

WATER

USERS

Instruction and warning book



# EOLO MYTHOS 24 2E

\*1.038791ENG\*





## **Dear Customer,**

*Our compliments 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 after-sales service, prepared and updated to guarantee constant efficiency of your boiler. Read the following pages carefully: you will be able to draw useful suggestions regarding the correct use of the appliance, the respect of which, will confirm your satisfaction for the Immergas product. For assistance and scheduled maintenance contact Authorised After-Sales centres: they have original spare parts and are specifically trained directly by the manufacturer.*

### **General recommendations**

*All Immergas products are protected with suitable transport packaging.*

*The material must be stored in dry environments protected against bad weather.*

*The instruction book is an integral and essential part of the product and must be consigned to the new user also 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.*

*This instructions manual provides technical information for installing Immergas boilers. As for the other issues related to boiler installation (e.g. safety in the work site, environment protection, injury prevention), it is necessary to comply with the provisions specified in the regulations in force and principles of good practice.*

*In compliance with 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, intending staff with specific technical skills in the plant sector, as envisioned by the Law.*

*Improper installation or assembly of the Immergas appliance and/or components, accessories, kit and devices can cause unexpected problems to people, animals and objects. Read the instructions provided with the product carefully to ensure a proper installation.*

*Maintenance must be carried out by skilled technical staff. The Authorised After-sales Service 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 book (or however supplied by the manufacturer), the manufacturer is excluded from any contractual and extra-contractual liability for any damages and the appliance warranty is invalidated.*

Product not intended for EU countries

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.

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# 1 BOILER INSTALLATION

## 1.1 INSTALLATION RECOMMENDATIONS.

The Eolo Mythos 24 2 E boiler has been designed for wall mounted installation only, for heating environments and production of domestic hot water for domestic use and similar purposes.

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

- installation (according to the provisions of the 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 their eventual replacement with appliances and/or equivalent components.

The wall surface must be smooth, without any protrusions or recesses enabling access to the rear part. They are not designed to be installed on plinths or floors (Fig. 1-1).

By varying the type of installation the classification of the boiler also varies, precisely:

- **Type B boiler**, if installed using the relevant terminal for air intake directly from the room in which the boiler has been installed.
- **Type C boiler** if installed using concentric pipes or other types of pipes envisioned for the sealed chamber boiler for intake of air and expulsion of flue gases.

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.

**Attention:** the manufacturer declines all liability for damages caused by boilers removed from other systems or for any non-conformities of such equipment.

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 normal servicing; it is therefore recommended to leave at least 45 cm between the upper part of the boiler and the ceiling and a gap of 3 cm between the boiler casing and the vertical sides of the cabinet. Keep all flammable objects away from the appliance (paper, rags, plastic, polystyrene, etc.).

Do not place household appliances underneath the boiler as they could be damaged if the safety valve intervenes (if not conveyed away by a draining funnel), or if there are leaks from the hydraulic connections; otherwise, the manufacturer cannot be held responsible for any damage caused to the household appliances.

For the aforementioned reasons, we recommend not placing furnishings, furniture, etc. under the boiler.

In the event of malfunctions, faults or incorrect operation, turn the appliance off immediately 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.

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

### • Installation regulations:

- this boiler can be installed outdoors in a partially protected area. A partially protected area is one in which the appliance is not exposed to the direct action of the weather (rain, snow, hail, etc..).

**NOTE:** *this type of installation is only possible when permitted by the laws in force in the appliance's country of destination.*

- Installation in places with a fire risk is prohibited (for example: garages, closed parking stalls), gas appliances and relative flue ducts, flue exhaust pipes and combustion air intake pipes.
- Installation is prohibited on the vertical projection of cooking hobs.
- Installation is also prohibited in places/environments that constitute common parts of office condominiums such as stairs, cellars, entrance halls, attics, lofts, escape routes, etc. if they are not located inside technical compartments under the responsibility of each individual building and only accessible to the user (for the features of the technical compartments, see the technical standards in force).

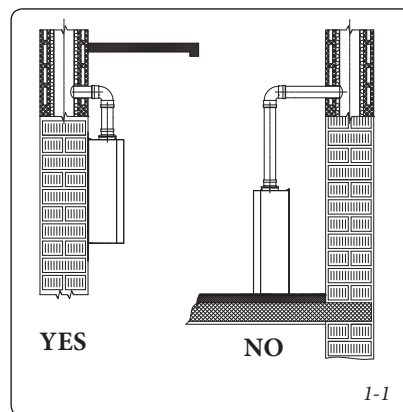
**Attention:** wall mounting of the boiler must guarantee stable and efficient support for the generator

*The plugs (standard supply) are to be used only in conjunction with the mounting brackets or fixing template to fix the appliance to the wall; they only ensure adequate support if inserted correctly (according to technical standards) in walls made of solid or semi-hollow brick or block. In the case of walls made from hollow brick or block, partitions with limited static properties, or in any case walls other than those indicated, a static test must be carried out to ensure adequate support.*

**N.B.: the hex head screws supplied in the blister pack are to be used exclusively to fix the relative mounting bracket to the wall.**

These boilers are used to heat water to below boiling temperature in atmospheric pressure. They must be connected to a central heating system and hot water circuit suited to their performance and capacity.

They cannot be connected directly to low-temperature systems.

