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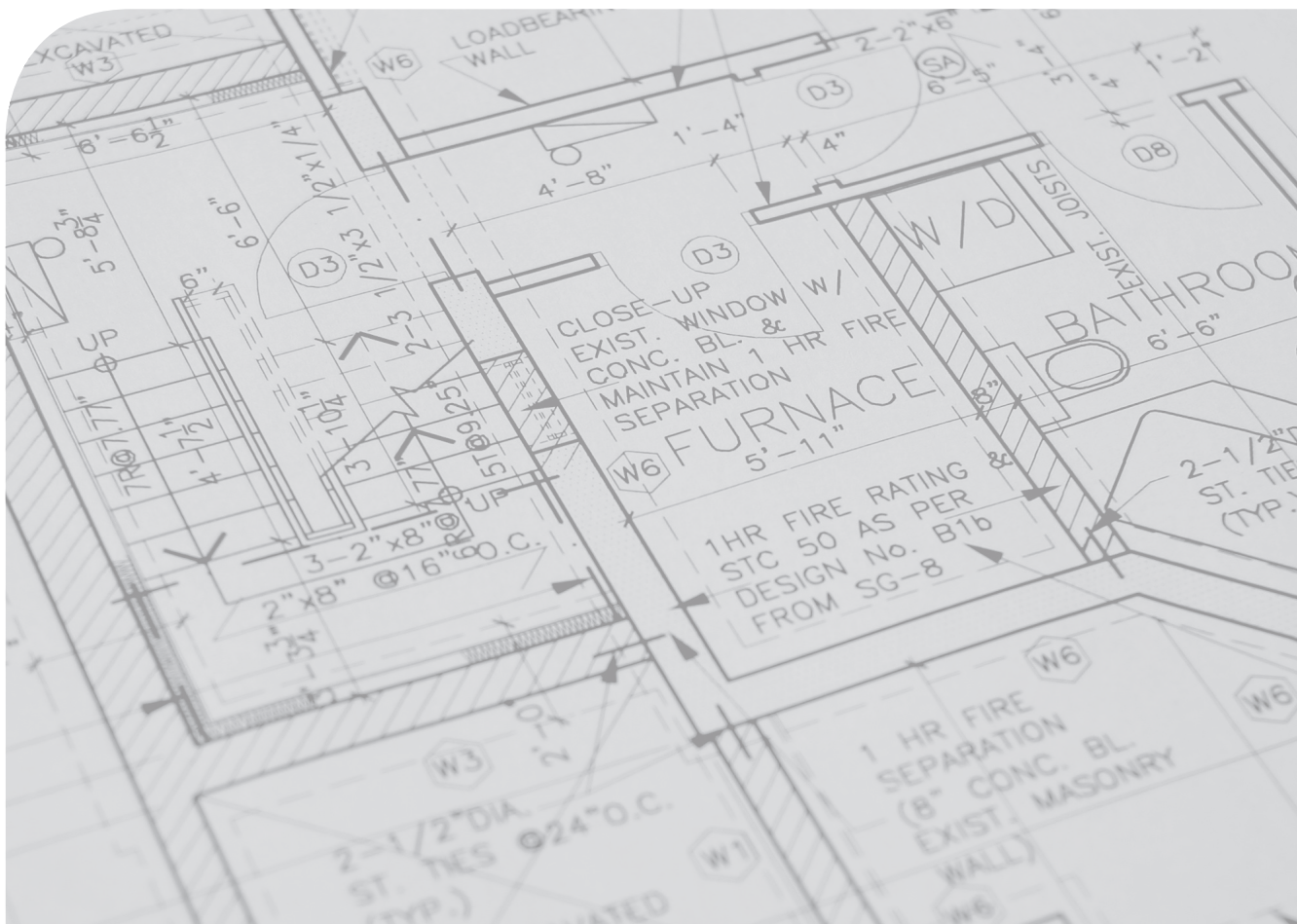
Instructions and recommendations

Installer

User

Maintenance technician

Technical Data



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Dear Customer

Congratulations for having chosen a top-quality Immergas product, able to assure well-being and safety for a long period of time. As an Immergas customer you can also count on a Qualified Authorised After-Sales Technical Assistance Centre, prepared and updated to guarantee constant efficiency of your appliance. Read the following pages carefully: you will be able to draw useful tips on the proper use of the device, compliance with which will confirm your satisfaction with the Immergas product.

The company **IMMERGAS S.p.A.**, with registered office in via Cisa Ligure 95 42041 Brescello (RE), declares that the design, manufacturing and after-sales assistance processes comply with the requirements of standard **UNI EN ISO 9001:2015**.

For further details on the product CE marking, request a copy of the Declaration of Conformity from the manufacturer, specifying the appliance model and the language of the country.

The manufacturer declines all liability due to printing or transcription errors, reserving the right to make any modifications to its technical and commercial documents without forewarning.





GENERAL RECOMMENDATIONS

This book contains important information for the:

Installer (section 1);

User (section 2);

Maintenance Technician (section 3).

- The user must carefully read the instructions in the specific section (section 2).
- The user must limit operations on the appliance only to those explicitly allowed in the specific section.
- The appliance must be installed by qualified and professionally trained personnel.
- The instruction booklet is an integral and essential part of the product and must be given to the new user in the case of transfer or succession of ownership.
- It must be stored with care and consulted carefully, as all of the warnings provide important safety indications for installation, use and maintenance stages.
- In compliance with the legislation in force, the systems must be designed by qualified professionals, within the dimensional limits established by the Law. Installation and maintenance must be performed in compliance with the regulations in force, according to the manufacturer's instructions and by professionally qualified staff, meaning staff with specific technical skills in the plant sector, as provided for by Law.
- Improper installation or assembly of the Immergas device and/or components, accessories, kits and devices can cause unexpected problems for people, animals and objects. Read the instructions provided with the product carefully to ensure proper installation.
- This instructions manual provides technical information for installing Immergas products. As for the other issues related to the installation of products (e.g. safety at the workplace, environmental protection, accident prevention), it is necessary to comply with the provisions of the standards in force and the principles of good practice.
- All Immergas products are protected with suitable transport packaging.
- The material must be stored in a dry place protected from the weather.
- Damaged products must not be installed.
- Maintenance must be carried out by skilled technical staff. For example, the Authorised Service Centre that represents a guarantee of qualifications and professionalism.
- The appliance must only be destined for the use for which it has been expressly declared. Any other use will be considered improper and therefore potentially dangerous.
- If errors occur during installation, operation and maintenance, due to non-compliance with technical laws in force, standards or instructions contained in this booklet (or however supplied by the manufacturer), the manufacturer is excluded from any contractual and extra-contractual liability for any damages and the device warranty is invalidated.
- In the event of malfunctions, faults or incorrect operation, turn the appliance off and contact an authorised company (e.g. the Authorised Technical Assistance Centre, which has specifically trained staff and original spare parts). Do not attempt to modify or repair the appliance alone.



SAFETY SYMBOLS USED



GENERIC HAZARD

Strictly follow all of the indications next to the pictogram. Failure to follow the indications can generate hazard situations resulting in possible harm to the health of the operator and user in general, and/or property damage.



ELECTRICAL HAZARD

Strictly follow all of the indications next to the pictogram. The symbol indicates the appliance's electrical components or, in this manual, identifies actions that can cause an electrical hazard.



MOVING PARTS

The symbol indicates the appliance's moving components that can cause hazards.



DANGER OF HOT SURFACES

The symbol indicates the appliance's very hot components that can cause burns.



WARNINGS

Strictly follow all of the indications next to the pictogram. Failure to follow the indications can generate hazard situations resulting in possible minor injuries to the health of both the operator and the user in general, and/or slight material damage.



ATTENTION

Read and understand the instructions of the appliance before carrying out any operation, carefully following the instructions given. Failure to observe the instructions may result in malfunction of the unit.



INFORMATION

Indicates useful tips or additional information.



EARTH TERMINAL CONNECTION

The symbol identifies the appliance's earth terminal connection point.



DISPOSAL WARNING

The user must not dispose of the appliance at the end of its service life as municipal waste, but send it to appropriate collection centres.

PERSONAL PROTECTIVE EQUIPMENT



SAFETY GLOVES



EYE PROTECTION



SAFETY FOOTWEAR



1 UNIT INSTALLATION

1.1 INSTALLATION WARNINGS



Operators who install and service the appliance must wear the personal protective equipment required by applicable law.



This appliance has been designed for base mounted installation only, for central heating and production of domestic hot water for domestic use and similar purposes.



In the event the unit is installed in damp places, one must provide an insulation system underneath it, to insulate it from the ground.



The place of installation of the appliance and relative Immergas accessories must have suitable features (technical and structural), such as to allow for (always in safe, efficient and comfortable conditions):

- installation (according to the provisions of technical legislation and technical regulations);
- maintenance operations (including scheduled, periodic, routine and special maintenance);
- removal (to outdoors in the place for loading and transporting the appliances and components) as well as the eventual replacement of those with appliances and/or equivalent components.



By varying the type of installation the classification of the appliance and precisely:

- **Type B₂₃ or B₅₃** appliance if installed using the relevant terminals for air intake directly from the room in which the appliance has been installed.
- **Type C appliance** if installed using concentric pipes or other types of pipes envisioned for the sealed chamber appliance for intake of air and expulsion of flue gas.



The equipment classification is shown in the illustrations of the various installation solutions on the following pages.



Only professionally enabled companies are authorised to install Immergas gas appliances.



Installation must be carried out according to regulation standards, current legislation and in compliance with local technical regulations and the required technical procedures.



It is forbidden to install appliances removed from other systems.

The manufacturer declines all liability in the event of damage caused by appliances removed from other systems or for any non-conformities with such equipment.



Check the environmental operating conditions of all parts relevant to installation, referring to the values shown in the technical data table in this booklet.



Installation of the appliance when powered by LPG must comply with the rules regarding gases with a greater density than air (remember, as an example, that it is prohibited to install plants powered with the above-mentioned gas in rooms where the floor is at a lower quota than the country level).





If installing a kit or servicing the appliance, always empty the system's domestic hot water circuit first so as not to compromise the appliance's electrical safety (Par. 3.26, 2.12).

Always disconnect the appliance from voltage and, depending on the type of operation, decrease the pressure and/or bring it to zero in the gas and DHW circuits.



Before installing the appliance, ensure that it is delivered in perfect condition; if in doubt, contact the supplier immediately. Packing materials (staples, nails, plastic bags, polystyrene foam, etc.) constitute a hazard and must be kept out of the reach of children.

If the appliance is installed inside or between cabinets, ensure sufficient space for routine servicing; for minimum installation distances, see Fig. 5.



It is just as important that the intake grids and exhaust terminals are not obstructed.



It is recommended to check that no flue gas recirculation is found in the air sample points (0.5% maximum permitted CO₂).



Keep all combustible material away from the appliance (paper, rags, plastic, polystyrene, etc.).



The minimum distance for exhaust pipes from flammable materials must be at least 25 cm.



In the event of malfunctions, faults or incorrect operation, turn the appliance off and contact an authorised company (e.g. the Authorised Technical Assistance Centre, which has specifically trained staff and original spare parts). Do not attempt to modify or repair the appliance alone.



Any modification to the appliance that is not explicitly indicated in this section of the booklet is forbidden.

Installation standards



This type of installation is possible when permitted by the laws in force in the appliance's country of destination.



This appliance must be installed in an environment where the temperature cannot fall below 0°C. Do not expose the appliance to atmospheric agents.



Installation of gas appliances, flue exhaust pipes and combustion air intake pipes is forbidden in places with a fire risk (for example: garages, closed parking stalls), and in potentially dangerous places.



Do not install in places/rooms that constitute public areas of apartment buildings, internal stairways or other escape routes (e.g. floor landings, entrance halls, etc.).





Installation is also forbidden in places/rooms that constitute public areas of apartment buildings such as cellars, entrance halls, attics, lofts, etc., unless otherwise provided for by local regulations in force.



These appliances are used to heat water to below boiling temperature in atmospheric pressure.



They must be connected to a central heating system and domestic hot water circuit suited to their performance and capacity.

INSTALLER

USER

MAINTENANCE TECHNICIAN

TECHNICAL DATA



Risk of damage due to corrosion caused by unsuitable combustion air and environment.

Spray, solvents, chlorine-based detergents, paints, glue, ammonium compounds, powders and similar cause product and flue duct corrosion.



Check that combustion air power supply is free from chlorine, sulphur, powders, etc.



Make sure that no chemical substances are stored in the place of installation.



If you want to install the product in beauty salons, paint workshops, carpenter's shop, cleaning companies or similar, choose a separate installation area that ensures combustion air supply that is free from chemical substances.



Make sure the combustion air is not fed through chimneys that were previously used with boilers or other central heating appliances powered by liquid or solid fuels. In fact, these may cause an accumulation of soot in the chimney

Risk of material damage after using sprays and liquids to search for leaks

Leak sprays and liquids clog the reference hole P.Ref. (Fig. 67) of the gas valve, damaging it irreparably.
During installation and maintenance, do not use spray or liquids on the gas valve (electric connections side).

Filling the condensate drain trap

When the appliance is switched on for the first time, combustion products come out of the condensate drain. After a few minutes of operation, check that combustion flue gases are no longer coming out of the condensate drain; this means that the drain trap has filled to a correct condensate height that the flue gases cannot pass through.

"Anti-legionella" thermal treatment of the accumulation storage tank.

"Anti-Legionella" heat treatment of the Immergas storage tank (can be activated both from the boiler panel and from the external temperature control systems provided).
During this phase, the temperature of the water inside the tank exceeds 60°C with the subsequent risk of burns.
Keep this domestic hot water treatment under control (and inform the users) to prevent unforeseeable damage to people, animals, things.
If required install a thermostatic valve on the domestic hot water outlet to prevent scalding.





Open chamber appliances type B₂₃ and B₅₃ must not be installed in rooms in which commercial, craft or industrial activities are carried out where products are used that are capable of developing vapours or volatile substances (e.g. acid vapours, glues, paints, solvents, fuels, etc.), as well as dust (e.g. dust from wood processing, coal dust, cement dust, etc.) that could be harmful to the appliance's components and impair its operation.



In configuration B₂₃ and B₅₃, unless local regulations are in force, the appliances must not be installed in bedrooms, bathrooms, toilets or studios; they must neither be installed in rooms containing solid fuel heat generators nor in rooms communicating with said rooms.



The installation rooms must be permanently ventilated, in compliance with the local regulations in force (at least 6 cm² for every kW of installed heat input, except in the event of any increases needed for electro-mechanical vacuum cleaners or other devices that could put the installation room under vacuum).



Install the appliances in B₂₃ and B₅₃ configuration in non-residential premises and which are permanently ventilated.

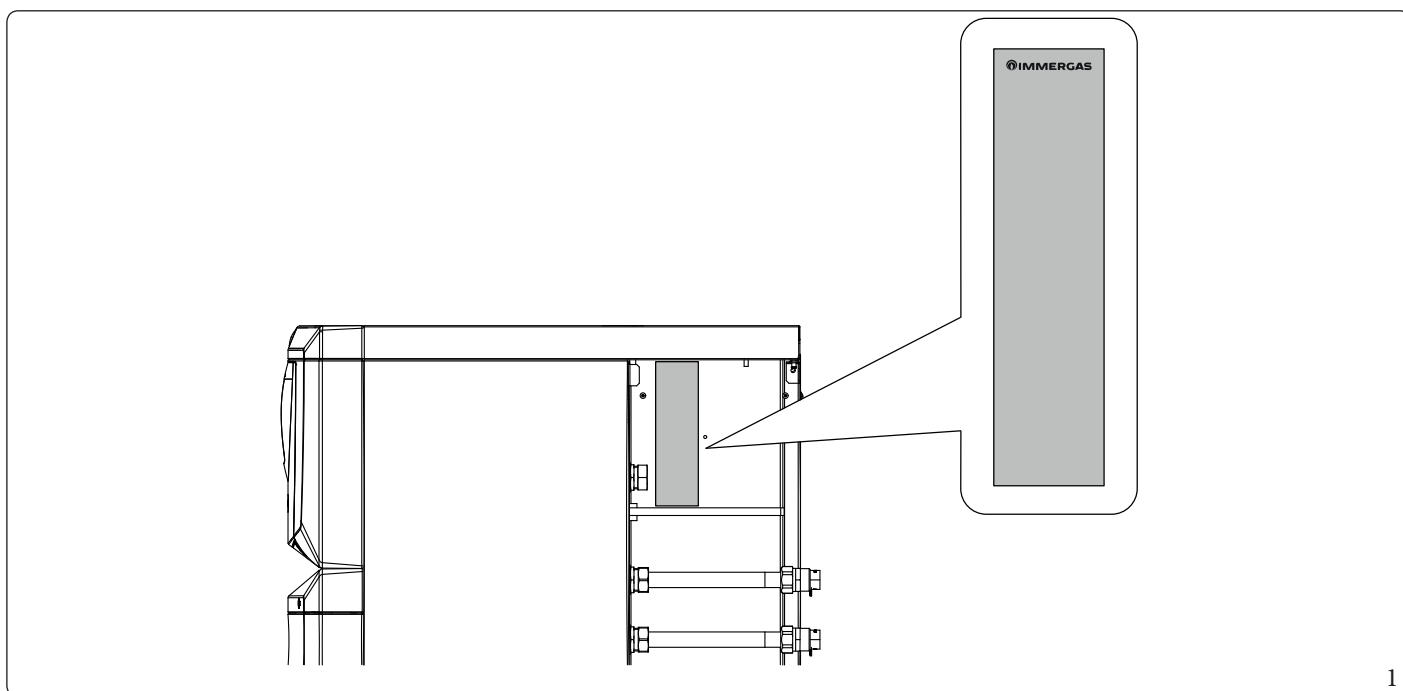


Failure to comply with the above implies personal responsibility and invalidates the warranty.



1.2 DATA NAMEPLATE AND INSTALLATION INFORMATION STICKER

1.2.1 Data nameplate positioning



1

INSTALLER

USER

MAINTENANCE TECHNICIAN

TECHNICAL DATA



The technical data are provided on the data plate on the appliance.



1.2.3 Installation information sticker

Md.	
Sr N°	
Qr	kW
Qrw	kW
Typ-ins	

3

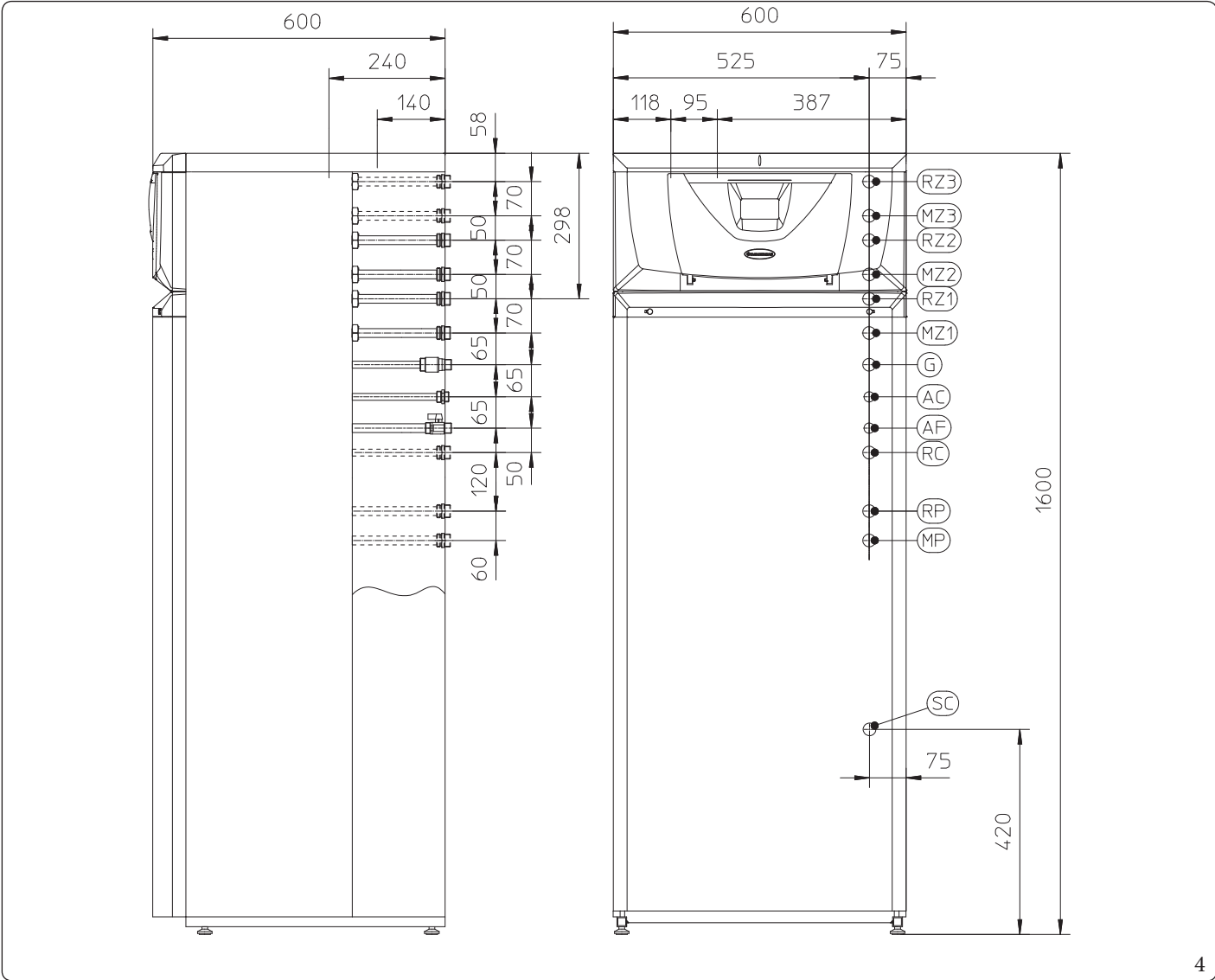
	ENG
Md.	Model
Sr N°	Serial Number
Qr	Central heating output set
Qrw	DHW output set
Typ-ins	Type of flue installed
1	Adhesive item code



At the time of installation, the authorised technician must fill in the facsimile of the installation information sticker (Fig. 3) with the information indicated. This sticker is inside the warranty group, it must also be filled out and applied on the outside of the appliance (in visible position) (see paragraph 3.2 Initial check).



1.3 MAIN DIMENSIONS



Key (Fig. 4):

- | | | | | | |
|-----|---|--|----|---|--|
| RZ3 | - | G 1" mixed zone 3 system return (Optional) | G | - | G 1/2" Gas supply |
| MZ3 | - | G 1" mixed zone 3 system flow (Optional) | AC | - | DHW outlet G 3/4" |
| RZ2 | - | G 1" mixed zone 2 system return | AF | - | DHW inlet G 3/4" |
| MZ2 | - | G 1" mixed zone 2 system flow | RC | - | Recirculation G 3/4" (optional) |
| RZ1 | - | G 3/4" direct zone 1 system return - G 1" mixed zone 1 system return | RP | - | Return to solar panels G 3/4" (optional) |
| MZ1 | - | G 3/4" direct zone 1 system flow - G 1" mixed zone 1 system flow | MP | - | Flow from G 3/4" solar panels (optional) |
| | | | SC | - | Condensate drain (minimum internal diameter Ø 13 mm) |

INSTALLER

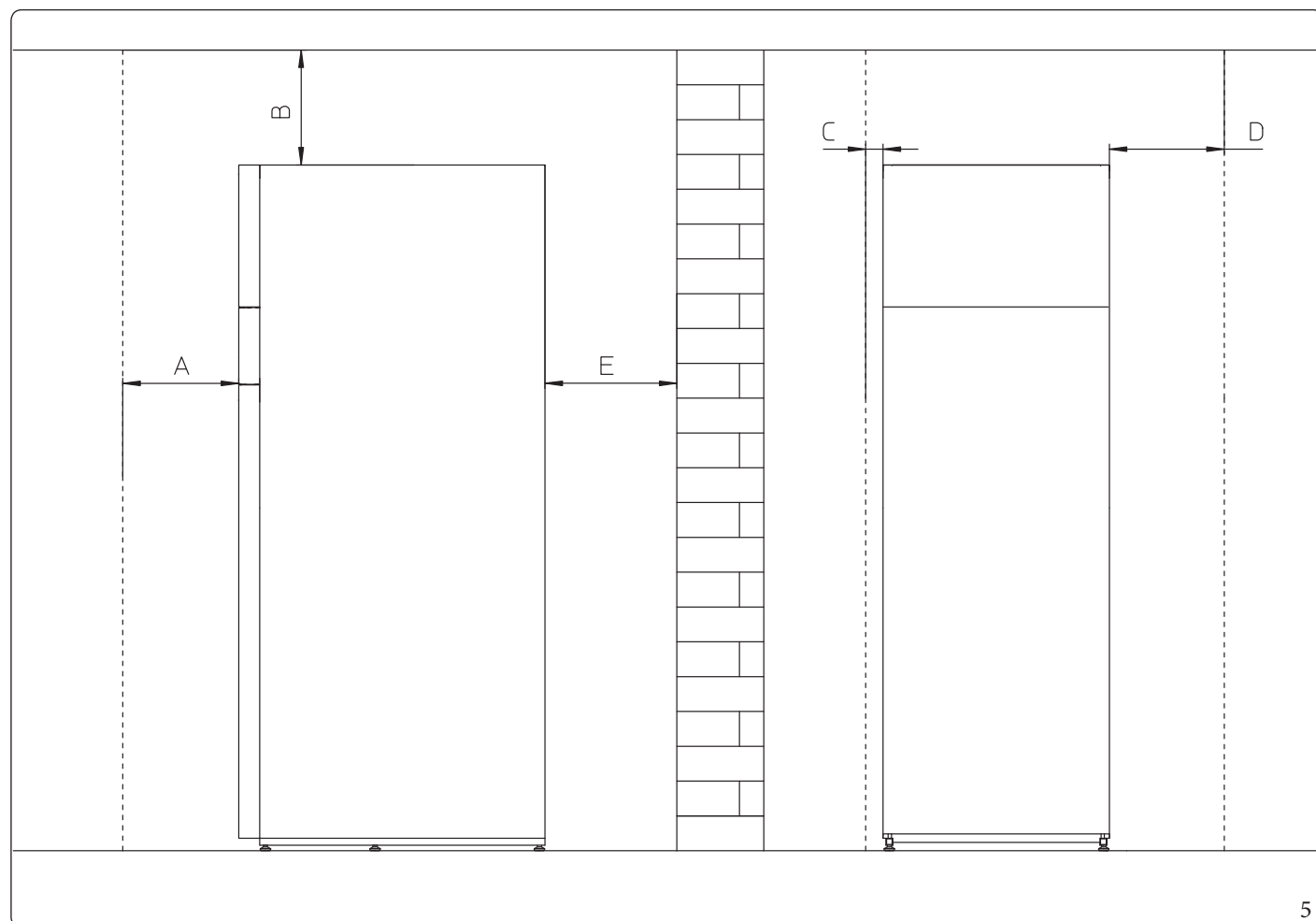
USER

MAINTENANCE TECHNICIAN

TECHNICAL DATA



1.4 MINIMUM INSTALLATION DISTANCES



5

Key (Fig. 5):

- A - 450 mm
- B - 350 mm
- C - 30 mm
- D - 300 mm
- E - 10 mm

1.5 GAS CONNECTION

Our appliances are built to work with natural gas (G20), LPG and mixtures of methane and hydrogen at 20% in volume (20%H₂NG), referred to the gas distributed in the network. Power supply pipes must be the same as or larger than the appliance fitting.



Before connecting the gas line, carefully clean inside all the fuel feed system pipes to remove any residue that could impair appliance efficiency.

Also make sure the gas corresponds to that for which the appliance is prepared (see appliance data nameplate).

If different, the boiler must be converted for operation with the other type of gas (see converting appliance for other gas types).



It is also important to check the dynamic pressure of the mains (methane or LPG) used to supply the boiler, which must comply with EN 437 and its attachment, as insufficient levels may reduce generator output and cause discomfort to the user. Static/dynamic network pressures higher than those required for regular operation may cause serious damage to the appliance control elements; in this case shut the gas line off.

Do not operate the device.

Have the device checked by experienced personnel.



According to the local regulation in force, make sure that a gas isolation valve is installed upstream of each connection between the appliance and the gas system. This valve, if supplied by the appliance's manufacturer, can be directly connected to the appliance (i.e. downstream from the pipes connecting the system to the appliance), according to the manufacturer's instructions.

The Immergas connection unit, supplied as an optional kit, also includes the gas isolation valve, whose installation instructions are provided in the kit.

In any case, make sure the gas isolation valve is connected properly.

The coupling system must conform to standards in force (EN 1775).

The gas supply pipe must be suitably dimensioned according to current regulations in order to guarantee correct gas flow rate to the burner even in conditions of maximum generator output and to guarantee appliance efficiency (technical specifications).



The appliance is designed to operate with fuel gas free from impurities; otherwise it is advisable to fit special filters upstream of the appliance to restore the purity of the fuel.

Storage tanks (in case of supply from LPG depot).

- New LPG storage tanks may contain residual inert gases (nitrogen) that degrade the mixture delivered to the appliance causing functioning anomalies.
- Due to the composition of the LPG mixture, layering of the mixture components may occur during the period of storage in the tanks. This can cause a variation in the calorific value of the mixture delivered to the appliance, with subsequent change in its performance.



1.6 HYDRAULIC CONNECTION



In order not to void the condensation module warranty, before making the device connections, carefully clean the heating system (pipes, radiators, etc.) with special pickling or descaling products to remove any deposits that could compromise correct device operation.

The current technical standards in force prescribes the washing and treatment of the water in the heating and water system, in order to protect the system and the appliance from deposits (e.g. scale), slurry or other hazardous deposits.

Hydraulic connections must be made in a rational way using the couplings on the appliance template.

3 and 8 bar safety valve



The appliance safety valves outlet must be connected to a tundish.

Otherwise, the appliance's manufacturer declines any responsibility in case of flooding if the drain valves cut.



The manufacturer declines all liability in the event of damage caused by the installation of an automatic filling system.

In order to meet the system requirements established by EN 1717 in terms of pollution of drinking water, we recommend installing the IMMERGAS anti-backflow kit to be used upstream of the cold water inlet connection of the appliance. We also recommend using category 2 heat transfer fluid (e.g.: water+ glycol) in the appliance's primary circuit (C.H. circuit), as defined in standard EN 1717.

Condensate drain

To drain the condensate produced by the appliance, it is necessary to connect to the drainage system by means of acid condensate resistant pipes, with an internal Ø of at least 13 mm.

The system connecting the appliance to the drainage system must be carried out in such a way as to prevent occlusion and freezing of the liquid contained in it.

Before appliance ignition, ensure that the condensate can be correctly removed. After first ignition, check that the drain trap is filled with condensate (Parag. 1.30).

Also, comply with national and local regulations on discharging waste waters.

In the event condensate is not discharged into the wastewater drainage system, a condensate neutraliser must be installed to ensure compliance with the parameters established by the legislation in force.



1.7 ELECTRICAL CONNECTION

The appliance has an IPX5D protection degree; electrical safety of the appliance is achieved only when it is connected properly to an efficient earthing system, as specified by current safety standards.



The manufacturer declines any responsibility for damage or physical injury caused by failure to connect the appliance to an efficient earthing system or failure to comply with the IEC reference standards.

Open the control panel connections compartment (Fig. 6).

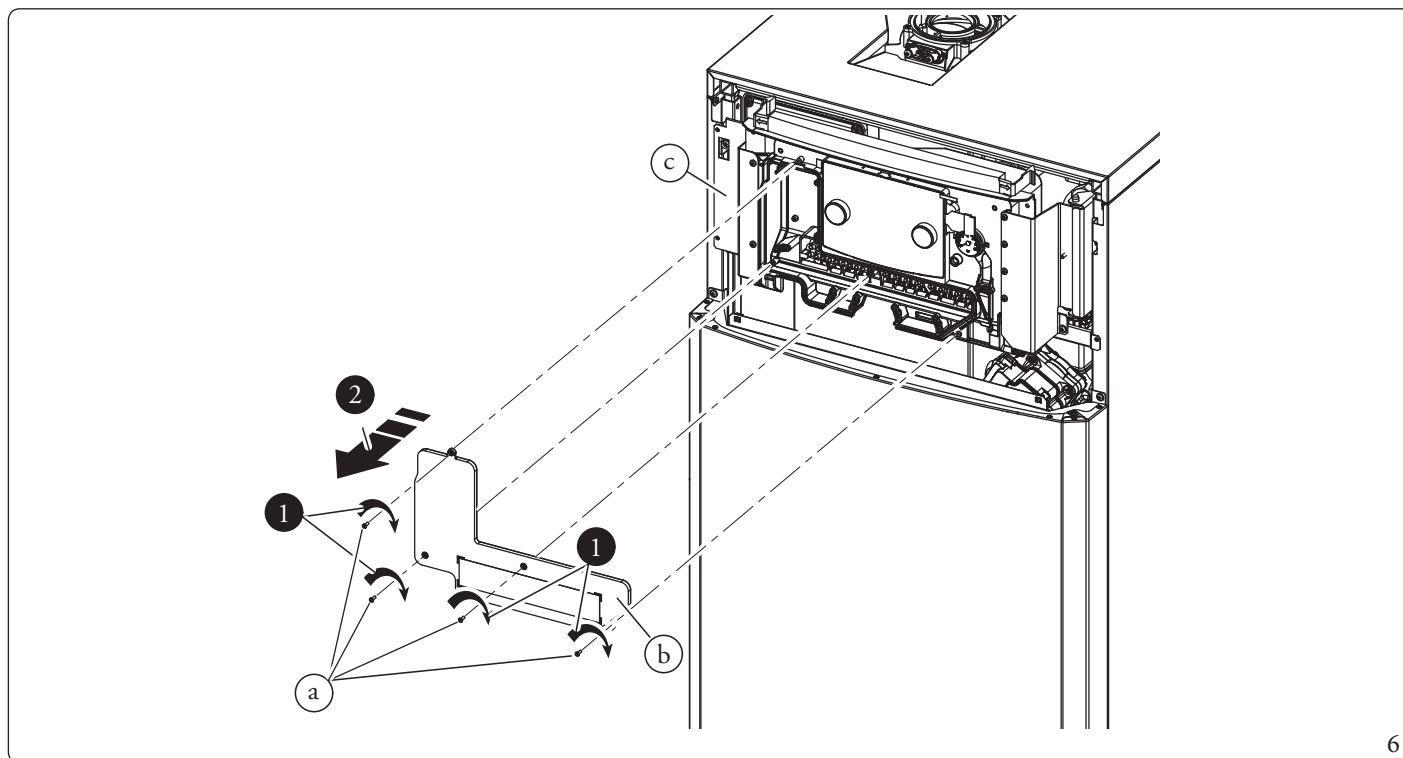


The power supply cable must be connected to a 230V $\pm 10\%$ / 50Hz mains supply respecting L-N polarity and earth connection; this network must also have a multi-pole circuit breaker with class III overvoltage category in compliance with installation regulations.

To disassemble the casing to have access to the connections compartment, follow the instructions in Par. 3.28).

To carry out electrical connections, all you have to do is open the connections compartment as follows.

1. Remove the front panel (Fig.6)
2. Loosen the screws (a).
3. Remove the cover (b) from the control panel (c).



At this point, you can access the terminal board.

Also ensure that the electrical installation corresponds to maximum absorbed power specifications as shown on the appliance data nameplate.

The boilers are supplied complete with a "Y" type H 05 VVF 3 x 0.75 mm² power supply cable, without plug.





To protect from possible dispersions of DC voltage, it is necessary to provide a type A differential safety device.

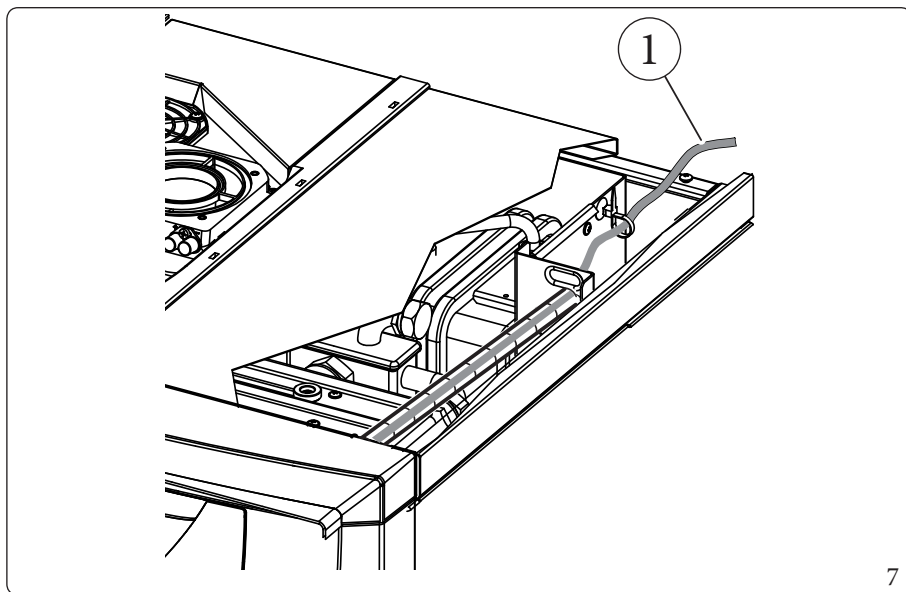


If the power cable is damaged, contact a qualified company (e.g. the Authorised Technical Assistance Centre) for its replacement to avoid a hazard.

The power supply cable must be laid as shown (Fig. 7).

If the network fuse on the P.C.B. needs replacing, this must also be done by qualified personnel: use a 5x20 250V 3.15 A fast fuse.

For the main power supply to the appliance, never use adapters, multiple sockets or extension leads.



Key (Fig. 7)

1 - Power supply cable

7

1.8 REMOTE CONTROLS AND ROOM CHRONO-THERMOSTATS (OPTIONAL)

The appliance is set up for room chrono-thermostats or remote controls, available as optional kits.

All Immergas chrono-thermostats are connected with 2 wires only.

Carefully read the user and assembly instructions contained in the accessory kit.



Disconnect power to the unit before making any electrical connections.

On/Off Immergas digital chrono-thermostat.

The chrono-thermostat allows:

- set two room temperature value: one for day (comfort temperature) and one for night (reduced temperature);
- set a weekly programme with four daily switch on and switch off times;
- selecting the required function mode from the various possible alternatives:
 - manual mode (with adjustable temperature);
 - automatic mode (with set programme);
 - forced automatic operation (momentarily changing the temperature of the automatic program).

The chrono-thermostat is powered by two 1.5V LR 6 type alkaline batteries.

“Comando Amico Remoto” (Remote Control Device) ^{v2} (CAR^{v2}) with climate chrono-thermostat function.

In addition to the functions described in the previous point, the CAR^{v2} panel enables the user to control all the important information regarding operation of the appliance and the heating system with the opportunity to easily intervene on the previously set parameters, without having to go to where the appliance is installed.

The panel is equipped with self-diagnosis to show any appliance operating anomalies on the display.

The climate chrono-thermostat incorporated into the remote panel enables the system flow temperature to be adjusted to the actual needs of the room being heated, in order to obtain the desired room temperature with extreme precision and therefore with evident saving in running costs.

The CAR^{v2} is fed directly by the appliance by means of the same 2 wires used for the transmission of data between the appliance and device.



“Comando Amico Remoto” (Remote Control Device) ^{v2} or On/Off chrono-thermostat electrical connection (Optional).



The operations described below must be performed after having removed the voltage from the appliance.

Any On/Off room thermostats or chrono-thermostats must be connected to the X9 terminal block on the zone management board: terminals 1 and 2 (S20-1) for the control of direct zone 1; terminals 3 and 4 (S20-2) for the control of mixed zone 2. Make sure that the On/Off thermostats contact is the "potential-free" type, i.e. independent of the mains voltage, otherwise the zone management P.C.B. would be damaged.

Any CAR^{v2} must be connected to terminals 44C and 41 complying with the polarity **without eliminating the jumper on terminals 1 and 2 of X9**.



CAR^{v2} always controls zone 1. In this case terminals 1 and 2 on terminal block "X9" on the zone management board must remain bridged.



If the Comando Amico Remoto remote control ^{v2} or any other On/Off chrono-thermostat is used arrange two separate lines in compliance with current regulations regarding electrical systems.

All appliance pipes must never be used to earth the electric or telephone system.

Ensure elimination of this risk before making the appliance electrical connections.



1.9 EXTERNAL TEMPERATURE PROBE (OPTIONAL)


The appliance is prepared for the application of the external probe (Fig. 8), which is available as an optional kit. Refer to the relative instruction sheet for positioning of the external probe.

The probe can be connected directly to the appliance electrical system and allows the max. system flow temperature to be automatically decreased when the external temperature increases, in order to adjust the heat supplied to the system according to the change in external temperature.

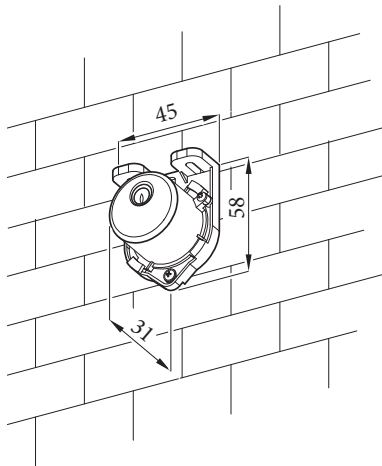
The external probe always operates when connected, regardless of the presence or type of room chrono-thermostat used and can work in combination with Immergas chrono-thermostats.

If wireless room probes are used, it is possible to activate or deactivate the action of the external probe for each individual zone in use, by acting on the parameter in the zone menu.

The electric connection of the external probe must be made on terminals 38 and 39 on the terminal block on the appliance control panel (Fig. 63).



If the probe is used, it is mandatory to set up two separate lines in compliance with current regulations regarding electrical systems.



8

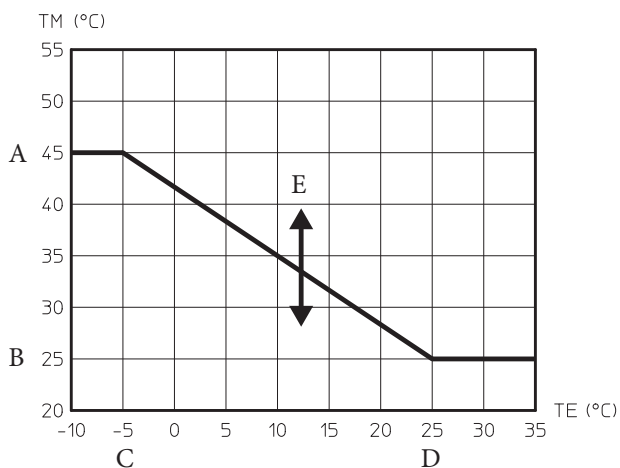
1.10 TEMPERATURE CONTROL SETTING

By setting the parameters in the "Zones/Configuration/Regulation" menus (with Service access), it is possible to automatically adjust the flow temperature of each zone according to the outdoor temperature.

This can be done by enabling the external probe modulation in the menu "Zones/Configuration/Regulation" (Default = Yes).

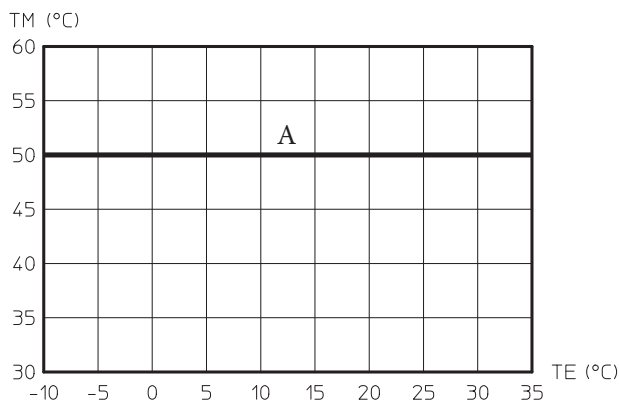
The curves (Fig. 9, 10) show examples of central heating flow temperature settings in the various operating modes available both with external probe and without.

