on request)
- PS - Pressure sensor
- SDC- Connection board
- TU - Domestic hot water flow meter
- VG1- Gas Valve

8.18 - AGUADENS model 37
multi-core wiring diagram

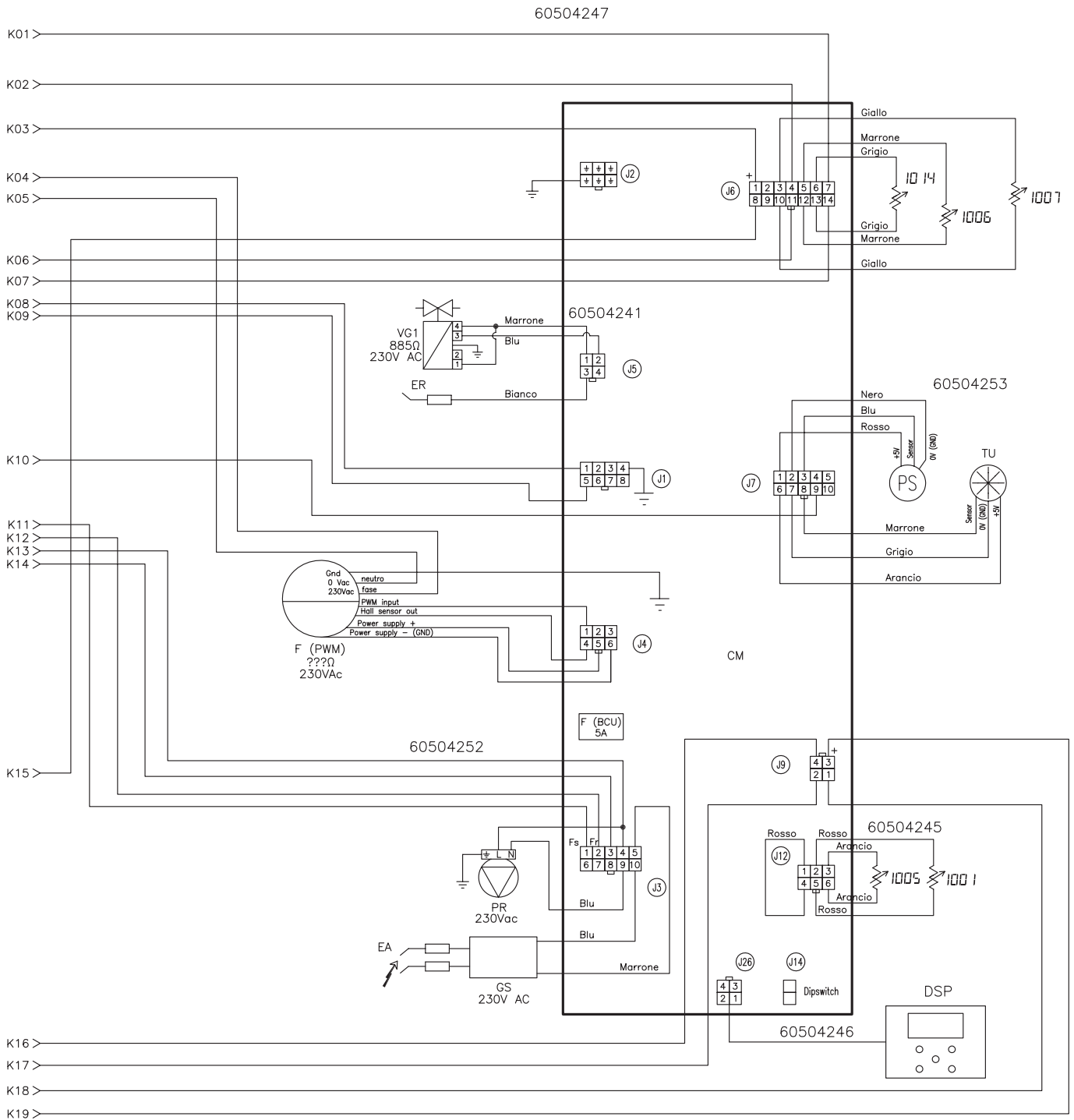


COLOR OF DIAGRAM CABLE
 ARANCIO = ORANGE
 BIANCO = WHITE
 BLU = BLUE
 GIALLO = YELLOW
 GIALLO/VERDE = YELLOW/GREEN
 GRIGIO = GREY
 MARRONE = BROWN
 NERO = BLACK
 ROSSO = RED
 VERDE = GREEN