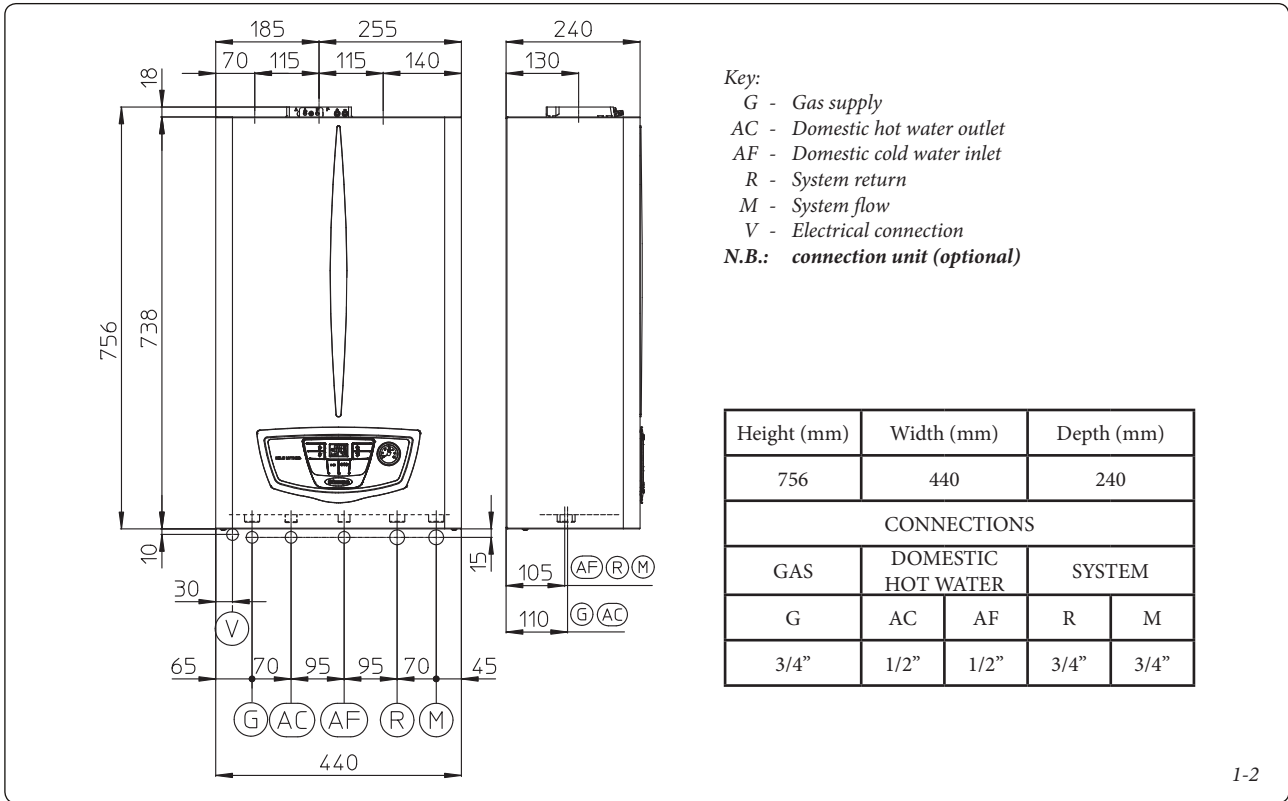


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**1.2 MAIN DIMENSIONS.**



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**1.3 ANTIFREEZE PROTECTION.**

**Minimum temperature -5°C.** The boiler comes standard with an anti-freeze function that activates the pump and burner when the system water temperature in the boiler falls below 4°C. The anti-freeze function is only guaranteed if:

- the boiler is correctly connected to gas and electricity power supply circuits;
- the boiler is powered constantly;
- the boiler is not in ignition failure block (Par. 2.4);
- the boiler essential components are not faulty.

*In these conditions the boiler is protected against freezing to an ambient temperature of -5°C.*

**Minimum temperature -15°C.** If the boiler is installed in a place where the temperature falls below -5°C and in the event there is no gas (or the boiler goes into ignition failure block), the appliance can freeze.

*To prevent the risk of freezing follow the instructions below:*

- protect the central heating circuit from freezing by inserting a good-quality antifreeze liquid into this circuit, which is specially suited for central heating systems and which is manufacturer guaranteed not to cause damage to the heat exchanger or other components of the boiler. The antifreeze liquid must not be harmful to one's health. The instructions of the manufacturer of this liquid must be followed scrupulously regarding the percentage necessary with respect to the minimum temperature at which the system must be kept. An aqueous solution must be made with potential pollution class of water 2.

*The materials used for the central heating circuit of Immergas boilers withstand ethylene and propylene glycol based antifreeze liquids (if the mixtures are prepared perfectly).*

For life and possible disposal, follow the supplier's instructions.

- Protect the domestic hot water circuit against freezing by using an accessory that is supplied on request (antifreeze kit) comprising two electric heating elements, the relevant cables and a control thermostat (carefully read the installation instructions contained in the accessory kit pack).

*Boiler anti-freeze protection is thus ensured only if:*

- the boiler is correctly connected to the electricity power supply circuits and powered;
- Main switch is inserted;
- the anti-freeze kit components are efficient.

*In these conditions the boiler is protected against freezing to temperature of -15°C.*

*The warranty does not cover damage due to interruption of the electrical power supply and failure to comply with that stated on the previous page.*

**NOTE:** if the boiler is installed in places where the temperature falls below 0°C the domestic hot water and central heating attachment pipes must be insulated.

## 1.4 CONNECTIONS (OPTIONAL).

### Gas connection.

Our boilers are designed to operate with methane gas (G20) or LPG. Supply pipes must be the same as or larger than the 3/4" G boiler fitting. Before connecting the gas line, carefully clean inside all the fuel feed system pipes to remove any residue that could impair boiler efficiency. Also make sure the gas corresponds to that for which the boiler is prepared (see boiler data name plate). If different, the appliance must be converted for operation with the other type of gas (see converting appliance for other gas types). The dynamic gas supply (methane or LPG) pressure must also be checked according to the type used in the boiler, which must be in compliance, as insufficient levels can reduce generator output and cause malfunctions.

Ensure correct gas cock connection. 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 coupling system must conform to standards.

**Fuel gas quality.** The appliance was designed to operate with combustible gas free of 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 heating power of the mixture delivered to the appliance, with subsequent change in its performance.

### Hydraulic connection.

**Attention:** in order not to void the heat primary exchanger warranty, before making the boiler connections, carefully clean the heating system (pipes, radiators, etc.) with special pickling or de-scaling products to remove any deposits that could compromise correct boiler operation.

A chemical treatment of the thermal system water is required, in compliance with the technical standards in force, in order to protect the system and the appliance from deposits (e.g., limescale), slurry or other hazardous deposits.


Water connections must be made in a rational way using the couplings on the boiler template. The boiler safety valve outlet must be connected to a draining funnel. Otherwise, the manufacturer declines any responsibility in case of flooding if the drain valve cuts in.

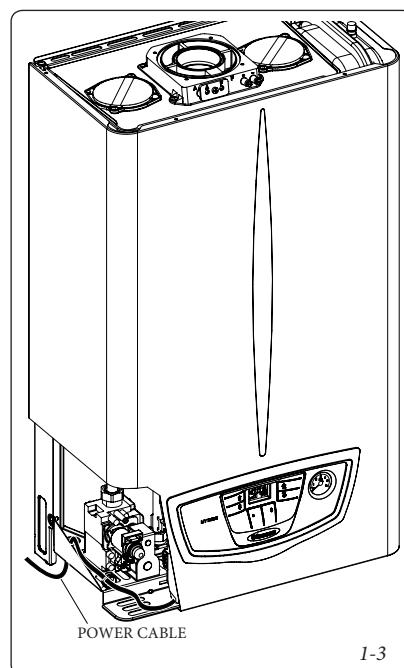
**Attention:** the manufacturer declines all liability in the event of damage caused by the installation of an automatic filling system.

**Attention:** to preserve the duration and the efficiency features of the appliance, in the presence of water whose features can lead to the deposit of limescale, installation of the "polyphosphate dispenser" kit is recommended.