*Zone flow temperature in central heating mode / C.H. mode
and external probe modulation enabled*



9

*Zone flow temperature in central heating mode / C.H. mode
with external probe absent
or external probe modulation parameter = NO*



10

Key (Fig. 9, 10)

TE - External temperature

TM - Flow temperature

A - Maximum flow set

B - Minimum flow set*

C - Minimum external temperature*

D - Maximum external temperature *

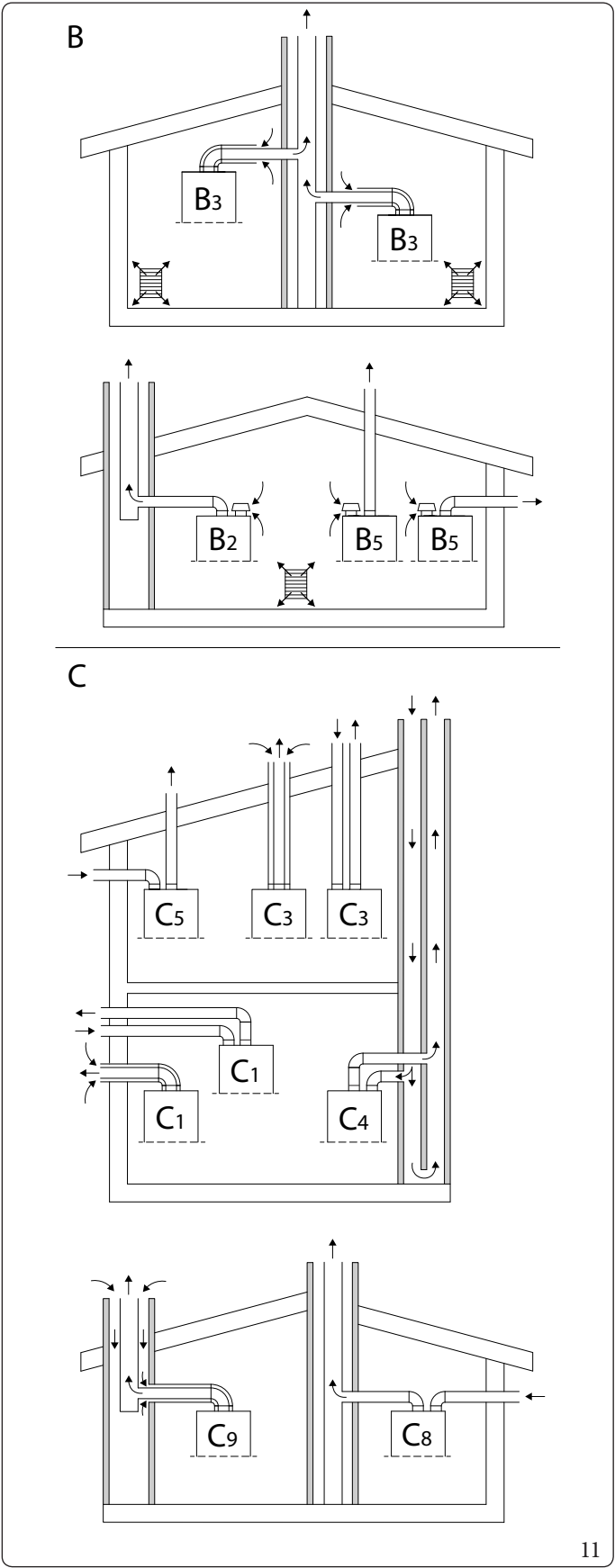
E - Climatic curve offset

*Functions reserved for Service

1.11 GENERAL EXAMPLES OF TYPES OF INSTALLATION OF FLUE SYSTEMS



For the types of installation of the flue systems approved for this product, scrupulously follow what is indicated in the table in paragraph 4.3, in the “type of appliance” line.



Installation types summarised table (Fig. 11):	
B	Appliance that withdraws air from the environment where it is installed and releases combustion products outside (either directly or through the flue).
B ₂	Appliance that withdraws air from the environment where it is installed and releases combustion products in the flue.
B ₃	Appliance connected to a conventional flue. A concentric pipe connects the flue to the appliance, in which the pressurised exhaust pipe is completely enveloped by combustion air withdrawn from inside the room. The combustion air is withdrawn by calibrated orifices present in the intake pipe.
B ₅	Appliance that withdraws air from the environment where it is installed and directly releases combustion products outside (through wall or roof).
C	Appliance whose combustion circuit (air feed, combustion chamber, heat exchanger and exhaust of combustion products) is sealed with respect to the room where the appliance is installed.
C ₁	Appliance with pipes connecting to a horizontal terminal, which simultaneously allows the inlet of combustion air and the release of flue gas through concentric orifices or close enough to be in similar wind conditions.
C ₃	Appliance with pipes connecting to a vertical terminal, which simultaneously allows the inlet of combustion air and the release of flue gas through concentric orifices or close enough to be in similar wind conditions.
C ₄	Appliance with two separate pipes connecting to a collective conventional flue. The flue consists of two pipes, concentric or separate, with air intake in one and flue gas release in the other and are in similar wind conditions.
C ₅	Appliance that withdraws air from outside and directly releases combustion products outside (through wall or roof). These pipes can end up in different pressure zones.
C ₆	Type C appliance intended to be connected to an approved system and sold separately.
C ₈	Appliance connected, through the exhaust pipe, to an individual or collective conventional flue. A second pipe is provided for the intake of combustion air from outside.
C ₉	Appliance connected, through a ducted exhaust pipe, to a vertical terminal. The exhaust pipe, by means of the cavity, also acts as a combustion air intake pipe.

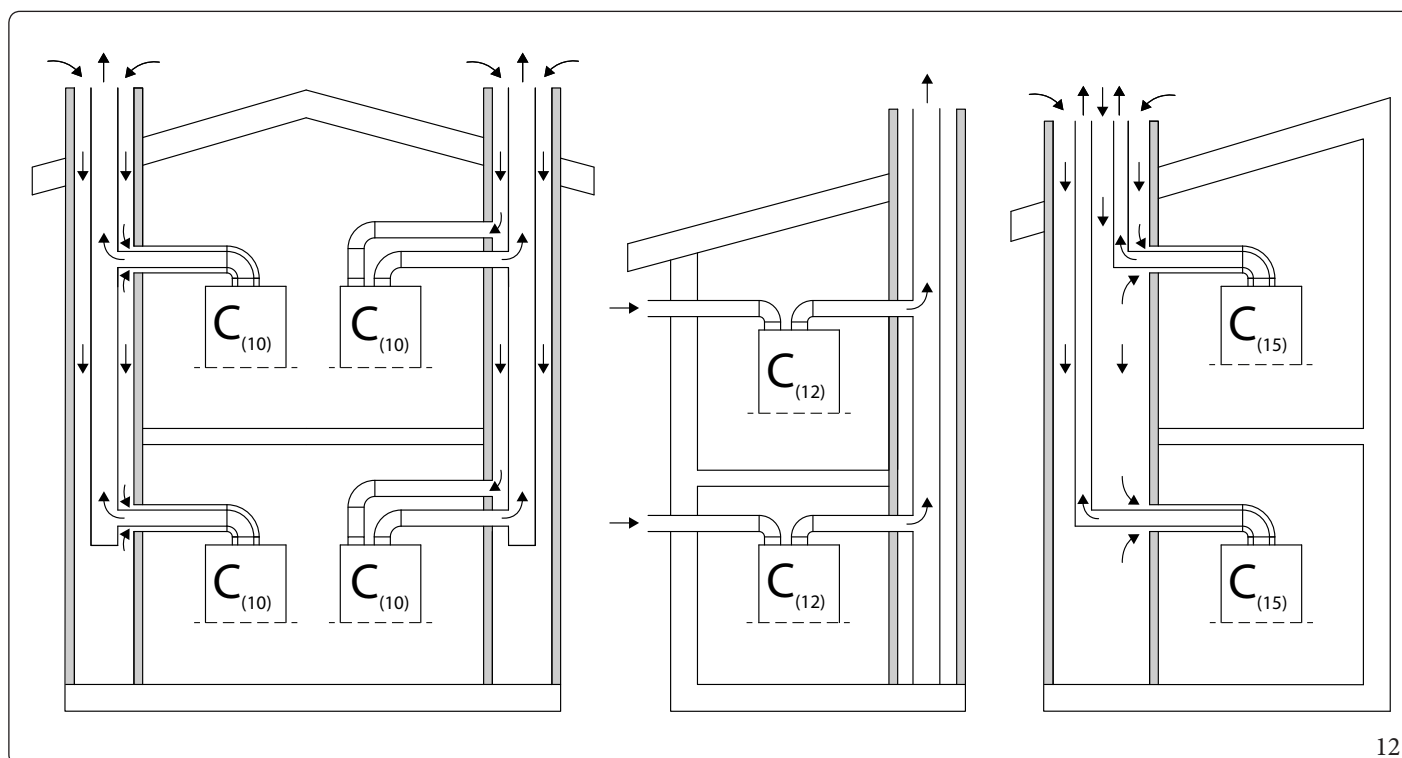
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Installation types summarised table (Fig. 12):

C ₍₁₀₎	Appliance intended for connection, via its ducts, to a collective flue designed for more than one appliance. This flue consists of two ducts connected to a terminal, which simultaneously allows combustion air to enter and flue gas to be exhausted through orifices that are concentric or close enough to be in similar wind conditions. The appliance is equipped with a fan upstream of the combustion circuit.
C ₍₁₂₎	Appliance intended for connection, via its exhaust duct, to a collective flue designed for more than one appliance. A second duct, an integral part of the appliance, is provided for the intake of combustion air from outside. The appliance is equipped with a fan upstream of the combustion circuit.
C ₍₁₅₎	Appliance connected to a vertical flue exhaust terminal and a common vertical duct, designed for more than one appliance, for air intake. This duct simultaneously allows the inlet of combustion air and the release of flue gas through concentric orifices or close enough to be in similar wind conditions. The appliance is equipped with a fan upstream of the combustion circuit.

1.12 IMMERGAS FLUE SYSTEMS

Immergas supplies various solutions separately from the appliances regarding the installation of air intake and flue exhaust terminals, which are fundamental for appliance operation. These solutions form an integral part of the product.

 The appliance must be installed with an original Immergas "Green Range" inspectionable air intake system and flue gas extraction system made of plastic, with the exception of configuration C₆ in the configurations envisaged in Parag. 1.11, as required by the regulations in force and by the product's approval. This flue can be identified by an identification mark and special distinctive marking bearing the note "only for condensation boilers".
For non-original flue system, refer to the technical data of the appliance.

 The plastic pipes cannot be installed outdoors, for tracts longer than 40 cm, without suitable protection from UV rays and other atmospheric agents.

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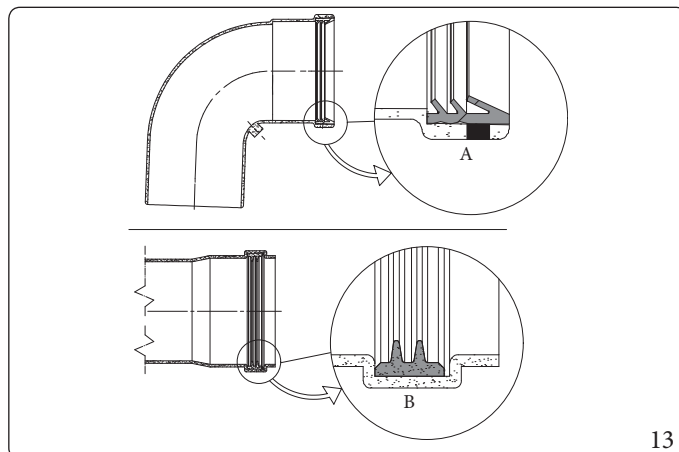
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Positioning the gaskets (black) for “green range” flue systems.

Position the gasket correctly (for bends and extensions) (Fig. 13):

- gasket (A) with notches, to use for bends;
- gasket (B) without notches, to use for extensions.

If necessary, to ease the push-fitting, spread the elements with commonly-used talc.



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Extension pipes and concentric elbows push-fittings.

To install push-fitting extensions with other elements of the flue, proceed as follows:

- Install the concentric pipe or elbow with the male side (smooth) on the female side (with lip seal) to the end stop on the previously installed element in order to ensure sealing efficiency of the coupling.



If the exhaust terminal and/or extension concentric pipe needs shortening, consider that the internal duct must always protrude by 5 mm with respect to the external duct.



For safety purposes, do not even temporarily obstruct the appliance intake/exhaust terminal.

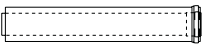




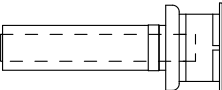
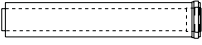



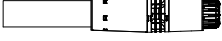
The various parts of the flue system must be checked to ensure that they have been laid in such a way as to prevent the coupled parts from detaching, in particular, the flue exhaust duct in the Ø80 separator kit configuration. If the condition described above is not adequately guaranteed, it will be necessary to use the appropriate retaining clamp kit.



When installing horizontal pipes, a minimum inclination of 5% towards the appliance must be maintained, and a section clamp with plug must be installed every 3 metres.



1.13 EQUIVALENT LENGTHS OF "GREEN RANGE" FLUE SYSTEM COMPONENTS.

Equivalent concentric lengths Ø 60/100 and Ø 80/125mm				
Duct Ø [mm]	Type of duct	picture	Equivalent length in [m] of concentric pipe	
			Ø 60/100mm	Ø 80/125mm
60/100	Concentric pipe Ø 60/100 m 1		1,00	-
	Ø 60/100 90° concentric elbow		1,30	-
	Concentric elbow 45° Ø 60/100		1,00	-
	Horizontal terminal Ø 60/100 concentric m 1 straight outlet		1,00	-
	Horizontal terminal Ø 60/100 concentric m 1 outlet 45°		2,50	-
	Horizontal terminal Ø 60/100 concentric m 1		1,00	-
	Vertical terminal Ø 60/100 concentric m 1.25		1,00	-
80/125	Concentric pipe 80/125 Ø m 1		-	1,00
	90° concentric bend 80/125 Ø		-	1,40
	Concentric bend 45° Ø 80/125		-	1,00
	Horizontal terminal Ø 80/125 concentric m 1		-	2,20
	Vertical terminal Ø 80/125 concentric m 1		-	1,70

The values of the equivalent lengths in metres of concentric pipe of the Ø60/100 terminals are not the actual ones, but are weighted values to be used for the calculation of the flue.





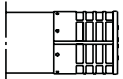
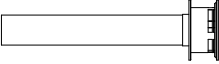
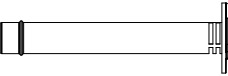


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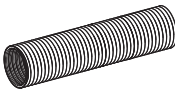
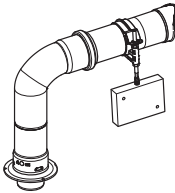


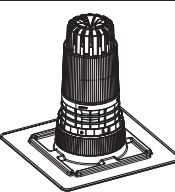
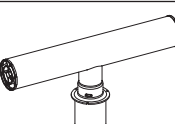
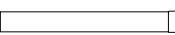


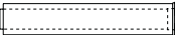





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Equivalent lengths for split Ø 80mm				
Duct Ø [mm]	Type of duct	Picture	Equivalent length in [m] of pipe Ø 80mm	
80/80	Pipe Ø 80 m 1		Exhaust	1,00
			Intake	0,70
	Ø 80 90° bend		Exhaust	2,10
			Intake	1,60
	Ø 80 45° bend		Exhaust	1,30
			Intake	1,00
	Horizontal terminal Ø 80 m 1		Exhaust	3,50
			Intake	2,50
	Horizontal terminal grid part Ø 80		Exhaust	2,50
			Intake	1,80
	Vertical exhaust terminal Ø 80 m 1		Exhaust	3,00
	Vertical exhaust terminal Ø 80 stainless steel		Exhaust	3,00
	Intake stub pipe Ø 80		Intake	4,30
	Thermoformed intake kit with configuration B		Intake	4,00

Equivalent lengths for Ø 50 mm flexible ducting				
Duct Ø [mm]	Type of duct	Picture	Equivalent length in [m] of Ø 50mm concentric hose	
50	Flexible hose Ø 50 m 1		Exhaust	1,00
	Terminal with 90° bend		Exhaust	1,20
	Flexible/rigid adapter (female/female)		Exhaust	0,35
	Support bend Ø 80 at 87°		Exhaust	0,60
	Vertical terminal Ø 80/125		Exhaust	0,50
	T-terminal Ø 80		Exhaust	1,00
80	Pipe Ø 80 m 1		Exhaust	0,15
			Intake	0,10
	Ø 80 90° bend		Exhaust	0,25
			Intake	0,20
	Ø 80 45° bend		Exhaust	0,15
			Intake	0,15
80/125	Concentric pipe 80/125 Ø m 1		-	0,20
	90° concentric bend 80/125 Ø		-	0,30
	Concentric bend 45° Ø 80/125		-	0,20
60/100	Concentric pipe Ø 60/100 m 1		-	0,60
	Ø 60/100 90° concentric elbow		-	0,80
	Concentric elbow 45° Ø 60/100		-	0,60




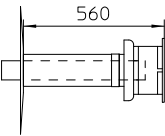

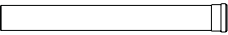


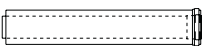


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

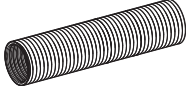
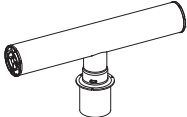


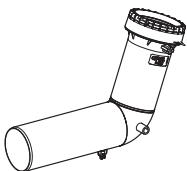



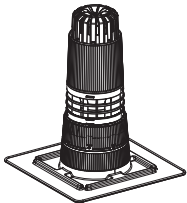
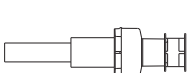
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Equivalent lengths for Ø 60 mm rigid ducting				
Duct Ø [mm]	Type of duct	Picture	Equivalent length in [m] of Ø 60mm pipe	
60	Pipe Ø 60 m 1 for ducting Ø 60 rigid		Exhaust	1,00
	Elbow 90° Ø 60 for ducting		Exhaust	1,10
	Elbow 45° Ø 60 for ducting		Exhaust	0,60
	Terminal complete with vertical exhaust Ø 60 for ducting		Exhaust	3,70
	Reduction Ø 80/60		Exhaust	0,80
80	Pipe Ø 80 m 1		Exhaust	0,40
			Intake	0,30
	Ø 80 90° bend		Exhaust	0,80
			Intake	0,60
	Ø 80 45° bend		Exhaust	0,50
			Intake	0,40
60/100	Concentric pipe Ø 60/100 m 1		-	2,00
	Ø 60/100 90° concentric elbow		-	2,50
	Concentric elbow 45° Ø 60/100		-	2,00

Equivalent lengths for Ø 80 mm rigid and Ø 80 mm flexible ducting					
Duct Ø [mm]	Type of duct	Picture	Equivalent length in [m] of pipe		
			-	Rigid Ø 80mm	Flexible Ø 80mm
80 rigid 80 flex	Pipe Ø 80 m 1		Exhaust	1,00	0,40
			Intake	0,70	0,30
	Ø 80 90° bend		Exhaust	2,00	0,80
			Intake	1,50	0,60
	Ø 80 45° bend		Exhaust	1,30	0,50
			Intake	1,00	0,40
	Flexible hose Ø 80 (1 m)		Exhaust	2,70	1,00
	T-terminal Ø 80		Exhaust	4,30	1,60
	Support bend Ø 80 to 87°		Exhaust	2,90	1,10
	Reduction Ø 80/60		Exhaust	2,10	0,80
	Support bend Ø 80 at 70°		Exhaust	2,70	1,00
	Male flexible adapter Ø 80		Exhaust	0,40	0,15
	Female flexible adapter Ø 80		Exhaust	0,60	0,20
	Flexible adapter/hose Ø 80		Exhaust	0,80	0,30
	Vertical terminal Ø 80 mm		Exhaust	1,90	0,70
	Vertical exhaust terminal Ø 80		Exhaust	2,00	0,80

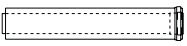


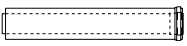


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Equivalent lengths for Ø 80 mm rigid and Ø 80 mm flexible ducting					
Duct Ø [mm]	Type of duct	Picture	Equivalent length in [m] of pipe		
			-	Rigid Ø 80mm	Flexible Ø 80mm
80/125	Concentric pipe 80/125 Ø m 1		-	1,80	0,70
	90° concentric bend 80/125 Ø		-	2,50	0,90
	Concentric bend 45° Ø 80/125		-	1,80	0,70
60/100	Concentric pipe Ø 60/100 m 1		-	2,50	1,30
	Ø 60/100 90° concentric elbow		-	3,50	2,00
	Concentric elbow 45° Ø 60/100		-	2,50	1,30

1.14 MAXIMUM FLUE LENGTH



The maximum flue length (L_{max}) is understood to include the terminal.



To calculate the equivalent length of the flue (L), simply add, for each component you intend to use, the corresponding value indicated in the column "Length equivalent to m of pipe" in the table in par. 1.13, and check that the resulting sum is equal to or less than the maximum length (L_{max}) indicated in par. 1.14. ($L \leq L_{max}$).



Should L be higher than L_{max} , consider using another type of flue.

Type	Installation		HERCULES 35 ABT
			L_{max} = Maximum length (m)
Ø 60/100mm	C_{13} (horizontal+elbow)		13
	C_{33} (vertical)		14,5
Ø 80/125mm	C_{13} (horizontal+elbow) C_{33} (vertical)		35
	$C_{(10)3} - C_{(15)3}$		9
Ø 80/80mm	$C_{43} - C_{53} - C_{83}$ (split)		35
	$C_{(10)3} - C_{(12)3}$		10
	$B_{23} - B_{23p} - B_{33} - B_{53} - B_{53p}$		30
Ø 50 flexible	C_{53}	Split 80/80 with intake by own terminal and exhaust in exposed or ducted Immergas pipe.	13
Ø 60mm rigid			25
Ø 80 flexible			30
Ø 80mm rigid			35
Ø 50 flexible	$C_{93} C_{(15)3}$	Concentric 60/100 or 80/125 with exhaust in ducted pipe and intake from technical slot.	13
Ø 60mm rigid			25
Ø 80 flexible			30
Ø 80mm rigid			35



The values indicated in the table are the maximum available lengths.

Adjustment of the maximum boiler speed depending on the length of the actual pipes installed must refer to the Table in Par. 3.13.

The flue parameter (heat output) must be calibrated by the maintenance technician at initial testing.

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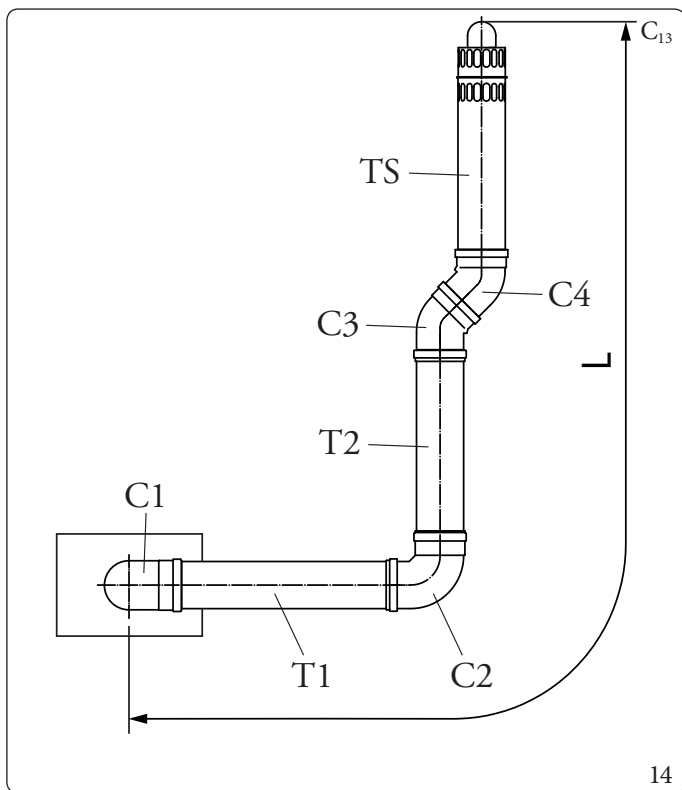


Example of flue length calculation.

In the example of a concentric system (Fig. 14), the following dimensions must be added together to calculate the equivalent length of the flue (L):

1 m (Concentric pipe Ø 60/100) + 1,3 m (90° concentric elbow Ø 60/100) + 1 m (Concentric pipe Ø 60/100) + 1 m (45° concentric elbow Ø 60/100) + 1 m (45° concentric elbow Ø 60/100) + 1 m (Concentric terminal Ø 60/100).

$L = 1 + 1,3 + 1 + 1 + 1 + 1 = 6,3 \text{ m} \leq L_{\text{max}} = 13 \text{ m}$.



Key (Fig. 14):

- T1 - Concentric pipe Ø 60/100
- T2 - Concentric pipe Ø 60/100
- C1 - 90° concentric elbow Ø 60/100 (do not consider when calculating the equivalent length)
- C2 - Ø 60/100 90° concentric elbow
- C3 - Concentric elbow 45° Ø 60/100
- C4 - Concentric elbow 45° Ø 60/100
- TS - Complete horizontal concentric intake-exhaust terminal Ø 60/100 (do not consider when calculating the equivalent length)
- L - Equivalent length
- L_{max} - Maximum length



To calculate the flue length of other types of installations, follow the logic illustrated in this example.

1.15 INSTALLATION OF BOILER TYPE B WITH OPEN CHAMBER AND FAN ASSISTED (OPTIONAL).

Configuration type B, open chamber and fan assisted (B₂₃ or B₅₃).

In this configuration the relevant terminal must be used (present in the intake kit for the installation in question) to be placed on the intake hole above the sealed chamber (Fig. 15).

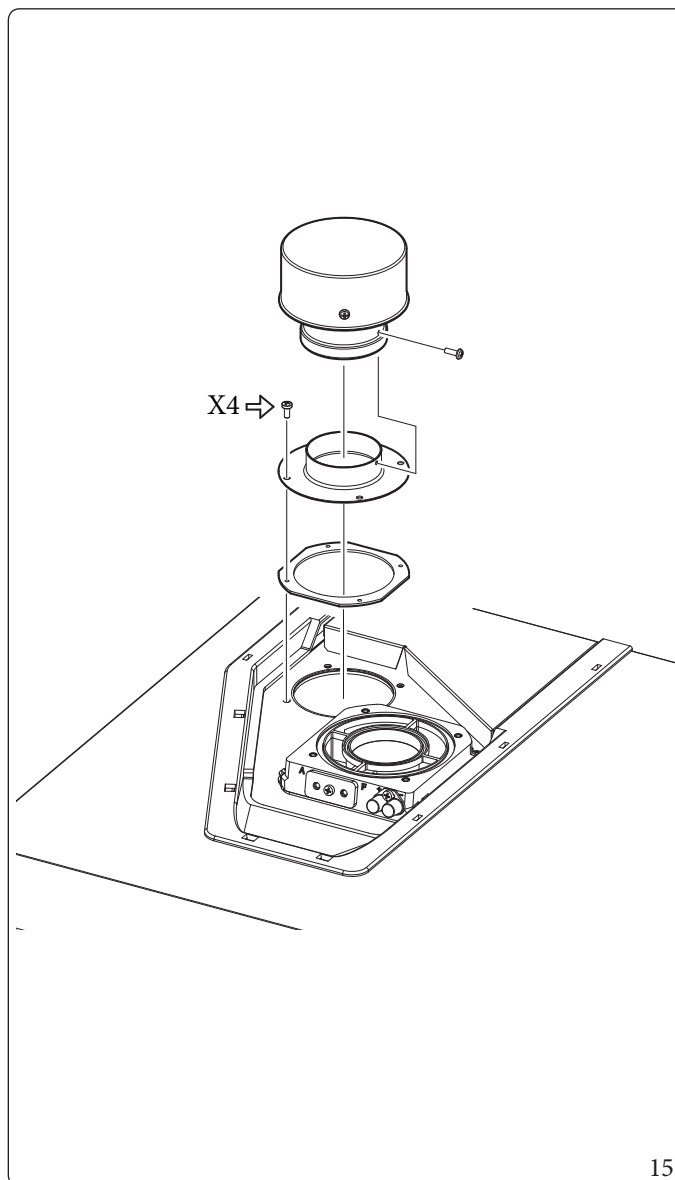
Air intake takes place directly from the environment and flue exhaust in individual chimney or to the outside.

The boiler in this configuration, following the assembly instructions stated on the relative instruction sheet, is classified as type B₂₃ or B₅₃ (according to the applicable regulations).

With this configuration;

- air intake takes place directly from the environment in which the appliance is installed and only functions in permanently ventilated rooms, according to the regulations in force;
- the flue exhaust must be connected to its own individual chimney or channelled directly into the external atmosphere;
- type B open chamber boilers must not be installed in places where commercial, artisan or industrial activities take place, which use products that may develop volatile vapours or substances (e.g. acid vapours, glues, paints, solvents, combustibles, etc.), as well as dusts (e.g. dust deriving from the working of wood, coal fines, cement, etc.), which may be damaging for the components of the appliance and jeopardise functioning;
- in B₂₃ or B₅₃ configuration, the boilers must not be installed in bedrooms, bathrooms or in studio flats;
- installation of appliances in B₂₃ or B₅₃ configuration is recommended in non-residential premises and which are permanently ventilated.

The following technical regulations in force must therefore be adhered to.



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1.16 CONCENTRIC HORIZONTAL KIT INSTALLATION

Type C configuration, sealed chamber and fan assisted

The position of the terminal (in terms of distances from openings, overlooking buildings, floor, etc.) must be in compliance with the regulations in force.

This terminal is connected directly to the outside of the building for air intake and flue gas exhaust.

The horizontal kit can be installed with the rear, right side, left side or front outlet.

For installation with frontal outlet, one must use the fixing plate and a concentric bend coupling in order to ensure sufficient space to carry out the tests required by law upon commissioning.

External grid

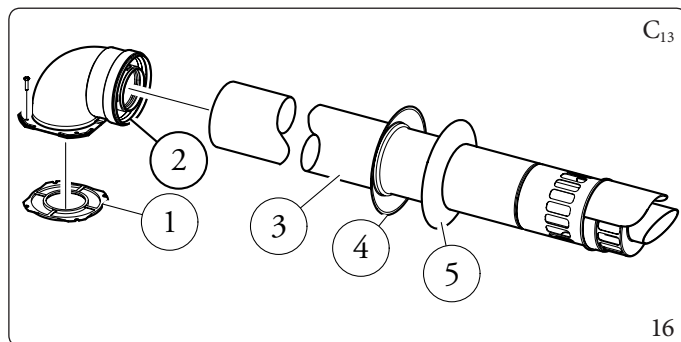
Make sure that the external silicone wall sealing plate is properly inserted in the wall.



For correct functioning of the system the terminal with grid must be installed correctly ensuring that, the "high" indication present on the terminal is respected on installation.

Horizontal intake/exhaust assembly kits Ø 60/100 (Fig. 16)

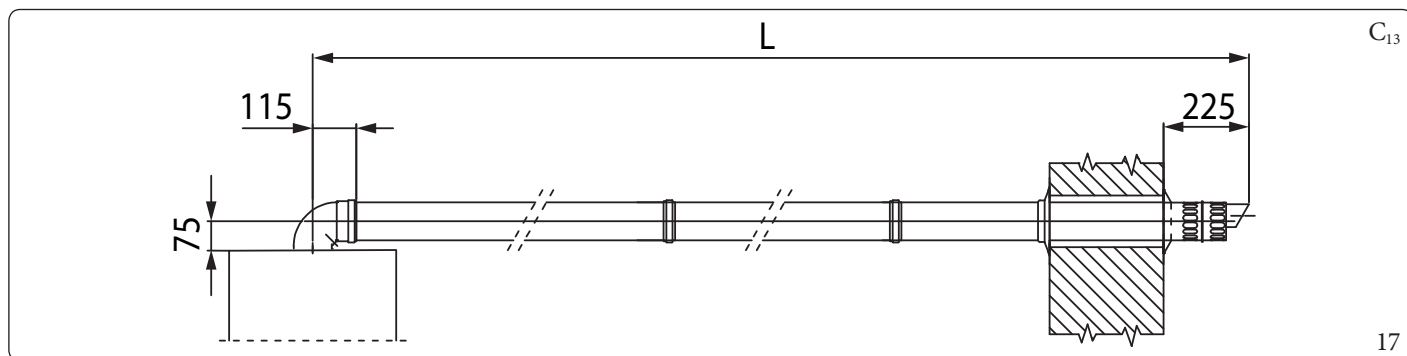
1. Install the curve with flange (2) on the central hole of the appliance, positioning gasket (1) with the circular projections downwards in contact with the appliance flange, and tighten using the screws contained in the kit.
2. Fit the Ø 60/100 (3) concentric terminal pipe with the male side (smooth) to the female side of the bend (2) up to the end stop, making sure that the internal and external wall sealing plates have been fitted; this will ensure sealing and joining of the elements making up the kit.



The kit includes (Fig. 16):

- N°1 Gasket (1)
- N°1 Concentric bend Ø 60/100 (2)
- N°1 Int./exhaust concentric terminal Ø 60/100 (3)
- N°1 Internal wall sealing plate (4)
- N°1 External wall sealing plate (5)

Extensions for horizontal kit Ø 60/100 (L = Equivalent length - L max = Maximum length) (Fig. 17).

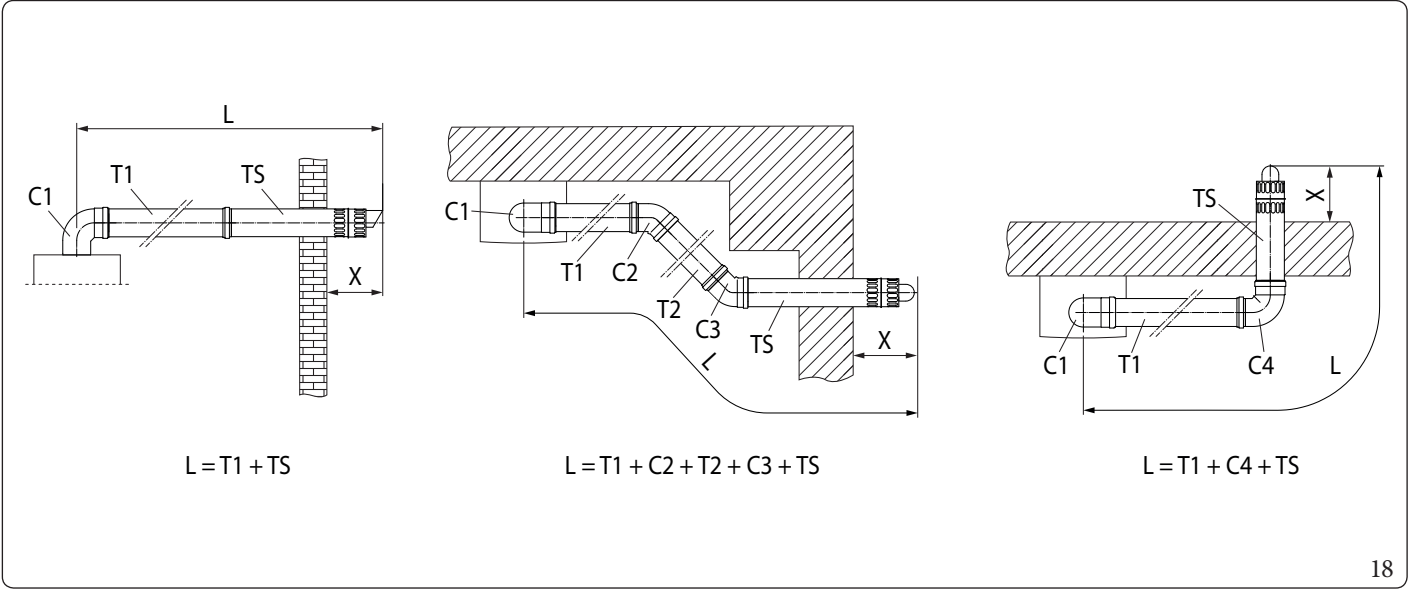


The maximum lengths ((L max) of the various flues that can be installed are given in the summary table in parag. 1.14.



Installation examples

Type of Duct	Minimum outlet height roof/wall (m)
	X
Concentric Ø 60/100 Horizontal	0,225



i To calculate the equivalent length of the flue (L), simply add, for each component you intend to use, the corresponding value indicated in the column "Length equivalent to m of pipe" in the table in par. 1.13, and check that the resulting sum is equal to or less than the maximum length (L max) indicated in par. 1.14. ($L \leq L \text{ max}$).

INSTALLER

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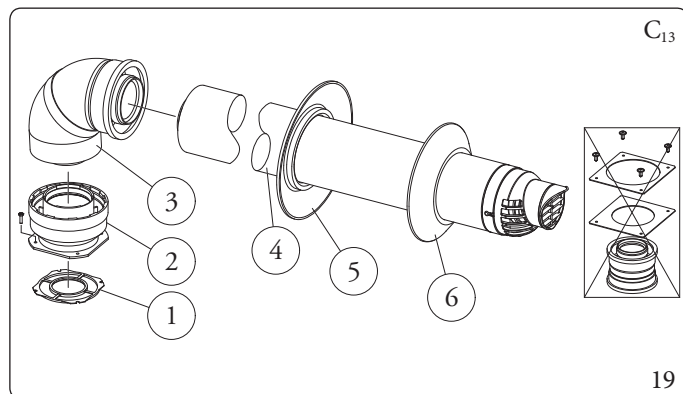
MAINTENANCE TECHNICIAN

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Horizontal intake/exhaust assembly kits Ø 80/125 (Fig. 19)

To install the kit Ø 80/125 one must use the flanged adaptor kit (pos. 2, Fig. 19).

1. Install the flanged adaptor (2) on the central hole of the Indoor Unit, positioning gasket (1) with the circular projections downwards in contact with the Indoor Unit flange, and tighten using the screws contained in the kit.
2. Engage the bend (3) with the male side (smooth) to the end stop on the adapter (2).
3. Fit the Ø 80/125 (4) concentric terminal pipe with the male side (smooth) to the female side of the bend (3) (with lip seals) up to the end stop, making sure that the internal (5) and external wall sealing plates (6) have been fitted; this will ensure sealing and joining of the elements making up the kit.



The adapter kit includes (Fig. 19):

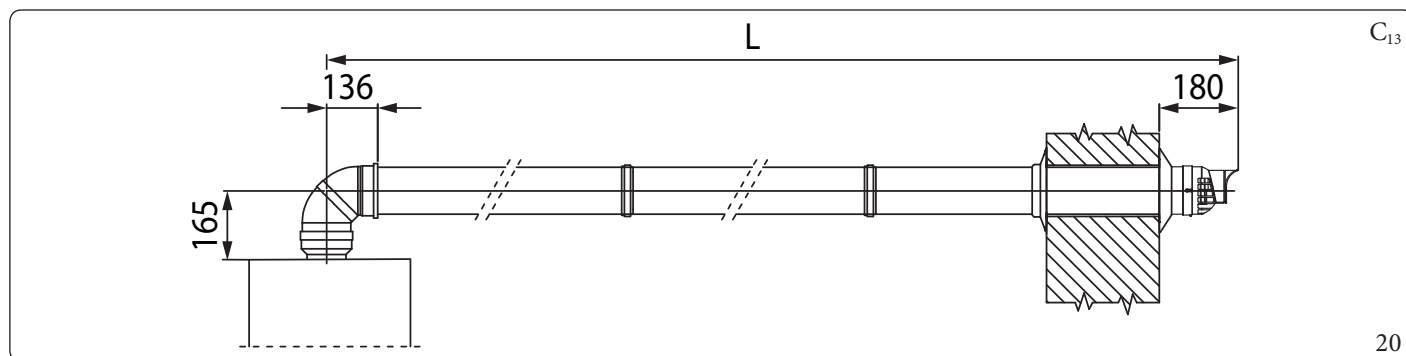
- N°1 Gasket (1)
- N°1 Adapter Ø 80/125 (2)

The Ø 80/125 kit includes (Fig. 19):

- N°1 Concentric bend Ø 80/125 at 87° (3)
- N°1 Int./exhaust concentric terminal Ø 80/125 (4)
- N°1 Internal wall sealing plate (5)
- N°1 External wall sealing plate (6)

The remaining kit components must not be used

Extensions for horizontal kit Ø 80/125 (L = Equivalent length - L_{max} = Maximum length) (Fig. 20).



The maximum lengths (L_{max}) of the various flues that can be installed are given in the summary table in parag. 1.14.

Installation examples

Type of Duct	Minimum outlet height roof/wall (m)
	X
Concentric Ø 80/125 Horizontal	0,18

$L = T1 + TS$

$L = T1 + C4 + TS$

$L = T1 + C2 + T2 + C3 + TS$

21

i To calculate the equivalent length of the flue (L), simply add, for each component you intend to use, the corresponding value indicated in the column "Length equivalent to m of pipe" in the table in par. 1.13, and check that the resulting sum is equal to or less than the maximum length (L max) indicated in par. 1.14. ($L \leq L_{max}$).

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1.17 CONCENTRIC VERTICAL KIT INSTALLATION

Type C configuration, sealed chamber and fan assisted

Concentric vertical intake and exhaust kit.

This vertical terminal is connected directly to the outside of the building for air intake and flue gas exhaust.



The vertical kit with aluminium slate enables installation on terraces and roofs with a maximum slope of 45% (approx 25°) and the height between the terminal cap and half-shell (374 mm for Ø 60/100 and 260 mm for Ø 80/125) must always be observed.

Vertical kit assembly with aluminium slate Ø60/100 (Fig. 22)

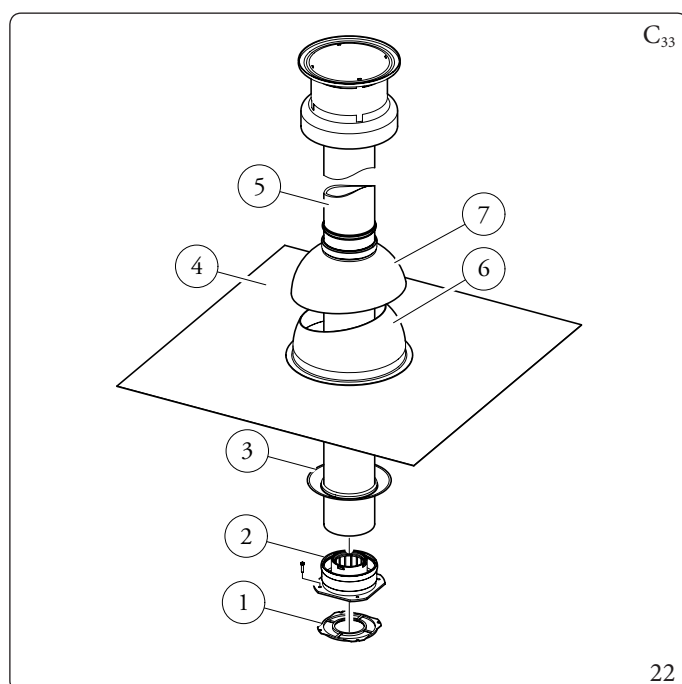
1. Install the concentric flange (2) on the flue exhaust of the appliance, positioning gasket (1) with the circular projections downwards in contact with the appliance flange.
2. Tighten the concentric flange with the screws in the kit.

Imitation aluminium slate installation:

3. Replace the slates with the aluminium sheet (4), shaping it to ensure that rainwater runs off.
4. Position the fixed half-shell (6) on the aluminium slate.
5. Insert the intake-exhaust pipe (5).
6. Fit the Ø 60/100 concentric terminal pipe with the male side (5) (smooth) into the flange (2) up to the end stop, making sure that the wall sealing plate has been fitted (3); this will ensure sealing and joining of the elements making up the kit.



When the appliance is installed in areas where very rigid temperatures can be reached, a special anti-freeze kit is available that can be installed as an alternative to the standard kit.