104311m1_B_m

Key - see key figure 8.13

Figure 8.14 - Multi-core wiring loom diagram



9 - TECHNICAL DATA










| TECHNICAL DATA | | UM | AGUADENS 16 | AGUADENS 22 |
|--|---------|-------------------|-------------------------------|-------------|
| Type (Type of exhaust flue/combustion air intake) | | | B23;C13;C33;C43;C53;C63;C83 | |
| Category | | | I12H3P | I12H3P |
| CE type certificate (PIN) | | | 0694CN6126 | 0694CN6126 |
| Max. heat input | | kW | 25,5 | 34,8 |
| Min. heat input | | kW | 3,2 | 4,4 |
| Max. useful heat output | | kW | 27,5 | 37,6 |
| Efficiency at max heat output | | % | 108 | 108 |
| Min. heat output | | kW | 3,97 | 4,35 |
| Efficiency at min heat output | | % | 109 | 109 |
| Gas flow rate | Nat gas | m ³ /h | 2,70 | 3,68 |
| | LP gas | Kg/h | 1,98 | 2,70 |
| Gas supply pressure | Nat gas | mbar | 20 | 20 |
| | LP gas | mbar | 37 | 37 |
| Gas supply minimum pressure | Nat gas | mbar | 15 | 15 |
| | LP gas | mbar | 25 | 25 |
| Gas supply maximum pressure | Nat gas | mbar | 27 | 27 |
| | LP gas | mbar | 45 | 45 |
| Combustion air intake pressure | Nat gas | mbar | 13,2 | 12,3 |
| | LP gas | mbar | 13,8 | 11,2 |
| Instantaneous D.H.W. adjustment range | | °C | 40-60 | 40-60 |
| D.H.W. with storage tank adjustment range | | °C | 40-70 | 40-70 |
| Domestic circuit maximum pressure | | bar | 7 | 7 |
| Rated power supply voltage | | V | 230 | 230 |
| Rated power supply frequency | | Hz | 50 | 50 |
| Absorbed electric power | | W | 120 | 120 |
| Electric protection rating | | | IPX4D | IPX4D |
| Exhaust flue pipe diameter (split) | | mm | 80 o 60 | 80 o 60 |
| Exhaust flue pipe max. length (split) (80) | | m | 40 | 25 |
| Exhaust flue pipe max. length (split) (60) | | m | 15 | 10 |
| Exhaust flue pipe diameter (coaxial) | | mm | 60/100 | 60/100 |
| Exhaust flue pipe max. length (coaxial) | | m | 10 | 10 |
| Equivalent length of a bend | | m | 45° bend = 0.5m, 90° bend =1m | |
| Weighted CO (0% O2 with natural gas) | | ppm | 8 | 15 |
| Weighted NOx (0% O2 with natural gas) (class 5 EN 483 and 297) | | ppm | 13 | 17 |
| CO2 (%) at minimum/maximum power | Nat gas | % | 8,5/9,0 | 8,5/9,0 |
| | LP gas | % | 10/10,5 | 10/10,5 |
| Exhaust flue gas maximum temperature at appliance outlet | | °C | 75 | 75 |
| Mass flow rate of exhaust flue gases | | kg/h | 25,4 | 42,3 |
| Head available at exhaust flue outlet | | Pa | 60 | 60 |
| Exhaust flue gas maximum temperature for overheating | | °C | 90 | 90 |
| Max. negative pressure available in combined exhaust flue/combustion air intake system | | Pa | 60 | 60 |
| Condensate maximum flow rate | | l/h | 1,9 | 3,2 |
| Condensate average acidity | | PH | 4 | 4 |
| Operating environment temperature | | °C | 0 ; +50 | 0 ; +50 |
| Weight of the appliance | | kg | 36 | 36 |