**Electrical connection.** The "Eolo Mythos 24 2 E" boiler has an IPX5D protection rating for the entire appliance. Electrical safety of the appliance is reached only when it is correctly connected to an efficient earthing system as specified by current safety standards.

**Attention:** the manufacturer declines any responsibility for damage or physical injury caused by failure to connect the boiler to an efficient earth system or failure to comply with the reference standards.

Also ensure that the electrical installation corresponds to maximum absorbed power specifications as shown on the boiler data nameplate. Boilers are supplied complete with an "X" type power cable without plug. 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 over-voltage category. When replacing the power supply cable, contact a qualified company (e.g. the Authorised After-Sales Technical Assistance Service). The power cable must be laid as shown (Fig. 1-3). In the event of mains fuse replacement on the P.C.B., use a 3.15A quick-blow fuse. For the main power supply to the appliance, never use adapters, multiple sockets or extension leads.



### 1.5 REMOTE CONTROLS AND ROOM CHRONO-THERMOSTATS (OPTIONAL).

The boiler is prepared for the application of room chrono-thermostats or remote controls, which are available as optional kits. (Fig. 1-4)

All Immergas chrono-thermostats are connected with 2 wires only. Carefully read the user and assembly instructions contained in the accessory kit.

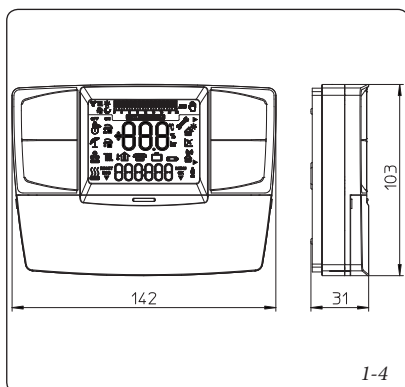
- On/Off Immergas digital chrono-thermostat. The chrono-thermostat allows:
  - set two room temperature value: one for daytime (comfort temperature) and one for night-time (reduced temperature);
  - set a weekly program with four daily switch on and switch off times;
  - select the required operating mode from the various possible alternatives:
    - manual mode (with adjustable temperature).
    - automatic mode (with set program).
    - forced automatic mode (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<sup>V2</sup> (CAR<sup>V2</sup>). In addition to the functions described in the previous point, the control 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 provided with self-diagnosis to display any boiler functioning anomalies. 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<sup>V2</sup> is fed directly by the boiler by means of the same 2 wires used for the transmission of data between the boiler and device.

CAR<sup>V2</sup> or chrono-thermostat On/Off electric connection (Optional). *The operations described below must be performed after having removed the voltage from the appliance.* Any On/Off room chrono-thermostat must be connected to clamps 40 and 41 eliminating jumper X40 (Fig. 3-2). Make sure that the On/Off thermostat contact is of the “clean” type, i.e. independent of the mains voltage, otherwise the P.C.B. would be damaged. Any CAR<sup>V2</sup> must be connected to clamps 40 and 41 eliminating jumper X40 on the circuit board, paying attention not to invert the polarity in the connections (Fig. 3-2). Connection with the wrong polarity prevents functioning, but without damaging the CAR<sup>V2</sup>. The boiler can only be connected to one remote control.

**Important:** if the CAR<sup>V2</sup> remote control is used, arrange two separate lines in compliance with current regulations regarding electrical systems. No boiler pipes must ever be used to earth the electric system or telephone lines. Ensure elimination of this risk before making the boiler electrical connections.



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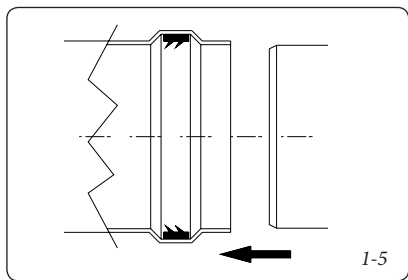
**1.6 IMMERGAS FLUE SYSTEMS.**

Immergas supplies various solutions separately from the boilers regarding the installation of air intake terminals and flue exhaust, which are fundamental for boiler operation.

**Attention: the boiler must only be installed together with an original Immergas air intake and flue gas exhaust system, except for the C6 configuration, in compliance with the standards in force. This system can be identified by an identification mark and special distinctive marking bearing the note “not for condensing boilers”.**

The flue exhaust pipes must not be in contact with or be near to flammable materials. Moreover, they must not pass through buildings or walls made of flammable material.

- Resistance factors and equivalent lengths. Each flue component has a *Resistance Factor* based on experimental tests and specified in the table below. The Resistance Factor for individual components is independent from the type of boiler on which it is installed and has a dimensionless size. It is however, conditioned by the temperature of the fluids that pass through the pipe and therefore, varies according to applications for air intake or flue exhaust. Each single component has a resistance corresponding to a certain length in metres of pipe of the same



diameter; the so-called *equivalent length*, can be obtained from the ratio between the relative Resistance Factors. *All boilers have an experimentally obtainable maximum Resistance Factor equal to 100.* The maximum Resistance Factor allowed corresponds to the resistance encountered with the maximum allowed pipe length for each type of Terminal Kit. This information allows calculations to be made to verify the possibility of setting up various flue configurations.

**N.B.:** to dimension the flue ducting using commercial components, refer to the table of combustion parameters (Paragr. 3.17).

- Positioning of double lip seals.** For correct positioning of lip seals on elbows and extensions, follow the assembly direction given in the figure (Fig. 1-5).
- Coupling extension pipes and concentric elbows.** 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.

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

- N.B.:** for safety purposes, do not obstruct the boiler intake/exhaust terminal, even temporarily.
- N.B.:** during the installation of the horizontal pipes one must maintain a minimum inclination of the pipes of 3% towards the boiler and a section clamp with gusset must be installed every 3 metres for non-insulated pipes and one every 2 metres for insulated pipes.

**Diaphragm installation.** For proper boiler operation a diaphragm must be installed on the outlet of the sealed chamber and before the intake and exhaust pipe (Fig. 1-6).