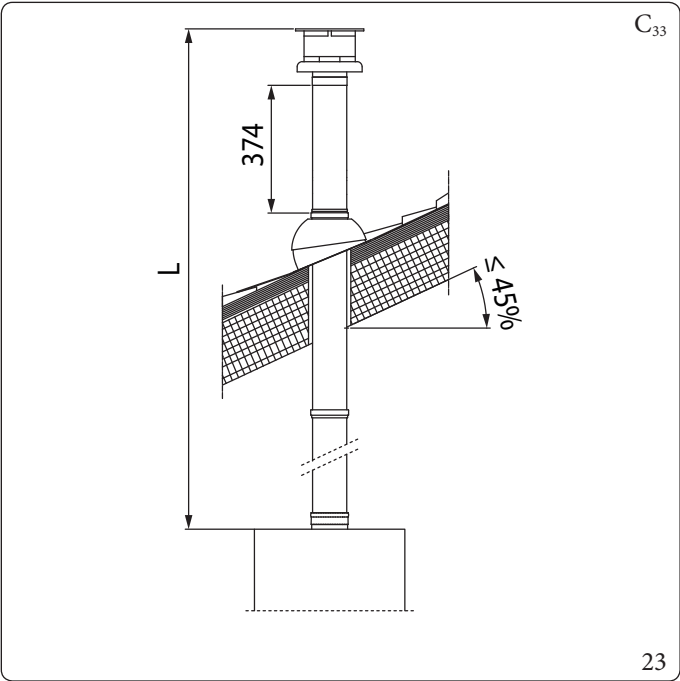


The kit includes (Fig. 22):

- N°1 Gasket (1)
- N°1 Female concentric flange (2)
- N°1 Wall sealing plate (3)
- N°1 Aluminium slate (4)
- N°1 Concentric intake/exhaust pipe Ø 60/100 (5)
- N°1 Fixed half-shell (6)
- N°1 Mobile half-shell (7)

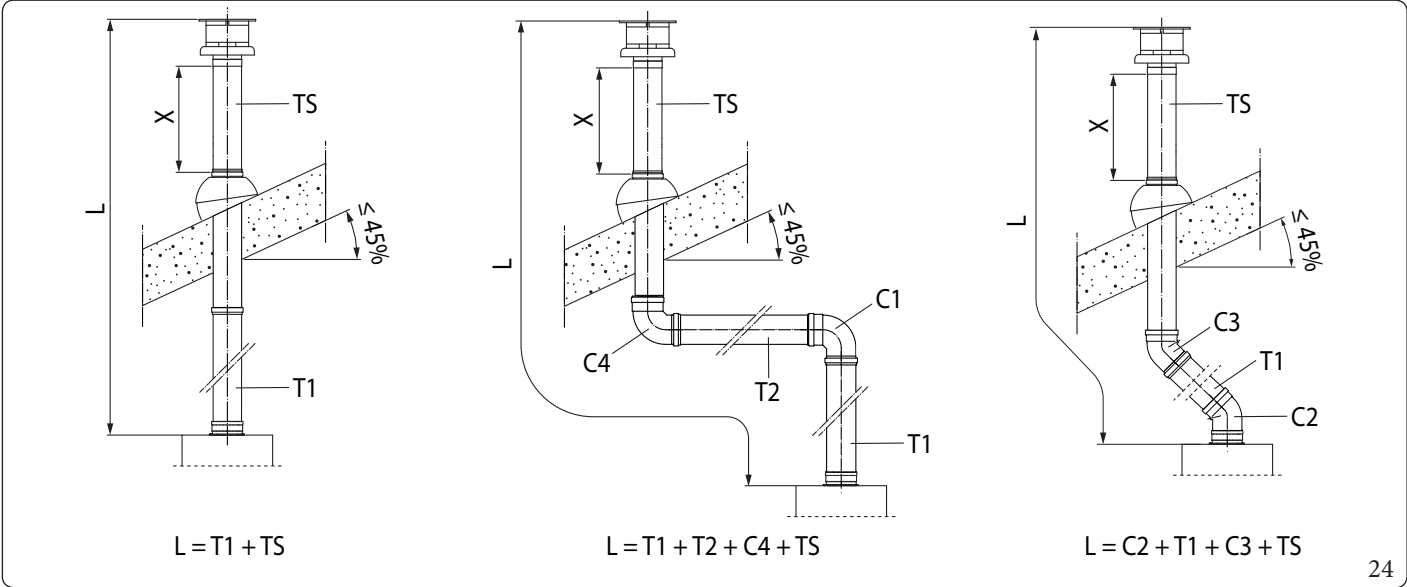
Extensions for vertical kit Ø 60/100 (L = Equivalent length - L max = Maximum length) (Fig. 23).

The maximum lengths ((L max) of the various flues that can be installed are given in the summary table in parag. 1.14.



Installation examples

Type of Duct	Minimum outlet height roof/wall (m)
	X
Concentric Ø 60/100 Vertical	0,374



To calculate the equivalent length of the flue (L), simply add, for each component you intend to use, the corresponding value indicated in the column "Length equivalent to m of pipe" in the table in par. 1.13, and check that the resulting sum is equal to or less than the maximum length (L max) indicated in par. 1.14. ($L \leq L \text{ max}$).

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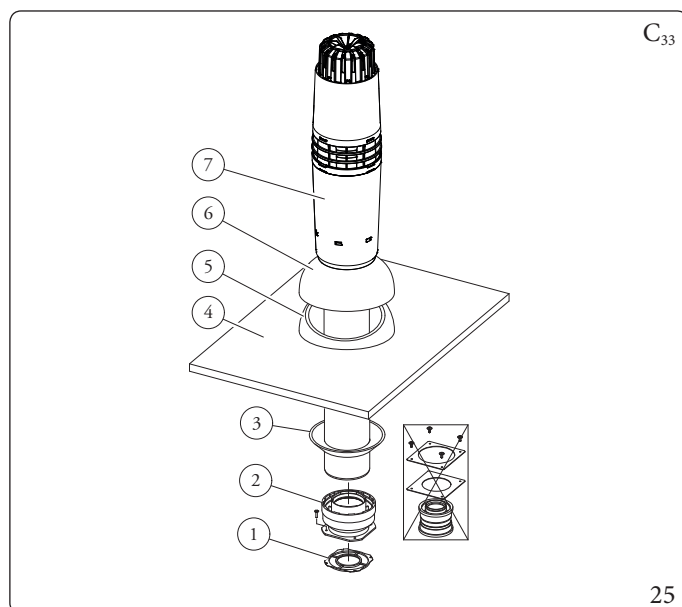


Vertical kit assembly with aluminium slate Ø80/125 (Fig. 25)



To install the kit Ø 80/125 one must use the flanged adapter kit (pos. 2, Fig. 19).

1. Install the concentric flange (2) on the flue exhaust of the appliance, positioning gasket (1) with the circular projections downwards in contact with the appliance flange.
 2. Tighten the concentric flange with the screws in the kit.
- Imitation aluminium slate installation:
3. Tighten the concentric flange with the screws in the kit.
 4. Replace the slates with the aluminium sheet (4), shaping it to ensure that rainwater runs off.
 5. Position the fixed half-shell (5) on the aluminium slate;
 6. Insert the intake-exhaust terminal (7);
 7. Fit the Ø 80/125 concentric terminal pipe with the male side (smooth) to the female side of the adapter (1) (with lip seals) up to the end stop, making sure that the wall sealing plate (3) has been fitted; this will ensure sealing and joining of the elements making up the kit.



The adaptor kit includes (Fig. 25):

- N°1 Gasket (1)
- N°1 Adapter Ø 80/125 (2)

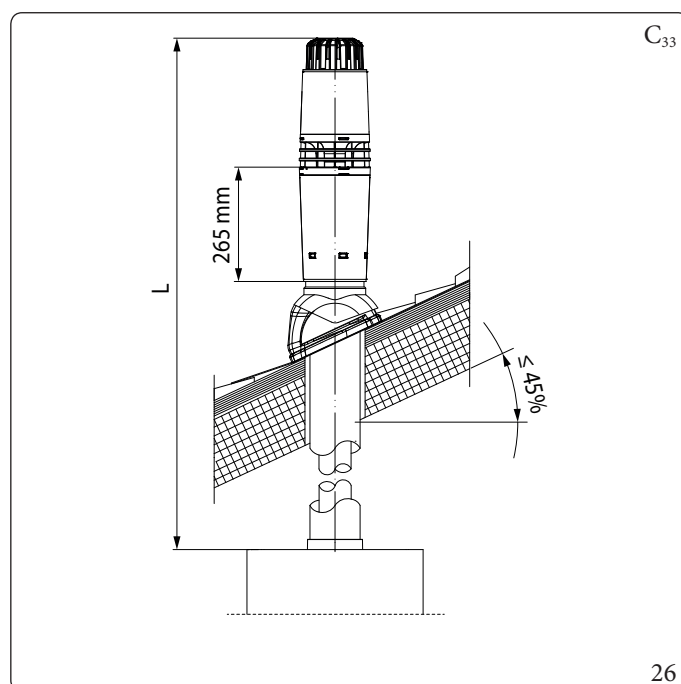
The Ø 80/125 kit includes (Fig. 25):

- N°1 Wall sealing plate (3)
 - N°1 Aluminium slate (4)
 - N°1 Fixed half-shell (5)
 - N°1 Mobile half-shell (6)
 - N°1 Concentric intake/exhaust pipe Ø 80/125 (7)
- The remaining kit components must not be used

Extensions for vertical kit Ø 80/125 (L = Equivalent length - L max = Maximum length) (Fig. 26).

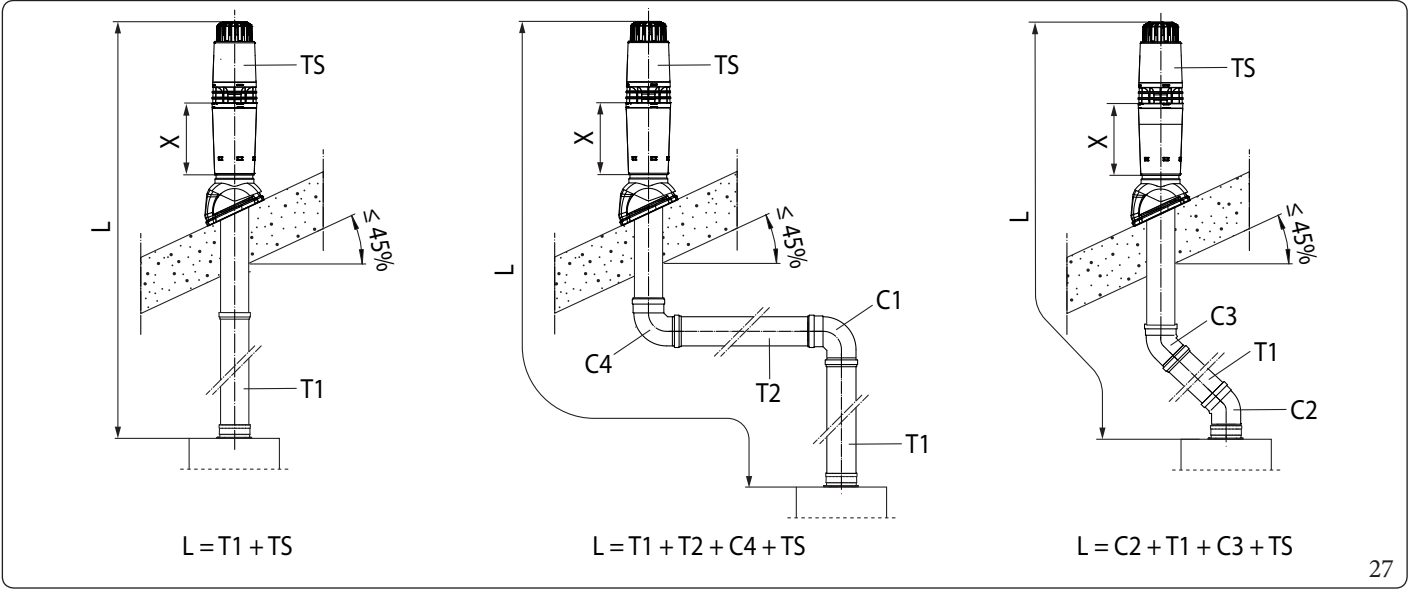


The maximum lengths ((L max) of the various flues that can be installed are given in the summary table in parag. 1.14.



Installation examples

Type of Duct	Minimum outlet height roof/wall (m)
	X
Concentric Ø 80/125 Vertical	0,26



i To calculate the equivalent length of the flue (L), simply add, for each component you intend to use, the corresponding value indicated in the column "Length equivalent to m of pipe" in the table in par. 1.13, and check that the resulting sum is equal to or less than the maximum length (L max) indicated in par. 1.14. ($L \leq L_{max}$).

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1.18 SEPARATOR KIT INSTALLATION

Type C configuration, sealed chamber and fan assisted separator kit Ø 80/80

This kit allows air to come in from outside the building and the exhaust to exit from the chimney, flue or intubated duct through divided flue exhaust and air intake pipes.

Combustion products are expelled from pipe (S) (in plastic, so as to resist acid condensate).

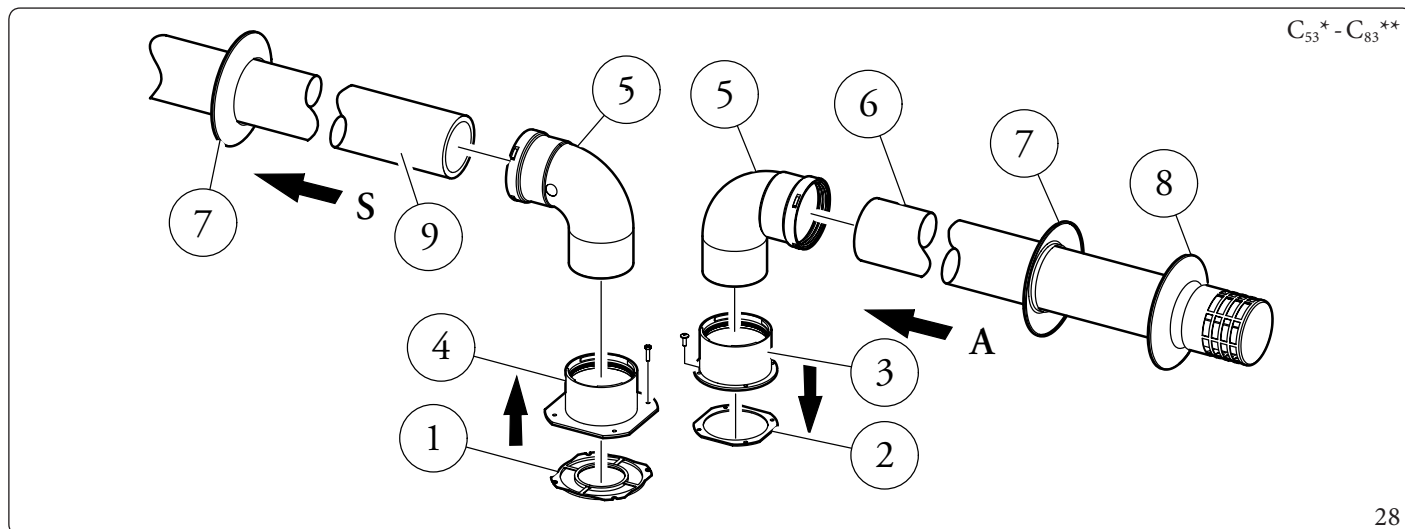
Air is taken in through duct (A) for combustion (this is also in plastic).

The intake pipe (A) can be installed either on the right or left hand side of the central exhaust pipe (S).

Both ducts can be routed in any direction.

Assembly of separator kit Ø 80/80 (Fig. 28):

1. Install the flange (4) on the central hole of the appliance, positioning gasket (1) with the circular projections downwards in contact with the appliance flange.
2. Tighten with the hexagonal head and flat point screws provided in the kit.
3. Replace the flat flange present in the lateral hole with respect to the central one (according to needs) with the flange (3), positioning the gasket (2) already present in the appliance in between.
4. Tighten with the supplied self-tapping screws with drill bit.
5. Fit the bends with male side (smooth) (5) in the female side of the flanges (3 and 4).
6. Fit the intake terminal (6) with the male side (smooth) in the female side of the bend (5) up to the end stop, ensuring that the internal and external wall sealing plates are fitted
7. Fit the exhaust pipe (9) with the male end (smooth) to the female end of the bend (5) up to the end stop; making sure that the internal wall sealing plate has been fitted, this will ensure sealing and joining of the elements making up the kit.



The kit includes (Fig. 28):

- N°1 Exhaust gasket (1)
- N°1 Flange gasket (2)
- N°1 Female intake flange (3)
- N°1 Female exhaust flange (4)
- N°2 Ø 80 90° bend (5)
- N°1 Intake terminal Ø 80 (6)
- N°2 Internal wall sealing plates (7)
- N°1 External wall sealing plate (8)
- N°1 Exhaust pipe Ø 80 (9)

* to complete C₅₃ configuration, also provide for a "green range" roof discharge terminal. The configuration on walls opposite the building is not allowed.

** configuration C₈ envisages connection to flues working with natural draught.




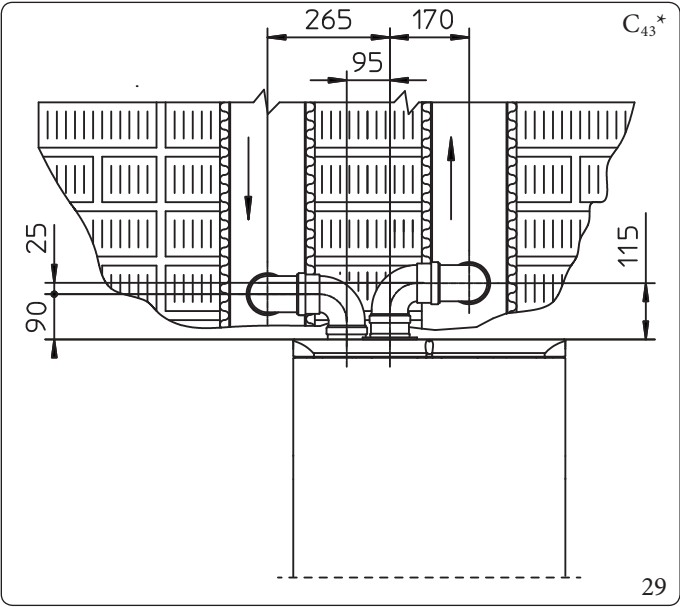
For technical data concerning the C₈ configuration, please refer to the table in par. 4.2.

Installation clearances (Fig. 29)


The minimum installation clearance measurements of the Ø 80/80 separator terminal kit have been stated in some limit conditions.

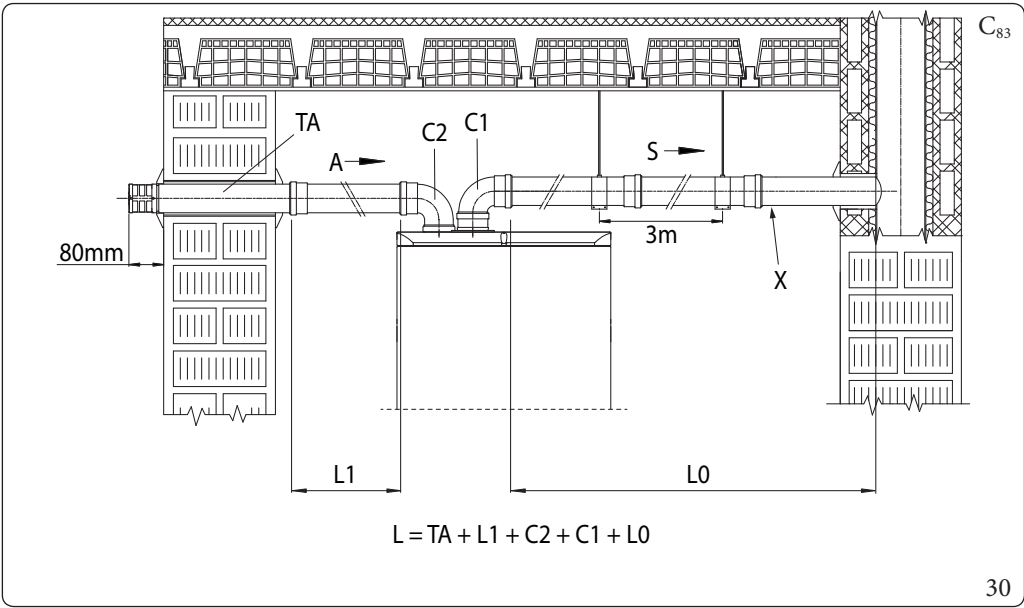
* Configuration C₄ envisages connection to flues working with natural draught.

 For technical data concerning the C₄ configuration, please refer to the table in par. 4.2.




Extensions for separator kit Ø 80/80 (L = Equivalent length - L max = Maximum length).

 To aid in the removal of possible condensate forming in the exhaust pipe, tilt the pipes towards the appliance with a minimum slope of 5% (Fig.30).

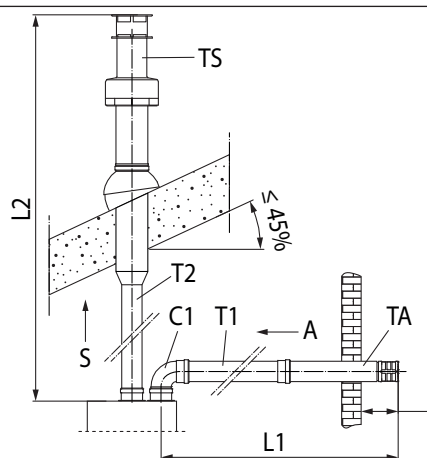


- Key (Fig. 30):
- A - Intake
 - X - Minimum slope 5%
 - S - Exhaust
 - L - Equivalent length
 - L max - Maximum length
 - TA - Intake terminal Ø80/80
 - C1 - Ø80/80 90° elbow
 - C2 - Ø80/80 90° elbow

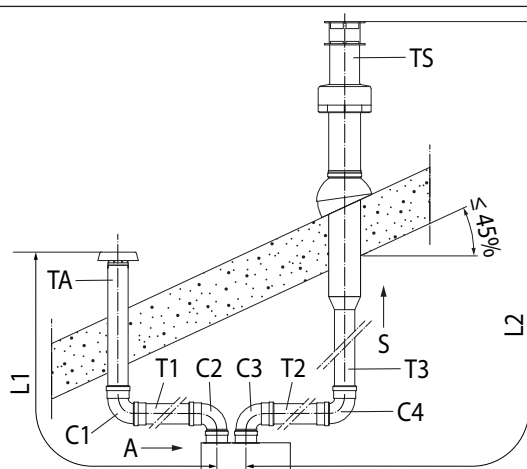
 The maximum lengths ((L max) of the various flues that can be installed are given in the summary table in parag. 1.14.

Installation examples

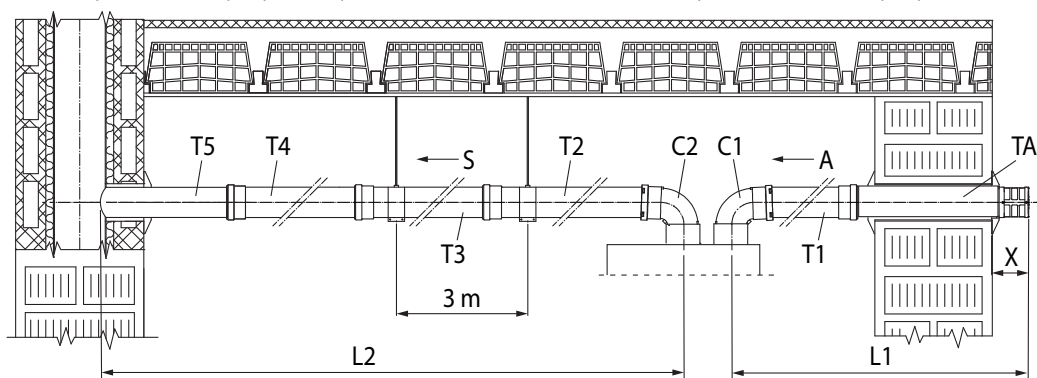
Type of Duct	Minimum outlet height roof/wall (m)
	X
Split Ø 80/80 Horizontal (with intake and exhaust bend)	0,08
Split Ø 80/80 Vertical (without bends)	-



$$L = L1 + L2 = (TA + T1 + C1) + (T2 + TS)$$



$$L = L1 + L2 = (TA + C1 + T1 + C2) + (C3 + T2 + C4 + T3 + TS)$$



$$L = L1 + L2 = (TA + T1 + C1) + (C2 + T2 + T3 + T4 + T5)$$

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To calculate the equivalent length of the flue (L), simply add, for each component you intend to use, the corresponding value indicated in the column "Length equivalent to m of pipe" in the table in par. 1.13, and check that the resulting sum is equal to or less than the maximum length (L max) indicated in par. 1.14. ($L \leq L_{max}$).

1.19 ADAPTOR KIT INSTALLATION C₉

This kit allows an Immergas appliance to be installed in C₉₃ configuration, with combustion air intake directly from the shaft where the flue gas exhaust is, obtained by means of a ducting system.

System composition

The system must be combined with the following components (sold separately) to be functional and complete:

- kit C₉₃ " Ø 100 or Ø 125 version;
- ducting kit rigid Ø 60 and Ø 80 and flexible Ø 50 and Ø 80;
- flue exhaust kit Ø 60/100 or Ø 80/125 configured according to the installation and type of appliance.

Mounting adapter kit C₉ (Fig. 32)



(Version Ø 125 only) before assembly check the gaskets are in the right position.

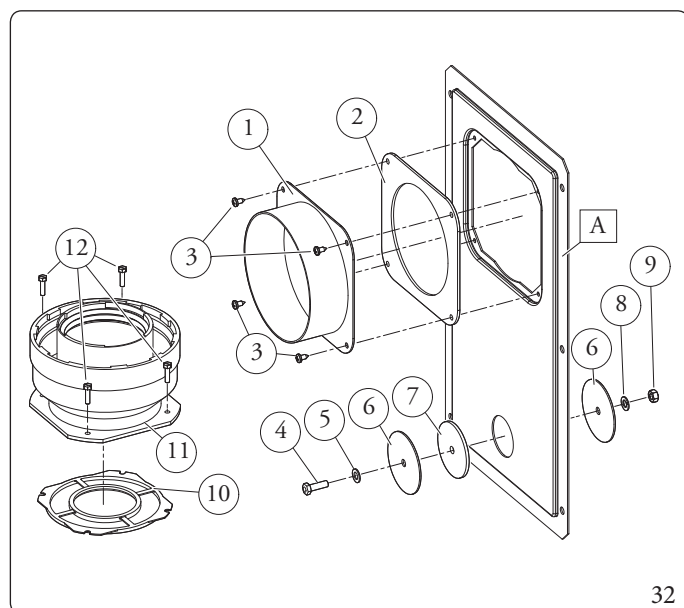
In the event component lubrication (already carried out by the manufacturer) is not sufficient, remove the residual lubricant using a dry cloth, then to ease fitting coat the parts with common or industrial talc.



To aid in the removal of possible condensate forming in the exhaust pipe, tilt the pipes towards the appliance with a minimum slope of 5% (Fig.30).

1. Mount the components of kit C₉ on the door (A) of the ducting system (Fig.32).
2. (Version Ø 125 only) mount the flanged adaptor (11) interposing the concentric gasket (10) on the appliance, fitting it with the screws (12).
3. Mount the ducting system as described in the relative instructions sheet.
4. Calculate the distances between the appliance drain and the bend of the ducting system.
5. Prepare the appliance flue system, making sure that the internal pipe of the concentric kit is fitted up to the end stop in the ducting system curve (Quota "X" Fig. 35), whereas the external pipe must reach the end stop of the adaptor (1).
6. Mount the cover (A) complete with adaptor (1) and caps (6) on the wall.
7. Assemble the flue system to the ducting system.

Once all components have been assembled properly, the exhaust fumes will be expelled via the ducting system; the combustion air for normal appliance operation will be aspirated directly by the shaft (Fig. 35).



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The adapter kit includes (Fig. 32):

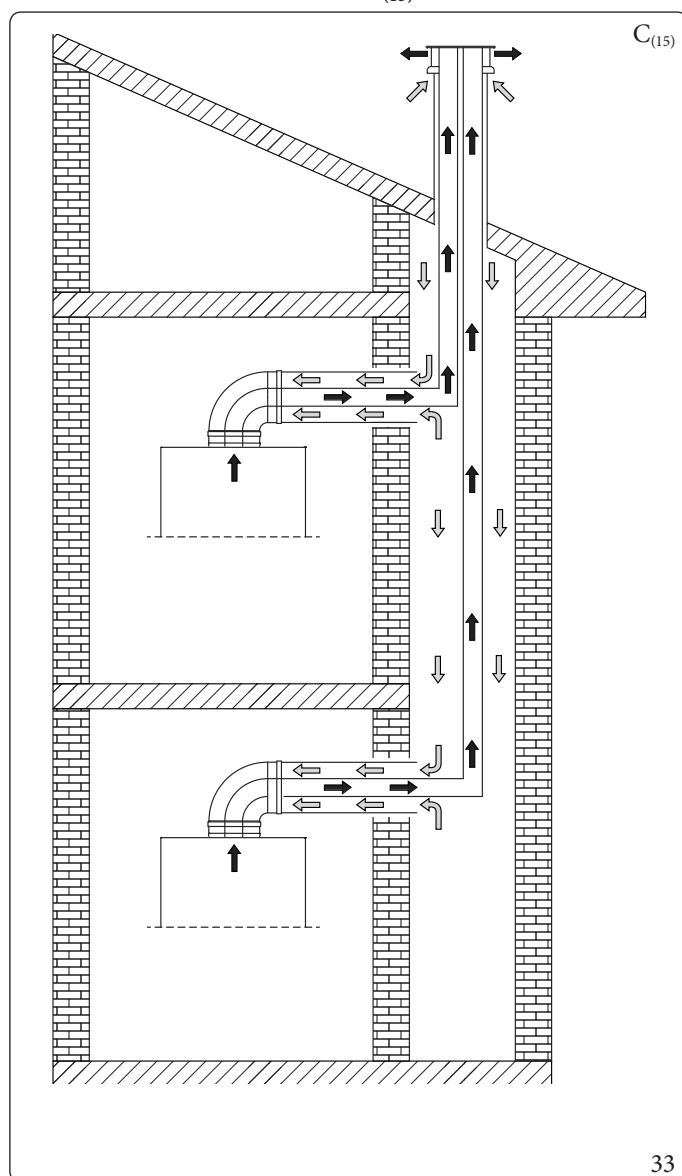
- N°1 Door adaptor Ø 100 or Ø 125 (1)
- N°1 Door gasket made of neoprene (2)
- N°4 Screws 4.2 x 9 AF (3)
- N°1 Hex headed screw M6 x 20 (4)
- N°1 Flat nylon washer M6 (5)
- N°2 Door hole closure metal-sheet plate plug (6)
- N°1 Plug gasket made of neoprene (7)
- N°1 Toothed washer M6 (8)
- N°1 Nut M6 (9)
- N°1 (Ø 80/125 kit) Concentric gasket Ø 60/100 (10)
- N°1 (Ø 80/125 kit) Flanged adaptor Ø 80/125 (11)
- N°4 (Ø 80/125 kit) M4 hex headed screws x 16 slotted screwdriver (12)
- N°1 (Ø 80/125 kit) Bag of lubricating talc

Supplied separately (Fig. 32):

- N°1 Ducting kit door (A)



1.20 CONFIGURATION C₍₁₅₎ CONCENTRIC KIT



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Installation in C₍₁₅₎ configuration of an Immergas appliance, makes it possible to intake combustion air directly from the shaft where the flue gas exhaust is present in the dedicated flue.

Information for C₍₁₅₎ installations

The appliance is suitable for operating in a C₍₁₅₎₃ or C_{(15)3X} system, correctly sized by a thermotechnical designer.

The roof terminal, which is an integral part of the project, must also meet the legislative and regulatory obligations prescribed for this component. In particular, it must ensure that the degree of recirculation of the flue gas is always below 10%.

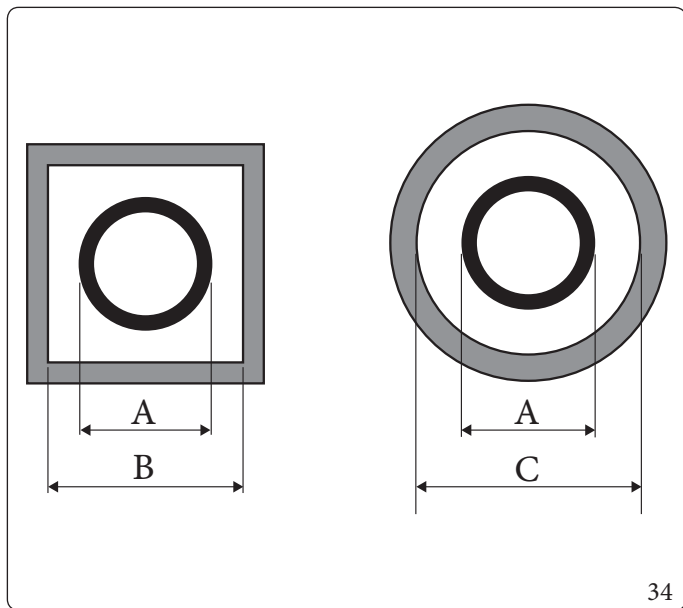
The common supply shaft must be sized so that, in combination with the intake part of the roof terminal, a vacuum greater than 5 Pa is not generated at the point of the shaft where the appliance draws the combustion air from the shaft itself, when the appliance works at maximum heat output and the entire multiple ducting system works at maximum design power.

If the single terminal complies with the following head losses conditions at the maximum appliance heat input:

Model	Pa
HERCULES35 ABT	10

in compliance with the conditions described above, the maximum extensions that can be achieved in the shaft are those defined in this manual with C₉₃ configuration, using the same appliance settings.

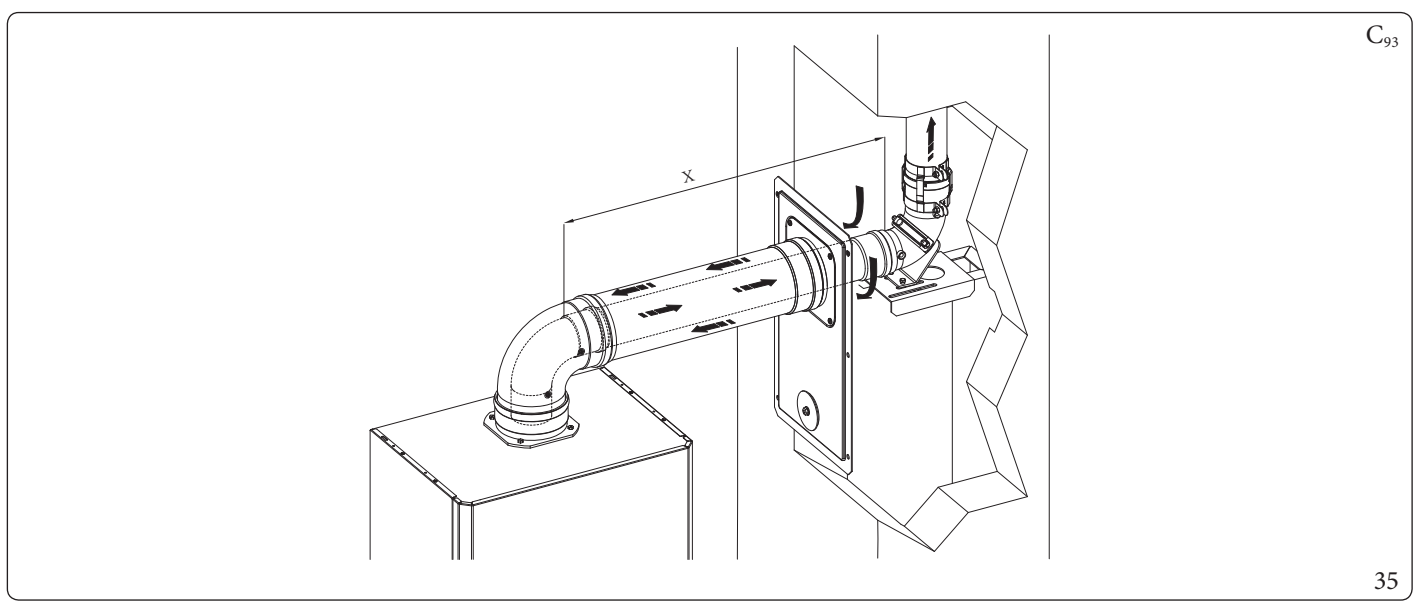




Ducting	ADAPTOR (A) mm	SHAFT (B) mm	SHAFT (C) mm
Ø60 Rigid	66	106	126
Ø50 Flexible	66	106	126
Ø80 Rigid	86	126	146
Ø80 Flexible	103	143	163

Technical data

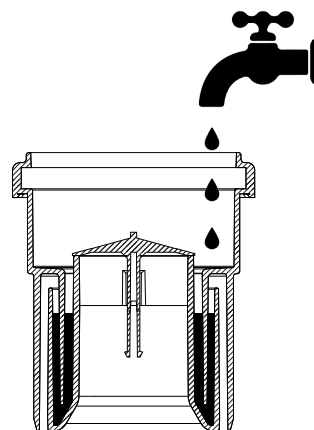
The dimensions of the shafts must ensure a minimum gap between the outer wall of the smoke duct and the inner wall of the shaft: 30 mm for circular section shafts and 20 mm in the event of a square section shaft (Fig. 34). Maximum 2 changes of direction are allowed on the vertical section of the flue system with a maximum clearance angle of 30° with respect to the vertical.



i The maximum lengths ((L max) of the various flues that can be installed are given in the summary table in parag. 1.14.

1.21 CONFIGURATION C₍₁₀₎ CONCENTRIC KIT (Ø 80/125)

In the C₍₁₀₎ and C₍₁₂₎ installations, the appliance flue exhaust must mandatorily be fitted with a flue gas non-return valve kit, consisting of the valve itself with instructions, specification and relative sticker with additional safety information (Fig.36).



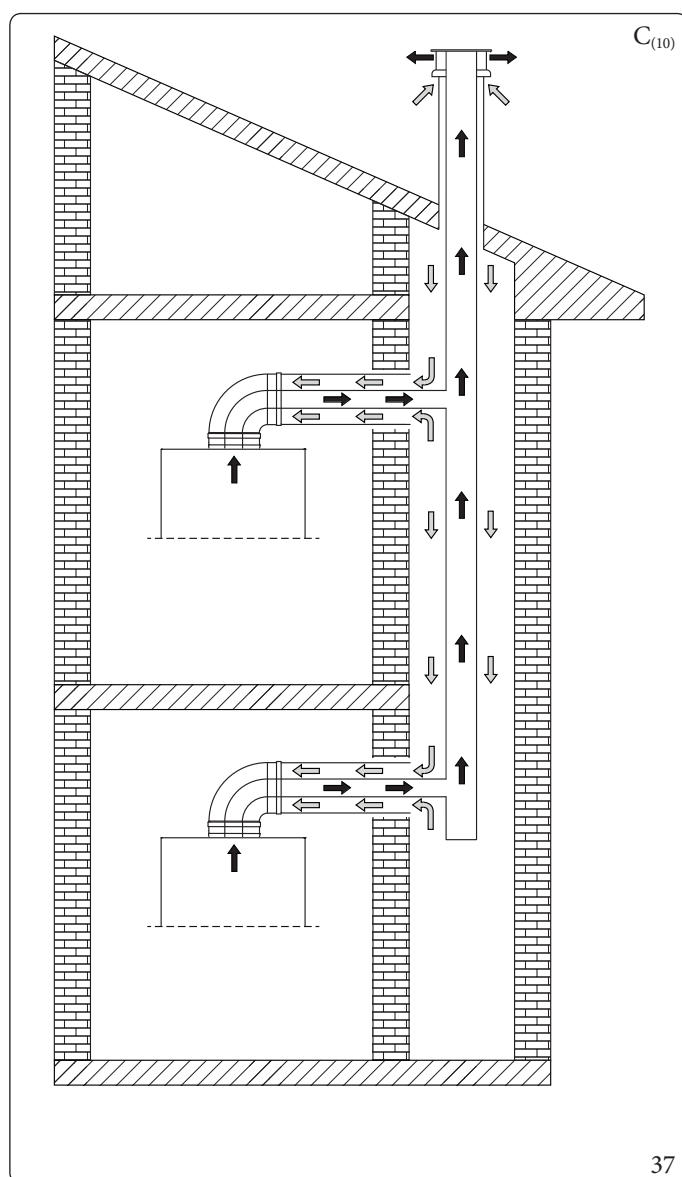
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Installation in C₍₁₀₎ configuration of an Immergas appliance (only permitted with approved original flue, including the specific non-return valve), makes it possible to intake combustion air directly from the shaft where the flue gas exhaust is present in the collective flue.



Coupling to the shaft for intake is possible with male flue Ø 125 or Ø 125 cut female.

The collective flue coupling for the exhaust is possible with female Ø 80 flue with gasket (Fig. 39).



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Concentric kit assembly in C₁₀ type configuration (Fig. 39)



To aid in the removal of possible condensate forming in the exhaust pipe, tilt the pipes towards the appliance with a minimum slope of 5% (Fig. 38).

1. Position the flanged adaptor (14) interposing the concentric gasket (15) on the appliance, fitting it with the screws (13).
2. Insert the non-return valve kit on flue gas Ø80 in the flanged adapter, taking care to remove the spacer Ø80 th. 5 mm.



Make sure to fill the flue gas non-return valve siphon with water (Fig. 36):

3. Fit the Ø 125 extension in the flanged adapter.
4. Insert the Ø 80/125 bend on the non-return valve.
5. Calculate the distances between the bend and the connection to the collective flue and the shaft.
6. Adapt the extension (10), calculating that the inner pipe of the concentric kit must fit as far as it will go into the collective flue. The outer pipe must engage up to the door.

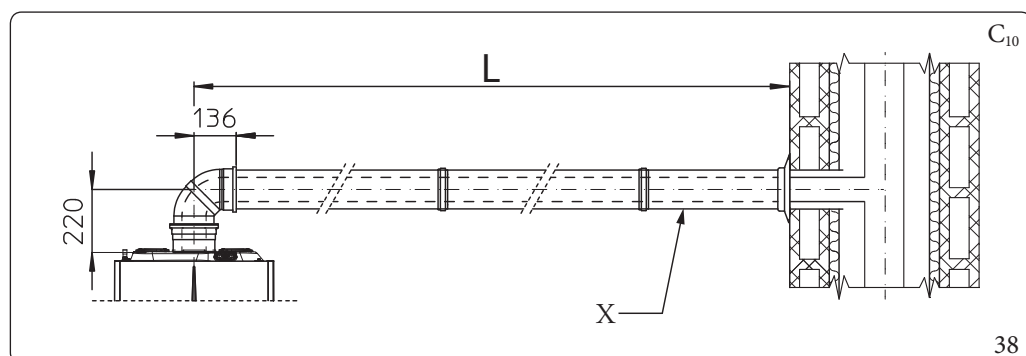


Before mounting it, ensure that the gaskets are in the correct position.

In the event component lubrication (already carried out by the manufacturer) is not sufficient, remove the residual lubricant using a dry cloth, then to ease fitting coat the parts with common or industrial talc.

7. Mount the cover (A) complete with adaptor (1) and caps (6) on the wall.
8. Assemble the flue to the collective flue exhaust system.
9. Go to the display and through the path Menu/General settings/Access level, upon request "Access code request", enter the code 1122 (using knobs "Set DHW" and "Set CH") and press "Ok" after which, the "Access level" menu will open, where you will need to select the type of access: "Service".
10. Refer to the path Menu/Support/Boiler/Flue
11. At item -Enable Klapet valve-, set "Yes".
12. Carry out the quick calibration procedure (Par. 3.12).

Once all components have been assembled properly, the exhaust flue gas will be expelled in the collective flue, the combustion air for normal appliance operation will be aspirated directly by the shaft (Fig. 35).