9 - TECHNICAL DATA

| TECHNICAL DATA | | UM | AGUADENS 27 | AGUADENS 37 |
|--|---------|-------------------|--------------------------------|-------------|
| Type (Type of exhaust flue/combustion air intake) | | | B23;C13;C33;C43;C53;C63;C83 | |
| Category | | | I12H3P | I12H3P |
| CE type certificate (PIN) | | | 0694CN6126 | 0694CN6126 |
| Max. heat input | | kW | 43,0 | 57,8 |
| Min. heat input | | kW | 8,5 | 12,0 |
| Max. useful heat output | | kW | 46,4 | 61,9 |
| Efficiency at max heat output | | % | 107 | 107 |
| Min. heat output | | kW | 9,2 | 13,0 |
| Efficiency at min heat output | | % | 108 | 108 |
| Gas flow rate | Nat gas | m ³ /h | 4,50 | 6,10 |
| | LP gas | Kg/h | 3,30 | 4,50 |
| Gas supply pressure | Nat gas | mbar | 20 | 20 |
| | LP gas | mbar | 37 | 37 |
| Gas supply minimum pressure | Nat gas | mbar | 15 | 15 |
| | LP gas | mbar | 25 | 25 |
| Gas supply maximum pressure | Nat gas | mbar | 27 | 27 |
| | LP gas | mbar | 45 | 45 |
| Combustion air intake pressure | Nat gas | mbar | 9,6 | 10,9 |
| | LP gas | mbar | 8,5 | 10,6 |
| Instantaneous D.H.W. adjustment range | | °C | 40-60 | 40-60 |
| D.H.W. with storage tank adjustment range | | °C | 40-70 | 40-70 |
| Domestic circuit maximum pressure | | bar | 7 | 7 |
| Rated power supply voltage | | V | 230 | 230 |
| Rated power supply frequency | | Hz | 50 | 50 |
| Absorbed electric power | | W | 140 | 140 |
| Electric protection rating | | | IPX4D | IPX4D |
| Exhaust flue pipe diameter (split) | | mm | 80 | 80 |
| Exhaust flue pipe max. length (split) (80) | | m | 10 | 8 |
| Exhaust flue pipe max. length (split) (60) | | m | / | / |
| Exhaust flue pipe diameter (coaxial) | | mm | 60/100 | 80/125 |
| Exhaust flue pipe max. length (coaxial) | | m | 4 | 10 |
| Equivalent length of a bend | | m | 45° bend = 0.5m, 90° bend = 1m | |
| Weighted CO (0% O2 with natural gas) | | ppm | 25 | 25 |
| Weighted NOx (0% O2 with natural gas) (class 5 EN 483 and 297) | | ppm | 30 | 30 |
| CO2 (%) at minimum/maximum power | Nat gas | % | 8,5/9,0 | 8,5/9,0 |
| | LP gas | % | 10/10,5 | 10/10,5 |
| Exhaust flue gas maximum temperature at appliance outlet | | °C | 75 | 75 |
| Mass flow rate of exhaust flue gases | | kg/h | 58,9 | 99,0 |
| Head available at exhaust flue outlet | | Pa | 60 | 60 |
| Exhaust flue gas maximum temperature for overheating | | °C | 90 | 90 |
| Max. negative pressure available in combined exhaust flue/combustion air intake system | | Pa | 60 | 60 |
| Condensate maximum flow rate | | l/h | 4,4 | 7,2 |
| Condensate average acidity | | PH | 4 | 4 |
| Operating environment temperature | | °C | 0 ; +50 | 0 ; +50 |
| Weight of the appliance | | kg | 37 | 40 |

10 - COMMAND MENU DIAGRAM

Key for figure 10.1

| Symbol | Description |
|---|---|
|  | Press and release the RESET key |
|  | Hold the reset key down for a time in seconds, indicated by the number (2) |
|  | Hold the reset key down for a time in seconds, indicated by the number (5) |
|  | Hold down the RESET and  key simultaneously for a time in seconds, indicated by the number |
|  | Press and release the  key |
|  | Press and release the  key |