The appropriate diaphragm is chosen based on type of pipe and its maximum extension: this calculation can be made using the tables below:

**N.B.:** the diaphragms are supplied together with the boiler as standard.

Diaphragm	Pipe extensions in metres Ø 60/100 horizontal
Ø 87 (ref. 2 fig. 1-6)	From 0.35 to 1.5
Ø 85 (ref. 1 fig. 1-6)	From 1.5 to 3.0

Diaphragm	Pipe extension in metres Ø 60/100 vertical
Ø 87 (ref. 2 fig. 1-6)	From 0.35 to 3.7
Ø 85 (ref. 1 fig. 1-6)	From 3.7 to 4.7

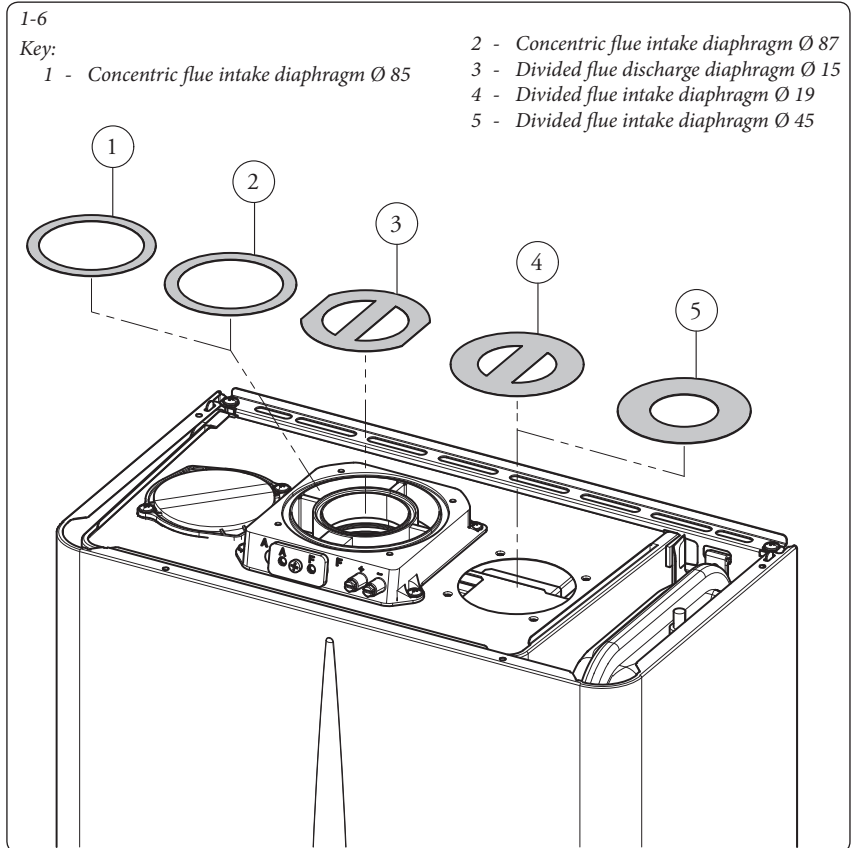
Diaphragm	Pipe extensions in metres Ø 80/125 horizontal
Ø 87 (ref. 2 fig. 1-6)	From 0.35 to 4.6
Ø 85 (ref. 1 fig. 1-6)	From 4.6 to 7.4

Diaphragm	Pipe extension in metres Ø 80/125 vertical
Ø 87 (ref. 2 fig. 1-6)	From 0.35 to 9.5
Ø 85 (ref. 1 fig. 1-6)	From 9.5 to 12.2

Pipe extension in metres Ø 80 divided	
Intake (diaphragm ref. 5 fig. 1-6)	Exhaust (diaphragm ref. 3 fig. 1-6)
From 0.5 to 35	0.5

Pipe extension in metres Ø 80 divided	
Intake (diaphragm ref. 4 fig. 1-6)	Exhaust
0.5	From 0.5 to 27

Pipe extension in metres Ø 80 divided	
Intake (diaphragm ref. 5 fig. 1-6)	Exhaust
Exceeding 1	Exceeding 1





1.7 TABLES OF RESISTANCE FACTORS AND EQUIVALENT LENGTHS.

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TYPE OF DUCT	Resistance Factor (R)	Equivalent length in m of concentric pipe $\varnothing$ 60/100	Equivalent length in m of concentric pipe $\varnothing$ 80/125	Equivalent length of pipe in m $\varnothing$ 80
Concentric pipe $\varnothing$ 60/100 m 1	Intake and Exhaust 16.5	<b>m 1</b>	m 2.8	Intake m 7.1 Exhaust m 5.5
Concentric bend 90° $\varnothing$ 60/100	Intake and Exhaust 21	<b>m 1.3</b>	m 3.5	Intake m 9.1 Exhaust m 7.0
Concentric bend 45° $\varnothing$ 60/100	Intake and Exhaust 16.5	<b>m 1</b>	m 2.8	Intake m 7.1 Exhaust m 5.5
Terminal complete with concentric horizontal intake-exhaust $\varnothing$ 60/100	Intake and Exhaust 46	<b>m 2.8</b>	m 7.6	Intake m 20 Exhaust m 15
Concentric horizontal intake-exhaust terminal $\varnothing$ 60/100	Intake and Exhaust 32	<b>m 1.9</b>	m 5.3	Intake m 14 Exhaust m 10.6
Concentric vertical intake-exhaust terminal $\varnothing$ 60/100	Intake and Exhaust 41.7	<b>m 2.5</b>	m 7	Intake m 18 Exhaust 14
Concentric pipe $\varnothing$ 80/125 m 1	Intake and Exhaust 6	m 0.4	<b>m 1.0</b>	Intake m 2.6 Exhaust m 2.0
Concentric bend 90° $\varnothing$ 80/125	Intake and Exhaust 7.5	m 0.5	<b>m 1.3</b>	Intake m 3.3 Exhaust m 2.5
Concentric bend 45° $\varnothing$ 80/125	Intake and Exhaust 6	m 0.4	<b>m 1.0</b>	Intake m 2.6 Exhaust m 2.0
Terminal complete with concentric vertical intake-exhaust $\varnothing$ 80/125	Intake and Exhaust 33	m 2.0	<b>m 5.5</b>	Intake m 14.3 Exhaust m 11.0
Concentric vertical intake-exhaust terminal $\varnothing$ 80/125	Intake and Exhaust 26.5	m 1.6	<b>m 4.4</b>	Intake m 11.5 Exhaust m 8.8
Terminal complete with concentric horizontal intake-exhaust $\varnothing$ 80/125	Intake and Exhaust 39	m 2.3	<b>m 6.5</b>	Intake m 16.9 Exhaust m 13
Concentric horizontal intake-exhaust terminal $\varnothing$ 80/125	Intake and Exhaust 34	m 2.0	<b>m 5.6</b>	Intake m 14.8 Exhaust m 11.3
Concentric adapter from $\varnothing$ 60/100 to $\varnothing$ 80/125 with condensate trap	Intake and Exhaust 13	m 0.8	<b>m 2.2</b>	Intake m 5.6 Exhaust m 4.3
Concentric adapter from $\varnothing$ 60/100 to $\varnothing$ 80/125	Intake and Exhaust 2	m 0.1	<b>m 0.3</b>	Intake m 0.8 Exhaust m 0.6
Pipe $\varnothing$ 80 m 1 (with and without insulation)	Intake 2.3 Exhaust 3	m 0.1 m 0.2	m 0.4 m 0.5	<b>Intake m 1.0</b> <b>Exhaust m 1.0</b>
Complete air intake terminal $\varnothing$ 80 m 1 (with or without insulation)	Intake 5	m 0.3	m 0.8	<b>Intake m 2.2</b>
Intake terminal $\varnothing$ 80 Exhaust terminal $\varnothing$ 80	Intake 3 Exhaust 2.5	m 0.2 m 0.1	m 0.5 m 0.4	<b>Intake m 1.3</b> <b>Exhaust m 0.8</b>
Bend 90° $\varnothing$ 80	Intake 5 Exhaust 6.5	m 0.3 m 0.4	m 0.8 m 1.1	<b>Intake m 2.2</b> <b>Exhaust m 2.1</b>
Bend 45° $\varnothing$ 80	Intake 3 Exhaust 4	m 0.2 m 0.2	m 0.5 m 0.6	<b>Intake m 1.3</b> <b>Exhaust m 1.3</b>
Parallel split $\varnothing$ 80 from $\varnothing$ 60/100 to $\varnothing$ 80/80	Intake and Exhaust 8.8	m 0.5	m 1.5	<b>Intake m 3.8</b> <b>Exhaust m 2.9</b>