Key (Fig. 38):

- X - Minimum slope 5%
- L - Equivalent length
- L max - Maximum length

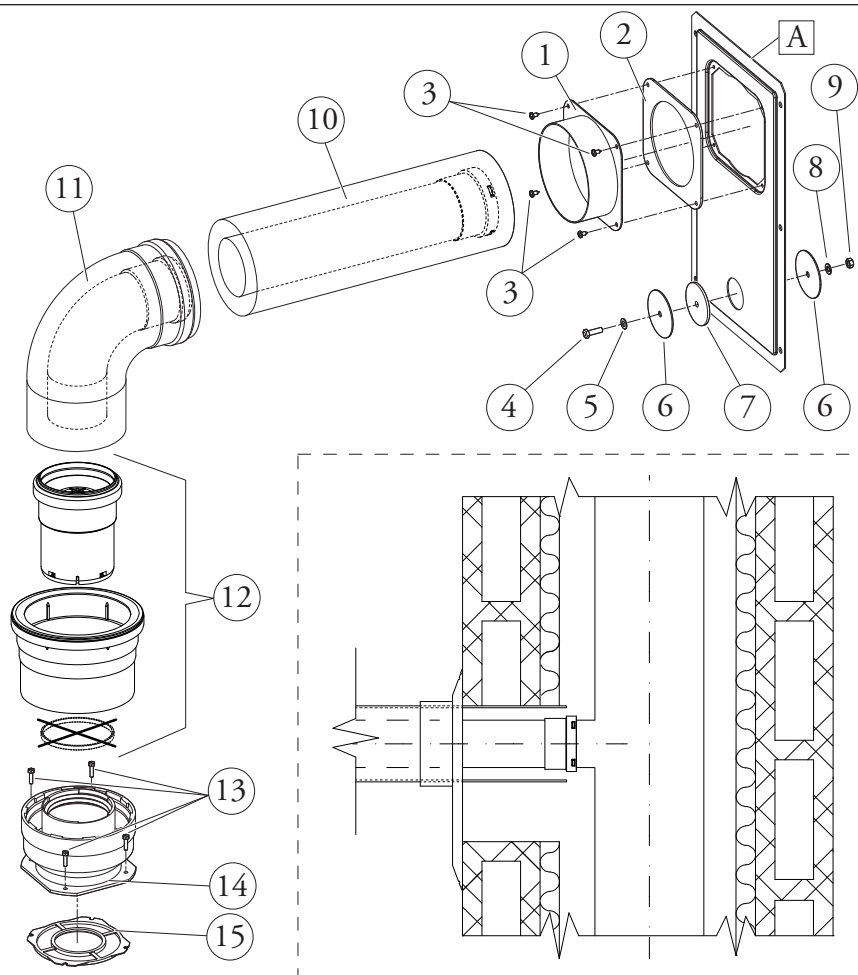
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Key (Fig. 39):

The C_{10} adaptor kit includes:

- 1 Door adaptor $\varnothing 100$ or $\varnothing 125$ (1)
- No.1 Door gasket made of neoprene (2)
- No.4 Screws 4.2x9 ST (3)
- No.1 Hex headed screw M6x20 (4)
- No.1 Flat nylon washer M6 (5)
- No.2 Door hole closure metal-sheet plate plug (6)
- No.1 Plug gasket made of neoprene (7)
- No.1 Toothed washer M6 (8)
- No.1 M6 nut (9)

The $\varnothing 80/125$ extension pipe kit includes:

- 1 Extension pipe unit $\varnothing 80/125$ (10)

The bend kit $\varnothing 80/125$ includes:

- 1 Concentric bend $\varnothing 80/125$ at 87° (11)

The non-return valve kit on the flues $\varnothing 80$ (12) includes:

- 1 Gasket $\varnothing 80$
- 1 Non-return valve on flues $\varnothing 80$
- 1 Extension $\varnothing 125$
- 1 Spacer $\varnothing 80$ th. 5 mm (to be excluded for this configuration)
- No.1 Information sticker

The adaptor kit includes:

- 4 (kit $\varnothing 80/125$) M4 hex headed screws x 16 slotted screwdriver (13)
- 1 (kit $\varnothing 80/125$) Flanged adapter $\varnothing 80/125$ (14)
- 1 (kit $\varnothing 80/125$) Concentric gasket (15)

Supplied separately (Fig. 39):

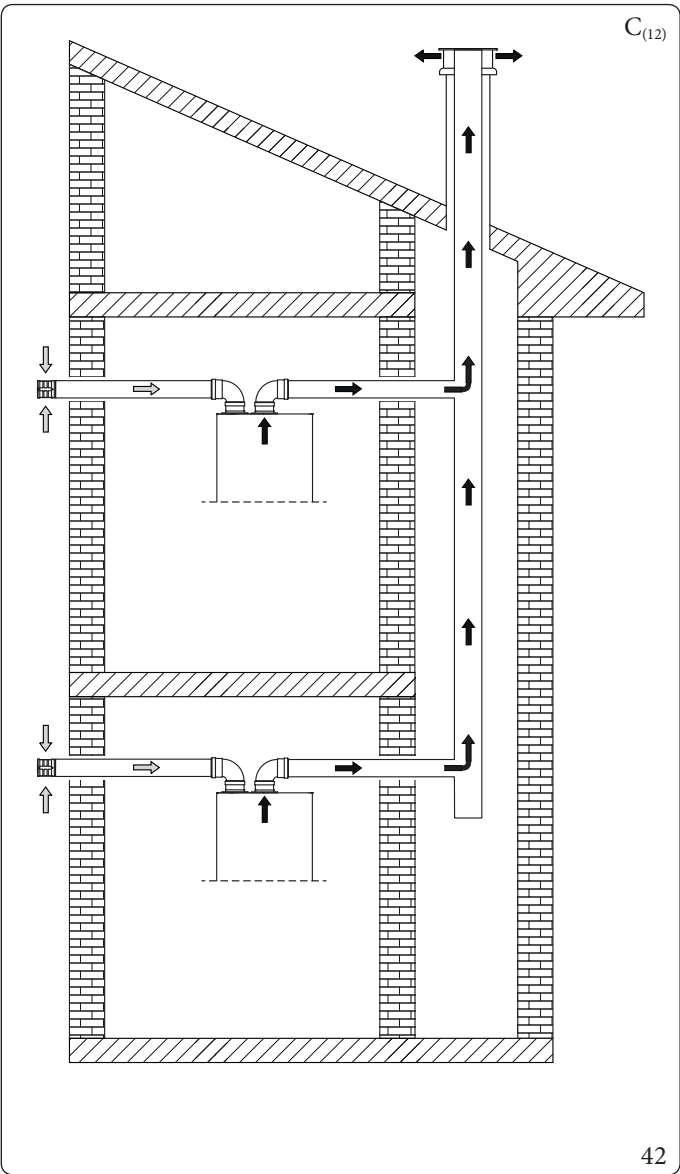
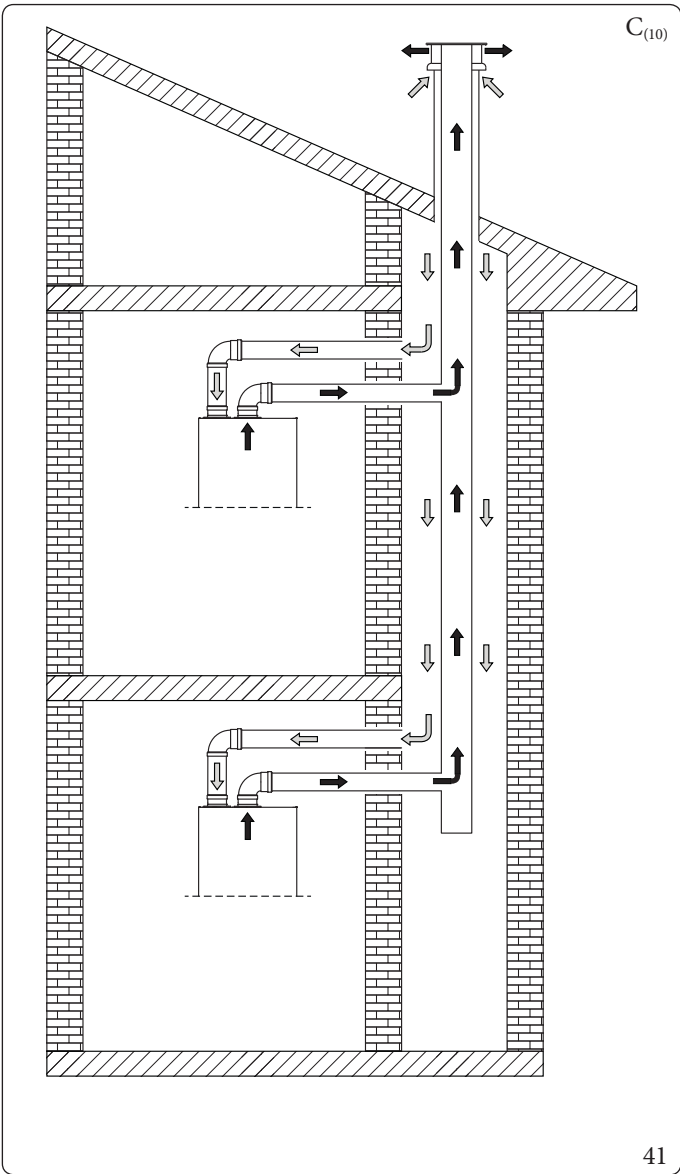
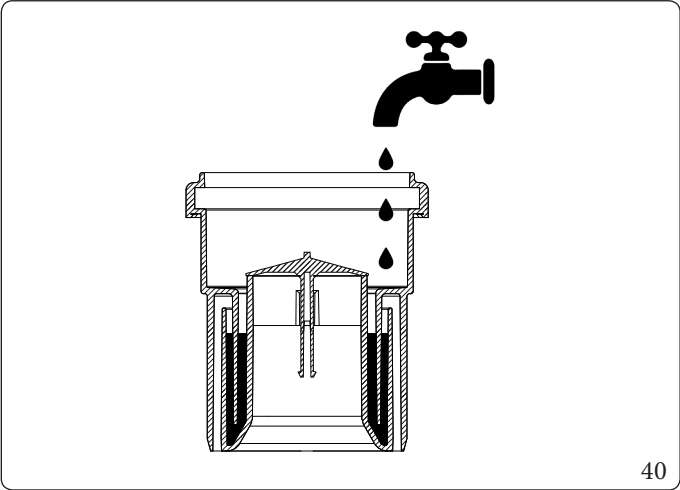
- No.1 Ducting kit door (A)



1.22 CONFIGURATION C₍₁₀₎ - C₍₁₂₎ SEPARATOR KIT (Ø 80/80)



In the C₍₁₀₎ and C₍₁₂₎ installations, the appliance flue exhaust must mandatorily be fitted with a flue gas non-return valve kit, consisting of the valve itself with instructions, specification and relative sticker with additional safety information (Fig.36).



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This configuration (allowed only with the approved original flue, including the specific non-return valve), makes it possible to suck the air outside the home or directly from the shaft where the flue gas exhaust is present and the evacuation of the flue gas itself inside a collective flue.



$C_{(10)}$ (Fig. 41):

Coupling to the shaft for intake is possible with male flue Ø 80 or Ø 80 cut female.

$C_{(10)} - C_{(12)}$ (Fig. 41 - 42)

The collective flue coupling for the exhaust is possible with female Ø 80 flue with gasket.

Assembly of separator kit Ø 80/80 (Fig. 43):

1. Install the discharge flange (4) on the appliance sample point flange, positioning the relative gasket (1) with the circular projections downwards in contact with the appliance flange, and tighten using the hex screws with flat tip contained in the kit.
2. Remove the flat flange present in the intake hole and replace it with the intake flange (3), positioning the gasket (2) contained in the separator kit Ø 80/80 and tighten using the supplied self-threading screws.
3. Eliminate the extension Ø 125 from the non-return valve kit on the flue gas.
4. Insert the spacer Ø 80 th. 5 mm into the flue exhaust flange.
5. Insert the flue gas non-return valve on the Ø 80 flues inside the flue exhaust flange.

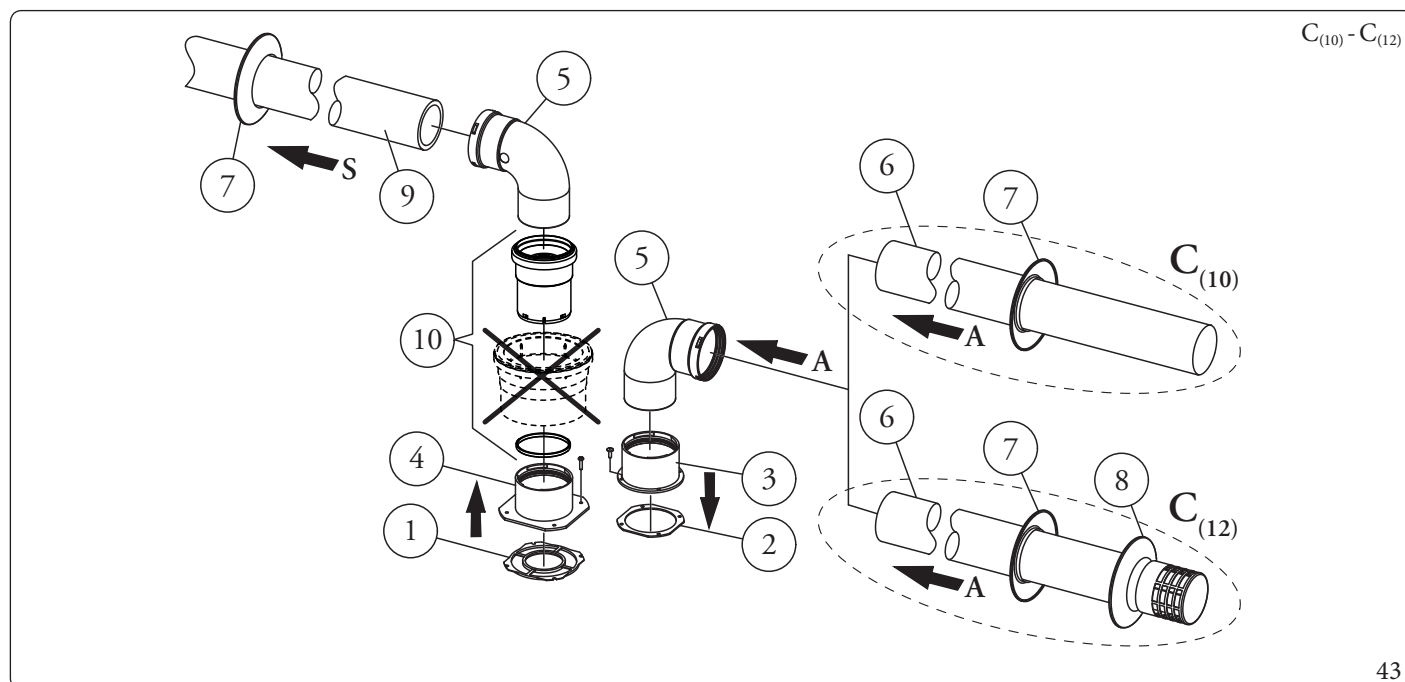


Make sure to fill the flue gas non-return valve siphon with water (Fig. 36):

6. Fit the bends with male side (smooth) (5) in the female side of the flanges (3 and 4).
7. For intake from shaft ($C_{(10)}$) i.e. from common intake duct, connect the intake ducts Ø 80 (6) to the bend (5), making sure that the internal wall sealing plate (7) has already been inserted. For wall intake ($C_{(12)}$), fit the intake terminal (6) with the male side (smooth) in the female side of the bend (5) up to the end stop, ensuring that the internal (7) and external (8) wall sealing plates are fitted.
8. Connect the Ø 80 drain pipe making sure to have already inserted the internal wall sealing plate (7) inside the end section of the pipe.



9. Go to the display and through the path Menu/General settings/Access level, upon request "Access code request", enter the code 1122 (using knobs "Set DHW" and "Set CH") and press "Ok" after which, the "Access level" menu will open, where you will need to select the type of access: "Service".
10. Refer to the path Menu/Support/Boiler/Flue
11. At item -Enable Klapet valve-, set "Yes".
12. Carry out the quick calibration procedure (Par.3.12).



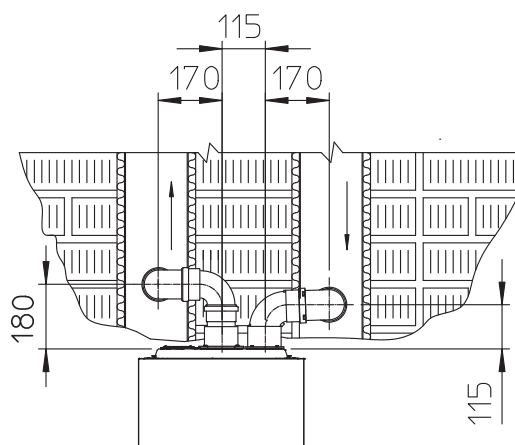
The kit includes (Fig. 43):

- No.1 Exhaust gasket (1)
- No.1 Flange gasket (2)
- No.1 Female intake flange (3)
- No.1 Female exhaust flange (4)
- No.2 Bend 90° Ø 80 (5)
- No. 1 Extension Ø 80 (6) (only C₍₁₀₎)
- No. 1 Intake terminal Ø 80 (6) (only C₍₁₂₎)

- No.2 Internal wall sealing plates (7)
- 1 External wall sealing plate (8) (C₍₁₂₎) only)
- No.1 Exhaust pipe Ø 80 (9)
- N°1 Non-return valve on flue gas Ø 80 (10)
- N.B.: remove extension Ø 125**

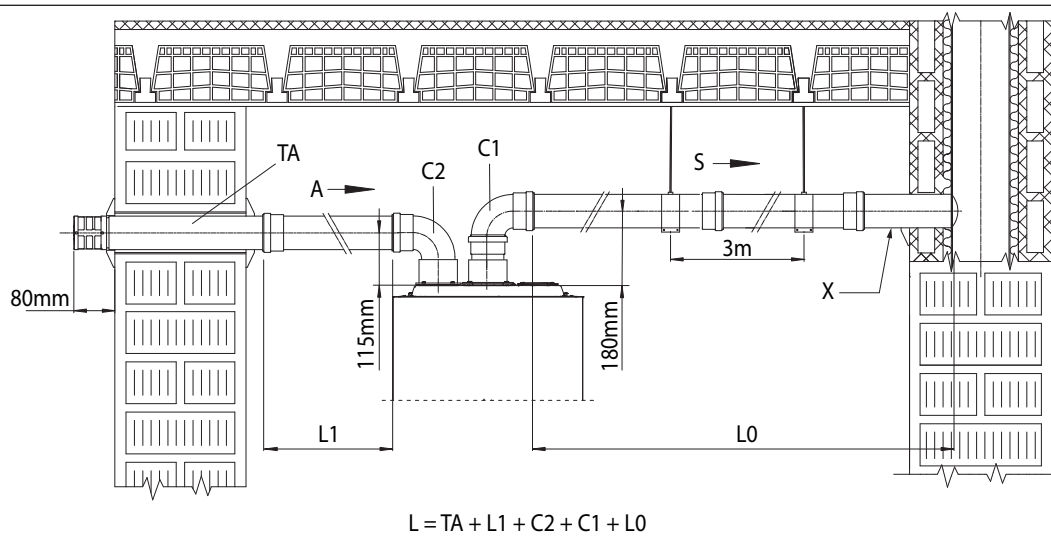
The configuration on walls opposite the building is not allowed.





C₁₀

44



C₁₂

45

Key (Fig. 45):

- A - Intake
- X - Minimum slope 5%
- S - Exhaust
- TA - Intake terminal Ø80

- C1 - Ø80 90° elbow
- C2 - Ø80 90° elbow
- L - Equivalent length
- Lmax - Maximum length



The maximum lengths ((L max) of the various flues that can be installed are given in the summary table in parag. 1.14.



Information for installations C₍₁₀₎ and C₍₁₂₎



The appliance is suitable for operation in a C₍₁₀₎ or C₍₁₂₎ system only with the supply of methane gas (2H and 2E categories).

The appliances are developed to operate on collective pressurised flues with a safety pressure at the minimum heat input of 25 Pa and a safety pressure at the maximum heat input of 100 Pa.



In boilers installed in type C₍₁₀₎ or C₍₁₂₎ flue systems, the parameter "Enable Klapet valve" must be enabled, which will require quick calibration. This is the only calibration operation permitted as CO₂ emission levels are affected by the operating pressures induced in the collective flue, with particular reference to the minimum heat input or any recirculation phenomena induced by the flue system.

The appliance must be connected to a flue system designed by a heating engineer in compliance with the local regulation in force. The collective flue system must be suitably sized to allow the appliance to operate with the following specifications with which it was designed:

- the maximum pressure, when n-1 appliance is working at maximum heat input (with n= number of total appliances connected or that can be connected to the same collective duct), and a boiler works at minimum heat input, is 25 Pa;
- the minimum pressure difference allowed between the combustion product outlet and the combustion air inlet is -200 Pa (- 400 Pa for C₍₁₂₎ including -100 Pa (- 300 Pa C₍₁₂₎) of pressure generated by wind;
- the duct must have been sized with a nominal temperature of the combustion products of 25°C.
- the maximum allowed recirculation rate for wind action is 10%;
- the common flue must be certified to admit an overpressure of at least 200 Pa (minimum pressure class P1);
- no draught-breaker devices must be provided in the duct system.

In particular, at the coupling point to the pressurised collective flue, a plate must be visible showing at least the following technical information:

- the name and trademark of the common flue gas pipe manufacturer;
- suitability for operation with certified boilers C₍₁₀₎ or C₍₁₂₎;
- the maximum flue gas mass value allowed in kg/h;
- the dimensions of the common duct (collective pipe) for each push fit point;



The openings for combustion air and the inlet of combustion products of the pressurised collective flue must be closed and their tightness must be checked when the appliance is disconnected.

The appliance connection to the pressurised collective flue must be made as instructed, without exceeding the specific maximum extensions stated.

The flue pipe must be inclined (5% slope) towards the appliance to facilitate the evacuation of condensate.



The appliance flue gas outlet must be installed with the flue gas non-return valve kit, which ensures correct operation of the appliance and facilitates its maintenance operations.

Furthermore, the safety sticker must be affixed on the front casing. This sticker is contained in the appropriate Kit C₍₁₀₎ C₍₁₂₎, which contains the additional exhaust flue gas non-return valve, necessary for the pressurised collective flues.



It is advisable to affix the sticker in a clearly visible position on the front casing.



Summary table of information for C₁₀ installations (Only Methane 2H - 2H)

		HERCULES 35 ABT	
		Q _{min}	Q _{n max}
Heat input	kW	3,0	34,9
CO ₂ % of reference	%	8,8	8,8
Maximum boiler outlet pressure	Pa	25	93
Minimum boiler outlet pressure C ₍₁₀₎	Pa	-200	-200
Minimum boiler outlet pressure C ₍₁₂₎	Pa	-400	-400
Maximum flue gas flow rate	kg\h	59	
Minimum flue gas flow rate	kg\h	5	
Flue gas temperature 80°C\60°C	°C	71	
Maximum flue duct length 80\125	m	9	
Maximum flue duct length 80\80	m	10	
Available head with maximum duct length	Pa	59,0	
Boiler settings (as indicated in the instruction booklet)	-	See Par. 1.22 from point 9 on.	



1.23 DUCTING OF FLUES OR TECHNICAL SLOTS

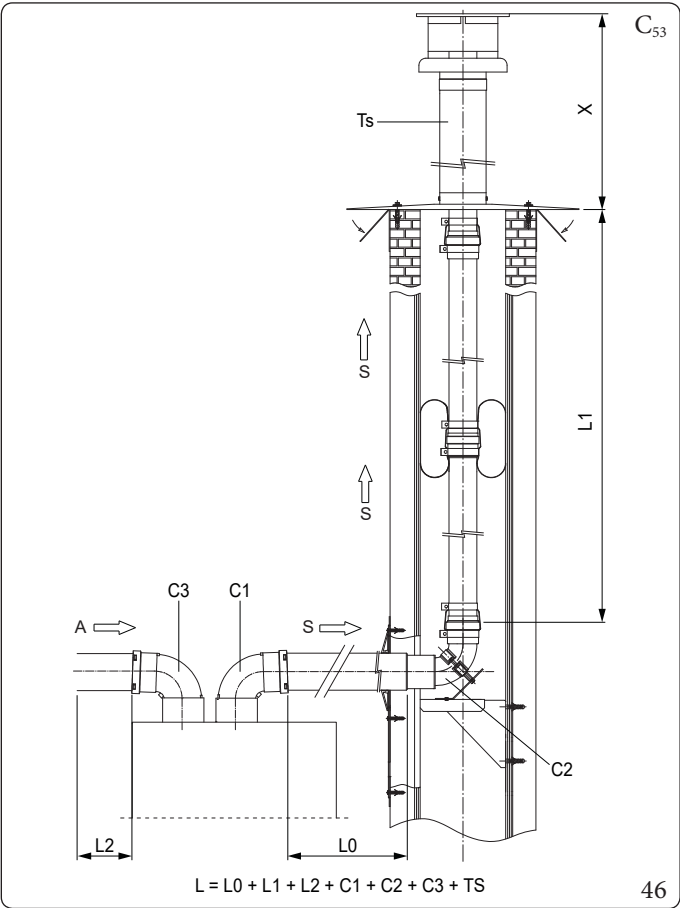
Ducting is an operation through which, via the introduction of one or more relevant pipes, one achieves a system for the evacuation of the combustion products of a gas appliance, made up from the coupling of an existing or new ducting pipe with a chimney, flue or technical slot (also in new buildings) (Fig. 46).
Ducting requires ducts declared to be suitable for the purpose by the manufacturer, following the installation and user instructions, provided by the manufacturer and the requirements of the regulations in force.


Immergas ducting systems

 The Ø 60 rigid, Ø 50 and Ø 80 flexible and Ø 80 rigid "Green Range" ducting systems must only be used for domestic use and with Immergas condensing boilers.

In any case, ducting operations must respect the provisions contained in the standard and in current technical regulations; in particular, the declaration of conformity must be compiled at the end of work and on commissioning of the ducted system.
The instructions in the project or technical report must likewise be followed, in cases provided for by the standard and current technical regulations.
To guarantee reliability and operation over time of the ducting system, make sure:

- it is used in average atmospheric and environmental conditions, according to current regulations (absence of combustion products, dusts or gases that can alter the normal thermophysical or chemical conditions; existence of temperatures coming within the standard range of daily variation, etc.).
- Installation and maintenance must be performed according to the indications supplied by the manufacturer included with the "green range" ducting system chosen and in compliance with the regulations in force.
- To guarantee long-time reliability and functionality of the ducting system, the maximum length specified by the manufacturer (Par. 1.14) must be complied with.



 The maximum lengths ((L max)) of the various flues that can be installed are given in the summary table in parag. 1.14.

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1.24 CONFIGURATION FOR C₆ FLUE INSTALLATION



Appliance designed to be connected to a commercial exhaust/intake system.

Hercules 35 ABT

Gas type		G20	G31
Flue temperature at maximum output	°C	71	72
Flue gas mass at maximum power	kg/h	59	42
Flue temperature at minimum output	°C	66	65
Flue gas mass at minimum power	kg/h	5	4
CO ₂ at Q. max.	%	8,8 (8,3 ÷ 9,3)	10,7 (10,2 ÷ 11,2)
CO ₂ a Q. minimum	%	8,8 (8,3 ÷ 9,3)	10,0 (9,4 ÷ 10,4)
Maximum head available at maximum power (maximum resistance value of the commercial flue system)	Pa	268	145
Maximum head available at minimum power	Pa	2	1
Maximum flue gas circuit temperature	°C	120	



- Ducts must withstand condensation (only for condensing models);
- Air intake ducts must withstand working air temperatures of up to 60°C;
- The maximum permissible percentage of flue gas recirculation in windy conditions is 10%;
- Suction and exhaust pipes cannot be installed on opposing walls;
- With flues in configuration C₆ discharge into pressurised flues is not permitted.



1.25 CONFIGURATION TYPE B, OPEN CHAMBER AND FAN ASSISTED FOR INDOORS

The appliance can be installed inside buildings in B₂₃ or B₅₃ mode; in this case, all technical rules and national and local regulations in force, must be complied with.

1.26 FLUE EXHAUST TO FLUE/CHIMNEY.

Flue exhaust does not necessarily have to be connected to a branched type traditional flue for type B appliances with natural draught (CCR).

The flue exhaust, for boiler clots installed in C configuration, can be connected to a single flue or to a multiple flue. For B₂₃ configurations, exhaust is only allowed into individual chimney or directly into the external atmosphere via a relevant terminal, unless otherwise provided by local regulations.

The multiple flues must also only be connected to type C appliances of the same type (condensation), having nominal heat inputs that do not differ by more than 30% less with respect to the maximum that can be attached and powered by the same fuel.

The thermo-fluid dynamic features (flue flow rate, % of carbon dioxide, % humidity etc.) of the appliances attached to the same multiple flues, must not differ by more than 10% with respect to the average appliance attached.

Multiple flues must be specially designed according to the calculation method and requirements of the standards (such as UNI 13384), by professionally qualified technical staff.

Chimney or flue sections for connection of the flue exhaust pipe must comply with requisites of technical standards in force.

It is possible to replace a type C conventional device with one provided with condensation, connected to multiple flues, only if the derogation conditions established by the regulations in force have been met.

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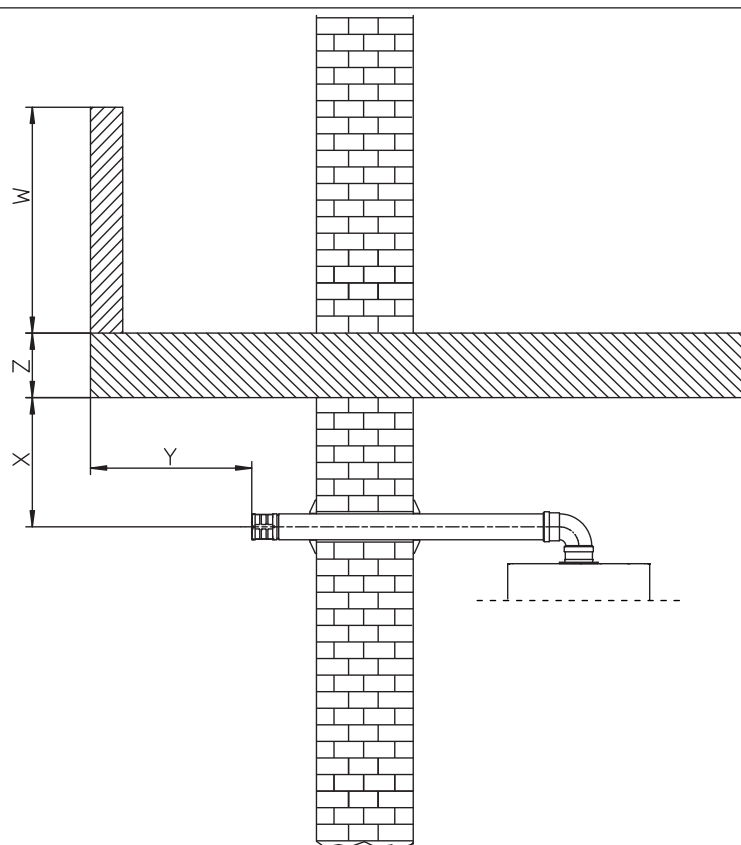
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1.27 FLUES, CHIMNEYS AND CHIMNEY CAPS.

Chimneys and roof-installed exhaust terminals must comply with the outlet height and with the distance from technical volumes set forth by the technical standards in force.



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Positioning the wall flue exhaust terminals.

The wall flue exhaust terminals must:

- be installed on external perimeter walls of the building (Fig. 47);
- be positioned according to the minimum distances specified in current technical standards.

Combustion products exhaust of natural draught or fan assisted appliances in open-top closed environments.

In spaces closed on all sides with open tops (ventilation pits, courtyards etc.), direct combustion product exhaust is allowed for natural draught or fan assisted gas appliances with a heat input range from 4 to 35 kW, provided the conditions as per the current technical standards are respected.

1.28 WATERTREATMENT PLANT FILLING

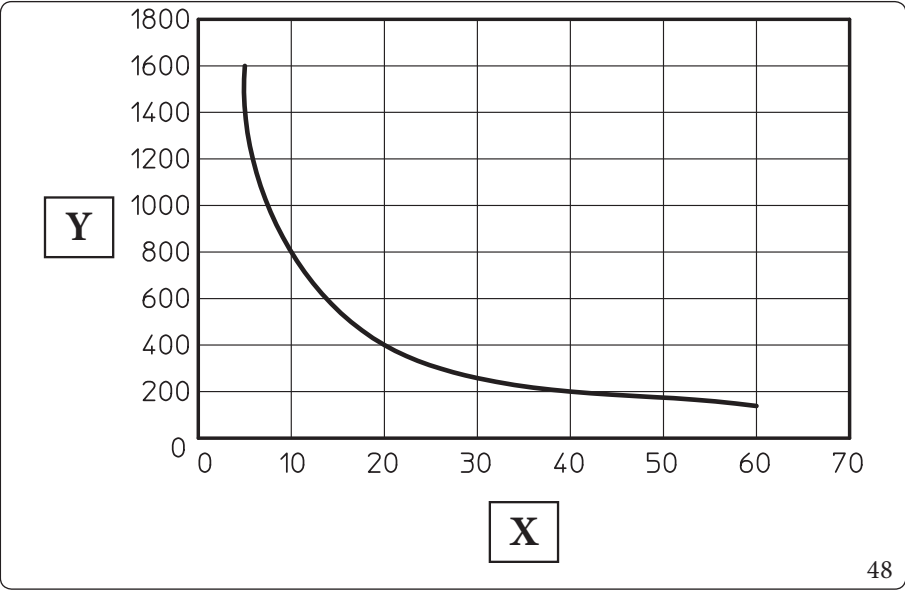
The technical standard in force requires washing and treatment of the system water of the water and DHW thermal system, following the indicated methods and provisions of local standards in force.

The parameters that influence the duration and proper operation of the heat exchanger are the water's PH, total hardness, conductivity, and oxygen, together with the system's processing residues (any welding residues), any oil present and corrosion products that can, in turn, cause damage to the heat exchanger.

In order to prevent this from happening, you are recommended to:

- Before installation on new systems as well as old ones, clean the system with clean water to eliminate solid residues.
- clean the system with a chemical treatment:
 - clean the new system with a suitable cleaning device (for example Sentinel X300, Fernox Cleaner F3 or Jenaqua 300) combined with thorough washing;
 - clean the old system with a suitable cleaning device (for example Sentinel X400 or X800, Fernox Cleaner F3 or Jenaqua 400) combined with thorough washing;
- Check the maximum total hardness and amount of filling water with reference to the graph (Fig. 48), if the contents and hardness of the water are below the indicated curve, no specific treatment is required; otherwise, to limit the content of calcium carbonate, you must provide for water-filling treatment.
- If it is necessary to provide for water treatment, it should be done through complete desalination of the filling water. As opposed to the complete softening process, desalinating the water completely not only removes hardening agents (Ca, Mg), but also eliminates all other minerals to reduce water-filling conductivity up to 10 microsiemens/cm. Given its low conductivity, desalinated water does not only prevent the formation of lime scale, but also serves as protection against corrosion.
- Insert a suitable inhibitor / passivator (for example Sentinel X100, Fernox Protector F1, or Jenaqua 100); if required, also insert appropriate antifreeze (such as for example Sentinel X500, Fernox Alphi 11 or Jenaqua 500).
- Check electrical conduction of the water, which should be higher than 2000 µs/cm in the case of treated water and lower than 600 µs/cm in the case of non-treated water.
- To prevent corrosion, the water system's PH should be between 7.5 and 9.5.
- Check the maximum content of chlorides, which should be less than 250 mg/l.

i The graph refers to the entire life cycle of the system. Therefore, also consider scheduled and unscheduled maintenance, which involves emptying and filling the said system.



Key (Fig. 48):
X - Total water hardness °F
Y - Litres of system water

i For quantities and methods of use of water-treatment products, refer to the instructions provided by their manufacturer.

1.29 SYSTEM FILLING

Once the appliance is connected, proceed with system filling via the filling cock (Det. 23 Fig. 53).

Filling is performed at low speed to ensure release of air bubbles in the water via the appliance and central heating system vents.

The pump may be noisy on start-up due to the presence of air. This noise should stop after a few minutes of functioning and however after having correctly bled the air contained in the hydraulic circuit.

The appliance incorporates an automatic vent valve positioned on the pump and one positioned on the hydraulic manifold.

Then open the radiator vent valves.

Close radiator vent valves when only water escapes from them.

The filling valve must be closed when the appliance pressure gauge indicates approximately 1.2 bar cold.



During these operations, enable the automatic vent functions on the appliance (Parag. 3.19);

1.30 FILLING THE CONDENSATE DRAIN TRAP



When the appliance is switched on for the first time, combustion products come out of the condensate drain. After a few minutes of operation, check that combustion flue gases are no longer coming out of the condensate drain; this means that the drain trap has filled to a correct condensate height that the flue gases cannot pass through.

1.31 GAS SYSTEM START-UP

To start up the system, refer to the technical standards in force.

This divides the systems and, therefore, the commissioning operations, into three categories: new systems, modified systems, reactivated systems.

In particular, for new gas systems:

- open windows and doors;
- avoid presence of sparks or naked flames;
- bleed all air from pipelines;
- ensure the internal system is properly sealed according to the specifications set forth by technical regulations in force.



1.32 APPLIANCE START-UP (IGNITION)



Whenever the appliance is powered back up, it starts by default with an 8-minute deaeration function; to stop this function before it has finished, press "Reset" and confirm by pressing "Ok".



The display leaves the factory set in Italian. To change the display language, see Par. 2.8 in the "USER" chapter, under "Menu\General settings\Language".

To commission the appliance (the operations listed below must only be performed by qualified personnel and in the presence of staff only):

1. check that the internal system is properly sealed according to the specifications set forth by regulations in force;
2. Ensure that the type of gas used corresponds to the appliance settings (the type of gas appears on the display on first electrical power supply);
3. check that there is no air in the gas pipe;
4. Check connection to a 230V~50Hz power mains, correct L-N polarity and the earthing connection;
5. check that the intake/exhaust terminals are not obstructed and that they are installed properly;
6. **Check that the drain trap is full and that it prevents any passage of flue gas into the room;**
7. check that there are no external factors that may cause the formation of fuel pockets;
8. Carry out the flue test (Par.3.13);
9. **Activate the Quick calibration function (if in the previous check it was necessary to change the flue parameters):** (Par. 3.12);
10. Switch the appliance on and check correct ignition;
11. Make sure that the gas flow rate and relevant pressure values comply with those given in the manual (Par.4.1);
12. ensure that the safety device intervenes in the event of gas supply failure and check the relative intervention time;
13. Check the activation of the main switch located upstream of the appliance and in the appliance.



Even if just one single safety check provides a negative result, do not commission the system.



1.33 UPM4 CIRCULATION PUMP

In the central heating mode, the following operating modes are available and can be selected from the "P.C.B. programming" menu (Par. 2.8).

- **T delta = 0:** automatic pump speed and proportional head: the pump speed varies according to the power supplied by the burner, the greater the power the greater the speed. Moreover, within Menu/Support/Boiler/**Pump**, it is possible to adjust the pump operating range by setting the "Maximum speed" parameter (adjustable from 6 to 9) and the "Minimum speed" parameter (adjustable from 6 to max set speed).
- **Delta t = 5 ÷ 25 K:** the pump speed varies to maintain the ΔT constant between the system flow and return according to set value K ($\Delta T = 9$ Default).
- **Fixed (6 - 9):** by setting the parameters "Maximum speed" and "Minimum speed" at the same value, the pump operates at constant speed.



For the appliance to work properly, it is recommended to set the pump at maximum fixed speed= 9.



In domestic hot water mode, the circulator pump always runs at full speed.

Pump symbols (Fig. 49):

With the pump powered and the pwm control signal connected and operating (pump ON or in stand-by), the symbol 2 flashes green ().

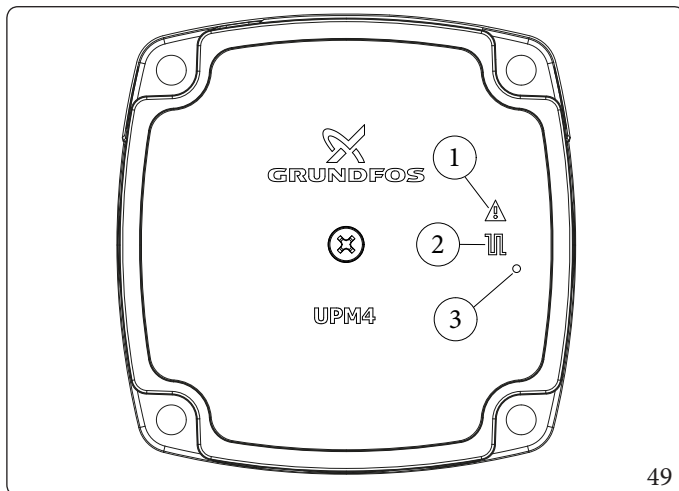
If the symbol 2 turns steady green (), the pump detects no command on the pwm signal and always runs at maximum speed.

If the pump detects an alarm, symbol 1 lights up red (). This can mean that there is one of the following faults:

- Low power supply voltage.
- Rotor seized (Cautiously turn the screw in the centre of the head to manually release the motor shaft).
- Electrical error.



These anomalies will be signalled on the boiler display as errors "60" or "61" as indicated in par. 2.9.



Key (Fig. 49):

- 1 - Alarm signal (Red)
- 2 - Functioning status signal (Steady green/Flashing green)
- 3 - Led (Not used on this model)

Pump release.

If after a long period of inactivity, the circulator is blocked, adjust the screw in the centre of the head in order to manually release the motor shaft.

Take great care during this operation to avoid damage to the motor.



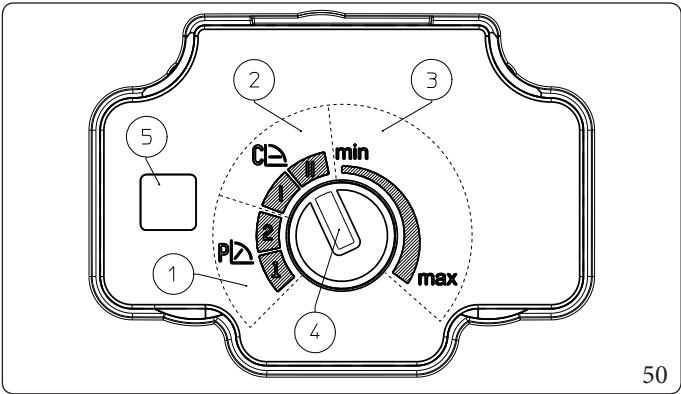
1.34 TACO CIRCULATION PUMP

The appliances are supplied with a variable speed circulator pump.

- **Proportional head:** the pump speed varies according to the power emitted by the burner, the greater the power the greater the speed.
- **Constant ΔT :** the pump speed varies to maintain the ΔT constant between the system flow and return according to a set value.
- **Fixed:** setting the selector at "Min" or "Max" the pump runs at fixed speed.

Pump LED

- purple LED: automatic adjustment to changes
- orange LED: constant head
- green LED: proportional head
- blue LED: fixed speed
- yellow LED: PWM signal output. External pump setpoint. (not used)
- white LED: Air detection. proceed with the venting routine.
- red LED: the pump is blocked but still live.



Key (Fig. 50):

- 1 - Proportional head adjustment zone
- 2 - Constant head adjustment zone
- 3 - Fixed speed adjustment zone
- 4 - Selector with LED
- 5 - Pump type (central heating/cooling + central heating/solar thermal/domestic hot water production)

Adjustments.

Turn the selector and set it on the desired curve to adjust the pump:

- P1 / P2;
- CI / CII (default);
- Min / Max.

P1 / P2 programs - Proportional head (green LED).

This allows the pressure level (head) to be proportionally reduced as the system heat demand decreases (flow rate reduction). Thanks to this function, the electric power consumption of the pump is reduced further: the energy (power) used by the pump decreases according to the pressure level and flow rate.

With this setting, the pump guarantees optimal performance in most heating systems, thereby being particularly suitable in single-pipe and two-pipe installations. Any noise originating from the water flow in the pipes, valves and radiators is eliminated by reducing the head.

Optimal conditions for thermal comfort and acoustic well-being.

CI / CII programs - Constant head (orange LED).

The pump maintains the pressure level (head) constant as the system heat demand decreases (flow rate reduction). With these settings, the pump is suitable for all floor systems where all the circuits must be balanced for the same drop in head.

Min / Max programs - Fixed speed (blue LED).

The pump is distinguished by adjustable operating curves by positioning the selector in any point between the Min and Max positions, thereby satisfying any installation requirement (from a simple single-pipe to more modern and sophisticated systems) and always guarantee optimum performance.

The precise working point can be selected in the entire field of use by gradually adjusting the speed.



Diagnostics in real time.

A lit LED, in various colours, provides information regarding the pump operating status (Det. 4 Fig. 50).

Possible pump release.

The blockage of the pump is signalled by backlighting of the LED with a steady red light.

In case of motor blockage, the pump intervenes automatically by means of a routine managed within its software to attempt to remove the blockage.

The pump automatically launches a routine procedure gradually increasing rotation torque up to 12 consecutive attempts.

During this procedure, the signal of the LED knob starts flashing at a different colour than that on the curve set at red for motor blockage.