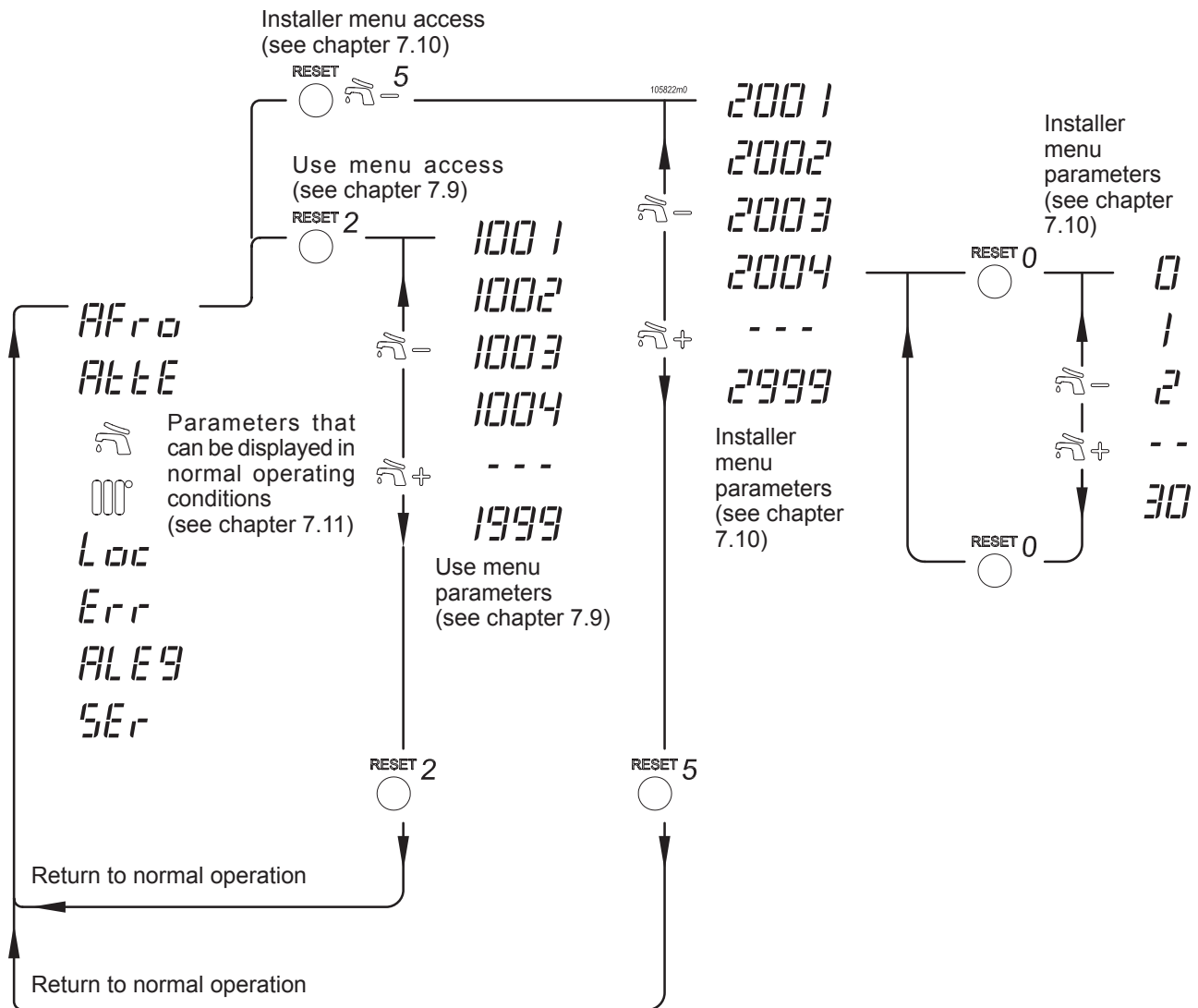


Figure 10.1 - Command menu diagram

11 - ENGINEERS TEST MODE



ATTENTION !!!

The modification of these parameters could cause the appliance, and therefore the plant, to malfunction. For this reason only a technician that has the awareness and in-depth knowledge of the appliances can modify them.

To access this menu, move the microswitch as stated in figure 6.5 detail "B".

| Parameter | Parameter Description | M.U. | Setting range | Factory value | Customised value |
|-----------|---|------|--|----------------|------------------|
| 3002 | Selection type | | From 50 to 55 | See figure 6.7 | |
| 3012 | Domestic hot water operating mode | / | 0 = DO NOT USE ; 1 = Storage tank with temperature sensor; 2 = Storage tank with thermostat; 3 = DO NOT USE ; 4 = DO NOT USE ; 5 = Instantaneous with turbine; | 5 | |
| 3013 | No function | / | / | / | |
| 3014 | Instantaneous domestic hot water pre-heat | / | OFF = No pre-heat ON = With pre-heat OFF | OFF | |
| 3015 | No function | / | / | / | / |
| 3016 | No function | / | / | / | / |
| 3020 | Domestic hot water flow rate sensor | / | 0 = B; 1 = DN 8; (AGUADENS 16) 2 = DN 10; 3 = DN 15; (AGUADENS 22, 27 and 37) 4 = DN 20; 5 = DN 25; | 0 | |
| 3021 | 2nd Exhaust flue sensor (1014) | / | 0 = Disabled; 1 = Enabled; 2 = Enabled with exhaust flue anti-closure pressure switch; | 1 | |
| 3022 | No function | / | / | / | |
| 3033 | No function | / | / | / | |
| 3034 | No function | / | / | / | |
| 3035 | No function | / | / | / | |
| 3036 | No function | / | / | / | |
| 3052 | No function | / | / | / | |