## 1.8 OUTDOOR INSTALLATION IN PARTIALLY PROTECTED AREA.

**N.B.:** a partially protected area is one in which the appliance is not exposed to the direct action of the weather (rain, snow, hail, etc.).

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

### • Configuration type B, open chamber and forced draught.

Using the special coverage kit one can achieve direct air intake (Fig. 1-7) and fumes exhaust in a single flue or directly outside. In this configuration it is possible to install the boiler in a partially protected place. In this configuration the boiler is classified as type B<sub>22</sub>.

With this configuration:

- air intake takes place directly from the environment in which the appliance is installed (outside);
- the flue exhaust must be connected to its own individual flue or channeled directly into the external atmosphere.

The technical regulations in force must be respected.

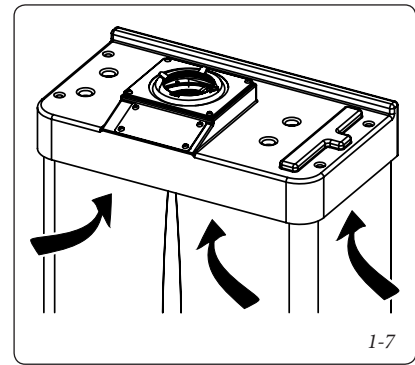
- **Coverage kit assembly (Fig. 1-9).** Remove the two plugs and the gaskets present from the two lateral holes with respect to the central one. Install the Ø 80 outlet flange on the central hole of the boiler, taking care to insert the gasket supplied with the kit and tighten by means of the screws provided. Install the upper cover, fixing it using the 4 screws present in the kit, positioning the relevant gaskets. Engage the 90° Ø 80 bend with the male end (smooth) in the female end (with lip seal) of the Ø 80 flange unit until it stops. Introduce the gasket, making it run along the bend. Fix it using the sheet steel plate and tighten by means of the straps present in the kit, making sure to block the 4 gasket flaps. Fit the male end (smooth) of the exhaust terminal into the the female end of the bend 90°

Ø 80, making sure that the relevant wall sealing plate is already fitted; this will ensure hold and joining of the elements making up the kit.

**Max. length of exhaust duct.** The flue pipe (vertical or horizontal) can be extended to a max. length of 12 linear metres, using insulated pipes (Fig. 1-25). To prevent problems of flue gas condensate in the exhaust pipe Ø 80, due to flue gas cooling through the wall, the length of the pipe (not insulated) must be limited to just 5 m (Fig. 1-22).

### • Configuration without cover kit in a partially protected location (type C boiler)

By leaving the side plugs fitted it is possible to install the appliance externally without the cover kit. Installation takes place using the Ø60/100, Ø 80/125 and separator Ø 80/80 concentric intake/exhaust kits. Refer to the paragraph relative to indoor installation. In this configuration the upper cover kit guarantees additional protection for the boiler. It is recommended but not compulsory.

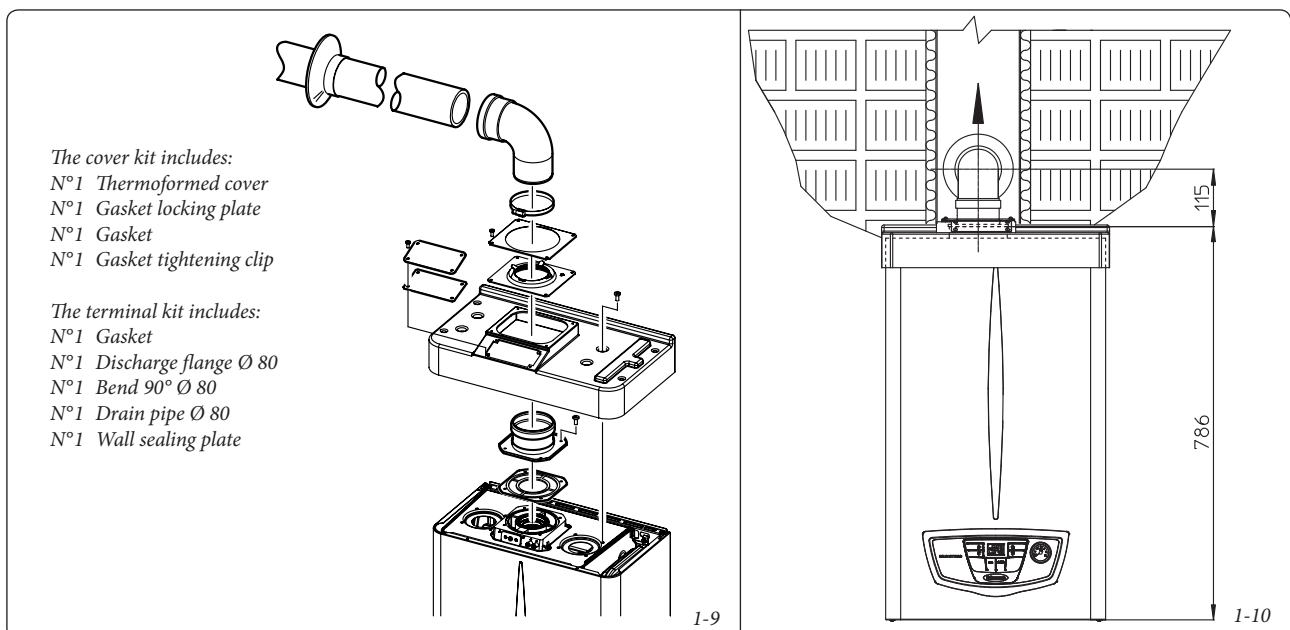


1-7

INSTALLER

USER

MAINTENANCE TECHNICIAN



The cover kit includes:  
 N°1 Thermoformed cover  
 N°1 Gasket locking plate  
 N°1 Gasket  
 N°1 Gasket tightening clip