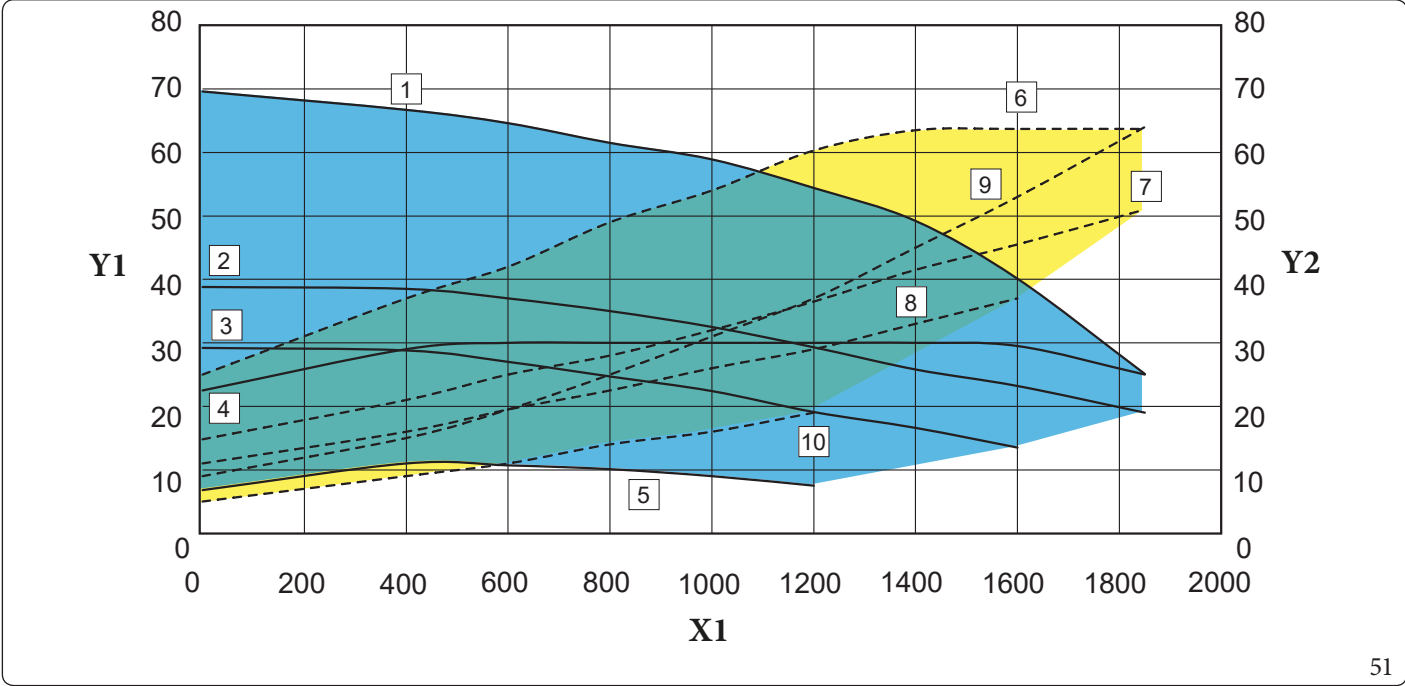
The procedure indicatively lasts 2 seconds for each attempt (about 30 seconds in all).

If the automatic unblock attempt fails, the colour of the LED knob remains steady red.

If the problem has not been resolved, proceed with manual unblocking as described below:

- Disconnect power to the boiler (the LED switches off).
- Close the system flow and return and let the pump cool down.
- Empty the system circuit via the relative cock.
- Remove the motor and clean the impeller.
- When unblocked, reassemble the motor, tightening the screws at a torque of 3.3 ± 0.5 Nm.
- Fill the primary circuit; restore boiler power and set the desired curve.

Head available for the Hercules 35 ABT system (direct zone and mixed zone)



- Key (Fig. 51):
- 1 = Head available to the system at maximum speed
 - 2 = Head available to the system in position C2
 - 3 = Head available to the system in position C1
 - 4 = Head available to the system in position P2
 - 5 = Head available to the system in position P1
 - 6 = Power absorbed by the pump at maximum speed
 - 7 = Power absorbed by pump in position C2
 - 8 = Power absorbed by pump in position C1
 - 9 = Power absorbed by pump in position P2
 - 10 = Power absorbed by pump in position P1

- Key (Fig. 51):
- X1 = Flow rate (l/h)
 - Y1 = Head (kPa)
 - Y2 = Power absorbed by pump (W)



The head flow rate graph (or Available head) is the same for both the pump on the direct zone and on the mixed zones.



1.35 DOMESTIC HOT WATER STORAGE TANK UNIT

The storage tank in Hercules 35 ABT is an accumulation type with a capacity of 120 litres.

It contains large coiled stainless steel heat exchanger pipes, which allow to notably reduce hot water production times.

These storage tank units constructed with stainless steel casing and bottoms, guarantee long duration through time.

The assembly concepts and welding (T.I.G.) are implemented to the minimum detail to ensure maximum reliability.

The upper inspection flange ensures practical control of the storage tank unit and the coiled heat exchanger and easy internal cleaning.

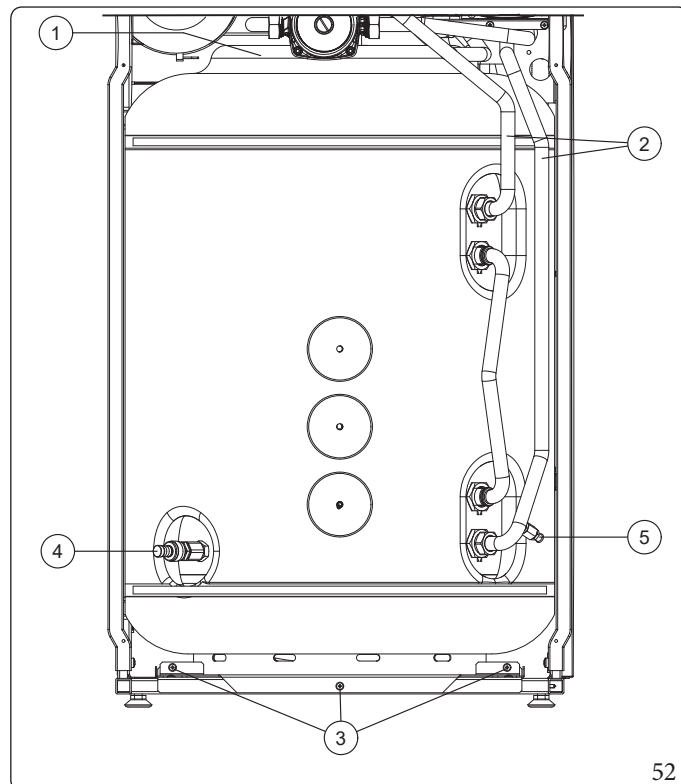
The flange cover is provided with domestic hot water connection fittings (cold inlet and hot outlet) and a Magnesium anode holder cap including the device, which is a standard supply to protect the inner part of the storage tank from possible corrosion.

Storage tank disassembly (Fig. 52).

For easy maintenance or particular handling requirements, remove the storage tank as described below.

- To disassemble the storage tank unit, empty the appliance system by acting on the relevant drain fitting (5). Before carrying out this operation, make sure that the system filling valve is closed.
- Close the cold water inlet valve and open any domestic hot water valve.
- Drain the storage tank by means of the draining valve (4).
- Loosen the nuts on the system flow and return pipes (2) and the cold inlet and hot outlet nuts present on the storage tank unit (1).
- Remove the screws (3) with the relative retainer brackets and slide the storage tank towards the front part on the relevant guides.

Work in reverse order to assemble the storage tank unit.



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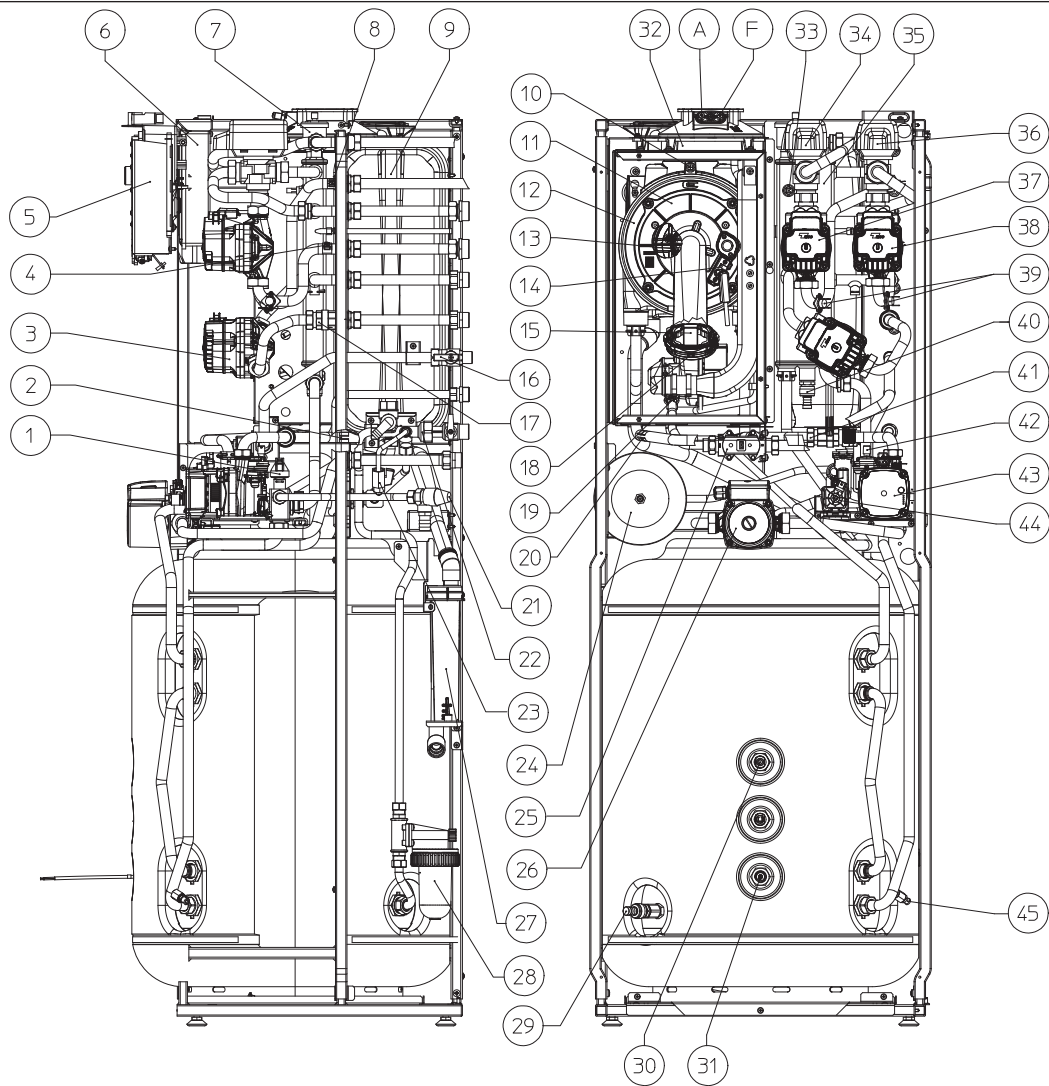
Have the efficiency of the storage tank unit's Magnesium Anode checked annually by an authorised company (e.g. Immergas Authorised Service Centre). The storage tank unit is prepared for introduction of the domestic hot water pump fitting.

1.36 KITS AVAILABLE ON REQUEST



Check the complete list of kits available and which can be combined with the product, consult the Immergas website, the Immergas Price List or the technical-commercial documentation (catalogues and data sheets).

1.37 MAIN COMPONENTS



Key (Fig. 53):

1	- Absolute pressure switch	16	- Gas isolation valve	A	- Air sample point
2	- Return probe	17	- Zone 1 check valve	F	- Flue sample point
3	- Zone 1 circulator pump	18	- Fan	33	- System control probe
4	- Zone 2 flow probe	19	- Gas mixer	34	- Mixing valve - zone 3 (optional)
5	- Control panel unit	20	- Flow probes	35	- Hydraulic manifold
6	- Electrical box unit	21	- 3 bars safety valve	36	- Zone 2 mixing valve
7	- Automatic air vent valve	22	- Tap with cold inlet manifold	37	- Zone 3 circulator pump (optional)
8	- Zone 3 flow probe (optional)	23	- Filling valve / tap	38	- Zone 2 circulator pump
9	- System expansion vessel	24	- Domestic hot water expansion vessel	39	- Safety thermostats
10	- Double flue probe sensor	25	- Gas valve	40	- Draining valve
11	- Gas manifold	26	- DHW recirculation pump (optional)	41	- Non return valve
12	- Heat exchanger	27	- Condensate drain trap	42	- Vent valve
13	- Burner	28	- Polyphosphate dispenser (Optional)	43	- Boiler pump
14	- Ignition/detection electrode	29	- Storage tank draining valve	44	- Motorised 3-way valve
15	- Spacer with clapet	30	- D.H.W. probe	45	- System draining valve
		31	- Solar probe (optional)		
		32	- Flue hood unit		

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MAINTENANCE TECHNICIAN

TECHNICAL DATA



2 INSTRUCTIONS FOR USE AND MAINTENANCE

2.1 GENERAL RECOMMENDATIONS



The device can be used by children at least 8 years old as well as by persons with reduced physical, sensory or mental capabilities, or lack of experience or required knowledge, provided that they are under surveillance, or after they have been instructed relating to the safe use and have understood the potential dangers.

Children must not play with the appliance.

Cleaning and maintenance destined to be performed by the user can not be carried out by unsupervised children.



For safety purposes, check that the air intake/flue exhaust terminals (if fitted) are not blocked.



If temporary shutdown of the appliance is required, proceed as follows:

- drain the heating system if antifreeze is not used. Contact an Authorised Service Centre to perform this operation;
- shut-off all electrical, water and gas supplies.



In the case of work or maintenance to structures located in the vicinity of ducting or devices for flue extraction and relative accessories, switch off the appliance and on completion of operations ensure that a qualified technician checks efficiency of the ducting or other devices.



Never clean the appliance or connected parts with easily flammable substances.



Do not open or tamper with the appliance.



Never leave containers or flammable substances in the same environment as the appliance.



Do not take apart or tamper with the intake and exhaust pipes.



Only use the user interface devices listed in this section of the booklet.



Do not climb on the appliance, do not use the appliance as a support base.



In the event of malfunctions, faults or incorrect operation, turn the appliance off and contact an authorised company (e.g. the Authorised Technical Assistance Centre, which has specifically trained staff and original spare parts).

Do not attempt to modify or repair the appliance alone.



The use of components involving use of electrical power requires some fundamental rules to be observed such as:

- do not touch the appliance with wet or moist parts of the body; do not touch when barefoot;
- never pull electrical cables or leave the appliance exposed to atmospheric agents (rain, sunlight, etc.);
- the appliance power cable must not be replaced by the user;
- in the event of damage to the power supply cable, switch off the appliance and contact exclusively qualified staff for replacement;
- if the appliance is not to be used for a certain period, disconnect the main appliance external switch.

INSTALLER



Water at a temperature of more than 50 °C can cause serious burns.
Always check the water temperature before any use.

USER



The temperatures indicated by the display have a tolerance of +/- 3°C due to environmental conditions that cannot be blamed on the appliance.



If you smell gas in the building:

- close the gas meter interception device or the main interception device;
- if possible, close the gas interception valve on the product;
- if possible, open doors and windows wide and create an air current;
- do not use open flames (e.g. lighters, matches);
- do not smoke;
- do not use electrical switches, plugs, door bells, telephones or intercom devices in the building;
- call an authorised company (e.g. Authorised Technical Assistance Centre).

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if you smell burning or see smoke coming out of the appliance, switch it off, disconnect power, close the main gas isolation valve, open the windows and call an authorised company (e.g. Authorised Technical Assistance Centre).

TECHNICAL DATA



At the end of its service life, the appliance must not be disposed of like normal household waste nor abandoned in the environment, but must be removed by a professionally authorised company as required by current legislation.
Contact the manufacturer for disposal instructions.

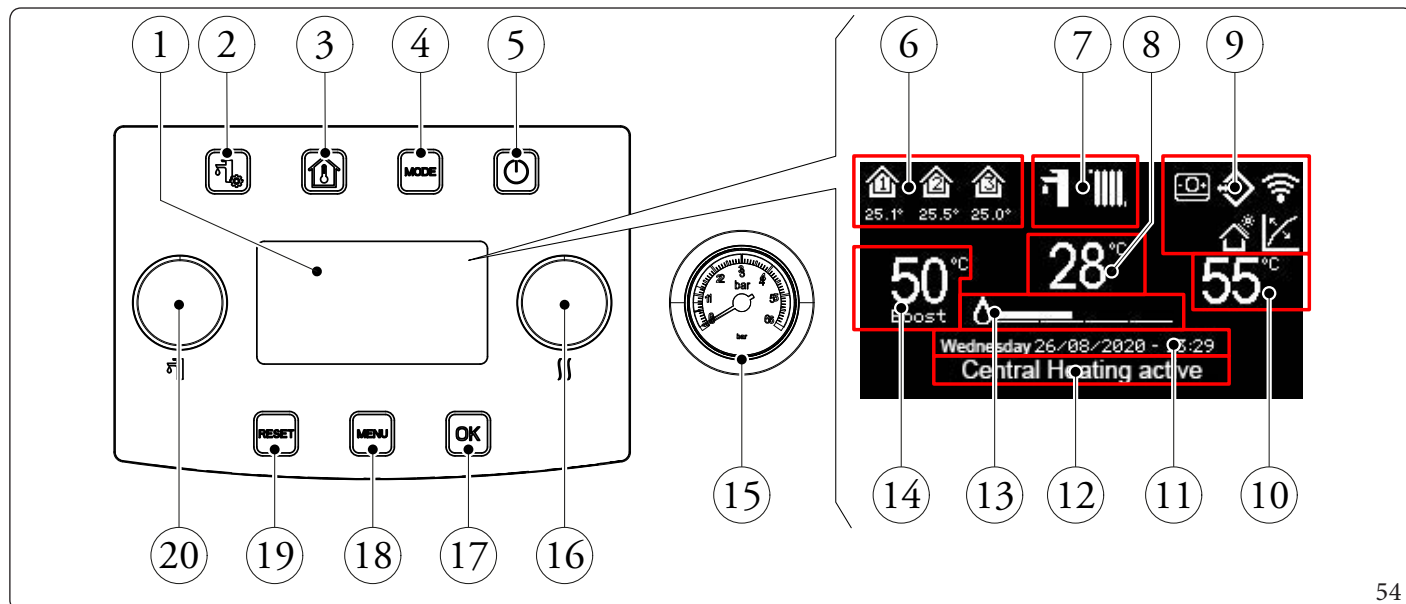


2.2 CLEANING AND MAINTENANCE



To preserve the appliance's integrity and keep the safety features, performance and reliability, which distinguish it, unchanged over time, you must execute maintenance operations on a yearly basis in compliance with what is stated in the relative point at "annual check and maintenance of the appliance", in compliance with national, regional, or local standards in force.

2.3 CONTROL PANEL




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Key (Fig. 54):

- | | | | |
|---|---|----|--|
| 1 | - Display. | 10 | - Central heating / C.H. set display. |
| 2 | - Domestic hot water button. | 11 | - Current date and time display. |
| 3 | - Zone button. | 12 | - System state. |
| 4 | - Functioning mode button. | 13 | - Flame presence symbol and relative output scale. |
| 5 | - ON/OFF Button. | 14 | - DHW (Domestic hot water) set display. |
| 6 | - Zones area (number and information of zone in use). | 15 | - Pressure gauge. |
| 7 | - Operating mode. | 16 | - "Set central heating / C.H." knob. |
| 8 | - Anomaly code/flow temperature display. | 17 | - Selection confirmation/ok button. |
| 9 | - System general icon display. | 18 | - Menu button. |
| | | 19 | - Anomalies/esc. reset button. |
| | | 20 | - "Set DHW (Domestic hot water)" Knob. |



2.4 USING THE APPLIANCE

 Before ignition make sure the heating system is filled with water and that the pressure gauge (Fig. 54) indicates a pressure of 1 - 1.2 cold.

If the value is less than 1, the system must be filled by actuating the filling cock (Par. 1.29) until the indicated value is reached.








Display when the appliance is switched on




The following are displayed upon ignition:

- Type of panel;
- Panel firmware version;
- Board firmware version.
- Type of selected gas

Once the device has been powered, it goes into the status prior to switch-off. Press the “MODE” button to cyclically select the desired operating mode amongst those available.

The operating mode in use is indicated by its icon at the top of the display (Fig. 55) and is unique for all zones. By pressing any button, the pushbutton panel lights up for a few seconds; in this way it is activated and ready to receive the subsequent commands. Depending on the system's configuration, the main screen displays various information regarding the system itself, amongst which:

Symbol	Description and operation
	Zone identification icon. This icon reverses its colour during the central heating / C.H. demand. The values below the zone icon, respectively indicate the temperature or any errors in such zone. The temperature and any errors are displayed if the wireless room probe is configured; if CARv2 is connected, the zone 1 icon will indicate the room temperature read by the CARv2; if no probe is connected or CARv2 remains active, only the "home" (zone) icon remains active without any other info below.
	Remote management system connection icon (Dominus).
	Remote control presence icon (CARv2, Smartech Plus) and control on the appliance panel is excluded.
	External probe connection.
	Connection to wireless room probes (optional).
	Burner on with flame present (the bar at the side indicates a progressive increase of the power supplied by the burner).
	Not used on this model.

Operating mode	Description	DHW	Central heating	Protection function (Antifreeze...)
OFF	Off	Disabled	Disabled	Disabled
	Summer	Enabled	Disabled	Activated
	Winter	Enabled	Enabled	Activated
	Stand-by	Disabled	Disabled	Activated

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2.5 OPERATING MODE

When the appliance is connected to the mains, the display and the lighting of the buttons will be activated.

This lighting will turn off after 10 seconds of inactivity.

To activate a command, you must first activate the keyboard (by pressing any button for 0.5-20 seconds), then press the intended button to enter the specific menu.

The keyboard switches off again after 20 seconds of continuous pressure.

The actual functionality of the buttons is obtained 1 second after being pressed. A close double press will not generate any button action.

The appliance can work in the following modes:

- OFF;
- STAND-BY (❄️);
- SUMMER (☀️);
- WINTER (❄️ + 🔥).

If the appliance is at "OFF", press the button "🔌" to activate it. If this is not the case, go to the next point.

Then press the "MODE" button in sequence to set the system to stand-by ❄️, summer ☀️ or winter ❄️ + 🔥 position.

• "OFF" mode

By pressing button "🔌" for at least 4", the display will show "OFF" and the system will be disabled. In this mode, the safety functions are not guaranteed and the remote devices are disconnected.



In "Stand-by" and "Off" mode, the appliance is to be considered still live.

• "Stand-by" Mode

Press the "MODE" button in succession until the ❄️ symbol appears

In this mode, the system is able to ensure protection functions only, such as: appliance antifreeze function, antiblock function and any anomaly signals (Fig. 55).



In "Stand-by" and "Off" mode, the appliance is to be considered still live.

• Summer

Press the "MODE" button in succession until the ☀️ symbol appears.

In this mode the appliance allows the production of domestic hot water and ensures protection (Fig. 55).

• Winter

Press the "MODE" button in succession until the ❄️ + 🔥 symbol appears.

In this mode the system allows the production of domestic hot water and room central heating and ensures protection (Fig. 55).



Display operation

Below is a description of how to use the control panel, including:

- Enter the menus;
- Moving in the menus;
- Set a menu item;
- Confirming a change;
- Exit without saving.

• Enter the menus

The control panel menus can be accessed by pressing the buttons (Fig. 54):

- “DHW” to enter the DHW menu;
- “Zones” to enter the Zone menu;
- “Menu” to enter the general settings menu.

• Moving in the menus

Simply rotate the “Set DHW (Domestic hot water)” knob to scroll the menu items.

The indication “[...]” next to the menu item indicates the availability of a submenu.

Press the “OK” button to access this submenu.

Pressing the “RESET” button goes back to the previous menu page.

• Set menu item

Go to the menu item to be set following the instructions given previously.

Once the menu item to be set is reached, press “OK” or rotate the “Set Central heating / C.H.” knob to highlight the value to be changed.

Change the value by turning the “Set central heating / C.H.” knob.

• Confirming a change

At the end of the modification, press “OK” to confirm the change and go back to the previously selected menu item.

• Exit without saving

If at the end of the modification you press “RESET”, you will return to the previously selected menu item without confirming the modification.



Changing the display language

The display leaves the factory set in Italian, proceed as follows to change the display language:

- Enter **Menu/Impostazioni generali/Lingua (Menu/General setting/Language)** if the menu is in English).
- Select the desired language from those available and press OK.

Clock and programs

From this menu, it is possible to set the system's date and time as well as the time slots for operation in Comfort and Economy mode.

- **Date and time.**

The date and time can be set by modifying the parameters in the menu

Clock and programs / Set date and time

Set date and time	
TIME	↕ 22:22
DAY	5
MONTH	1
YEAR	2020



- **Automatic summer time**

Clock and programs / Automatic summer time

The automatic adaptation of the time can be enabled or disabled when changing from winter to summer time (and vice versa).

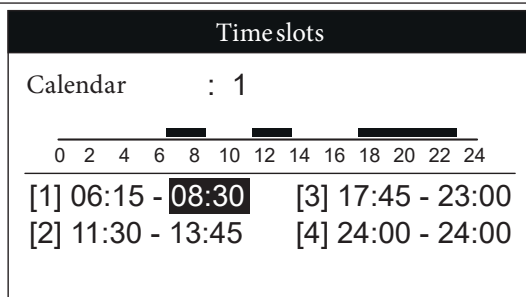
- **Calendars**

It is possible to set 4 calendars with 4 time operating slots in system comfort mode. The system will operate in economy mode during out-of-range time fractions of these 4 time slots.

After setting these 4 calendars it is possible to associate them to the various days of the week in the zone programs, DHW (Domestic hot water) according to one's needs.

Set the time slots by modifying the menu

Clock and programs / Time slots



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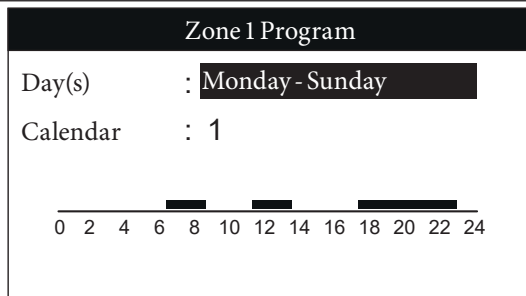
- **Program for Zone 1, Zone 2, Zone 3 (if present), central heating and DHW program.**

In these menus the central heating and DHW time ranges (calendars from 1 to 4) are assigned to Zone 1, Zone 2, Zone 3 (if present).

You can assign the calendar to a single day or to a group of days (single day, Monday - Friday, Saturday-Sunday, Monday - Saturday, Monday - Sunday).

Therefore each day may be personalised with 4 different operating programs.

For convenient selection, the bottom part displays the graphics of the relevant calendar being selected (Fig. 58).



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On the menu

Zone / Information

it is possible to identify the status of the various controls managing the central heating / C.H..



- **Holiday program.**

Clock and programs / Holiday Program

If required, it is possible to pause system operation for an established period.



Both the DHW (Domestic hot water) control and central heating / C.H. are stopped.

Set the number of system operation suspension days.



The day on which the holiday program is set is counted as the first day of system suspension.

The program does not take into account the setting time but ends at midnight on the last day set.

The antifreeze function is still ensured during the holiday period.



In case of blackout, the holiday program is cancelled.

2.6 DHW MODE

During activation, "DHW underway" appears on the display.

It is possible to set the domestic hot water temperature adjustment in two ways: MANUAL or AUTOMATIC.

The selection is made by entering the DHW menu ("DHW" button) and setting the "Set Management" parameter.

Manual adjustment (Man)

Adjustment of the DHW temperature in MAN mode is done via the "DHW Set" knob (Fig. 54) or by changing the value "Manual set" within the "DHW" menu.

Confirmation can take place in two ways: by pressing the OK button or by waiting two minutes after changing the value.

Automatic adjustment (Auto)

The AUTOMATIC domestic hot water temperature adjustment involves setting "Comfort Set" and "Economy Set" parameters in the "DHW" menu and choosing the calendar inside the menu as indicated below.

Clock and programs / DHW Program

In the selected time slots, the DHW set will be automatically set to the "Comfort Set" value; outside these, the set DHW will be set to "Economy Set" value.

It is possible to temporarily modify the DHW (Domestic hot water) set by setting a manual value using the "Set DHW (Domestic hot water)" knob (Fig. 54).

This setting will be lost when the time slot is next changed.

The forced automatic function can be interrupted by simply pressing the "MODE" button.

Boost Function

It is also possible for Domestic hot water / D.H.W. to set the "Boost Function" function.

When the Boost is active, the word "Boost" appears in the display below the "Set DHW" temperature (Fig. 54):

To set this function, press the "DHW" button and select the "Boost Function" which has three modes (ON - OFF - AUTO):

- **Boost ON** (Comfort): with Boost active, the boiler maintains the set domestic hot water temperature constant. This provides maximum comfort but with frequent burner ignitions.
- **Boost OFF** (Economy): the Boost is off and sufficient comfort is had with a few ignitions;
- **Auto**: Boost is managed simultaneously with the time slots set on the boiler DHW (Domestic hot water) program or the CAR V2 if present (active in comfort and deactivated in economy).

Anti-Legionella function

If the anti-legionella function is activated (disabled as a standard), the temperature inside the storage tank is brought to 65°C for 30 minutes.



Water at temperatures above 50°C can cause severe burns. When the anti-legionella function is activated, always check the water temperature before any use.



2.7 CENTRAL HEATING MODE



To verify if the central heating is actually in operation, look at the Zone area icon: if the identifier icon of the zone is full it means that C.H. is active, otherwise, even when the room thermostat is open, it will be empty.

The central heating / C.H. adjustment can be set in three ways: MANUAL, AUTOMATIC, OFF.

The selection is made by entering the “Zone” menu .

After having selected the zone of interest, access the menu:

Settings / Operation mode

Use with Room thermostat TA (Optional)



If there is no room thermostat, the jumpers at the ends of the terminals on terminal block X9 of the zones control unit must be serviced. In these conditions, a continuous request from the Room thermostat is simulated

Man functioning mode

With this setting, the central heating / C.H. is manually enabled and will be valid until the subsequent and different setting.

When the room temperature (if TA present) exceeds that set on the TA, the central heating / C.H. turns off.

Auto functioning mode

By associating a calendar with the relevant zone program, it is possible to determine the time slots for activating the room central heating at a set system temperature.

When the room temperature detected by any Room thermostat is lower than required, the central heating / C.H. is activated (only if requested by the calendar program).

When the room temperature detected by any Room thermostat is higher than required, the room central heating / C.H. is deactivated.

Functioning mode Off

Central heating / C.H. always off.



With multi-zone systems, the temperature adjustment for the central heating system can be set on the menu Zone \ Configuration \ Regulation.

Operation with external probe

It is possible to use the thermoregulation functions associated to an external probe.

The appliance is designed for use with an optional external probe.

With the external probe connected, the flow setpoint for room central heating / C.H. is managed by the system depending on the external temperature measured (Par.1.9).

It is possible to enable thermal adjustment for each individual zone. The symbol is present if the probe is connected and working.

Use with wireless room probes (Optional)



Using Central heating / C.H. through the wireless room probes is the optimal solution for controlling the room temperature. With room probes configured and enabled, it will be possible to set on the individual zones the room temperature with which to control the central heating / C.H. ignition; the central heating / C.H. flow set at which the appliance will operate will be regulated to the ideal temperature for maintaining room comfort, with maximum energy saving.

Man functioning mode

With this setting, the central heating is always enabled (regardless of the hourly settings) and the value set on Zone\Settings\Set MAN (room temperature demand) will be valid until the subsequent and different setting.

When the room temperature exceeds the set room set, the central heating / C.H. turns off.

Auto functioning mode

There are two room temperature setpoints:

Zone / Settings / Set AUTO comfort

Zone / Settings / Set AUTO reduced

By associating a calendar with the relevant zone program, it is possible to determine the time slots when to activate the room temperature control set as Comfort (Set Auto Comfort); the reduced room temperature control (Set Auto reduced) will be active in the remaining time intervals. The flow set will be automatically calculated according to the room temperature (If the default setting "Room sensor modul." = Yes is maintained).

When the room temperature detected by any Room probe is lower than required, the central heating / C.H. is activated.

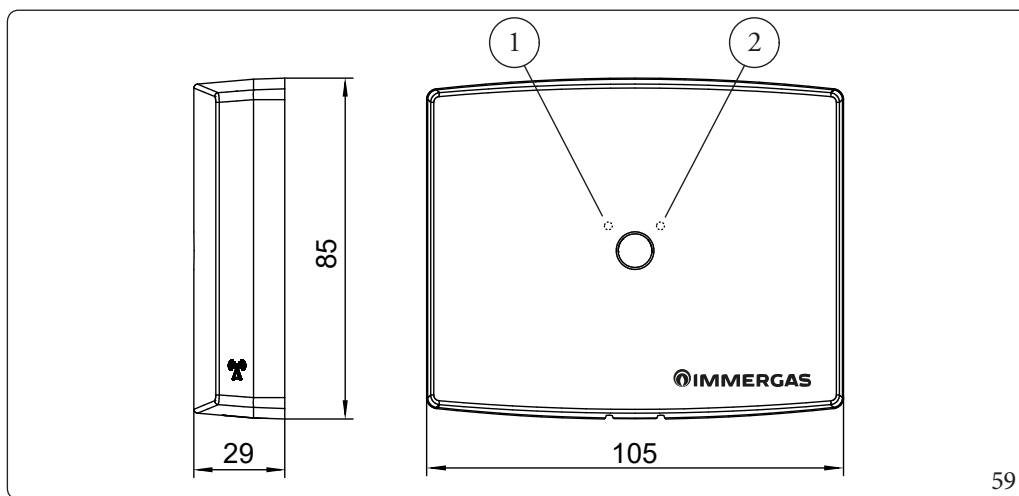
When the room temperature detected by any Room probe is higher than required, the room central heating / C.H. is deactivated.

Functioning mode Off

Central heating / C.H. always off.



The presence of the link on the TA contact is required when the central heating / C.H. demand needs to be checked using only the wireless room probes.



Key (Fig. 59):

- 1 - Left LED
- 2 - Right LED

Wireless probe LED behaviour

On the wireless probe there are two LEDs next to the button. The possible signals on these LEDs are the following:

Status	Situation	Left LED	Right LED
Normal functioning	Normal functioning	1 Flash every 60 seconds	
	No association	1 Flash every 4 seconds	
	RF transmission in progress		1 Flash



Appliance operation with wireless room probes

The wireless room probe (with concentrator) allows the measurement of the room temperature and sending of this value to the appliance control panel where possible, via the display board, set a weekly program for the room temperature control. There is no manual command or adjustment of the room control on the probe.



The key on the probe and concentrator has no function for the end user.
It is recommended not act on this button, on any of the devices.

Room antifreeze function with wireless room probes

The room antifreeze protection is activated when the zone operating mode is set to Off and the appliance is in Winter mode.

The antifreeze function can be deactivated through the menu with Service access.

With zone operation = Off, in case of room sensor fault, the appliance will NEVER receive any room central heating / C.H. request (not even in case of antifreeze). Only the boiler antifreeze function will remain active.

If you want to ensure the room is protected from freezing (also in the presence of any faults on the sensors), it is possible to select the zone operating mode = Manual and set the minimum room set; in these conditions, the probe flow produces a central heating / C.H. request (permanent 24h) with minimum flow set.

Boiler flow temperature with wireless room probe

By activating the "Room sensor modul." function, the appliance will automatically manage the flow temperature making it correlated to the actual room need. The appliance flow temperature will vary between the maximum and minimum values set on the zone parameters and will proportionally decrease when the desired room temperature is reached.

By deactivating the "Room sensor modul." function, the appliance flow temperature will remain fixed at the maximum value set on the zone parameters for the entire central heating / C.H. request time; if multi-zones present with several probes, the boiler will provide the highest flow temperature among the requests from the various zones. A different maximum and minimum flow temperature value can be defined for each individual zone.

Combined operation of wireless room probe with external probe

If the "Room sensor modul." and "Outdoor sensor modul." functions are kept active, the combined wireless room probe and external probe operation makes it possible to add together the appliance flow temperature calculation actions.

Based on the outdoor temperature, the flow temperature calculation function will determine the maximum flow temperature for the zone (correlated to the temperature outside at that moment). The room probe can further decrease the value based on the rising of the room temperature.



Appliance operation in case of wireless room probe fault

Radio communication lost between room probe and concentrator

Failed data reception by the wireless probe causes the relative error to appear on the display.

Typically the error is reported after 4 minutes; the last reading on the room probe is kept active with consequent central heating mode function referring to this reading.

After 10 minutes of no communication, the appliance determines that the probe is “out of order”; two dashes appear on the display instead of Room T keeping the error signal under the icon of the zone house active.

Operation with room probe “out of order” causes a central heating / C.H. request from the appliance with minimum zone flow set in any selected program condition (permanent 24h).

The only central heating / C.H. off condition is the selection of the OFF status on the zone menu or the Summer selection.

Fault on room sensor NTC

Already at the first communication of an out of range room value (MAX after 4 minutes), the probe assumes the “out of order” condition; then proceed with the operation described above (permanent central heating / C.H. request at minimum set in any operating condition other than the OFF state).

Fault on the concentrator (receiver connected to appliance)

In case of concentrator offline error, the appliance behaves as in probe “out of order” condition.

Adjustments available on display with the presence of wireless room probes

After correct pairing, the zone menu is available to manage operation of central heating with wireless room probe.

The room temperature settings and adjustments are available by accessing the zone menu.

With multiple zones connected, acting on the appliance control panel central heating / C.H. adjustment knob will give direct access to the zone menu where it will be possible to choose the zone of interest and select the size to be varied (both flow temperature and room temperature).



Adjustment of the central heating system flow temperature

Acting directly on the "Set central heating" knob you can access the zone menu, where you may access the relevant zone and subsequently set the value 'A' (Fig. 9), setting the flow temperature to the system with active request.

No external probe

Without external probe, following central heating / C.H. adjustment using the knob, the display shows the actual temperature set for central heating / C.H.; if the value is not maintained, it is because the functioning mode of the zone is set on A-ECO or OFF (20°C).

External probe present (optional)

From the zone menu, you may set OFF-set 'E' (Fig. 9).

With the external probe present, the appliance calculates the central heating system temperature according to the outdoor temperature; in these conditions the user is still allowed to make a correction (offset) on the flow temperature using the zone menu, in relation to the outdoor temperature detected by the probe.

Operation with Comando Amico Remoto^{v2} (CAR^{v2}) (optional)



In case of single-zone system, this will be managed via CAR^{v2}.

In case of multi-zone system, the CAR^{v2} will only manage zone 1: zone 2 and/or zone 3 will be managed by the TA and/or room probes.

When the Car V2 is connected, the display will no longer show any setting concerning zone 1, while maintaining the main information. The symbol will appear on the display. The appliance regulation parameters can be set via the CAR^{v2} control panel, all the buttons remain active on the appliance control panel (except the MODE button) and the display where the functioning state is shown.



If the appliance is put into "off" mode, the "ERR>CM" connection error symbol will appear on the CAR^{v2}. The CAR^{v2} is however powered constantly so as not to lose memorised programs.



The presence of the jumper on the zone 1 TA contact is required when the zone 1 central heating demand needs to be checked using only CAR^{v2}.

Zone menu description/Information

• Operation status

- Off = off;
- A-ECO = means that the zone is in the time slot where the central heating has been programmed to be deactivated;
- A-COMF = means that the zone is in the time slot where the central heating has been programmed to be activated and running if the room thermostat is closed;
- Man = central heating is always active and the relative time program is not considered.

• Room thermostat status

- if open, there is no central heating / C.H. request in progress (until it is closed);
- if closed, it will go in combination with the appliance programming.

• Central heating / C.H. set

- info on the actual active set in real time (depends on the central heating / C.H. programming or any external probe).



2.8 PARAMETERS AND INFORMATION MENU

There are 3 Settings menus (Fig. 54):
DHW: accessible from the DHW button (2);
Zones: accessible by pressing the zone button (3);
General settings menu: accessible by pressing the menu button (18).

 Some menu settings appear only when the options are actually connected and working and if the appliance settings allow it.

 The parameters referring to zone 3 can only be displayed if there is a zone 3 on the system and it is configured correctly.

“DHW (Domestic hot water)” Menu.
Press the “DHW (Domestic hot water)” button to access a list of variables that enable you to customise use of the DHW (Domestic hot water).
Hereunder is a list of all available menus:

DHW				
Menu item	Description	Range	Default	Customised value
DHW control	Boiler = informs that the DHW control is managed from the boiler panel	Off-On-Auto	Off	
	Remote = informs that the DHW control is managed by CARv2			
Temperature	Temperature read by the DHW probe			
Boost Function (*)	Sets the DHW (Domestic hot water) boost function management:			
	Off = always off			
	On = always on			
	Auto = managed as required by the DHW (Domestic hot water) program			
Set Management (*)	Sets the DHW (Domestic hot water) set control mode:	Auto-Man	Man	
	Auto = the DHW set will be controlled at two levels, according to the DHW program.			
	Man = the DHW set will always be fixed at the manual value (regardless of the DHW program)			
Comfort Set	Sets comfort set (comfort set will be active during the active time slots of the DHW program if "Set Management = Auto" is selected)	10 ÷ 60°C	50°C	
Economy Set	Sets reduced set (economy set will be active during the NON active time slots of the DHW program if "Set Management = Auto" is selected)	10 ÷ 60°C	30°C	
Manual set	Sets manual set (manual set will be active 24 hours a day if "Set Management = Man" is selected)	10 ÷ 60°C	10°C	

(*) See the DHW paragraph (Parag. 2.6).

Zones Menu.

Press the “Zones” BUTTON  to access a list of variables that enable you to customise use of the zones.

Below is the complete list of available menus, some of which are only visible after enabling the component or activating the specific associated function:

ZONES	
Menu item	Description
Zone 1	Defines the operating parameters to manage zone 1
Zone 2	Defines the operating parameters to manage zone 2
Zone 3	Defines the operating parameters to manage the zone 3 (if present).



The following tables will appear the same also for Zone 2 and Zone 3, if any.

ZONES/Zone 1	
Menu item	Description
Information	This displays the system operating data
Settings	Defines the operating parameters to manage zone 1
Configuration	Defines any further operating parameters to manage zone 1



ZONES/ZONE 1/Information		
Menu item	Description	Range
Room temperature (***)	Room temperature read on zone 1	0°C ÷ 50°C
Set room temperature (**) (***)	Room temperature set on zone 1	5°C ÷ 35°C
Operation status	Mode set on zone 1	Off / A-ECO / A-COMF / Man
Room Thermostat Stat.	Status of the room thermostat on zone 1	Open / Close
Set CH	This displays the zone 1 flow set	25°C ÷ 85°C
Plant	Information related to the type and presence or absence of a room probe	



Zone 1 Information Menu is always present regardless of whether or not a CARv2 is connected.

(*) displayed at Service access level

(**) not displayed when the “Enable room probe” is set to No

(***) displayed when the zone of interest is associated with a room probe (RF probe,...)

ZONES/Zone 1/Information/Plant		
Menu item	Description	Range
Room probe	This displays or not the presence of the room probe	Off = No probe
		WIRED = Not used
		RF = Probe present
		OT = CAR V2 presence
Water circuit	If zone board is present, it informs about the type of system in use in the zone.	DIR = Direct circuit
		MIX = Mixed circuit
Flow temperature	Zone board absent: the temperature read is the one to the boiler outlet	0°C ÷ 99°C
	Zones control unit present + information request relating to mixed zone: the temperature read is that at the mixing valve outlet.	