The undersigned **COSMOGAS S.r.L.**, with Registered Office in via L. Da Vinci n° 16 - 47014 Meldola (FC) ITALY,

DECLARES

under its own responsibility that the project:

| |
|---------------------|
| WARRANTY N° |
| GAS APPLIANCE MODEL |
| DATE OF MANUFACTURE |

subject of this declaration, is in compliance with the model described in the Type examination certificate **CE** , whose reference is given in the table in chapter 9 under “CE type certificate (PIN)” and meeting that required by the Directives: Gas Appliances, (**2009/142/CE** former **90/396/CEE**), Low Voltage, (**2006/95/CE**), Electromagnetic Compatibility, (**2004/108/CEE**).

(the warranty number corresponds to the serial number)

This declaration is issued for that established by the above-mentioned Directives.

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



13 - WARRANTY

13.1 - General warranty conditions

All **COSMOGAS** products are guaranteed against material flaws and manufacturing defects for **24** months from the date of commissioning, **COSMOGAS** also extends the warranty to :

SHELL AND TUBE HEAT EXCHANGER BODIES, CRR and CRV guaranteed up to 5 years;

PRE-MIXED BURNERS guaranteed up to 10 years;

ATMOSPHERIC BURNERS guaranteed up to 15 years.

This warranty extension will only be valid if **COSMOGAS** has received the warranty card, filled-in completely, which will certify the date of commissioning. Within the above-mentioned term **COSMOGAS** commits to repairing or replacing the faulty construction parts and which will be acknowledged as such with exclusion of normal deterioration due to operations.

The extension of the warranty exclusively covers the cost of the spare part. All other accessory costs are excluded, such as: labour, transfer costs and expenses for transporting material.

The warranty does not extend to the recasting of the damage, of any nature, that has happened to persons or property. The faulty material replaced under warranty is the property of **COSMOGAS** and must be returned to our establishment, without further damage, within **30** days from replacement.

All **COSMOGAS** products are encumbered by the title retention agreement, until the appliance sold have been paid in full.

13.2 - Instructions for filling-in the warranty card

1. - Have your installer put his stamp on the warranty certificate.
2. - Always request the intervention of our authorised technician for commissioning and to validate the warranty;

To validate the warranty, the technician must control:

1. - Gas pressure at the burner (or combustion agent air pressure for pre-mixed and condensing appliances);
2. - Water leaks;
3. - Gas leaks;

The list of authorised technicians is found attached to the instruction manual or can be found in the Yellow Pages under "Gas water heater".

- The technician will take the warranty certificate and deliver it to **COSMOGAS**.

13.3 - Warranty limitations

The warranty is not valid:

- if the appliance is installed by **non**-qualified staff;
- if the appliance is installed in a way that is not in compliance with the **COSMOGAS** instructions and/or that established by the current national and/local regulations;
- whenever the plant is not run/services in compliance with the instructions and/or the current national and local regulations.
- whenever the product has damage caused by changes in voltage;
- whenever the product has damaged caused by the use of excessively hard water, or which is too acid or too oxygenated;
- whenever the product has failures caused by heat shocks, abnormalities of chimneys and/or exhaust and intake pipes;
- whenever the product has anomalies not depending on **COSMOGAS**;
- whenever the appliances have been tampered with for adaptation, repairs or replacement with non-original spare parts;
- whenever repairs are performed by unauthorised staff.
- Whenever the warranty certificate is not sent to **COSMOGAS** within **15 days** from the date **1°** commissioning.

COSMOGAS does not assume any responsibility for any accident that may occur or be caused by the user, precluding any compensation that does not concern appliance parts recognised as defective manufacturing.

Any dispute is the jurisdiction of the Forlì Law Court, ITALY.



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