The terminal kit includes:  
 N°1 Gasket  
 N°1 Discharge flange Ø 80  
 N°1 Bend 90° Ø 80  
 N°1 Drain pipe Ø 80  
 N°1 Wall sealing plate

1-9

1-10

**1.9 CONCENTRIC HORIZONTAL KIT INSTALLATION.**

**Type C configuration, sealed chamber and fan assisted.**

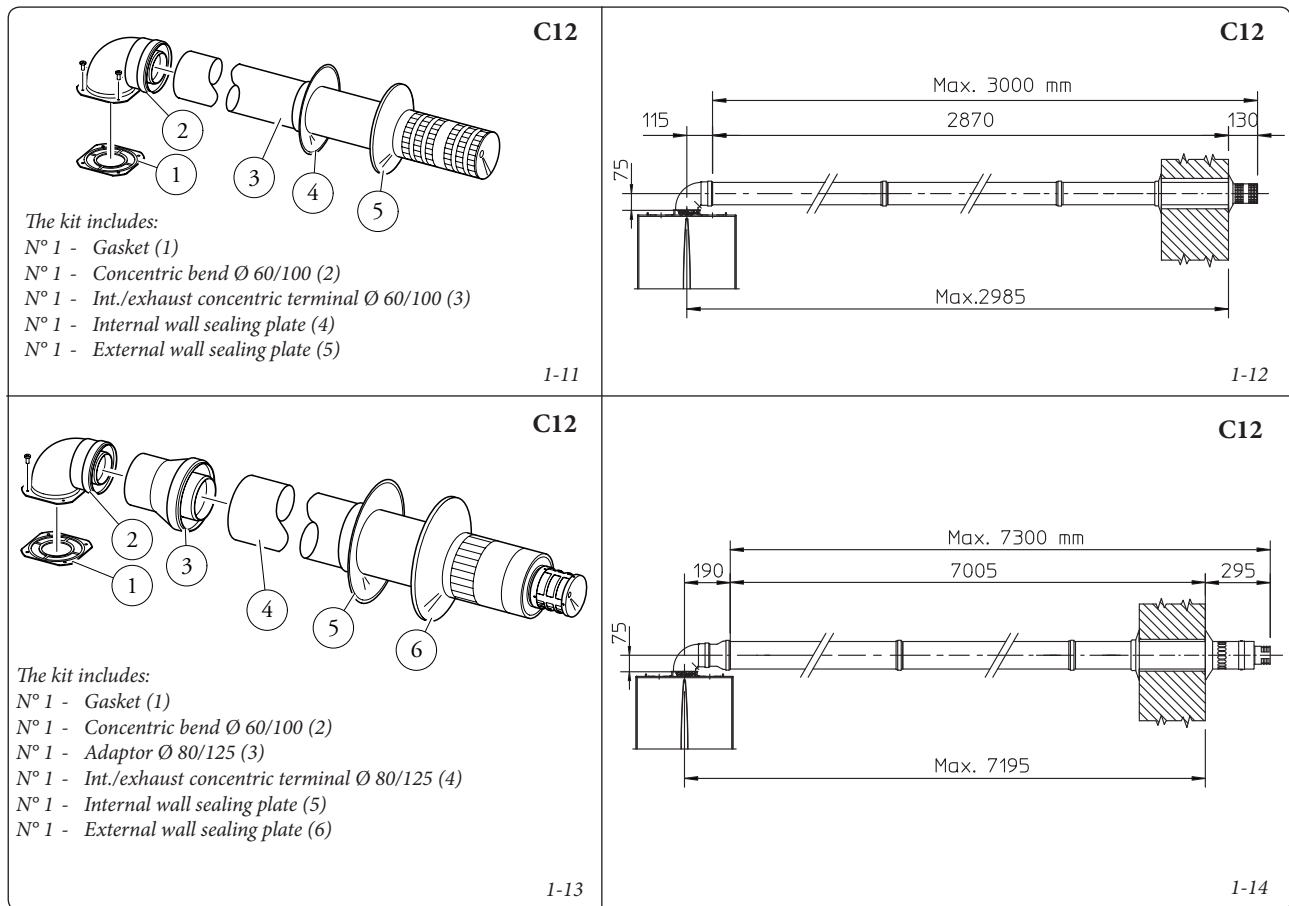
This terminal is connected directly to the outside of the building for air intake and flue exhaust. The horizontal kit can be installed with the rear, right side, left side or front outlet. For installation with frontal outlet, one must use the fixing plate and a concentric bend coupling in order to ensure sufficient space to carry out the tests required by law upon commissioning.

**Horizontal intake - exhaust kit Ø60/100.** Kit assembly (Fig. 1-11): install the bend with flange (2) onto the central hole of the boiler inserting the gasket (1) and tighten using the screws included in the kit. Couple the concentric terminal pipe Ø 60/100 (3) with the male end (smooth) into the female end (with lip seals) of the bend (2) up to the stop, making sure that the internal and external wall sealing plate have been fitted, this will ensure sealing and joining of the kit elements.

- Extensions for horizontal kit Ø 60/100 (Fig. 1-12). The kit with this configuration can be extended up to a *max. horizontal length of 3 m* including the terminal with grid and excluding the concentric bend leaving the boiler. This configuration corresponds to a resistance factor of 100. In this case the special extensions must be requested.

**Horizontal intake - exhaust kits Ø80/125.** Kit assembly (Fig. 1-13): install the bend with flange (2) onto the central hole of the boiler inserting the gasket (1) and tighten using the screws in the kit. Fit the male end (smooth) of the adapter (3) up to the end stop on the female side of the bend (2) (with lip seal). Fit the Ø 80/125 (4) concentric terminal pipe with the male end (smooth) to the female end of the adapter (3) (with lip gasket) up to the 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.

- Extensions for horizontal kit Ø 80/125 (Fig. 1-14). The kit with this configuration can be extended up to a *maximum length of 7.3 m*, including the terminal with grid and excluding the concentric bend leaving the boiler and the adapter Ø 60/100 in Ø 80/125. This configuration corresponds to a resistance factor of 100. In this case the special extensions must be requested.





**1.10 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 exhaust.

**N.B.:** the vertical kit with aluminium tile 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) must always be observed.

**Vertical kit with aluminium tile Ø 60/100.**

To use this kit one must use the fixing plate kit 60/100 (sold separately).