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ZONES/Zone 1/Settings (1)				
Menu item	Description	Range	Default	Customised value
Operation mode (1)	Sets the zone 1 operating mode	Off / Man / Auto	Man	
Set AUTO comfort (2)	Zone 1 room temperature correlated to the active time slots of the zone 1 calendar	10°C ÷ 35°C	20°C	
Set AUTO reduced (2)	Zone 1 room temperature correlated to the NON active time slots of the zone 1 program	5°C ÷ 30°C	16°C	
Set MAN (3)	Zone 1 room temperature that can be activated by selecting the operating mode = manual	5°C ÷ 35°C	20°C	
Weather comp. offset (4)	Zone 1 flow temperature correction in relation to external probe detection	-9°C ÷ 9°C	0°C	
Maximum flow set (5)	Maximum zone 1 flow temperature	20°C ÷ 85°C	85°C	

(1) **The zone 1 Settings menu is not displayed** if there is a remote device, but the menu will remain available on other zones not remote-controlled

(2) **Not displayed** when:

- the parameter "Operation mode" is set at "Man" or "Off" lack or unavailability of room probes

(3) **Not displayed** when:

- the parameter "Operation mode" is set at "Auto" or "Off" lack or unavailability of room probes

(4) **Not displayed** when:

- the external probe is missing
- the parameter "Operation mode" is set at "Off"

(5) **Not displayed** when:

- the external probe is present
- a room probe is configured
- the parameter "Enable room sensor" is set at "Yes"

ZONES/Zone 1/Configuration/Regulation				
Menu item	Description	Range	Default	Customised value
Weather comp. offset (1)	With external probe present, the offset value can be set with respect to the climatic curve.	-9°C ÷ 9°C	0°C	
Maximum flow set	Defines the maximum flow temperature of central heating / C.H. system operation	20°C ÷ 85°C	85°C	

(1) **Not displayed** when:

- the external probe is missing
- the parameter "Operation mode" is set at "Off"



Main Menu

Press the “MENU” button to access a list of variables that enable you to customise use of the system. Hereunder is a list of all available menus:

MENU	
Menu item	Description
Clock and programs	Defines the date/time and time operating slots
Information	Display system operating data
Anomalies log	Displays the list of the last 10 anomalies
Meters	This displays the number of ignitions and the hours of operation of the burner
General settings	Allows selecting the panel operating language, the display operating mode and to access the password-protected menus dedicated to a qualified technician.
Support	Gives access to the functions exclusive for Service

MENU/ Clock and programs				
Menu item	Description	Range	Default	Customised value
Set date and time	Current date and time setting			
Automatic summer time	Automatic time setting when changing from winter to summer time (and vice versa).	Yes - No	Yes	
Calendars	Defines the time range for operation in Comfort and Economy mode			
Zone 1 Program	Zone 1 time scheduling		CAL3	
Zone 2 Program	Zone 2 time scheduling		CAL3	
Zone 3 Program	Zone 3 time scheduling (if present)		CAL3	
DHW Program	DHW operation time programming		CAL3	
Holiday Program	Defines the period during which the system disables both hot water heating and room central heating functions. At the end of the set days, the previously active functions will be reset.	Off - 1 ÷ 30 Day(s)	Off	

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Menu / Information	
Menu item	Description
Gas type	Gas type display: NG (Methane), LG (L.P.G.), AP (propane air)
Flow temperature	Flow temperature display
DHW temperature	Displays the DHW outlet temperature
Set CH	This displays the set central heating / C.H. temperature set
Set DHW	Set DHW (Domestic hot water) temperature display
Outside temperature	View the external temperature, if the external probe is present (optional)
Input DHW temperature	Not used on this model
Return temperature	Return temperature display
CH2 temperature	Safety flow probe display
Flow temperature	Displays the temperature read on the system flow probe
Duty pump command	Displays the pump speed command
Flow pump	Displays the central heating circuit flow rate inside the boiler
Flow rate	Not used on this model
Fan speed	Fan speed display (rpm)
Boiler exhaust temp.	Flue gas temperature display
Solar storage temp.	Not used on this model
Solar collector temp.	Not used on this model
Maintenance withing	This displays the number of days within which maintenance must be carried out. After the days or with the function de-activated, the line is not displayed
Main board rev. SW	Boiler board sw version display
Firmware version	Display board sw version display

MENU/Anomalies log	
Menu item	Description
Boiler	Allows the selection of the boiler anomaly history.
Room probe	Allows the selection of the room probe anomaly history (if present).



MENU/Anomalies log/ Boiler	
Menu item	Description
Show alarm	This displays the boiler anomaly history. The size of the anomaly history is equal to 10 anomalies and they are displayed in decreasing order of appearance (no.1 is the most recent). The displayed anomalies are accompanied by the time and date of the anomaly being generated.

MENU/Anomalies log/ Room probe	
Menu item	Description
Show alarm	Displays the room probe anomaly history (if present). The size of the anomaly history is equal to 10 anomalies and they are displayed in decreasing order of appearance (no.1 is the most recent). The displayed anomalies are accompanied by the time and date of the anomaly being generated.

MENU / General settings				
Menu item	Description	Range	Default	Customised value
Language	Defines the remote panel operation language		ITA (*)	
Display	It is possible to adjust the contrast and lighting of the display. The lighting (available on two levels) can be automatically selected as fixed or variable during the boiler operation or user access to the display		Contrast: 5 Display lighting: Min	
Access level	Allows the entry of an access code to access the parameter customisation menus according to ones needs (dedicated to a qualified technician)			
Factory setting	Resets the user parameters to default state			

(*) The display leaves the factory set in Italian. To change the display language, see Par. 2.5 in the “USER” chapter, under “Changing the display language”.

In case the user restores the factory conditions through "**Menu/General settings/User factory settings**", the menu will appear in English. Proceed in the following way to restore the desired display language:

- Enter **Menu/General setting/Language**.
- Select the desired language from those available and press OK.



2.9 FAULT AND ANOMALY SIGNALS

The appliance indicates a possible anomaly through a code flanked by the symbol of a key "🔑" in the centre of the display and the message "boiler anomaly" at the bottom of the display itself (Fig. 54).

Error Code	Anomaly signalled	Cause	Appliance status / Solution
01	No ignition block	In the event of request of room central heating or domestic hot water production, the boiler does not switch on within the preset time. Upon appliance commissioning or after extended downtime, it may be necessary to eliminate the block.	Press the Reset button (1)
02	Safety thermostat block (overheating safety device)	During normal operation, if a fault causes excessive overheating internally, the boiler goes into overheating block.	Press the Reset button (1)
03	Flue safety thermostat block	During normal operation, if a fault causes excessive flue gas overheating, the boiler blocks.	Press the Reset button (1)
04	Contacts resistance block	The P.C.B. detects a fault on the gas valve supply. Check its connection. (the anomaly is detected and displayed only in the event of a request).	Press the Reset button (1)
05	Delivery probe fault	The board detects an anomaly on the flow NTC probe.	The appliance does not start (1)
07	Chimney sweep function	The boiler is in chimney sweep function or complete/quick calibration.	(3)
08	Maximum N° of resets	Number of allowed resets already performed.	The anomaly can be reset 5 times consecutively, after which the function is inhibited for at least one hour. One attempt is gained every hour for a maximum of 5 attempts. By switching the appliance on and off again, the 5 attempts are re-acquired.
10	Insufficient system pressure	Water pressure inside the central heating circuit that is sufficient to guarantee the correct operation of the boiler is not detected.	Check the appliance pressure gauge to ensure the system pressure is between 1-1.2 bar and restore the correct pressure, if necessary.
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the "Information" menu			
(3) Error displayed only on CAR ^{v2}			



Error Code	Anomaly signalled	Cause	Appliance status / Solution
12	Storage tank probe anomaly	The board detects an anomaly on the storage tank probe.	The appliance cannot produce domestic hot water (1)
15	Configuration error	If the board detects an anomaly or incongruity on the electric wiring, the boiler will not start.	If normal conditions are restored, the appliance restarts without having to be reset. Check that the boiler is configured correctly (1)
16	Fan anomaly	This occurs if the fan has a mechanical or electrical fault.	Press the Reset button (1)
20	Parasite flame block	This occurs in the event of a leak on the detection circuit or anomaly in the flame control unit.	Press the Reset button (1)
23	Return probe anomaly	The board detects an anomaly on the return NTC probe.	The appliance always works with the pump at maximum speed (1)
29	Flue probe anomaly	The board detects an anomaly on the flue gas probe.	The appliance does not start (1)
30	Combustion model setting request	The combustion model identification parameter setting is incorrect or does not support the firmware evolution of the combustion control board.	(1)
31	Loss of remote control communication	This occurs if an incompatible remote control is connected, or if communication between the boiler and the remote control is lost or incorrect connection to the terminals.	Disconnect and reconnect the power to the appliance. If the Remote Control is still not detected on re-starting, the appliance will switch to local operating mode, i.e. using the controls on the control panel. Check the correct connection to the terminals (1).
32	Zone 2 Low Temperature probe anomaly	The zone 2 low temperature flow probe has an out of range resistive value.	(1)
33	Low temperature zone 3 probe anomaly (optional)	The zone 3 low temperature flow probe has an out of range resistive value.	(1)
34	Low-temperature Zone 2 safety thermostat intervention	Safety thermostat positioned on low temperature zone 2 intervention.	(1)
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the “Information” menu			
(3) Error displayed only on CAR ^{v2}			

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Error Code	Anomaly signalled	Cause	Appliance status / Solution
35	Low-temperature Zone 3 safety thermostat intervention (optional)	Safety thermostat positioned on low temperature zone 3 intervention.	(1)
36	IMG Bus communication loss	Communication between the various components is interrupted due to an anomaly on the boiler control unit, on the zone control unit or on the IMG Bus.	The appliance does not satisfy the central heating requests (1)
37	Low power supply voltage value	This occurs when the power supply voltage is lower than the allowed limits for the correct boiler operation.	If normal conditions are restored, the appliance restarts without having to be reset (1)
38	Loss of flame signal	This occurs when the boiler is ignited correctly and the burner flame switches off unexpectedly; a new attempt at ignition is performed and if normal conditions are restored, the boiler does not have to be reset.	If normal conditions are restored, the appliance restarts without having to be reset (1) (2)
43	Block due to loss of flame signal	This occurs if the "Flame signal loss" error occurs many times in a row within a preset period (38).	Press the Reset button, before restarting, the appliance will run a post-ventilation cycle. (1)
44	Block for exceeding gas valve frequent maximum opening time	This occurs if the gas valve remains open for longer than required for normal operation, without the boiler switching on.	Press the Reset button (1)
45	High T Delta	The boiler detects a sudden, unexpected increase in the ΔT between the flow probe and the system return probe.	The power of the burner is limited to prevent damage to the condensation module and once the right ΔT is restored, the appliance resumes regular operation. Make sure there is water circulating in the boiler, that the pump is configured according to system requirements and that the return probe works properly (1)
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the "Information" menu			
(3) Error displayed only on CAR ^{V2}			



Error Code	Anomaly signalled	Cause	Appliance status / Solution
46	Intervention of DIM v2 safety thermostat or Low temperature safety thermostat outside the boiler	During normal operation, if an anomaly causes excessive overheating of the flow temperature in low temperature conditions, the boiler blocks.	In this case, after suitable cooling, it is possible to reset the thermostat (see relative instructions sheet) (1)
47	Burner power limitation	Should flue high temperature be detected, the boiler reduces power supplied so as not to damage it.	(1)
48	System flow probe anomaly	The board detects an anomaly on the system flow probe (Optional).	The appliance works with possible system temperature oscillations (1)
49	High temperature block on return probe	The temperature measured by the return probe is above 90°C. The block is with manual reset.	The error disappears when the temperature detected by the return probe drops below 70°C. Press the Reset button (1)
51	RF communication failure towards CAR v2 RF	If there is no communication between the boiler and Wireless version CAR, an anomaly is signalled. From this moment, it is only possible to control the system by means of the control panel of the boiler itself.	Check operation of the Wireless CAR, check the battery charge (refer to the relative instructions booklet).
59	Electric power supply mains frequency anomaly	The board detects a main supply voltage frequency anomaly.	The appliance does not start (1)
60	Anomaly pump blocked	The pump is stopped due to one of the following causes: Impeller blocked, electrical fault.	Try to unblock the pump as described in the relative section. If normal conditions are restored, the appliance restarts without having to be reset (1)
61	Air in circulator pump anomaly	Air is detected inside the pump; the pump cannot work.	Vent the pump and the central heating circuit. If normal conditions are restored, the appliance restarts without having to be reset (1)
62	Complete calibration required	Missing calibration is detected by the P.C.B. It may occur in the event the P.C.B. is replaced or if the parameters are altered in the air / gas section, thus requiring "complete calibration".	The appliance does not start (1)
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the "Information" menu			
(3) Error displayed only on CARv2			

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Error Code	Anomaly signalled	Cause	Appliance status / Solution
72	Fast calibration required	The P.C.B. detects that some parameters have been altered, thus requiring "fast calibration".	The appliance does not start (1)
73	High deviation between flow probe and safety flow probe	Faulty flow sensor or not correctly inserted.	If normal conditions are restored, the appliance restarts without having to be reset (1)
74	Safety flow probe anomaly	The board detects an anomaly on the NTC safety flow probe.	The appliance does not start (1)
77	Combustion control anomaly	Out of range current is detected on the gas valve.	The appliance does not start (1)
78	Combustion control anomaly	High current on the gas valve is detected.	The appliance does not start (1)
79	Combustion control anomaly	Reduced current on the gas valve is detected.	The appliance does not start (1)
80	Block - gas valve driver issue	This occurs in the event of malfunctions of the P.C.B. that controls the valve.	Press the Reset button (1)
84	Combustion anomaly (Power reduction in progress)	A low supply pressure is detected on the gas line. As a result the appliance power is limited and the anomaly is reported.	If normal conditions are restored, the appliance restarts without having to be reset (1) (2)
87	Block - gas valve control	A malfunction of one of the components that controls the gas valve has been detected.	The appliance does not start (1)
88	Block - gas valve control	A malfunction of one of the components that controls the gas valve has been detected.	The appliance does not start (1)
89	Combustion signal unstable	The flame is unstable due to: presence of flue gas recirculation, wind, unstable gas pressure, unstable fan speed, or due to system malfunction.	The appliance keeps working (1) (2)
90	Combustion signal beyond limit	The combustion signal is beyond the adjustment range required for an extended period of time.	The appliance keeps working (1) (2)
91	Incorrect ignition block	The board has exhausted all possible actions in order to obtain optimal ignition of the burner.	Press the Reset button (1)
92	Fan revs correction limit	The system has exhausted all possible corrections of the number of fan revs.	The appliance keeps working (1) (2)
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the "Information" menu			
(3) Error displayed only on CAR ^{v2}			



Error Code	Anomaly signalled	Cause	Appliance status / Solution
93	Combustion signal beyond limit	The combustion signal is beyond the adjustment range required for a limited period of time.	The appliance keeps working (1) (2)
94	Combustion anomaly	A problem is detected on the combustion control, which may be due to: gas low pressure, flue recirculation, defective gas valve or P.C.B.	If normal conditions are restored, the appliance restarts without having to be reset (1) (2)
95	Combustion signal discontinuous	The system detects a discontinuous combustion signal.	The appliance keeps working (1) (2)
96	Clogged flue	This occurs in the event an obstruction is detected in the flue system.	The appliance does not start (1). If normal conditions are restored the boiler restarts without having to be reset If error 96 appears after the Technician has made changes on the "flue" parameters, it is necessary to perform a "quick calibration".
98	Block - maximum no. of software errors	The maximum number of software errors possible has been reached.	Press the Reset button (1)
99	General block	A boiler anomaly has been detected.	Press the Reset button (1)
121*	Zone 1 device offline alarm	Low quality or no radio communication between the zone 1 wireless probe and the concentrator.	Check receiver/sensor positioning Check probe battery (1)
122*	Zone 2 device offline alarm	Low quality or no radio communication between the zone 2 wireless probe and the concentrator.	Check receiver/sensor positioning Check probe battery (1)
123*	Zone 3 device offline alarm (optional)	Low quality or no radio communication between the zone 3 wireless probe and the concentrator.	Check receiver/sensor positioning Check probe battery (1)
125*	Zone 1 room temperature probe anomaly	Faulty room sensor (resistor open or short circuit).	Replace room probe (1)
126*	Zone 2 room temperature probe anomaly	Faulty room sensor (resistor open or short circuit).	Replace room probe (1)
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the "Information" menu			
(3) Error displayed only on CAR^{v2}			

(*) Errors visible below zone area icons.

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Error Code	Anomaly signalled	Cause	Appliance status / Solution
127*	Zone 3 room temperature probe fault (optional)	Faulty room sensor (resistor open or short circuit).	Replace room probe (1)
141	Alarm due to connection to outdated zones control unit	The zones control unit does not have suitable firmware for communicating with the boiler.	Update zones control unit fw (or replace the board with the latest version) (1)
142	Dominus Offline Alarm	The Dominus is disconnected or not powered. No communication between Dominus and the boiler.	Check that the Dominus is correctly connected and powered Replace the Dominus or the display board (1)
144*	BMS Offline Alarm	The BMS interface has lost communication with the master	(1)
145*	Conflict alarm on Master definition	The settings made on the parameters and the external connections generate a conflict between them on the unique definition of Master device for system control (e.g. activation of the BMS or Dominus Superior dialogue together with the presence of CAR ^{v2})	(1)
177	DHW maximum time alarm	The DHW request was made exceeding a preset maximum time.	(1)
178	Anti-legionella cycle not successful	The anti-legionella cycle was not completed successfully within a preset time.	Check the set anti-legionella time. Check the thermal exchange to the storage tank. The error is reset by changing the operating mode, or by pressing the ON - OFF button (1).
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the "Information" menu			
(3) Error displayed only on CAR ^{v2}			

(*) Errors visible below zone area icons.



Error Code	Anomaly signalled	Cause	Appliance status / Solution
300*	RF address 0 concentrator off-line alarm	Lack of communication on BUS (wires) between concentrator with address "0" and boiler.	Check concentrator-boiler-display board connection wiring Check correct association Replace concentrator board or display board (1)
301*	RF address 1 concentrator off-line alarm	Lack of communication on BUS (wires) between concentrator with address "1" and boiler.	Check concentrator-boiler-display board connection wiring Check correct association Replace concentrator board or display board (1)
302*	RF address 2 concentrator off-line alarm	Lack of communication on BUS (wires) between concentrator with address "2" and boiler.	Check concentrator-boiler-display board connection wiring Check correct association Replace concentrator board or display board (1)
(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Service Centre)			
(2) The anomaly can only be verified in the list of errors in the "Information" menu			
(3) Error displayed only on CAR^{v2}			

(*) Errors visible below zone area icons.



The reset of the error signal (following a solving operation) can take up to 10 minutes. It is recommended to "force" the communication between the probe and concentrator by briefly pressing the probe button; in this way the RF communication between the two devices will be forced and the error signal will be quickly cancelled.

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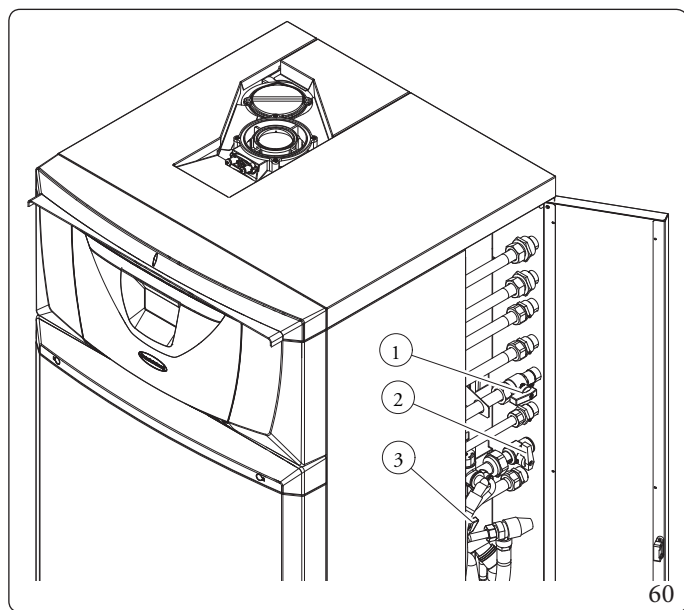
2.10 APPLIANCE SWITCH-OFF

Switch the appliance off by putting it in “off” mode, disconnect the main switch outside of the appliance and close the gas isolation valve upstream of the appliance.

Never leave the appliance switched on if left unused for prolonged periods.

2.11 RESTORE CENTRAL HEATING SYSTEM PRESSURE

1. Periodically check the system water pressure (the appliance's pressure gauge hand must indicate a cold value between 1 and 1.2 bar).
2. If the pressure falls below 1 bar (with the system cold) restore normal pressure via the system filling valve located at the side of the appliance (Det. 3, Fig. 60).
3. Close the valve after the operation.
4. If the pressure reaches values around 3 bar, there is a risk of tripping the safety valve (in this case, remove water from a radiator air vent valve until a pressure of 1 bar is achieved, or ask for assistance from professionally qualified personnel).
5. In the event of frequent pressure drops, contact qualified staff for assistance to eliminate the possible system leakage.



Key (Fig. 60):

- 1 - GAS isolation valve
- 2 - Cold water inlet valve
- 3 - System filling valve

2.12 EMPTYING THE D.H.W. CIRCUIT

To do this, always close the domestic cold water inlet upstream of the appliance.

Open any domestic hot water tap to discharge the pressure from the circuit.

2.13 ANTIFREEZE PROTECTION

The appliance has an antifreeze function that switches the burner on automatically when the temperature drops below 4°C (standard protection to minimum temperature of 0°C).

2.14 PROLONGED INACTIVITY

In case of prolonged inactivity (e.g. second home), we recommend:

1. close the gas;
2. to switch off the power supply;
3. Contact an Authorised Service Centre to empty the central heating circuit. This operation must be avoided if there is glycol inside the system;
4. Contact an Authorised Service Centre to empty the storage tank;
5. to empty the DHW circuit of the appliance, proceed as described in Par. 2.12.

2.15 CLEANING THE CASE

1. Use damp cloths and neutral detergent to clean the appliance casing.



Never use abrasive or powder detergents.

2.16 PERMANENT SHUTDOWN

In the event of permanent shutdown of the appliance, contact professional staff for the procedures and ensure that the electrical, water and gas supply lines are shut off and disconnected.

2.17 AUTOMATIC VENT MODE

When the function is enabled, every time the boiler is electrically powered, the system automatic Vent function is activated (lasting 8 minutes). This function is displayed on the main screen from text:

"De-aeration underway".

During this period the DHW and CH functions are not active.

It is possible to cancel the "Automatic vent" function by pressing the Reset button.



3 INSTRUCTIONS FOR MAINTENANCE AND INITIAL CHECK

3.1 GENERAL RECOMMENDATIONS



Operators who install and service the appliance must wear the personal protective equipment (PPE) required by applicable law.
The list of possible PPE is not complete as they are indicated by the employer.



Before carrying out any maintenance work, make sure that:

- you have disconnected the power to the appliance;
- you have closed the gas isolation valve;
- you have discharged the pressure from the system and domestic hot water circuit.



If additional documentation needs to be consulted for extraordinary maintenance, contact the Authorised After-Sales Service.



Supply of spare parts

The device's warranty shall be rendered null and void if unapproved or unsuitable parts are used for maintenance or repairs. These will also compromise the product's compliance, and the said product may no longer be valid and fail to meet the current regulations. In regard to the above, only use original Immergas spare parts when replacing components.



3.2 INITIAL CHECK

Commissioning the appliance requires you to:

- ensure that the type of gas used corresponds to the appliance settings (the type of gas appears on the display on first electrical power supply, on the data nameplate or, with the display already on, with the following sequence: MENU - Information - Ok);
- check connection to a 230V-50Hz power mains, correct L-N polarity and the earthing connection;
- make sure the central heating system is filled with water and the cooling appliance pressure gauge reads a pressure of 1-1.2 bar;
- check that the air vent valve caps open and that the system is well deaerated;
- switch the appliance on and check correct ignition;
- check the CO₂ flow rate in the flue:
 - maximum
 - intermediate
 - minimum
- the values comply with the relevant tables (Par. 3.3);
- fill in and affix the installation information sticker on the appliance next to the data nameplate, with the same data as in this instruction manual, in paragraph 1.2 on the facsimile of the sticker;
- check activation of the safety device in the event of no gas, as well as the relative activation time;
- check the activation of the main switch located upstream of the appliance;
- check that the intake and/or exhaust terminals are not blocked;
- ensure activation of all adjustment devices;
- ensure production of domestic hot water;
- check the tightness of the hydraulic circuits;
- check ventilation and/or aeration of the installation room where provided;



Even if just one single safety check provides a negative result, do not commission the system.

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3.3 YEARLY APPLIANCE CHECK AND MAINTENANCE



The following checks and maintenance should be performed once a year to ensure operation, safety and efficiency of the appliance over time.

- Clean the flue side of the heat exchanger.
- Clean the main burner.
- Check the correct positioning, integrity and cleanliness of the detection and ignition electrode; remove any oxide present.
- If deposits are detected in the combustion chamber they must be removed and the heat exchanger coils must be cleaned using nylon or broomcorn brushes; it is forbidden to use brushes made of metal or other materials that may damage the combustion chamber. It is also forbidden to use alkaline or acid detergents.
- Check the integrity of the insulating panels inside the combustion chamber and if damaged replace them.
- Visually check for water leaks or oxidation from/on connections and traces of condensate residues inside the sealed chamber.
- Check the contents of the condensate drain trap.
- Visually check that the siphon is properly filled with condensate and top it up if necessary.
- Check that there are no material residues in the condensate drain siphon clogging the condensate passage; also check that the entire condensate drainage circuit is clear and efficient.
- In the event of obstructions (dirt, sediment, etc.) with consequent leakage of condensate in the combustion chamber, one must replace the insulating panels.
- Check that the burner and gas manifold seal gaskets are intact and perfectly efficient, otherwise replace them. In any case the gaskets must be replaced at least every two years, regardless of their state of wear.
- Check that the burner is intact, that it has no deformations or cuts and that it is properly fixed to the combustion chamber lid; otherwise it must be replaced.
- Visually check that the water safety drain valve is not blocked.
- Check, after discharging the system pressure and bringing it to zero (read on boiler pressure gauge), that the expansion vessel system charge is at 1.0 bar.
- Check that the domestic hot water expansion vessel charge is at a pressure between 3 and 3.5 bar.
- Check that the system static pressure (with system cold and after refilling the system by means of the filling valve) is between 1 and 1.2 bar.
- Visually check that the safety and control devices have not been tampered with and/or shorted, in particular, the system pressure switch.
- Check the integrity of the storage tank Magnesium Anode.
- Check the condition and integrity of the electrical system and in particular:
 - The power cables must be inside the cable fixings;
 - There must be no traces of blackening or burning.
- Check correct lighting and operation.
- Check the CO₂ by using the chimney sweep function at the three reference heat outputs, using the parameters in the table below. Should values out of the indicated tolerance range be detected, check the integrity of the ignition / detection electrode and, if required, change it, also changing the relative gasket. At this point, activate the "complete calibration" function.
- Ensure correct calibration of the burner in domestic water and central heating phases.
- Check correct operation of control and adjustment devices and in particular:
 - system regulation probes intervention;
 - DHW regulation probe intervention.
- Check sealing efficiency of gas circuit and the internal system.
- Check the intervention of the device against no gas ionisation flame control. Intervention time must be 5 seconds.
- Check the flue gas non-return valve at the fan outlet (inside the unit).
- Check and if necessary, clean the siphon of the flue gas non-return valve in the flue in installations C₍₁₀₎ - C₍₁₂₎.



If the flue gas non-return valve in the flues must be removed to inspect and clean it, temporarily plug the exhaust pipe connected to the collective flue. This prevents the return of fumes from the other appliances connected to the flue itself.



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Gas type	CO ₂ to Nominal Q.	CO ₂ to ignition Q.	CO ₂ to Minimum Q.
G20	8,8 (8,3 ÷ 9,3) %	8,8 (8,3 ÷ 9,3) %	8,8 (8,3 ÷ 9,3) %
G31	10,3 (9,8 ÷ 10,8) %	10,7 (10,2 ÷ 11,2) %	10,0 (9,4 ÷ 10,4) %

Gas type	O ₂ at Nominal Q.	O ₂ at Ignition Q.	O ₂ at Minimum Q.
G20	5,1 (6,0 ÷ 4,2) %	5,1 (6,0 ÷ 4,2) %	5,1 (6,0 ÷ 4,2) %



In the case of an annual inspection of the device, the max CO must be less than 700 ppm (0% O₂). If the CO value is higher, the device requires maintenance/repair.



If a Hydrogen ready installation is planned for H₂ percentages up to 20%, (referring to the gas distributed in the network) all calibration of the gas valve must refer to the O₂ values in the table above.



In addition to yearly maintenance, one must also check the energy efficiency of the thermal system, with frequency and procedures that comply with the indications of the technical regulations in force.



In the setting at Q. Nominal and at Q. Minimum, if the O₂ values are not reached, the full Calibration procedure must be repeated. If after this operation the values are still not within the indicated ranges, no further adjustments are necessary.

INSTALLER

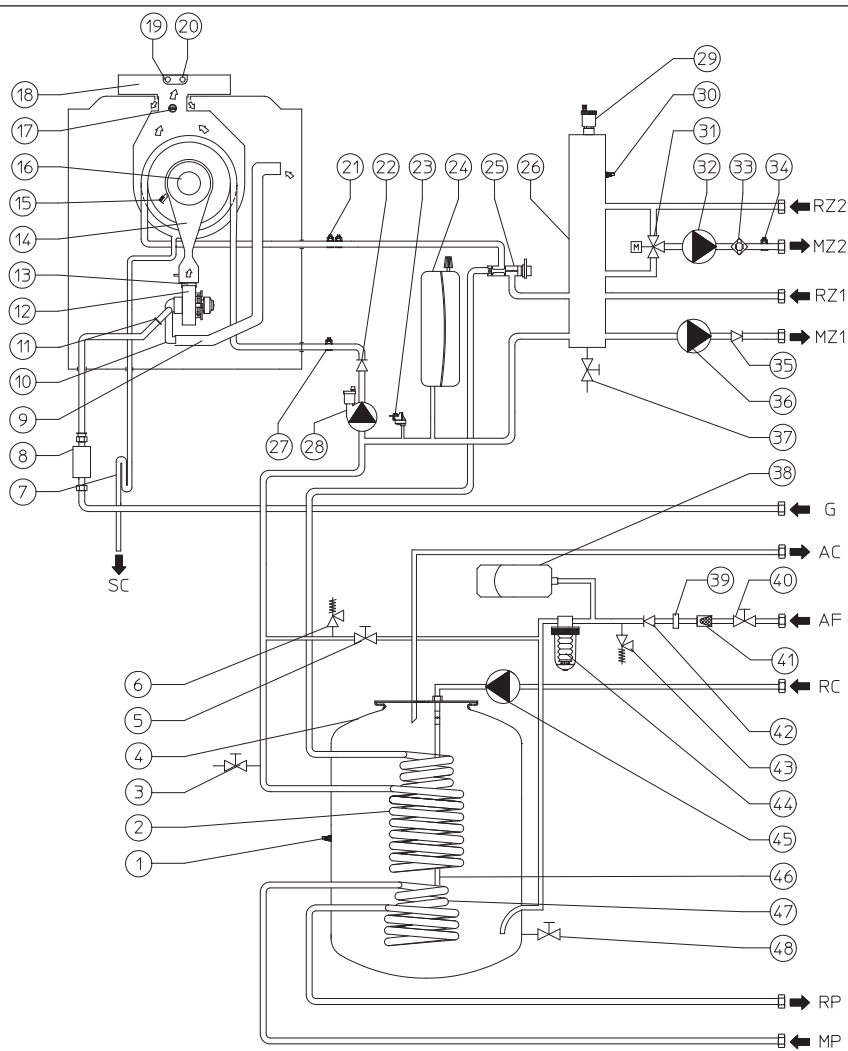
USER

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3.4 HYDRAULIC DIAGRAM



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Key (Fig. 61):

1 - DHW probe	20 - Flue sample point (F)	41 - Cold water inlet filter
2 - Stainless steel coil for storage tank	21 - Flow probe	42 - Cold water inlet non-return valve
3 - System draining valve	22 - One-way valve	43 - 8 bar safety valve
4 - Stainless steel storage tank	23 - System pressure switch	44 - Polyphosphate dispenser (Optional)
5 - System filling valve	24 - System expansion vessel	45 - Recirculation pump (optional)
6 - 3 bar safety valve	25 - Motorised 3-way valve	46 - Magnesium anode
7 - Condensate drain trap	26 - Hydraulic manifold	47 - Solar stainless steel coil
8 - Gas valve	27 - Return probe	48 - Storage tank draining valve
9 - Air intake pipe	28 - Boiler circulating pump	
10 - Air/gas mixer	29 - Air vent valve	
11 - Gas nozzle	30 - System control probe	
12 - Fan assembly	31 - Mixing valve	
13 - Non-return valve on flue gas	32 - Zone 2 circulator pump	
14 - Air/gas manifold	33 - Safety thermostat	
15 - Ignition/detection/electrode	34 - Zone 2 flow probe	
16 - Burner	35 - Zone 1 one-way valve	
17 - Double flue probes sensor	36 - Zone 1 circulator pump	
18 - Flue hood	37 - Manifold draining valve	
19 - Air sample point (A)	38 - Domestic hot water expansion vessel	
	39 - Flow limiter	
	40 - Cold water inlet valve	
		RZ1 - Zone 1 system return
		MZ1 - Zone 1 system flow
		RZ2 - Zone 2 System Return
		MZ2 - Zone 2 System Flow
		G - Gas supply
		AC - Domestic hot water outlet
		AF - Domestic cold water inlet
		RC - DHW (Domestic hot water) re-circulation
		RP - Return from solar panels (optional)
		MP - Flow from solar panels (optional)
		SC - Condensate drain



Internal connections wiring diagram.



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INSTALLER

Key (Fig. 62):

A19	-	Removable memory
B1	-	Flow probe
B1-2	-	System flow probe
B2	-	D.H.W. probe
B5	-	Return probe
B24	-	Safety flow probe
B27	-	Double flue probe sensor
E3	-	Ignition and detection electrode
M1	-	Boiler circulating pump
M20	-	Fan
M30	-	Three-way stepper motor
S5	-	System pressure switch
T1	-	Boiler P.C.B. transformer
T2	-	Ignition transformer
X70	-	Safety thermostat (low temperature) link
Y1	-	Gas valve

Colour code key (Fig. 62):

BK	-	Black
BL	-	Blue
BR	-	Brown
G	-	Green
GY	-	Grey
OR	-	Orange
P	-	Purple
PK	-	Pink
R	-	Red
W	-	White
Y	-	Yellow

Key (Fig. 62):

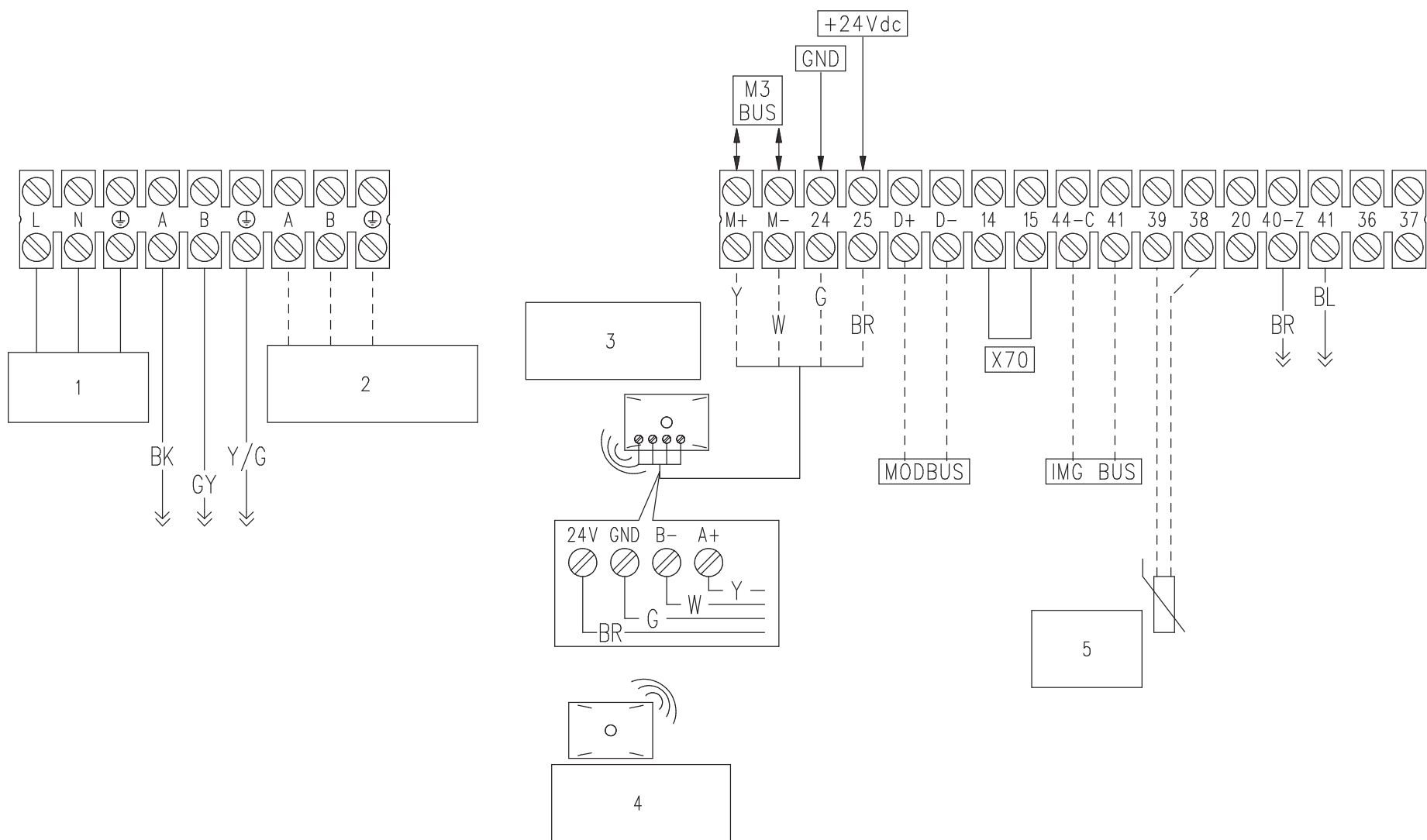
1	-	230 Vac 50Hz Power supply
2	-	230 V connections
3	-	Low voltage connections
4	-	Display board
5	-	Capacitive keyboard



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Key (Fig. 63):

- IMGBUS* - Possible connection to:
- *CARv2*.
- M3BUS* - Possible connection to:
- *Wireless room probes*.
- MODBUS* - Possible connection to:
- *Dominus*.
- X70* - *Safety thermostat (low temperature) link*

MAINTENANCE TECHNICIAN

Colour code key (Fig. 63):

- BK* - *Black*
BL - *Blue*
BR - *Brown*
G - *Green*
GY - *Grey*
OR - *Orange*
P - *Purple*
PK - *Pink*
R - *Red*
W - *White*
Y - *Yellow*

USER

Key (Fig. 63):

- 1* - *230 Vac 50Hz Power supply*
2 - *230 Vac power supply outlet for optional*
3 - *Wireless concentrator (optional)*
4 - *Zone x wireless room probes (optional)*
5 - *External probe (optional)*

INSTALLER

The requests for activation of central heating on DIMBUS are affected by the Central Heating Program set on the boiler Zones Menu.





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Key (Fig. 64):

B3-2	- Zone 2 low temperature flow probe
E7-2	- Zone 2 low temperature safety thermostat
M10-1	- Zone 1 circulator pump
M10-2	- Zone 2 circulator pump
M31-2	- Zone 2 mixing valve
S25...S28	- P.C.B. setting selector
T2	- Zones control unit low voltage power supply
Zone 1	- Direct zone
Zone 2	- Mixed zone

Colour code key (Fig. 64):

BK	- Black
BL	- Blue
BR	- Brown
G	- Green
GY	- Grey
OR	- Orange
P	- Purple
PK	- Pink
R	- Red
W	- White
Y	- Yellow

Key (Fig. 64):

1	- Zone 1 room thermostat (optional)
2	- Zone 2 room thermostat (optional)
3	- Zones control unit
4	- Central heating request inlet from other DIM
5	- Zones signal state outlet for other DIM

On connecting the zone control room thermostats, it is necessary to eliminate the jumpers present in the zones control unit on terminal block X9.

The requests for activation of central heating on DIM BUS are affected by the Central Heating Program set on the boiler Zones Menu.

The CAR^{v2} (optional) is intended for zone 1 room control regardless of the selections on the zones control unit.

With CAR^{v2} connected **the jumper on TA1 of the zones control unit must remain present.**

Zones control unit setting values		
Switch N°	OFF (☐)	ON (▣)
1	Homogeneous zones control	Mixed zones control
2	1 mixed zone (Z2)	2 mixed zones (Z2 and Z3)
3	MASTER board	SLAVE board
4	Main zone = zone 1	Main zone = zone 2
5	Super CAR: main zone flow control	Super CAR: system flow control
6	Mixed zones max. temperature = 50°C	Mixed zones max. temperature = 75°C
7	Normal functioning	Active testing function
8	Not used	Not used
9	Mixed zones min temperature = 25°C	Mixed zones min. temperature = 35°C
10	Not used	Not used
11	Not used	Not used
12	Not used	Not used

INSTALLER

USER

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TECHNICAL DATA



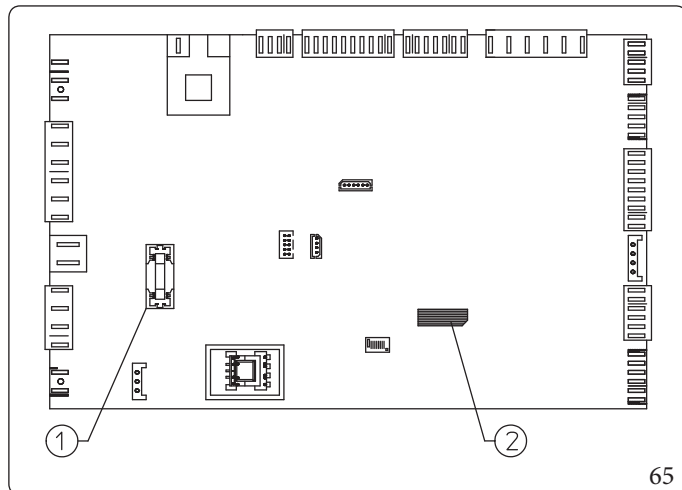
3.6 REMOVABLE MEMORY



Replacing the memory must be carried out after disconnecting all electrical connection of the P.C.B.

P.C.B.

The P.C.B. is equipped with a removable memory (Ref. 2 Fig.65) which records all operation parameters and appliance customisations. Should the P.C.B. be replaced, you can use the memory of the replaced board again, so it is not necessary to reconfigure the appliance.



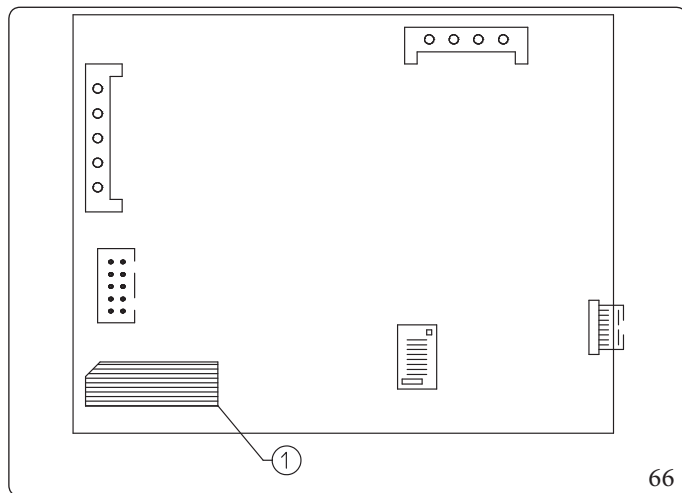
Key (Fig. 65):

- 1 - Quick fuse 3.15 A 250 V Type F
- 2 - Grey removable memory (A19)

Display board

The display board is equipped with a removable memory (Ref. 1 Fig.66) which records all operation parameters and customisations of the display, wireless probes, Dominus and timer maintenance.

Should the display board be replaced, you can use the memory of the replaced board again so it is not necessary to reconfigure the appliance.



Key (Fig. 66):

- 1 - Black removable memory (A19)



3.7 TROUBLESHOOTING



Maintenance operations must be carried out by an authorised company (e.g. Authorised After-Sales Technical Assistance Centre).

Trouble	Possible causes	Solutions
Smell of gas	Caused by leakage from gas circuit pipelines.	Check sealing efficiency of gas intake circuit.
Repeated ignition blocks	No gas. Condensate drain clogged.	Check the presence of pressure in the network and that the gas adduction valve is open. Restore the function of the condensate drain, checking that the condensate has not affected: combustion components, fan and gas valve.
Irregular combustion or noisiness	Dirty burner, clogged primary heat exchanger, incorrect combustion parameters, intake-exhaust terminal not correctly installed.	Check the indicated components.
Non-optimal ignition of first ignitions of the burner.	The first ignitions of the burner (after calibration) may not be optimal.	The system automatically adjusts the burner ignition until the best ignition conditions are found.
Frequent trips of the overheating safety device thermostat function.	Lack of water in the appliance, little water circulation in the system or blocked pump (Par. Circulation pump).	Check on the pressure gauge that the system pressure is within established limits. Check that the radiator valves are not closed and also the functionality of the pump.
Siphon blocked	Dirt or combustion products deposited inside.	Check that there are no residues of material blocking the flow of condensate.
Heat exchanger blocked.	This may be caused by the drain trap being blocked.	Check that there are no residues of material blocking the flow of condensate.
Abnormal noises in the system	Air in the system.	Check opening of the special air vent valve cap (Par.1.37). Make sure the system pressure and expansion tank factory-set pressure values are within the set limits. The factory-set pressure values of the expansion vessel must be 1.0 bar, the value of system pressure must be between 1 and 1.2 bar.
Abnormal noises in the condensation module	Air in the module.	Use the manual air vent valve (Parag. 1.37) to remove any air inside the condensation module. When the operation has been performed, close the manual air vent valve.
Poor production of D.H.W.	Clogged condensing module or D.H.W. exchanger.	Contact After-Sales Assistance Service that has procedures to clean the module or D.H.W. heat exchanger.
Poor production of D.H.W.	DHW heat exchanger clogged.	Contact the Authorised After-Sales Assistance Service that has procedures to clean the D.H.W. heat exchanger.

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3.8 ACCESS RESERVED TO SERVICE

To enter the appliance menu reserved for Service:

MENU / General settings / Access level

To activate the access reserved to "Service", follow the above path; upon "Access code request", enter code 1122 (using the "DHW set" and "Central heating set" knobs) and press "Ok", then the "Access level" menu will open where it is possible to select the "Service" access type. The authentication as "Service" gives access to the parameters reserved for a qualified Technician.



As long as you continue navigating the menu, access as Service remains active.

Returning to the main screen, the Service access will remain active for 4 minutes, then it will automatically go back to User level.

To manually go back to User level, simply type the password following the procedure described above and set User again.

If the appliance turns off and on again, the menu will automatically go back to User level.



3.9 CONVERTING THE APPLIANCE TO OTHER TYPES OF GAS

 The gas conversion operation must be carried out by an authorised company (e.g. Authorised Technical Assistance Service).

To convert to another type of gas the following operations are required:

MENU / Support / Boiler / Combustion


- In the "Combustion" window, modify and confirm the type of gas on the line "Gas type": "NG" for methane gas, "LG" for LPG gas and "AP" for propane air (Par. 2.8).
- Perform complete calibration (Parag. 3.15): during which, check and, if necessary, correct the CO₂ value.
- Upon completing the conversion, apply the sticker regarding the modified gas content onto the data nameplate in the connection box.

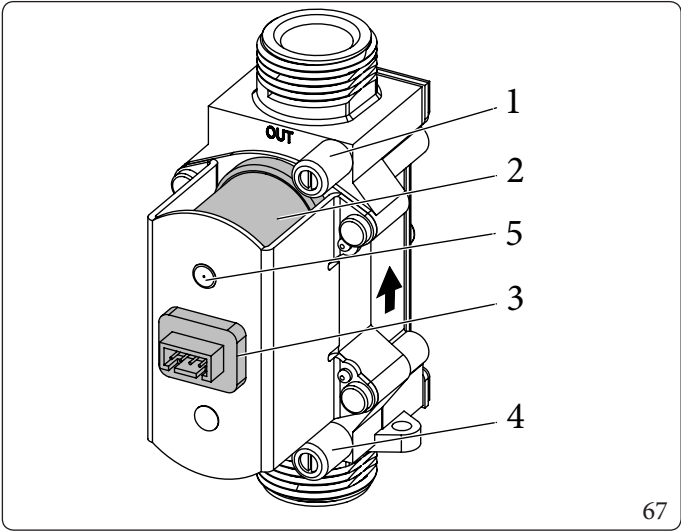
 **The pressure testers used for calibration should be perfectly closed and there should be no leaks from the gas circuit.**

Checks following conversion to another type of gas.

- These adjustments must be made with reference to the type of gas used, following that given in the table (Parag. 4.2). After having made sure that the conversion is complete and that the calibration has been successful, you must make sure that:
- there is no flame in the combustion chamber;
 - the burner flame is not too high or low and that it is stable (does not detach from burner);

 Maintenance operations must be carried out by an authorised company (e.g. Authorised After-Sales Technical Assistance Centre).

 **Risk of material damage after using sprays and liquids to search for leaks**
Leak sprays and liquids clog the reference hole P.Ref. (Fig. 67) of the gas valve, damaging it irreparably. During installation and maintenance, do not use spray or liquids on the gas valve (electric connections side).



- Key (Fig. 67):
- 1 - Gas valve outlet pressure point
 - 2 - Coil
 - 3 - Wiring connector
 - 4 - Gas valve inlet pressure point
 - 5 - P. Ref. (Reference pressure)

3.10 CALIBRATION TYPE INVOLVING THE REPLACEMENT OF A COMPONENT.

When performing extraordinary maintenance on the appliance, involving the replacement of a component, such as the P.C.B. (if the removable memory is not put into the replacement board) or components in the air, gas and flame control circuits, the appliance will need to be calibrated.

Select the type of calibration to be carried out according to the table below.

Component replaced	Type of calibration required
Gas valve	Quick calibration
Fan	Quick calibration
Burner	Complete calibration with CO ₂ check
Ignition / detection electrode	Complete calibration with CO ₂ check
P.C.B. (New virgin P.C.B. without removable memory recovery)	Reset the parameters Complete calibration with CO ₂ check
P.C.B. (Recovery of the removable memory with the boiler parameters set from the replaced board)	No calibration required.



Nominal heat

The Calibration function is automatically activated when entering the menu window. Initially “Calibration Phase Max” appears, meaning that the appliance is performing the nominal power calibration phase. After the first moments of burner ignition, "Calibration Phase Max <" appears meaning that the appliance has detected and stored the minimum parameters necessary for appliance ignition (it is possible to force the end of calibration by pressing “RESET”). To check and correct the CO₂ values, continue waiting for the combustion set for nominal power to be engaged. After the engaging is complete, “Calibration Phase Max Ok” appears and the belowline “Combustion Set” is highlighted at the same time.

 Under these conditions, the combustion value (CO₂) linked to the supply of maximum nominal power can be measured (Par.3.11).

Complete calibration	
Calibration Phase	Max Ok
Combustion Set	↕ 23
Power perc.	100 %
Flow temperature	51 °C
Flame	On
CH underway	

If the CO₂ value is not that indicated in the table (Par. 4.2), change the value, as described in the paragraph (Par. 3.11). When the combustion value measured on the nominal power is correct, request the advancement of the procedure to the next phase (intermediate ignition power) by pressing the “OK” button “Calibration Phase Max Ok”.

Ignition intermediate heat output

Once the nominal heat output calibration is confirmed, the appliance is calibrated with the intermediate heat output (or ignition heat output).

The beginning of the intermediate phase is displayed with "Calibration Phase med" it means that the appliance is adjusting the intermediate power.

To check and correct the CO₂ values, continue waiting for the combustion set for intermediate power to be engaged. After the engaging is complete, "Calibration Phase med Ok" appears and the below line "Combustion Set" is highlighted at the same time.



Under these conditions, the combustion value linked to the supply of intermediate power can be measured (Par.3.11). Any corrections to the intermediate combustion are linked to the same actions illustrated for the nominal power.

Complete calibration	
Calibration Phase	med Ok
Combustion Set	↕ 30
Power perc.	23%
Flow temperature	43°C
Flame	On
CH underway	

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If the CO₂ value is not that indicated in the table (Par. 4.2), change the value, as described in the paragraph (Par. 3.11).

When the combustion value measured on the intermediate power is correct, request the advancement of the procedure to the next phase (minimum power) by pressing OK "Calibration Phase med Ok".



Minimum heat output

After confirming the intermediate power calibration, the appliance is calibrated at minimum power. The beginning of the minimum phase is displayed with “Calibration Phase Min” it means that the appliance is adjusting the minimum power. To check and correct the CO₂ values, continue waiting for the combustion set for minimum power to be engaged. After the engaging is complete, “Calibration Phase Min Ok” appears and the belowline “Combustion Set” is highlighted at the same time.

 Under these conditions, the combustion value linked to the supply of minimum power can be measured (Par.3.11). Any corrections to the minimum combustion are linked to the same actions illustrated for the nominal power.

Complete calibration

Calibration Phase	Max Ok
Combustion Set	↕ 64
Power perc.	0%
Flow temperature	24°C
Flame	On

CH underway

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If the CO₂ value is not that indicated in the table (Par. 4.2), change the value, as described in the paragraph (Par. 3.11). When the combustion value measured on the minimum power is correct, request the end of the procedure by pressing the “OK” “Calibration Phase Min Ok” button. The end of the function is accompanied by the window “Calibration completed”

 If the message "Max Err" on the "Calibration Phase" item appears, it means that something was not successful during the calibration process. In which case, the operation must be repeated from the beginning.

3.11 CO₂ ADJUSTMENT



During complete calibration (Par. 3.15) the CO₂ values can be adjusted.

To have an exact value of CO₂ in the flue, the technician must insert the sampling probe to the bottom of the sample point.



In case of calibration for propane air, select the analyser in LPG gas mode.

Check that the CO₂ value is that indicated in the table (Par.4.2), (with maximum tolerance equal to $\pm 0.2\%$), otherwise, modify the value as described below:

Complete calibration	
Calibration Phase	Max Ok
Combustion Set	◄ 22
Power perc.	99%
Flow temperature	53°C
Flame	On
CH underway	

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The modification takes place only if the line "Combustion Set" is highlighted; using the "Set flow" knob, change the "Combustion Set" value then press "Ok" to confirm the new value.




Wait for the text "Max Ok" "med Ok" or "Min Ok" to appear before checking the combustion linked to the new value based on the phase in which the change is made.



3.12 QUICK CALIBRATION

This function allows you to calibrate the appliance automatically without requiring or giving the possibility to alter the parameters. Typically, the "quick calibration" is used after changing the flue type parameters in the menu, which creates the "72" anomaly or is necessary in case of component replacement (Par.3.10).

 Before performing quick calibration, ensure that all the requirements indicated in (Par.1.29 - 1.30) have been met.

The energy produced during the function is disposed of on the central heating circuit / C.H. circuit if a the storage tank is at temperature; check that any valves on the system not managed by the appliance are open.
To dispose of all the energy on the domestic hot water, open the hot water tap and set the DHW (Domestic hot water) set to maximum before activating the function.
Select the Summer or Winter mode and enable the function by accessing the menu as "Service" access level:

Menu/Support/ Specialfunction/ Fast calibration

 If Antifreeze mode is selected, the function cannot be activated.
In the attempt of activating the function under impossible conditions, the text "Incompatible mode" will be displayed.

Once the function is active, the appliance sequentially carries out the procedures required to calibrate the appliance with the nominal, intermediate and minimum heat output values.

Fast calibration	
Calibration Phase	Max...
Combustion Set	--
Power perc.	0%
Flow temperature	26°C
Flame	Off
CH underway	

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- Calibration Phase: indicates the phase of calibration in progress and the stability connection on the combustion;
 - Combustion Set: value not compiled during quick calibration;
 - Power perc.: indicates (from 0 to 100%) the power supplied by the burner;
 - Flow temperature: indicates the thermal module outlet temperature;
 - Flame: indicates the presence of a flame (thus the ignition of the burner)
- The text indicating the circuit on which the energy produced is discharged appears at the bottom of the display ("CH underway" or "DHW underway").
- The Calibration function is automatically activated when entering the menu window.
- Initially "Max procedure phase..." appears, meaning that the appliance is performing the nominal power calibration phase.
- After the first moments of burner ignition, "Max procedure phase <" appears meaning that the appliance has detected and stored the minimum parameters necessary for its ignition (it is possible to force the end of calibration by pressing "RESET").
- The advancement is automatic; however, the quick calibration window makes the various phases known:
- Calibration Phase Max
 - Calibration Phase med
 - Calibration Phase Min
- The "Combustion Set" line is not managed, as it is not possible to operate to modify its value.
- The end of the function is accompanied by the window "Calibration completed"

 If the message "Max Err" on the "Calibration Phase" item appears, it means that something was not successful during the calibration process. In which case, the operation must be repeated from the beginning.

3.13 FLUE TEST



Before performing the test, ensure that the condensate drain trap has been filled correctly and check that there are no obstructions in the air intake circuit and flue exhaust and that the sealed chamber is perfectly closed and the flue has already been installed.

The Flue Test activation command is available in the Menu (with Service reserved access) at the following address:

Menu / Support / Special function / Test flue

To activate the flue test, enter the “Test flue” page and on the first line, activate the Test by selecting “Start”.

To end the flue test, select the “Stop” item on the first line.

To define the value to set in the “Length Flue parameter, detect the parameters during the “Test flue”.

The appliance remains in this mode for a maximum period of 15 minutes, keeping the fan speed constant.

The function ends after 15 minutes, or by selecting “Stop”.

Check the ΔP between two pressure tests (Par. 1.37) and set the parameter “Length Flue” according to the values below:

Hercules 35 ABT	
Menu - Support - Boiler - Flue	Pressure
Min	< 153 Pa
med	153 ÷ 242 Pa
Max	> 242 Pa
Value detected on first check	



Examinations are carried out by sealing the holes provided to analyse the flues, making them pneumatically sealed.



Should there be a appliance malfunction, you can carry out a flue test to check that there are no obstructions in the flue system. Different values to those indicated in the previous tables indicate a flue system malfunction, especially a flue system with excessive load losses or obstructed system.



3.14 PARAMETERS AND INFORMATION MENU

There are 3 Settings menus (Fig. 54):
DHW: accessible from the DHW button (2);
Zones: accessible by pressing the zone button (3);
General settings menu: accessible by pressing the menu button (18).

 Some menu settings appear only when the options are actually connected and working and if the appliance settings allow it.

“DHW (Domestic hot water)” Menu.
Press the “DHW (Domestic hot water)” button to access a list of variables that enable you to customise use of the DHW (Domestic hot water).
Hereunder is a list of all available menus:

DHW				
Menu item	Description	Range	Default	Customised value
DHW control	Boiler = informs that the DHW control is managed from the boiler panel			
	Remote = informs that the DHW control is managed by CAR v2			
Temperature	Temperature read by the DHW probe			
Boost Function (*)	Sets the DHW (Domestic hot water) boost function management:	Off-On-Auto	Off	
	Off = always off			
	On = always on			
	Auto = managed as required by the DHW (Domestic hot water) program			
Set Management (*)	Sets the DHW (Domestic hot water) set control mode:	Auto-Man	Man	
	Auto = the DHW set will be controlled at two levels, according to the DHW program.			
	Man = the DHW set will always be fixed at the manual value (regardless of the DHW program)			
Comfort Set	Sets comfort set (comfort set will be active during the active time slots of the DHW program if "Set Management = Auto" is selected)	10 ÷ 60 °C	50 °C	
Economy Set	Sets reduced set (economy set will be active during the NON active time slots of the DHW program if "Set Management = Auto" is selected)	10 ÷ 60 °C	30 °C	
Manual set	Sets manual set (manual set will be active 24 hours a day if "Set Management = Man" is selected)	10 ÷ 60 °C	10 °C	

(*) See the DHW paragraph (Parag. 2.6).

Zones Menu.

After accessing as “SERVICE”, the zone menu is enriched with additional parameters with respect to user access.

Press the “Zones” BUTTON  to access a list of variables that enable you to customise use of the zones.

Below is the complete list of available menus, some of which are only visible after enabling the component or activating the specific associated function:

ZONES	
Menu item	Description
Zone 1	Defines the operating parameters to manage zone 1.
Zone 2	Defines the operating parameters to manage the zone 2.
Zone 3 (*)	Defines the operating parameters to manage the zone 3 (if present).



The following tables will appear the same also for Zone 2 and Zone 3, if any.

ZONES/Zone 1	
Menu item	Description
Information	This displays the system operating data
Settings	Defines the operating parameters to manage zone 1
Configuration	Defines any further operating parameters to manage zone 1

ZONES/ZONE 1/Information		
Menu item	Description	Range
Room temperature (***)	Room temperature read on zone 1	0°C ÷ 50°C
Set room temperature (**) (***)	Room temperature set on zone 1	5°C ÷ 35°C
Operation status	Mode set on zone 1	Off / A-ECO / A-COMF / Man
Room Thermostat Stat.	Status of the room thermostat on zone 1	Open / Close
Set CH	This displays the zone 1 flow set	25°C ÷ 85°C
Plant	Information related to the type and presence or absence of a room probe	



Zone 1 Information Menu is always present regardless of whether or not a CAR^{v2} is connected.

(**) not displayed when the “Enable room probe” is set to No

(***) displayed when the zone of interest is associated with a room probe (RF probe,...)



ZONES/Zone 1/Information/ Plant		
Menu item	Description	Range
Room probe	This displays or not the presence of the room probe	Off = No probe
		WIRED = Not used
		RF = Probe present
		OT = CAR V2 presence
Water circuit	If zone board is present, it informs about the type of system in use in the zone.	DIR = Direct circuit
		MIX = Mixed circuit
Flow temperature	Zone board absent: the temperature read is the one to the boiler outlet	0°C ÷ 99°C
	Zones control unit present + information request relating to mixed zone: the temperature read is that at the mixing valve outlet.	

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ZONES/Zone 1/Settings (1)				
Menu item	Description	Range	Default	Customised value
Operation mode (1)	Sets the zone 1 operating mode	Off / Man / Auto	Man	
Set AUTO comfort (2)	Zone 1 room temperature correlated to the active time slots of the zone 1 calendar	10°C ÷ 35°C	20°C	
Set AUTO reduced (2)	Zone 1 room temperature correlated to the NON active time slots of the zone 1 program	5°C ÷ 30°C	16°C	
Set MAN (3)	Zone 1 room temperature that can be activated by selecting the operating mode = manual	5°C ÷ 35°C	20°C	
Weather comp. offset (4)	Zone 1 flow temperature correction in relation to external probe detection	-9°C ÷ 9°C	0°C	
Maximum flow set (5)	Maximum zone 1 flow temperature	20°C ÷ 85°C	85°C	

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(1) **The zone 1 Settings menu is not displayed** if there is a remote device, but the menu will remain available on other zones not remote-controlled

(2) **Not displayed** when:

- the parameter "Operation mode" is set at "Man" or "Off" lack or unavailability of room probes

(3) **Not displayed** when:

- the parameter "Operation mode" is set at "Auto" or "Off" lack or unavailability of room probes

(4) **Not displayed** when:

- the external probe is missing
- the parameter "Operation mode" is set at "Off"

(5) **Not displayed** when:

- the external probe is present
- a room probe is configured
- the parameter "Enable room sensor" is set at "Yes"

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3.15 COMPLETE CALIBRATION



Before carrying out complete calibration, ensure that all the requirements indicated in par.1.29 and 1.30).

In the event of anomaly "62" or "72" (Par.2.9) the appliance cancels any requests by itself.

During the various calibration stages, the CO₂ value can be checked and possibly corrected as described in Par. 3.11.

The energy produced during the function is disposed of on the central heating circuit / C.H. circuit if a DHW (Domestic hot water) request is not activated; check that any valves on the system not managed by the appliance are open.

To dispose of all the energy on the domestic hot water, open the hot water tap and set the DHW (Domestic hot water) set to maximum before activating the function.

The calibration procedure involves various stages:

- nominal heat output calibration;
- intermediate heat output ignition calibration;
- minimum heat output calibration;

The complete calibration function offers a maximum time of stay within the Calibration Menu of 20 minutes counted after the last action on the display keyboard.

After this time, the function ends, showing the message "Calibration completed".

The Calibration completed window will be automatically abandoned after 60 seconds (to display the main window); if you want to exit the "Calibration completed" message in advance, press the "OK" button.

Complete calibration activation

Select the Summer or Winter mode and enable the function by accessing the menu as "Service" access level:

Menu / Support / Special function / Complete calibration



If Antifreeze mode is selected, the function cannot be activated.

In the attempt of activating the function under impossible conditions, the text "Incompatible mode" will be displayed.

Complete calibration	
Calibration Phase	Max...
Combustion Set	◆ 23
Power perc.	0%
Flow temperature	25°C
Flame	Off
CH underway	

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- Calibration Phase: indicates the phase of calibration in progress and the stability connection on the combustion;
- Combustion Set: indicates the combustion set value in progress; if the text is highlighted, the value can be changed using the "Set Central heating" knob;
- Power perc.: indicates (from 0 to 100%) the power supplied by the burner;
- Flow temperature: indicates the thermal module outlet temperature;
- Flame: indicates the presence of a flame (thus the ignition of the burner)

The text indicating the circuit on which the energy produced is discharged appears at the bottom of the display ("CH underway" or "DHW underway").



ZONES/Zone 1/Configuration/Regulation				
Menu item	Description	Range	Default	Customised value
Enable room sensor	With room probe associated, its control can be disabled (No) or enabled again (Yes)	No - Yes	Yes	
Room sensor modul.	With the room probe associated, it is possible to disable the modulation on the flow temperature (No) or enable it again (Yes)	No - Yes	Yes	
Outdoor sensor modul.	With the external probe present, it is possible to disable the modulation on the outdoor temperature (No) or enable it again (Yes) for the selected zone	No - Yes	Yes	
Weather comp. offset	With external probe present, the offset value can be set with respect to the climatic curve.	-9°C ÷ 9°C	0°C	
Reduced	Without any association with room probes, it is possible to set a zone flow temperature reduction during the "reduced" bands of the central heating / C.H. calendars	Off ÷ 40°C	Off	
Backlash off temp.	With room probe associated, and "Room sensor modul." function = NoThe hysteresis cannot be set on the room On-Off control	0,1°C ÷ 1°C	0,2°C	
System inertia	It sets the system reaction speed based on the type of system present; for example: -5 : fan-coil system. -10 : Radiator system. -20 : floor system	1 ÷ 20	10	
External temperat. max	Defines the maximum outdoor temperature at which to operate the central heating system with minimum flow	-5°C ÷ 45°C	25°C	
External temperat. min	Defines the minimum outdoor temperature at which to operate the central heating system with maximum flow	-25°C ÷ 15°C	-5°C	
Maximum flow set	Defines the maximum flow temperature of central heating / C.H. system operation	20°C ÷ 85°C	85°C	
Minimum flow set	Defines the minimum central heating / C.H. system operation flow temperature (if external probe is present, it will be correlated to the maximum outdoor temperature)	20°C ÷ 85°C	20°C	

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ZONES/Zone 1/Configuration/NoFrost function				
Menu item	Description	Range	Default	Customised value
NoFrost enable	If the wireless room probe is installed, it is possible to activate or not the room antifreeze function when the Zone operating mode is "Off"	No - Yes	Yes	
NoFrost temperature	If wireless room probe is installed and the antifreeze function is enabled, it is possible to define the room antifreeze trigger temperature	0.5°C - 10°C	5°C	

ZONES/Zone 1/Configuration/Room probe				
Menu item	Description	Range	Default	Customised value
Type	Makes it possible to select the type of probe to be associated with the zone in question	Off = No probe	Off	
		WIRED = Not used		
		RF = Configuration to activate association with a wireless room probe		
Address M3	During the association, it is necessary to enter the concentrator acknowledgement address (see dip-switch on concentrator)	0 ÷ 2		
Status	This displays the association status with wireless probe (Parag. 3.18)	Err = Association procedure failed		
		No-Link = Probe cannot be reached via RF		
		... (in config) = Probe association in progress		
		Ok = Probe correctly associated		



Main Menu

Press the “MENU” button to access a list of variables that enable you to customise use of the system. Hereunder is a list of all available menus:

MENU	
Menu item	Description
Clock and programs	Defines the date/time and time operating slots
Information	Display system operating data
Anomalies log	Displays the list of the last 10 anomalies
Meters	This displays the number of ignitions and the hours of operation of the burner
General settings	Allows selecting the panel operating language, the display operating mode and to access the password-protected menus dedicated to a qualified technician.
Support	Gives access to the functions exclusive for Service

MENU/ Clock and programs				
Menu item	Description	Range	Default	Customised value
Set date and time	Current date and time setting			
Automatic summer time	Automatic time setting when changing from winter to summer time (and vice versa).	Yes - No	Yes	
Calendars	Defines the time range for operation in Comfort and Economy mode			
Zone 1 Program	Zone 1 time scheduling		CAL3	
Zone 2 Program	Zone 2 time scheduling		CAL3	
Zone 3 Program	Zone 3 time scheduling (if present)		CAL3	
DHW Program	DHW operation time programming		CAL3	
Holiday Program	Defines the period during which the system disables both hot water heating and room central heating functions. At the end of the set days, the previously active functions will be reset.	Off - 1 ÷ 30 Day(s)	Off	

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MENU / Information	
Menu item	Description
Gas type	Gas type display: NG (Methane), LG (L.P.G.), AP (propane air)
Flame signal	Flame signal display
Flow temperature	Views central heating system flow temperature
DHW temperature	Storage tank/DHW (Domestic hot water) outlet temperature display
Set CH	This displays the set central heating / C.H. temperature set
Set DHW	Set DHW (Domestic hot water) temperature display
Outside temperature	View the external temperature, if the external probe is present (optional)
Input DHW temperature	Not used on this model
Return temperature	Return temperature display
CH2 temperature	Safety flow probe display
System flow temp.	Displays the temperature read on the system flow probe
Duty pump command	Views the control of the pump duty PWM
Flow pump	Displays the central heating circuit flow rate inside the boiler
Flow rate	Not used on this model
Fan speed	Fan speed display (rpm)
Boiler exhaust temp.	Flue gas temperature display
Solar storage temp.	Not used on this model
Solar collector temp.	Not used on this model
Maintenance withing	This displays the number of days within which maintenance must be carried out. After the days or with the function de-activated, the line is not displayed
Main board rev. SW	Boiler board sw version display
Firmware version	Display board sw version display



MENU/Anomalies log	
Menu item	Description
Boiler	Allows the selection of the boiler anomaly history.
Room probe	Allows the selection of the room probe anomaly history (if present).

MENU/Anomalies log/Boiler	
Menu item	Description
Show alarm	This displays the boiler anomaly history. The size of the anomaly history is equal to 10 anomalies and they are displayed in decreasing order of appearance (no.1 is the most recent). The displayed anomalies are accompanied by the time and date of the anomaly being generated.
Reset anomalies	Resets the list of anomalies

MENU/Anomalies log/Room probe	
Menu item	Description
Show alarm	Displays the room probe anomaly history (if present). The size of the anomaly history is equal to 10 anomalies and they are displayed in decreasing order of appearance (no.1 is the most recent). The displayed anomalies are accompanied by the time and date of the anomaly being generated.
Reset anomalies	Resets the list of anomalies

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MENU/Meters	
Menu item	Description
Burner ignitions number	Number of burner ignitions counter
Burner working hours	Burner operating hours meter

MENU/General settings				
Menu item	Description	Range	Default	Customised value
Language	Defines the remote panel operation language		ITA (*)	
Display	It is possible to adjust the contrast and lighting of the display. The lighting (available on two levels) can be automatically selected as fixed or variable during the boiler operation or user access to the display		Contrast: 5 Display lighting: Min	
Access level	Allows the entry of an access code to access the parameter customisation menus according to one's needs (dedicated to a qualified technician)			
User factory settings	Resets the user parameters to default state			
Service factory settings	Resets the service parameters to default state: the boiler parameters are excluded (hydraulic and combustion setting)			

(*) The display leaves the factory set in Italian. To change the display language, see Par. 2.5 in the "USER" chapter, under "Changing the display language".

In case the user restores the factory conditions through "**Menu/General settings/User factory settings**", the menu will appear in English. Proceed in the following way to restore the desired display language:

- Enter **Menu/General setting/Language**.
- Select the desired language from those available and press OK.



Assistance menu access

To enter the appliance menu reserved for Service:

MENU / General settings / Access level

To activate the access reserved to "Service", follow the above path; upon "Access code request", enter code 1122 (using the "DHW set" and "Central heating set" knobs) and press "Ok", then the "Access level" menu will open where it is possible to select the "Service" access type. The authentication as "Service" gives access to the parameters reserved for a qualified Technician.



As long as you continue navigating the menu, access as Service remains active.

Returning to the main screen, the Service access will remain active for 4 minutes, then it will automatically go back to User level.

To manually go back to User level, simply type the password following the procedure described above and set User again.

If the appliance turns off and on again, the menu will automatically go back to User level.

MENU / Support

Boiler
DHW
C.H.
Inputs
Modbus
Special function
Maintenance

MENU/Support/Boiler/Hydraulic				
Menu item	Description	Range	Default	Customised value
Hydraulic	Defines the type of boiler hydraulics	Istan. = not used on this model	Herc. = with domestic hot water production and central heating system pump control	
		Bol. = not used on this model		
		Herc. = with domestic hot water production and central heating system pump control		
		Herc. Sol.= not used on this model		

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MENU/Support/Boiler/Combustion				
Menu item	Description	Range	Default	Customised value
Model	Set the heat generator type	1 ÷ 30	3	
Gas type	Defines the type of gas:	NG = operation with methane gas	NG = Methane	
		LG = operation with LPG gas		
		AP = operation with Propane Air gas		
Fan rpm min	Setting of minimum fan speed (absolute)	450 - 3500 (rpm)	2350 rpm	
Fan rpm max	Setting of maximum fan speed (absolute)	3500 ÷ 8300 (rpm)	6950 rpm	
Fan rpm ign.	Sets burner ignition fan speed	2000 ÷ 4500 (rpm)	3500 rpm	
Maximum calibr. range	Activates a greater combustion set adjustment range during complete calibration	No = normal combustion set adjustment range	No	
		Yes = extended combustion set adjustment range		



A change in values of this table will cause a appliance block with E62 appearing and consequent request for complete calibration.



The P.C.B. defines the operating mode and the appliance output according to the combination of several parameters. The correct fan revolutions to obtain the correct operating power of the appliance are defined from the combination of parameters "Model", "Gas type", "Length Flue"; this is why it is suggested not to modify the "Fan rpm" parameters (Fan rpm min - Fan rpm max - Fan rpm ign.).

MENU/Support/Boiler/Powers				
Menu item	Description	Range	Default	Customised value
Power max DHW	Defines the maximum heat output percentage of the boiler during the D.H.W. phase compared to the maximum heat output available	0 ÷ 100 (%)	100	
Power min DHW	Defines the minimum heat output percentage of the boiler during the D.H.W. phase compared to the minimum heat output available	0 ÷ 100 (%)	0	
Power max CH	Defines the maximum heat output percentage of the boiler during the central heating mode compared to the maximum heat output available	0 ÷ 100 (%)	75	
Power min CH	Defines the minimum heat output percentage of the boiler during the central heating mode compared to the minimum heat output available	0 ÷ 100 (%)	0	
Correction flow DHW	Not used on this model	- 9 ÷ 9 (kw)	0	



The P.C.B. defines the operating mode and the boiler output according to the combination of several parameters. The correct ranges to obtain the correct operating power of the appliance are defined from the combination of parameters "Model", "Gas type", "Length Flue"



MENU/Support/Boiler/External relays				
Menu item	Description	Range	Default	Customised value
Relay 1	The boiler is set-up for functioning with the relay board (optional), which can be configured on relay 1	Off = relay always Off	Zone 1	
		Zone 1 = Zone 1 control		
		Allarm = Generic alarm		
		CH active = CH mode active		
		Gas valve = External gas valve supply		
		Three-way = Active together with three-way position in central heating		
		DHW active = CH mode active		
Relay 2	The boiler is set-up for functioning with the relay board (optional), which can be configured on relay 2	Off = relay always Off	Off	
		Allarm = Generic alarm		
		CH active = CH mode active		
		Gas valve = External gas valve supply		
		Zone 2 = Zone 2 control		
		HP = not used on this model		
		DHW active = CH mode active		
Relay 3	The boiler is set-up for functioning with the relay board (optional), which can be configured on relay 3	Off = relay always Off	Off	
		CHL active = not used on this model		
		Allarm = Generic alarm		
		CH active = CH mode active		
		Gas valve = External gas valve supply		
		HP = not used on this model		
		*DHW recirc. = Storage tank recirculation pump active when Boost is active		
		Zone 1 = Zone 1 control		
		DHW active = CH mode active		

(*) To activate recirculation using the “recirculation pump” optional kit, in addition to configuring the relay, it is necessary to activate the Boost function. With Boost On, recirculation is always running. With Boost Auto, recirculation works according to the time slots set on the DHW (Domestic hot water) program (on in comfort and off in economy).

MENU/Support/Boiler/Flue				
Menu item	Description	Range	Default	Customised value
Length	Sets flue length	Min / med / Max	Min	
Enable Klapet valve	Set the preset parameters on the board software to allow installation in configuration C ₍₁₀₎ - C ₍₁₂₎	No / Yes	Yes	



A change in these parameters will cause the appliance block signalled with E72; to reset E72, a quick calibration must be activated.



MENU/Support/Boiler/Timers				
Menu item	Description	Range	Default	Customised value
Anti heating cycles	Central heating anti-cycle timer set.	0 ÷ 840	180 seconds	
Heating ramp	Set central heating ramp timer.	0 ÷ 840	180 seconds	
RT request delay	Set delay timer requested by TA.	0 ÷ 600	0 seconds	
Solar delay	Not used on this model.	-	-	
Waiting time priority	Not used on this model.	-	-	
Antilegionella stop	Sets the maximum time for the anti-legionella function. Once this time elapses, an error is indicated and the function is forced to terminate.	0 ÷ 255	180 minutes	
Boiler end of precedence	Set the maximum time allowed to finish heating of the storage tank. When this time elapses, the appliance signals error 177.	0 ÷ 255	240 minutes	

MENU/Support/Boiler/Pump				
Menu item	Description	Range	Default	Customised value
Mode	Sets the boiler pump operation mode in central heating	Interm. = in winter "mode" the pump is managed according to the room control request.	Interm.	
		Cont. = in winter mode the pump is always powered and so functions continuously		
Max pump speed	Sets the boiler pump maximum operating speed in central heating	1 ÷ 9	9	
Min pump speed	Sets the boiler pump minimum operating speed in central heating	1 ÷ 9	9	
Delta t	This defines the type of speed control of the boiler pump in central heating	Delta t = 0: head proportional to the power supplied by the burner	15°C	
		Delta t = 5...25: constant Delta t operation (at the set value)		



MENU/Support/DHW				
Menu item	Description	Range	Default	Customised value
Boiler control input	Set the type of board input on which to activate the storage tank control	ntc = storage tank control performed via NTC probe	ntc	
		dig = storage tank control performed via contact (not used on this model)		
		ntc+dig = storage tank control performed by summing the probe reading and the enabling contact (not used on this model)		
DHW hysteresis	Set the storage tank control hysteresis and temperature	hyster. 0: 3k control hysteresis and flow correlated to the DHW setting (set +25K)	hyster. 1	
		hyster. 1: 3k control hysteresis and flow correlated to boiler power		
		hyster. 2: 10k control hysteresis and flow correlated to set		
		hyster. 3 5k control hysteresis and flow fixed at 85°C		
		hyster. 4: hysteresis and flow settable on parameters below the item		
Boil.water temp. hyst. 4	Set the storage tank flow temperature for hysteresis type 4	35 ÷ 85	70°C	
Diff.prec. with hyst. 4	Set the storage tank control hysteresis for type 4 hysteresis	2 ÷ 10	6°C	
DHW flow regulator	Not used on this model	-	-	
DHW min set	Set minimum DHW (Domestic hot water) set limit available to user	10 ÷ 65	10°C	
DHW max set	Set maximum DHW (Domestic hot water) set limit available to user	10 ÷ 65	60°C	
Anti-legionella	Anti-legion.cycle time: Sets the anti-legionella function intervention time	00:00 ÷ 24:00	02:00	
	Anti-legion.cycle day: Sets the day(s) of activation of the anti-legionella function	None ... All	None	

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MENU/Support/C.H.				
Menu item	Description	Range	Default	Customised value
CH min set	Set minimum central heating / C.H. set limit available	20 ÷ 85	20°C	
CH max set	Set maximum central heating / C.H. set limit available	20 ÷ 85	85°C	
Edit external probe	Sets correction factor on external probe reading	-9 ÷ 9	0°C	
Sys.flow probe max cur.	Sets the maximum limit for boiler flow set correction from system flow probe reading (Optional)	0 ÷ 15	5°C	

MENU/Support/Inputs				
Menu item	Description	Range	Default	Customised value
Configurable input	Enables management of system flow probe	Disable / Flow temp / Photovol.	Flow temp	
Remote control	Sets the dialogue protocol with remote device	IMG BUS: select this mode when connecting an Immergas remote control (e.g. CARv2) to terminals 44-41	IMG BUS	
		1: not used on this model		
		2: not used on this model		

MENU/Support/Modbus				
Menu item	Description	Range	Default	Customised value
Type	Enables dialogue in Dominus app or Domotics system	Off - Dominus - *BMS	Off	

MENU/Support/Special function/Deaeration				
Menu item	Description	Range	Default	Customised value
Enable vent	Vent enabled: to activate automatic venting at each power-on	No - Yes	Yes	
Deaeration comand	Activates/deactivates the deaeration control with a command	Stop - Start		
Function duration in hours	This displays the time remaining until the end of the function	0 - 255 (h)		
Anomaly	This displays any current anomaly	--		



MENU/Support/Special function/ Test flue			
Menu item	Description	Range	Default
En. test flue	Activate the flue test function	Stop - Start	Stop
Status	Notifies the function status	Off - On	
Fan speed	Fan speed display (rpm)	-- (rpm)	
Anomaly	This displays any current anomaly	--	

MENU/Support/Special function/ Complete calibration		
Menu item	Description	Range
Complete calibration	Activates the complete calibration function (Access to the calibration window with activation of the complete calibration command: makes it possible to change the combustion set)	

MENU/Support/Special function/ Fast calibration		
Menu item	Description	Range
Fast calibration	Activates the quick calibration function (Access to the calibration window with activation of the quick calibration command)	

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MENU/Support/Specialfunction/Screed heater				
Menu item	Description	Range	Default	Customised value
En. screed heater	Activates the function with Yes selected and the advanced end if No is selected	No - Yes	No	
Minimum flow set	It is possible to set the minimum flow temperature at screed heater function start	20 ÷ 45 (°C)	25°C	
Maximum flow set	It is possible to set the maximum flow temperature delivered during the screed heater function	25 ÷ 55 (°C)	45°C	
Min dwell time set	It is possible to set the days of stay at minimum flow set during the screed heater function	1 ÷ 7 (Day(s))	3 Day(s)	
Rise gradient	It is possible to set the ascent variation speed from minimum flow set to maximum flow set during the screed heater function	3 ÷ 30 (°C/Day)	30°C/Day	
Max dwell time set	It is possible to set the days of stay at maximum flow set during the screed heater function	1 ÷ 10 (Day(s))	4 Day(s)	
Fall gradient	It is possible to set the descent variation speed from maximum flow set to minimum flow set during the screed heater function	3 ÷ 30 (°C/Day)	30°C/Day	
Status	This displays the screed heater function progress	Off = function deactivated		
		Min = function active with stay time at minimum flow set		
		up = function active with increase from minimum flow set to maximum flow set		
		Max = function active with stay time at maximum flow set		
		down = function active with decrease from maximum flow set to minimum flow set		
Holding time T max	This displays the stay time at maximum screed heater temperature (h)	(h)		
Function duration in days	This displays the time remaining until the end of the function in days	(Day(s))		
Function duration in hours	This displays the time remaining in hours until the end of the function (to be added to the days of the previous item)	(h)		

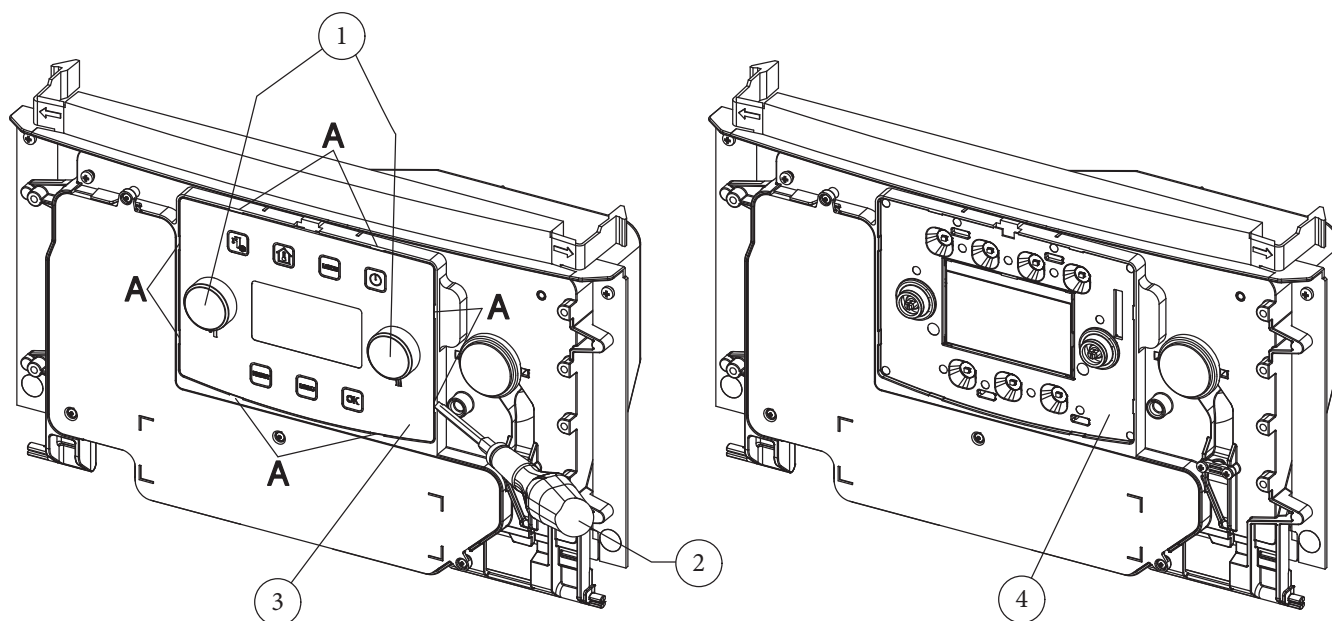
MENU/Support/Maintenance				
Menu item	Description	Range	Default	Customised value
Select number of months	Sets the number of months for scheduled maintenance	Off- 36	Off	



3.16 REPLACING THE CONTROL PANEL KEYBOARD

When replacing the keyboard due to a fault or malfunction, proceed as follows:

1. Disconnect power to the appliance.
2. Open the control panel (see Par. 3.28 and Fig. 6) and disconnect the pin strip that connects the keyboard to display by accessing the internal parts of the control panel, below the integrated P.C.B.
3. Remove the knobs (1)
4. Use a flat head screwdriver (2) to remove the keyboard (3), actuating under the surface in the various points indicated with (A).
5. Pulir and the surface (4) of the control panel by removing any residue of the double-sided adhesive.
6. Glue the new keyboard to the control panel by applying finger pressure along the entire perimeter of the keyboard.



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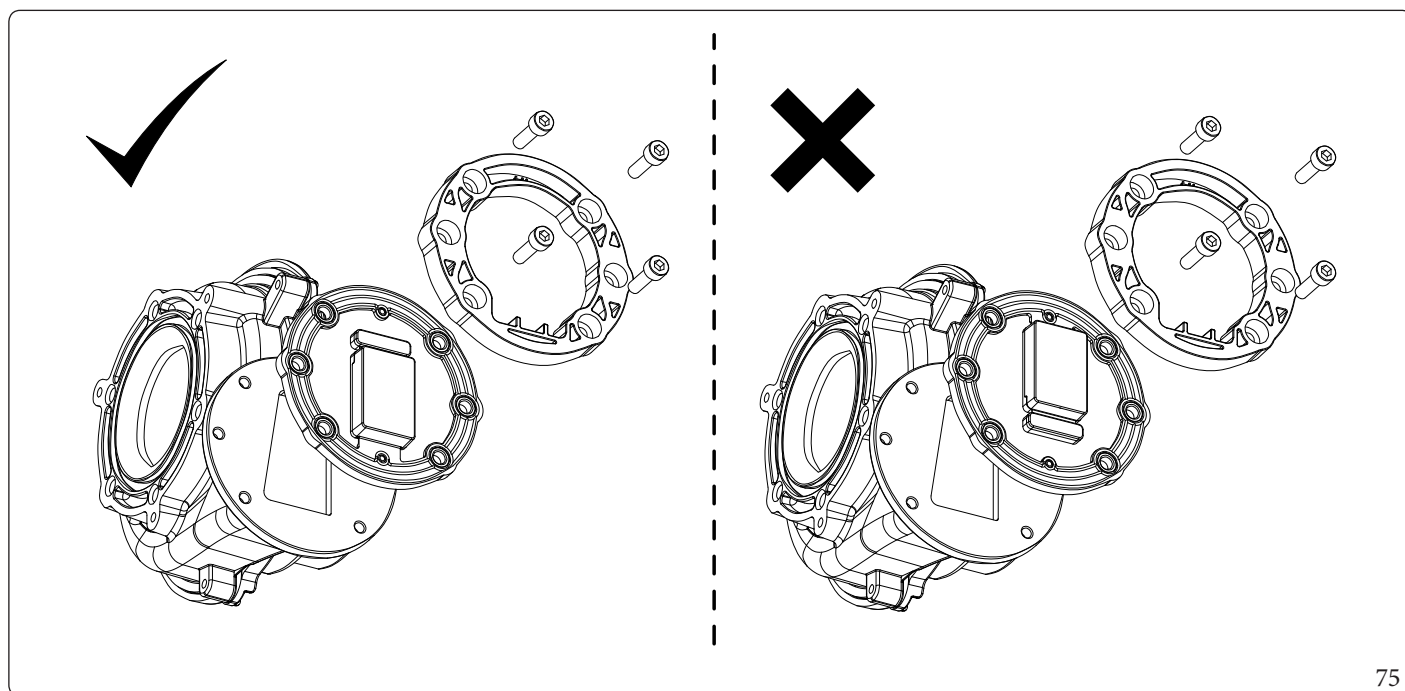
3.17 SPECIFIC INFORMATION FOR CORRECT APPLIANCE INSTALLATION IN COMMON PRESSURISED FLUE SYSTEMS ($C_{(10)}$ - $C_{(12)}$)



The appliance is factory equipped with a flue gas non-return valve located downstream of the fan, this device, given the importance of its correct operation, must have its installations $C_{(10)}$ and $C_{(12)}$ checked on an annual basis, and the active rubber element must be replaced in case of cuts in the moving parts.