Kit assembly (Fig. 1-15): install the concentric flange (2) on the central hole of the boiler inserting the gasket (1) and tighten using the screws in the kit. Fit the male end (smooth) of the adapter (3) into the female end of the concentric flange (2). Imitation aluminium tile installation. Replace the tile with the aluminium sheet (5), shaping it to ensure that rainwater runs off. Position the fixed half-shell (7) and insert

the intake-exhaust pipe (6). Fit the Ø 80/125 concentric terminal pipe with the male end (6) (smooth) to the female end of the adapter (3) (with lip gasket) up to the end stop; making sure that the wall sealing plate (4) has been fitted, this will ensure sealing and joining of the elements making up the kit.

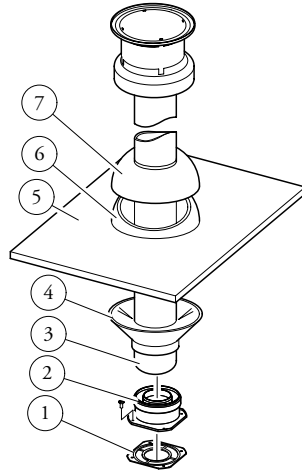
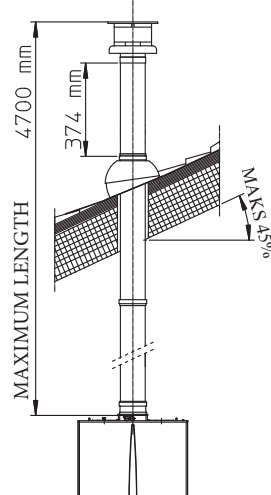
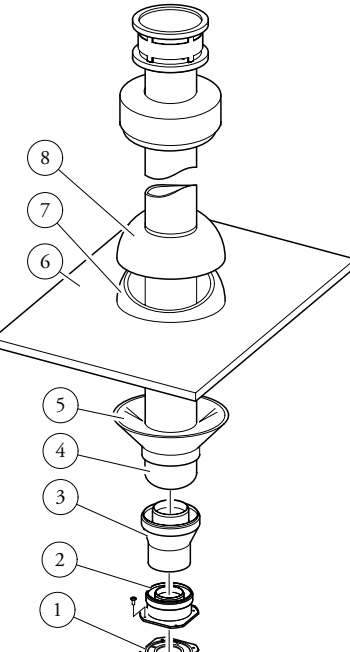
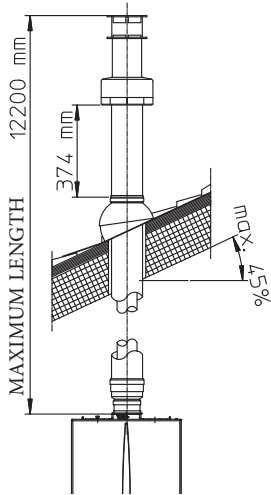
•Extensions for vertical kit Ø 60/100 (Fig. 1-16).  
The kit with this configuration can be extended to a *max. straight vertical length of 4.7 m*, including the terminal. This configuration corresponds to a resistance factor of 100. In this case specific extensions must be requested.

**Vertical kit with aluminium tile Ø 80/125.**

Kit assembly (Fig. 1-17): to install the kit Ø 80/125 one must use the flanged adapter kit in order to install the flue system Ø 80/125. Install the flanged adaptor (2) on the central hole of the boiler, positioning gasket (1) with the circular projections downwards in contact with the boiler flange and tighten using the screws contained in the kit. Installation of the fake aluminium tile: replace the tiles with the aluminium sheet

(4), shaping it to ensure that rainwater runs off. Position the fixed half-shell (5) on the aluminium tile and insert the intake-exhaust pipe (7). Fit the Ø 80/125 concentric terminal pipe with the male side (smooth) to the female side of the adapter (1) (with lip gaskets) 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.

• Extensions for vertical kit Ø 80/125 (Fig. 1-18).  
The kit with this configuration can be extended up to a *max. length of 12.2 m* including the terminal. If additional components are assembled, the length equivalent to the maximum allowed must be subtracted. In this case specific extensions must be requested.

 <p style="text-align: right;"><b>C32</b></p> <p><i>The fixing plate kit includes:</i> N° 1 - Gasket (1) N° 1 - Female concentric flange (2)</p> <p><i>The Kit includes:</i> N° 1 - Int./exhaust concentric pipe Ø 60/100 (3) N° 1 - Ring (4) N° 1 - Aluminium tile (5) N° 1 - Fixed half-shell (6) N° 1 - Mobile half-shell (7)</p> <p style="text-align: right;">1-15</p>	 <p style="text-align: right;"><b>C32</b></p> <p style="text-align: right;">1-16</p>
 <p style="text-align: right;"><b>C32</b></p> <p><i>The kit includes:</i> N° 1 - Gasket (1) N° 1 - Female concentric flange (2) N° 1 - Adaptor Ø 80/125 (3) N° 1 - Int./exhaust concentric pipe Ø 80/125 (4) N° 1 - Ring (5) N° 1 - Aluminium tile (6) N° 1 - Fixed half-shell (7) N° 1 - Mobile half-shell (8)</p> <p style="text-align: right;">1-17</p>	 <p style="text-align: right;"><b>C32</b></p> <p style="text-align: right;">1-18</p>

**1.11 SEPARATOR KIT INSTALLATION.**  
**Type C configuration, sealed chamber and fan assisted.**

This kit allows air to come in from outside the building and the fumes to exit from the chimney or flue through divided flue exhaust and air intake pipes. Combustion products are expelled from pipe (S). Air is taken in through pipe (A) for combustion. Both ducts can be routed in any direction.

**Separator kit Ø 80/80.** Kit assembly (Fig. 1-19): install the flange (4) on the central hole of the boiler inserting the gasket (1) and tighten using the hex head and flat tip screws contained in the kit, insert the anti-pulse plate up to the stop (5). Remove the flat flange present in the lateral hole with respect to the central one (according to needs) and replace it with the flange (3), position-