For safety reasons, the flue gas non-return valve (inside the appliance) must be replaced after 10 years of operation.



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Before removing the sealing elements of the sealed chamber, using the flue gas analyser and with the appliance off, check that there are no traces of combustion products in the flue gas sample point.

The presence of combustion products indicates that the non-return valve on the flue gas (in appliance exhaust) is not properly closed, in which case it is appropriate to check the absence of flue gas even in the sealed chamber (analysis via air sample point).



If malfunctions are detected on the flue gas non-return valves, especially on the discharge valve, in the absence of a shut-off flue adjusting device at the coupling point of the flue in the pressurised collective flue, it will be necessary to turn off all the boilers connected to the pressurised collective flue itself, or make sure to intercept the connection point to avoid the dispersion of combustion products into the environment.

Only then proceed to verify the components, making sure that the non-return valve siphon on the flue gas (on the exhaust) (Fig. 36) is full and replacing them if malfunctioning or damaged.



3.18 APPLIANCE COUPLING WITH WIRELESS ROOM PROBES

The kit concentrator with probe consists of two devices capable of communicating together via radio frequency. The radio association between the two devices **is not factory set**.

It is necessary to perform the following operations at the time of installation, in order to activate radio acknowledgement and assign room control to the correct zone.

The room probe will be positioned in the room where temperature control is required.

The room probe works with the use of two 1.5V AA batteries and does not require electrical connection via wires.

The concentrator must be connected to the appliance by wiring (supplied with the kit) and positioned near the appliance.

If necessary it can be placed away from the appliance; in this case, it is necessary to provide a suitable electrical connection (not supplied with the kit).



Both the probe and the concentrator are suitable for indoor operation; they cannot be used outdoors and/or in environments subject to atmospheric agents.

Association procedure:

Insert the batteries on the probe and press the button on the probe for 5 sec.



If the probe is already previously associated, the LH and RH LEDs will flash alternately, therefore **it is necessary to proceed with the RF disassociation** (see RF Disassociation operations); if it **is not associated** the LH LED will start to flash (RH LED off), then continue with the next step of this procedure.

Zone assignment to wireless room probe:

1. make sure to have correctly made the electrical connections between concentrator and appliance and to have inserted the batteries on the wireless probe;
2. feed the appliance and access the Menu. For more details on menu navigation and access controls, see (Par.2.8);
3. access with the "Service" credentials;
4. access the Zones Menu;
5. select the zone to which the room probe refers;
6. enter the menu Configuration/Room probe;
7. select Type = RF;
8. set the M3 address of the concentrator to which to associate the wireless probe (the M3 address is defined by the position of the switches on the board inside the concentrator, default 0);
9. press OK (a confirmation window will be displayed with the text "Confirm operation?");
10. accept the confirmation request by pressing OK; then the display will show "Status ..." (association in progress) and Lh LED will flash on the concentrator (pending association);
11. move to the probe to be associated within 30 seconds and press the central button for 5 seconds. When the LH LED flashes, briefly press the button again (1 second);
12. once the operation has been completed correctly, the 2 LH and RH LEDs will flash alternately on the probe for 10 sec. to then indicate on the LH LED the number of the associated zone by flashing, with the RH LED steady. If the operation is not completed correctly, the two LEDs will flash synchronously for 5 seconds and the display will show the text "Status No-Link" (the operation needs to be repeated);
13. on Display, when the operation is completed correctly, the room probe status appears as "Ok".

Indications displayed on the "Status Room probe" menu

The following items appear in the Room probe association window:

- **Status = Err:** configuration error; the association sequence on the concentrator was not successful. Repeat the association sequence.
- **Status = No-Link:** error on RF association between probe and concentrator; it may also appear with probe battery flat. Check wireless probe operation and repeat the association sequence.
- **Status = - - :** indicates the wait for configuration; if it is maintained for a long time during the association sequence, check the connection between the concentrator and appliance.
- **Status = ...:** indicates the mode of association in progress.
- **Status = Ok:** indicates the correct association between the wireless probe and the zone to be controlled.



RF disassociation on wireless room probe

Should it be necessary to reset a previous assignment made on the room probe, proceed with the following operation on the room probe:

1. Press and hold the RF Probe button for at least 5s, if it is associated the LH-LEDs and the RH-LEDs will start to flash alternately;
2. At this point, press the button again for 5s and release it when only the LH-LED starts flashing while the RH-LED remains off;
3. Wait until the LH LED stops flashing before making a new association.

By using optional kits such as the concentrator kit for wireless room probes (if necessary to manage a single zone) and any wireless room probe kit (to manage any other zones up to a maximum of 3), it is possible to activate a room control in central heating / C.H. managed directly by the appliance.

The central heating / C.H. program will manage two room temperatures (comfort and reduced) in combination with the slots requested on the central heating / C.H. program (possibly diversified for the 3 zones).

Under these conditions, it will be possible to activate a system flow temperature modulating control so as to limit consumptions (enter any temperature control class, see table below).

To complete the room control via wireless probes, it is possible to connect the external probe (optional) and activate the control via the Dominus App (optional).

Remember that the central heating / C.H. demand, in addition to being subject to the central heating / C.H. program and to the temperature detected by the room probe, it will also be controlled by the contact set up for limit switch micro (terminals 40-41 for single zone).

For the electrical connection, configuration and correct management of the room probes (+ concentrator), see the kit instruction sheet.

Class	Contribution to room central heating seasonal energy efficiency	Description
I	1%	Using up to 2 Wireless room probes with modulating function excluded
V	3%	Using up to 2 Wireless room probes with modulating function active
VI	4%	Using up to 2 Wireless room probes with modulating function active on room and on external temperature (+ external probe connected to boiler)
VIII	5%	Using 3 Wireless room probes with modulating function active

3.19 AUTOMATIC VENT

The De-aeration setting and activation control is available in the Menu (with Service recognition) at the following path:

Menu / Support / Special function / Deaeration

Once in the “Deaeration” page, the window allows the first line to activate automatic de-aeration each time the appliance is powered by selecting “Enable vent = Yes” (standard setting).

This function lasts 8 minutes and it can be ended both by setting “Enable vent = No”, and by pressing the “Reset” button on the main screen control panel.

On the second line of the “Deaeration” page it is possible to activate the manual de-aeration by selecting “Deaeration = Start”.


This function lasts 18 hours and it can be ended by setting “Deaeration = Stop” and by pressing the “Reset” button on the control panel.




3.20 CHIMNEY SWEEP

- Activate the chimney sweep function by enabling the mode as described below.
- With the display set on the main screen (if not, go to the main screen by pressing the Menu key
1. Activate the keyboard by pressing any key (if it is not already active, i.e. with the backlit keys);
 2. Press the "RESET" key and keep it pressed for about 4 - 6.5 seconds until the message Chimney sweeper appears, then release the key;
 3. When the "RESET" key is released, the following list will appear on the display:

Chimneysweeper			
Menu item	Description	Range	Default
En. chimney sweeper	Chimney sweep function active	Stop - Start	Stop
Status	Notifies the function status	Off - On	
Set power level	Set power level	0 ÷ 100%	
Flow temperature	Flow temperature display	0 ÷ 99°C	
Flame	This displays the flame status	Off - On	
Circuit CH	Notification if central heating / C.H. is activated	Off - On	
Circuit DHW	Notification if DHW (Domestic hot water) is activated	Off - On	
Anomaly	This displays any current anomaly	--	

 If the key is released after the time limit of 6.5 seconds, no function is activated.

 In this state, all adjustments are excluded and the safety thermostat and the limit thermostat functions remain active.

Activate the function in the first line by selecting "Start".

This function makes it possible for the technician to check the combustion parameters in the working range that goes from minimum central heating / C.H. Q. to Nominal central heating / C.H. Q.

It is possible to select whether to make the check in CH status or DHW status by opening any hot water valve.

The power supplied by the burner can be adjusted within the chimney sweep menu on the "Set power level" parameter.


The central heating or D.H.W. operating mode is displayed on the chimney sweep window.

After completing the checks, disable the function by selecting "Stop".

If an anomaly with a manual release command is active when this function is started, the prolonged pressure described above will be followed by the message "Chimney sweeper: Fault active".

If the Antifreeze mode is set at start-up, the prolonged pressure described above will be followed by the message "Chimney sweeper: In-compatible mode".

Once activated from the Chimney sweeper window, the function remains active until the "En. chimney sweeper=Stop" command is given, or after the chimney sweep function has lasted for 20 minutes after the last action on the buttons and/or encoder.

 With the function active, it is possible to return to the initial screen and then re-enter the Chimney sweeper window with a long press on the reset button, keeping the function always active.

3.21 SCREED HEATER

The appliance is equipped with a function to perform the thermal shock on new radiant panel systems, as required by the applicable standard.

The function can only be activated when the appliance is in antifreeze mode.



Contact the manufacturer of the radiant panels for the thermal shock characteristics and its correct execution.



To be able to activate the function there must be no remote control connected, while in case of system divided into zones it must be properly connected, both hydraulically and electrically.

Menu / Support / Special function / Screed heater

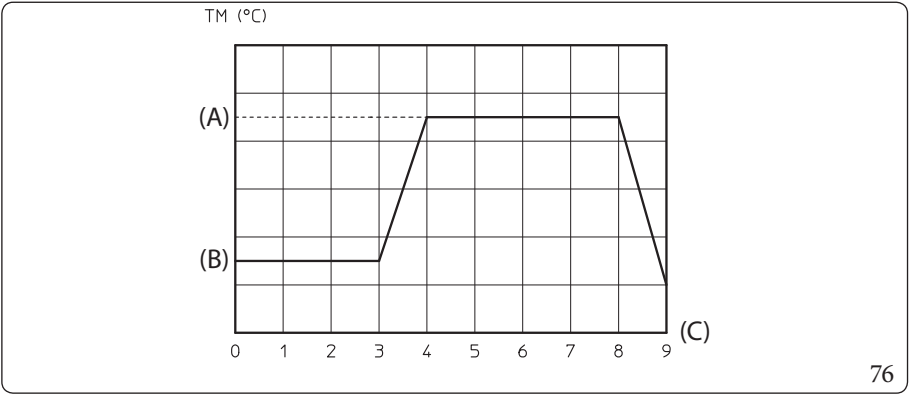
The active zone pumps are those with ongoing requests, made via the room thermostat input.

The standard function lasts in total 8 days - 3 days at the lowest temperature set and 4 days at the highest temperature selected plus the time necessary for the ascent and descent variations (Fig. 76).

Duration can be changed by changing the value of parameters, see (Par.2.8).

At this point, "Screed heater underway" appears on the display.

In case of failure, the function is suspended and will resume when normal operating conditions are reset from the point where it was interrupted.



Key (Fig. 76):
(A) - Top set
(B) - Lower set
(C) - Days



3.22 PUMP ANTI-BLOCK

The appliance has a function that starts up the pump at least once every 24 hours for 30 seconds in order to reduce the risk of the pump locking up due to prolonged inactivity.

3.23 THREE-WAY ANTI-BLOCK

In both phase "DHW", and "DHW-C.H.", the appliance has a function that activates the motorised 3-way unit 24 hours after the last time it operated by running a complete cycle in order to reduce the risk of the 3-way blocking due to prolonged inactivity.

3.24 RADIATOR ANTIFREEZE

If the system return water is below 4°C, the appliance starts up until reaching 42°C.

3.25 P.C.B. PERIODICAL SELF-CHECK

During functioning in Central heating mode or with appliance in Standby, the function activates every 18 hours after the last appliance check/power supply. In case of functioning in domestic hot water mode the self-check starts within 10 minutes after the end of the with-drawing in progress, for duration of approx. 10 seconds.



During the self-check, the appliance remains off. Warnings included.

3.26 DRAINING THE SYSTEM

Empty the appliance by actuating the specific draining valve (Det. 45 Fig. 53).

Before draining, ensure that the filling valve is closed.

In systems that are drained frequently, filling must be carried out with suitably treated water to eliminate hardness that can cause lime-scale.



If fluid containing glycol was added to the system circuit, make sure it is recovered and disposed of in accordance with standard EN 1717.

3.27 STORAGE TANK DRAINING

To drain the storage tank, use the relevant storage tank draining valve (Det. 29 Fig. 53).



Before performing this operation, close the boiler cold water inlet valve and open any DHW system hot water valve in order to allow the inlet of air into the storage tank.



3.28 CASING REMOVAL

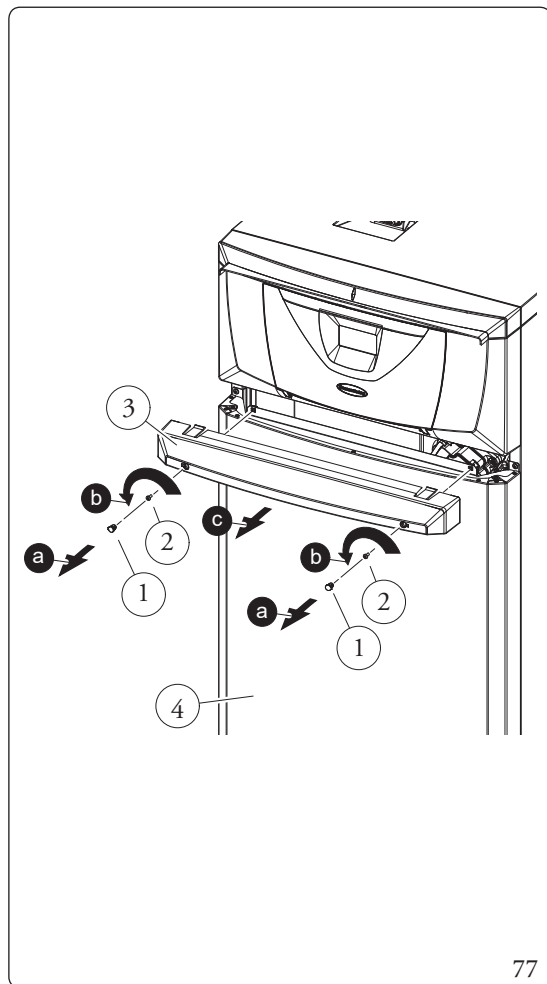
To facilitate appliance maintenance the casing can be completely removed as follows:

Bottom aesthetic profile (Fig. 77).

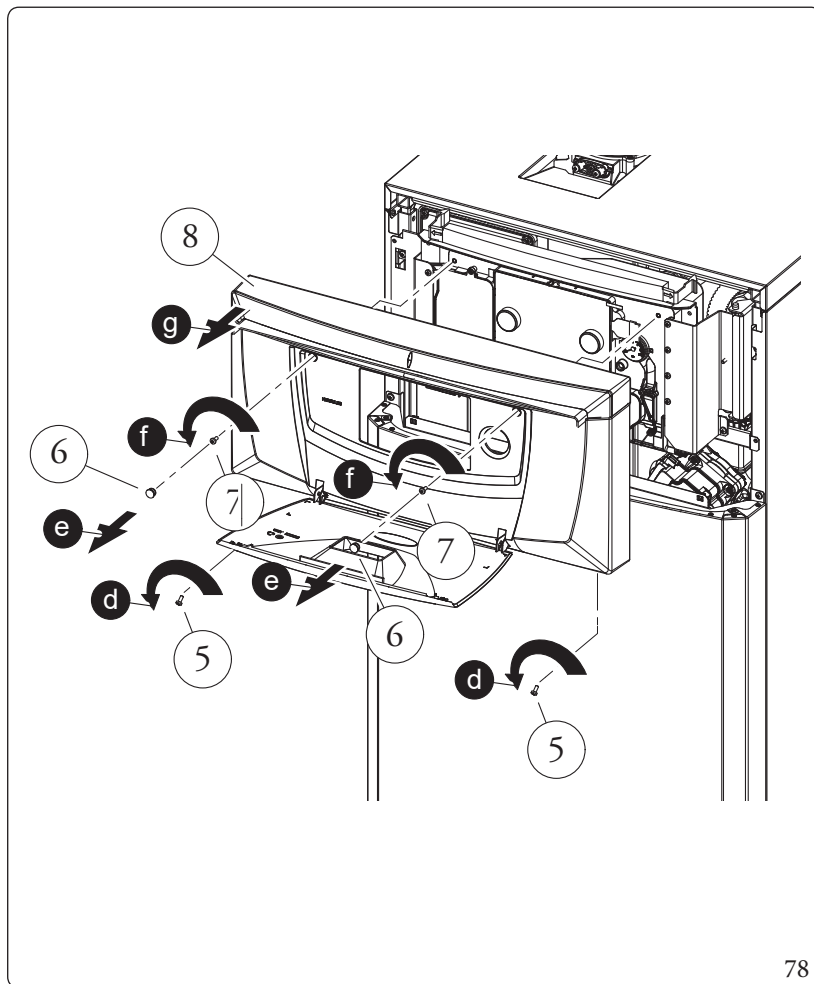
1. Remove (a) the caps (1).
2. Unscrew (b) the two screws (2).
3. Slip off (c) the bottom aesthetic profile (3) from the boiler (4).

Front panel (Fig. 78)

4. Unscrew (d) the screws (5).
5. Remove (e) the cover caps (6) and unscrew (f) the screws (7).
6. Pull (g) the front panel (8) towards you and release it from its lower seat.



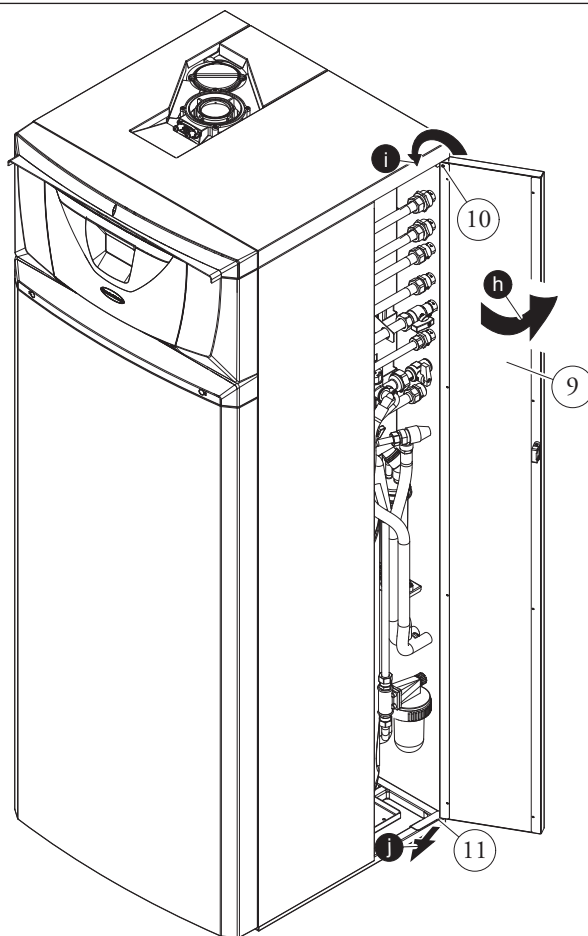
77



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Side door (Fig. 79)

7. Open (h) the side door (9) making it turn by at least 90° outwards.
8. Unscrew (i) the screw (10) in the top corner of the door (9).
9. Release the door (9) from the bracket just released from the screw (10) bending it outwards and sliding it off (j) of the lower pin (11).



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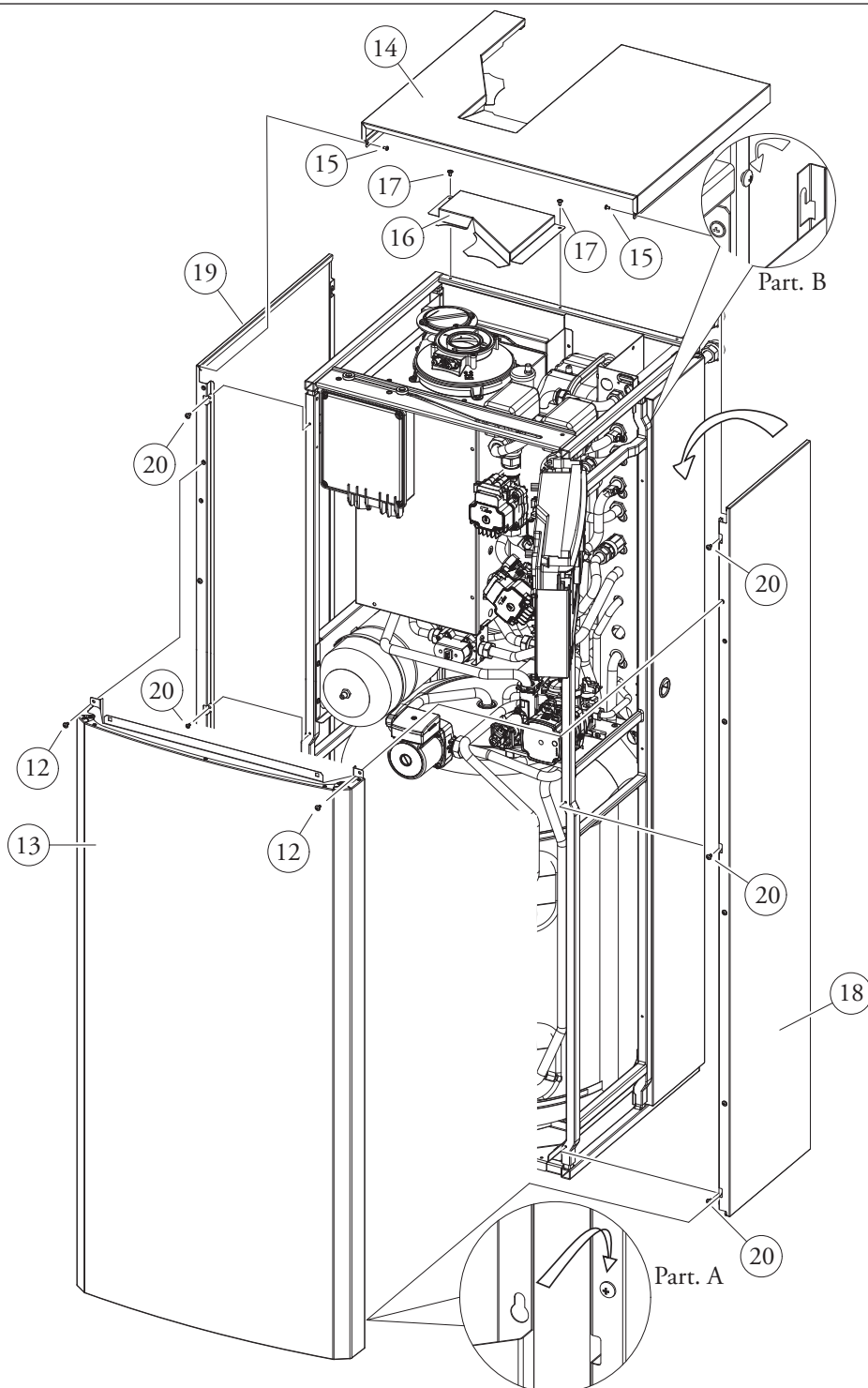
MAINTENANCE TECHNICIAN

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Casing (Fig. 80)

10. Unscrew the front screws (12), push the front (13) slightly upwards in order to free it from the lower fixing slots and pull it towards yourself (det. A).
11. Remove the front half-cover (14) loosening the internal screws (15), pull the cover towards yourself to release it from the screws with end stop positioned in the rear and then lift the cover.
12. Remove the rear half-cover (16) by unscrewing the two screws (17).
13. Remove the two casing sides (18 and 19) loosening the screws (20) (3 for each side). After that, push slightly up in order to release the side from its housing and pull it outwards (det. B).



4 TECHNICAL DATA

4.1 VARIABLE HEAT OUTPUT

 The power data in the table has been obtained with intake-exhaust pipe measuring 0.5 m in length. Gas flow rates refer to net calorific value below a temperature of 15°C and at a pressure of 1013 mbar.

Hercules 35 ABT

			METHANE (G20)			PROPANE (G31)		
FLOW RATE OUTPUT	HEAT OUTPUT		FAN REVS		GAS FLOW RATE BURNER	FAN REVS		GAS FLOW RATE BURNER
(kW)	(kW)		(rpm)	(%)	(m³/h)	(rpm)	(%)	(kg/h)
34,9	33,9	D.H.W.	6950	100	3,69	6650	100	2,71
29,0	28,2	HEAT. + D.H.W.	5775	75	3,07	5450	73	2,25
27,5	26,7		5575	71	2,91	5275	69	2,14
26,0	25,3		5375	66	2,75	5075	64	2,02
24,0	23,3		5125	61	2,54	4825	59	1,86
22,5	21,9		4925	56	2,38	4650	55	1,75
21,0	20,4		4725	52	2,22	4475	51	1,63
19,5	19,0		4525	48	2,06	4275	46	1,51
17,5	17,0		4250	42	1,85	4025	41	1,36
16,0	15,6		4075	38	1,69	3850	37	1,24
14,5	14,1		3875	33	1,53	3675	33	1,13
13,0	12,6		3675	29	1,38	3475	28	1,01
11,0	10,6		3400	23	1,16	3225	22	0,85
9,5	9,1		3200	19	1,01	3050	18	0,74
8,0	7,6		3000	14	0,85	2875	14	0,62
6,5	6,2		2800	10	0,69	2675	10	0,50
4,5	4,3		2550	4	0,48	2425	4	0,35
3,0	2,8		2350	0	0,32	2250	0	0,23

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4.2 COMBUSTION PARAMETERS

Combustion parameters: measuring conditions of useful efficiency (flow temperature/return temperature= 80/60 °C), ambient temperature reference = 20 °C.

Hercules 35 ABT

Gas type		G20	G31
Supply pressure	mbar	20,0	37,0
Gas nozzle diameter	mm	5,70	5,00
Ignition fan speed	rpm	3500	3800
Post ventilation fan speed	rpm	3500	3800
Flue flow rate at D.H.W. nominal heat output	kg/h	59	42
Flue flow rate at heating nominal heat output	kg/h	49	33
Flue flow rate at min heat output	kg/h	5	4
CO ₂ at Nominal Q.	%	8,8 (8,3 ÷ 9,3)	10,3 (9,8 ÷ 10,8)
*O ₂ at Nominal Q.		5,1 (6,0 ÷ 4,2)	- (- ÷ -)
CO ₂ at Ignition Q.	%	8,8 (8,3 ÷ 9,3)	10,7 (10,2 ÷ 11,2)
*O ₂ at Ignition Q.		5,1 (6,0 ÷ 4,2)	- (- ÷ -)
CO ₂ at Minimum Q.	%	8,8 (8,3 ÷ 9,3)	10,0 (9,4 ÷ 10,4)
*O ₂ at Minimum Q.		5,1 (6,0 ÷ 4,2)	- (- ÷ -)
CO with 0% O ₂ at Nom./Min. Q.	ppm	141 / 3	189 / 6
NO _x with 0% O ₂ at Nom./Min. Q.	mg/kWh	22 / 15	53 / 23
Flue temperature at nominal output	°C	71	72
Flue temperature at minimum output	°C	66	65
Max air combustion temperature	°C	50	50
Maximum flue gas circuit temperature	°C	120	120

* O₂ values refer to gas 20% H₂NG



4.3 TECHNICAL DATA TABLE

		HERCULES 35 ABT
Domestic hot water nominal heat input	kW	34,9
Central heating nominal heat input	kW	29,0
Minimum heat input	kW	3,0
DHW nominal heat input with 20% H ₂ NG gas	kW	32,7
Po Central heating nominal heat input with 20% H ₂ NG gas	kW	27,3
Minimum heat input with 20% H ₂ NG gas	kW	3,0
Domestic hot water nominal heat output (useful)	kW	33,9
Central heating nominal heat output (useful)	kW	28,2
Minimum heat output (useful)	kW	2,8
*Effective thermal efficiency 80/60 Nom./Min.	%	97,1 / 94,3
*Effective thermal efficiency 50/30 Nom./Min.	%	105,0 / 103,7
*Effective thermal efficiency 40/30 Nom./Min.	%	106,5 / 108,0
Efficiency at 100% heat output (η_{100}) ref. UNI EN 15502-1	%	97,3
Efficiency at partial heat load (η_{30}) ref. UNI EN 15502-1	%	109,7
Casing losses with burner On/Off	%	0,61 / 0,63
Chimney losses with burner Off/On	%	0,01 / 2,27
Maximum heating temperature	°C	90
Adjustable central heating temperature (min. operating field)	°C	20
Adjustable central heating temperature (max operating field)	°C	85
System expansion vessel total volume	l	10,8
Expansion vessel pre-charged pressure	bar	1,0
Appliance water content	l	9,5
Domestic hot water adjustable temperature	°C	10 / 60
Central heating circuit max. operating pressure	bar	3,0
Domestic hot water circuit min. pressure (dynamic)	bar	0,3
Domestic hot water circuit max. operating pressure	bar	8,0
Flow rate capacity in continuous duty (ΔT 30°C)	l/min	21,5
Weight of full boiler	kg	267,5
Weight of empty boiler	kg	121,0
Electrical connection	V/Hz	230 / 50
Nominal absorbed current	A	1,6
Installed electric power	W	220
Equipment electrical system protection	IP	X5D
Ambient operating temperature range	°C	0 ÷ 40
NO _x class	-	6
*Weighted NO _x G20	mg/kWh	21
Weighted CO G20	mg/kWh	16
Weighted NO _x G31	mg/kWh	-
Weighted CO G31	mg/kWh	-
Type of appliance	-	B ₂₃ B _{23p} B ₃₃ B ₅₃ B _{53p} C ₁₃ C ₃₃ C ₄₃ C ₅₃ C ₆₃ C ₈₃ C ₉₃ C _{13X} C _{33X} C _{43X} C _{53X} C _{63X} C _{83X} C _{93X} C ₍₁₀₎₃ C ₍₁₂₎₃ C _{(10)3X} C _{(12)3X} C ₍₁₅₎₃ C _{(15)3X}
Market		IE
Category		II2H3P

* Efficiencies and weighted NO_x refer to the net calorific value.

The data relevant to domestic hot water performance refer to a dynamic inlet pressure of 2 bar and an inlet temperature of 15°C; the values are measured directly at the appliance outlet considering that to obtain the data declared mixing with cold water is necessary.

Configurations C₍₁₀₎ and C₍₁₂₎ are only permitted with original, approved flue system

The appliance is suitable for operation in a C₍₁₀₎ or C₍₁₂₎ system and only with the supply of methane gas (2H and 2E categories).

For type C₆₃ it is forbidden to install the appliance as it came out of the factory, in configurations that require shared flues in positive pressure.

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4.4 TECHNICAL PARAMETERS FOR COMBINATION BOILERS (IN COMPLIANCE WITH REGULATION 813/2013)

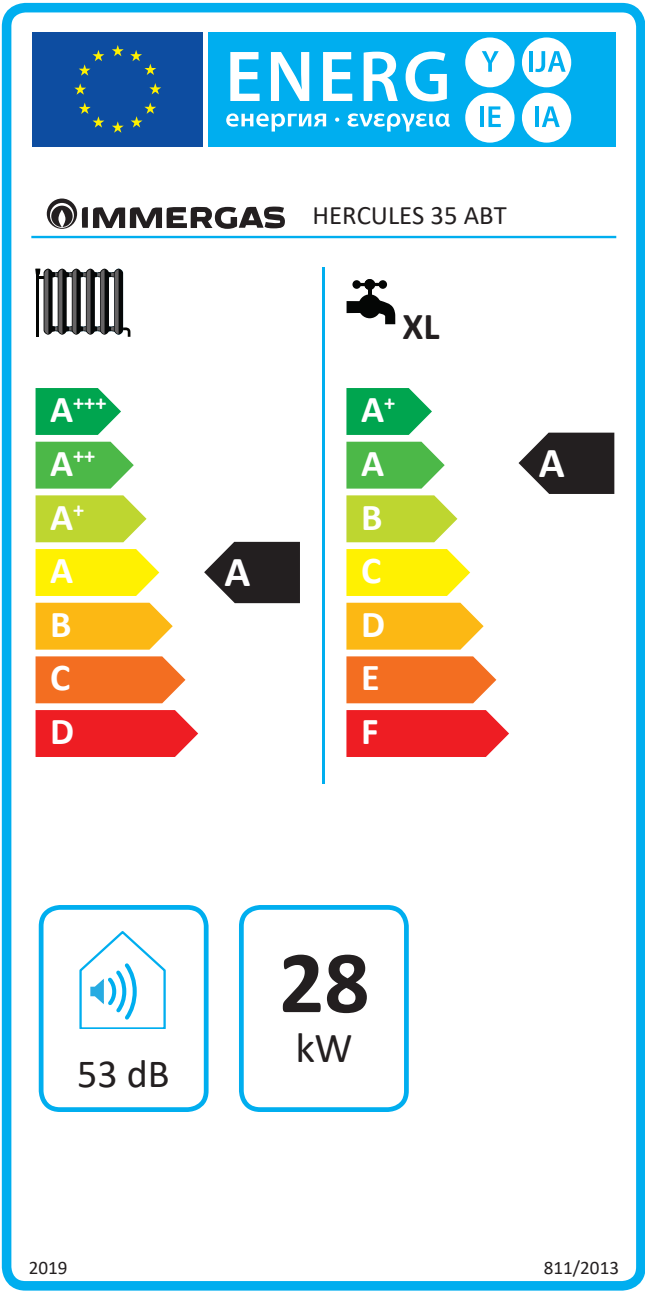
The efficiencies and NO_x values in the following tables refer to the gross calorific value.

Model	HERCULES 35 ABT		
Condensing Boiler	YES		
Low temperature boiler	NO		
Boiler type B1	NO		
Co-generation appliance for central heating	NO		
Mixed heating appliance	YES		
Nominal heat output	P _n	28	kW
Seasonal energy efficiency of central heating	η _s	94	%
For central heating only and combination boilers: useful heat output			
At nominal heat output in high temperature mode (*)	P ₄	28,2	kW
At 30% of nominal heat output in a low temperature mode (**)	P ₁	9,5	kW
For central heating only and combination boilers: useful efficiency			
At nominal heat output in high temperature mode (*)	η ₄	87,6	%
At 30% of nominal heat output in a low temperature mode (**)	η ₁	98,8	%
Auxiliary electricity consumption			
At full load	e _{l_max}	0,020	kW
At partial load	e _{l_min}	0,015	kW
In standby mode	P _{SB}	0,005	kW
Other items			
Heat loss in standby	P _{stby}	0,088	kW
Ignition burner energy consumption	P _{ign}	0,000	kW
Emissions of nitrogen oxides	NO _x	19	mg\kWh
For mixed central heating appliances			
Stated load profile	XL		
Domestic hot water production efficiency	η _{WH}	82	%
Daily electrical power consumption	Q _{elec}	0,250	kWh
Annual electrical power consumption	AEC	55	kWh
Daily gas consumption	Q _{fuel}	23,689	kWh
Annual gas consumption	AFC	19	GJ
(*) High temperature mode means 60°C on return and 80°C on flow.			
(**) Low temperature mode for condensation Boilers means 30°C, for low temperature boilers 37°C and for other appliances 50°C of return temperature.			



4.5 PRODUCT FICHE (IN COMPLIANCE WITH REGULATION 811/2013)

Hercules 35 ABT



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Parameter		Value
Annual energy consumption for the central heating mode (QHE)	GJ	48
Annual electricity consumption for the domestic hot water function (AEC)	kWh	55
Annual fuel consumption for the domestic hot water function (AFC)	GJ	19
Seasonal space heating energy efficiency (ηs)	%	94
Water heating energy efficiency (ηwh)	%	82

For proper installation of the appliance refer to chapter 1 of this booklet (for the installer) and current installation regulations.
For proper maintenance refer to chapter 3 of this booklet (for the maintenance technician) and adhere to the frequencies and methods set out herein.



4.6 PARAMETERS FOR FILLING IN THE PACKAGE FICHE

If an assembly is to be made from this device, use the assembly sheets shown in (Fig. 83 and 85).

For the correct compilation, insert into the appropriate spaces (as shown in the facsimile package fiche (Fig. 82 and 84) the values set out in the tables "Parameters for compiling package fiche" and "Parameters for compiling DHW pack package fiche".

The remaining values must be obtained from the technical data sheets of the products used to make up the assembly (e.g. solar devices, integration heat pumps, temperature controllers).

Use sheet (Fig. 83) for "assemblies" related to the heating function (e.g.: boiler + temperature controller).

Use sheet (Fig. 85) for "assemblies" related to the domestic hot water function (e.g.: boiler + solar thermal system).

Facsimile for filling in the package fiche for room central heating systems.

Seasonal central heating energy efficiency of the boiler

1
[] %

Temperature control

From temperature

control board

Class I = 1 %, Class II = 2 %,
Class III = 1.5 %, Class IV = 2 %,
Class V = 3 %, Class VI = 4 %,
Class VII = 3.5 %, Class VIII = 5 %

2
+ [] %

Supplementary boiler

From boiler board

Seasonal central heating energy efficiency of the room (%)

([] - 'I') x 0.1 = **3** ± [] %

Solar contribution

From the board of the solar device

Dimensions of the manifold (in m²)

Volume of the tank (in m³)

Efficiency of the manifold (in %)

Classification of the tank
A* = 0.95, A = 0.91,
B = 0.86, C = 0.83,
D-G = 0.81

('III' x [] + 'IV' x []) x (0.9 x ([] / 100) x [] = **4** + [] %

Supplementary heat pump

From the heat pump

board

Seasonal central heating energy efficiency of the room (%)

([] - 'I') x 'II' = **5** + [] %

Solar contribution and supplementary heat pump

Select the lowest value

0.5 x **4** [] O 0.5 x **5** [] = **6** - [] %

Seasonal central heating energy efficiency of the set

7
[] %

Seasonal central heating energy efficiency class of the set

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
G F E D C B A A⁺ A⁺⁺ A⁺⁺⁺
 < 30 % ≥ 30 % ≥ 34 % ≥ 36 % ≥ 75 % ≥ 82 % ≥ 90 % ≥ 98 % ≥ 125 % ≥ 150 %

Boiler and supplementary heat pump installed with low temperature heat emitters at 35 °C?

From the board of the heat pump

7 [] + (50 x 'II') = [] %

The energy efficiency of the set of products indicated in this sheet may not reflect the actual energy efficiency after installation since such efficiency is affected by additional factors, such as the heat loss in the distribution system and the size of the products compared to the size and features of the building.



Parameters for filling in the assembly chart

Parameter	HERCULES 35 ABT
"I"	94
"II"	*
"III"	0,95
"IV"	0,37

* to be established by means of table 5 of Regulation 811/2013 in case of "assembly" including a heat pump to integrate the boiler. In this case the boiler must be considered as the main appliance of the assembly.

Room central heating system package fiche.

Seasonal central heating energy efficiency of the boiler 1 %

Temperature control 2 %
 From temperature control board

Class I = 1 %, Class II = 2 %,
 Class III = 1.5 %, Class IV = 2 %,
 Class V = 3 %, Class VI = 4 %,
 Class VII = 3.5 %, Class VIII = 5 %

Supplementary boiler 3 %
 From boiler board

Seasonal central heating energy efficiency of the room (%)

(-) x 0.1 = ± %

Solar contribution

From the board of the solar device

Dimensions of the manifold (in m²)

Volume of the tank (in m³)

Efficiency of the manifold (in %)

Classification of the tank
 A* = 0.95, A = 0.91,
 B = 0.86, C = 0.83,
 D-G = 0.81

(x + x) x (0.9 x (/ 100) x = + 4 %

Supplementary heat pump 5 %
 From the heat pump board

Seasonal central heating energy efficiency (in %)

(-) x = + %

Solar contribution and supplementary heat pump

Select the lowest value 6 %

0.5 x 4 O 0.5 x 5 = - %

Seasonal central heating energy efficiency of the set 7 %

Seasonal central heating energy efficiency class of the set

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

G
F
E
D
C
B
A
A⁺
A⁺⁺
A⁺⁺⁺

< 30 %
≥ 30 %
≥ 34 %
≥ 36 %
≥ 75 %
≥ 82 %
≥ 90 %
≥ 98 %
≥ 125 %
≥ 150 %

Boiler and supplementary heat pump installed with low temperature heat emitters at 35 °C?

From the board of the heat pump 7 + (50 x) = %

The energy efficiency of the set of products indicated in this sheet may not reflect the actual energy efficiency after installation since such efficiency is affected by additional factors, such as the heat loss in the distribution system and the size of the products compared to the size and features of the building.

INSTALLER

USER

MAINTENANCE TECHNICIAN

TECHNICAL DATA



Facsimile for filling in the domestic hot water production system package fiche

Water heating energy efficiency of combination boiler

¹
 %

Stated load profile:

Solar contribution

From the board of the solar device

Auxiliary electricity

$$(1.1 \times \text{'I'} - 10\%) \times \text{'II'} - \text{'III'} - \text{'I'} = + \text{'2'} \%$$

Water heating energy efficiency of the assembly in average climate conditions

³
 %

Water heating energy efficiency class of the assembly in average climate conditions

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	G	F	E	D	C	B	A	A ⁺	A ⁺⁺	A ⁺⁺⁺
<input type="checkbox"/> M	< 27 %	≥ 27 %	≥ 30 %	≥ 33 %	≥ 36 %	≥ 39 %	≥ 65 %	≥ 100 %	≥ 130 %	≥ 163 %
<input type="checkbox"/> L	< 27 %	≥ 27 %	≥ 30 %	≥ 34 %	≥ 37 %	≥ 50 %	≥ 75 %	≥ 115 %	≥ 150 %	≥ 188 %
<input type="checkbox"/> XL	< 27 %	≥ 27 %	≥ 30 %	≥ 35 %	≥ 38 %	≥ 55 %	≥ 80 %	≥ 123 %	≥ 160 %	≥ 200 %
<input type="checkbox"/> XXL	< 28 %	≥ 28 %	≥ 32 %	≥ 36 %	≥ 40 %	≥ 60 %	≥ 85 %	≥ 131 %	≥ 170 %	≥ 213 %

Water heating energy efficiency class in colder and hotter climate conditions

 Colder: ³ - 0.2 x ² = %

 Hotter: ³ + 0.4 x ² = %

The energy efficiency of the set of products indicated in this sheet may not reflect the actual energy efficiency after installation since such efficiency is affected by additional factors, such as the heat loss in the distribution system and the size of the products compared to the size and features of the building.

Parameters for filling in the DHW package fiche

Parameter	HERCULES 35 ABT
"I"	81
"II"	*
"III"	*

* to be determined according to Regulation 811/2013 and transient calculation methods as per Notice of the European Community no. 207/2014.

Domestic hot water production system package fiche.

Water heating energy efficiency of combination boiler

^① %

Stated load profile:

Solar contribution

From the board of the solar device

Auxiliary electricity

(1.1 x - 10 %) x - = + ^② %

Water heating energy efficiency of the assembly in average climate conditions

^③ %

Water heating energy efficiency class of the assembly in average climate conditions

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	G	F	E	D	C	B	A	A ⁺	A ⁺⁺	A ⁺⁺⁺
<input type="checkbox"/> M	< 27 %	≥ 27 %	≥ 30 %	≥ 33 %	≥ 36 %	≥ 39 %	≥ 65 %	≥ 100 %	≥ 130 %	≥ 163 %
<input type="checkbox"/> L	< 27 %	≥ 27 %	≥ 30 %	≥ 34 %	≥ 37 %	≥ 50 %	≥ 75 %	≥ 115 %	≥ 150 %	≥ 188 %
<input type="checkbox"/> XL	< 27 %	≥ 27 %	≥ 30 %	≥ 35 %	≥ 38 %	≥ 55 %	≥ 80 %	≥ 123 %	≥ 160 %	≥ 200 %
<input type="checkbox"/> XXL	< 28 %	≥ 28 %	≥ 32 %	≥ 36 %	≥ 40 %	≥ 60 %	≥ 85 %	≥ 131 %	≥ 170 %	≥ 213 %

Water heating energy efficiency class in colder and hotter climate conditions

Colder: ^③ - 0.2 x ^② = %

Hotter: ^③ + 0.4 x ^② = %

The energy efficiency of the set of products indicated in this sheet may not reflect the actual energy efficiency after installation since such efficiency is affected by additional factors, such as the heat loss in the distribution system and the size of the products compared to the size and features of the building.







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Design, manufacture and post-sale assistance of gas boilers, gas water heaters and related accessories



This instruction booklet is made of ecological paper.