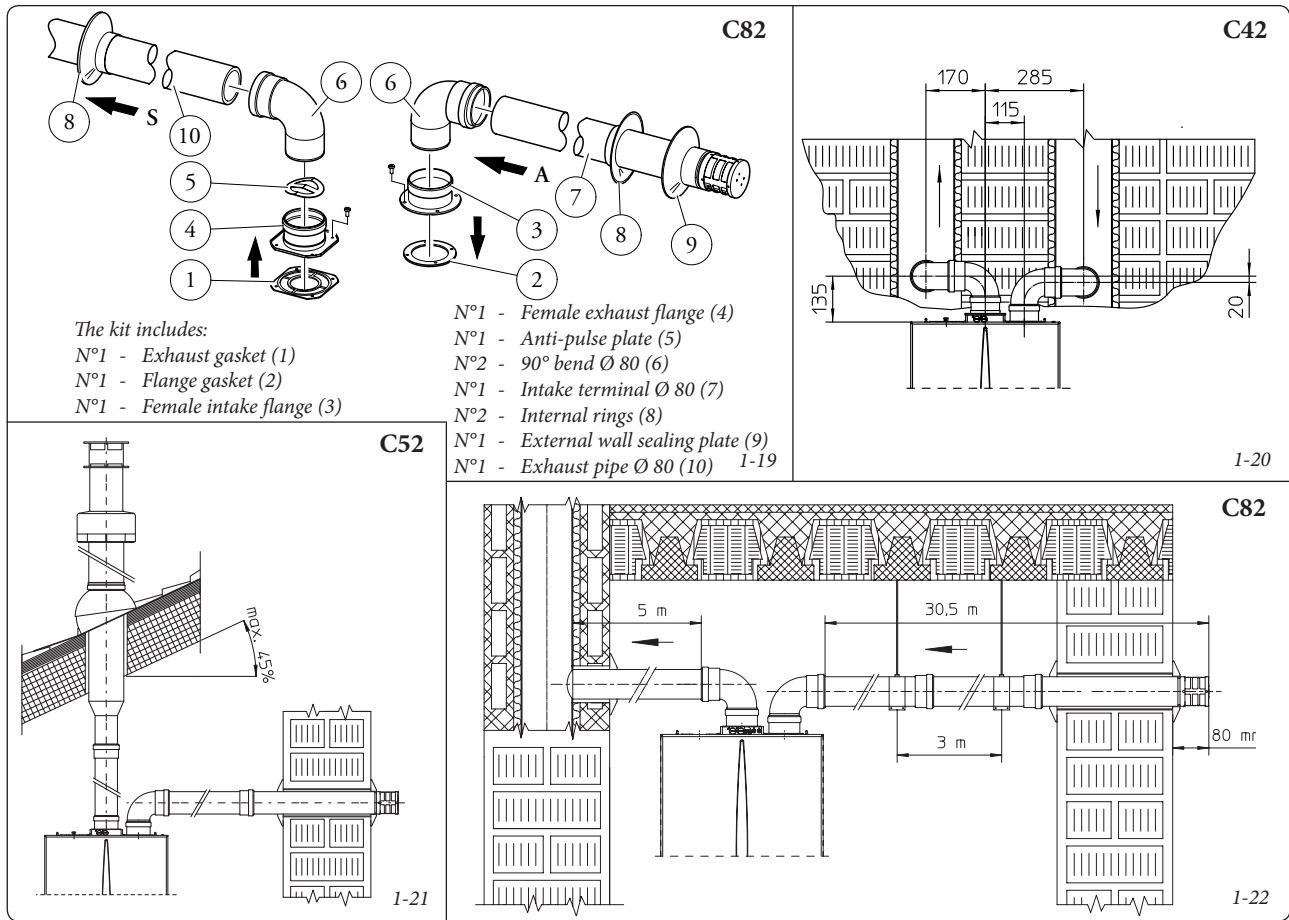
ing the gasket (2) already present in the boiler and tighten using the supplied self-threading screws. Fit the male end (smooth) to the bends (6) in the female end of the flanges (3 and 4). Fit the intake terminal (7) with the male section (smooth) in the female section of the bend (6) up to the stop, ensuring that the internal and external wall sealing plates are fitted. Fit the exhaust pipe (10) with the male end (smooth) in the female end of the bend (6) up to the stop, making sure that the internal wall sealing plate has been fitted, this will ensure sealing and joining of the kit elements.

- Installation clearances (Fig. 1-20). The minimum installation clearance measurements of the Ø 80/80 separator terminal kit have been stated in some limit conditions.
- The figure (Fig. 1-21) shows the configuration with vertical exhaust and horizontal intake.
- Extensions for separator kit Ø 80/80. The maximum vertical straight length (without bends) usable

for Ø 80 intake and exhaust pipes is 41 metres of which 40 intake and 1 exhaust. This total length corresponds to a resistance factor of 100. The total usable length obtained by summing the Ø 80 intake and exhaust pipe lengths can reach, as a maximum, the values provided in the following table. If *mixed accessories or components are used*, the maximum extension can be calculated by using a resistance factor for each component or its *equivalent length*. The sum of these resistance factors must not exceed 100.

- Temperature loss in flue pipes (Fig. 1-22). To prevent problems of flue gas condensate in the exhaust pipe Ø 80, due to fume cooling through the wall, *the length of the exhaust pipe must be limited to just 5 m*. If longer distances must be covered, use Ø 80 pipes with insulation (see insulated separator kit Ø 80/80 chapter).

**Insulated separator kit Ø 80/80.** Kit assembly



Maximum usable lengths (including intake terminal with grill and two 90° bends)			
NON-INSULATED PIPE		INSULATED PIPE	
Drain (metres)	Intake (metres)	Drain (metres)	Intake (metres)
1	36.0*	6	29.5*
2	34.5*	7	28.0*
3	33.0*	8	26.5*
4	32.0*	9	25.5*
5	30.5*	10	24.0*
* The air intake pipe can be increased to 2.5 metres if the exhaust bend is eliminated, 2 metres if the air intake bend is eliminated, 4.5 metres eliminating both bends.		11	22.5*
		12	21.5*

Attention: the boiler is designed to evacuate the combustion products up to a maximum extension of 27 linear metres from the exhaust, with 1 m plus 90° bend at the intake. If the installa-

tion requests a development of the flue to the discharge that exceeds the recommended 12 m, due consideration must be given to the formation of condensate that could take place inside the

pipe and Immergas insulated "Blue Series" flue kits must be used.

(Fig. 1-23): install the flange (4) on the central hole of the boiler inserting the gasket (1) and tighten using the hex head and flat tip screws contained in the kit, insert the anti-pulse plate up to the stop (5). Remove the flat flange present in the lateral hole with respect to the central one (according to needs) and replace it with the flange (3), positioning the gasket (2) already present in the boiler and tighten using the supplied self-threading screws. Insert and slide cap (7) onto bend (6) from the male side (smooth), and join bends (6) with the male side (smooth) in the female side of flange (3). Fit bend (12) with the male side (smooth) into the female side of flange (4). Fit the male end (smooth) of the intake terminal (8) up to the stop on the female end of the bend (6), making sure you have already inserted the wall sealing plates (9 and 10) that ensure correct installation between pipe and wall, then fix the closing cap (7) on the terminal (8). Join the exhaust pipe (11) with the male side (smooth) in the female side of the bend (12) to the end stop, ensuring that the wall sealing plate (9) is already inserted for correct installation between the pipe and flue.

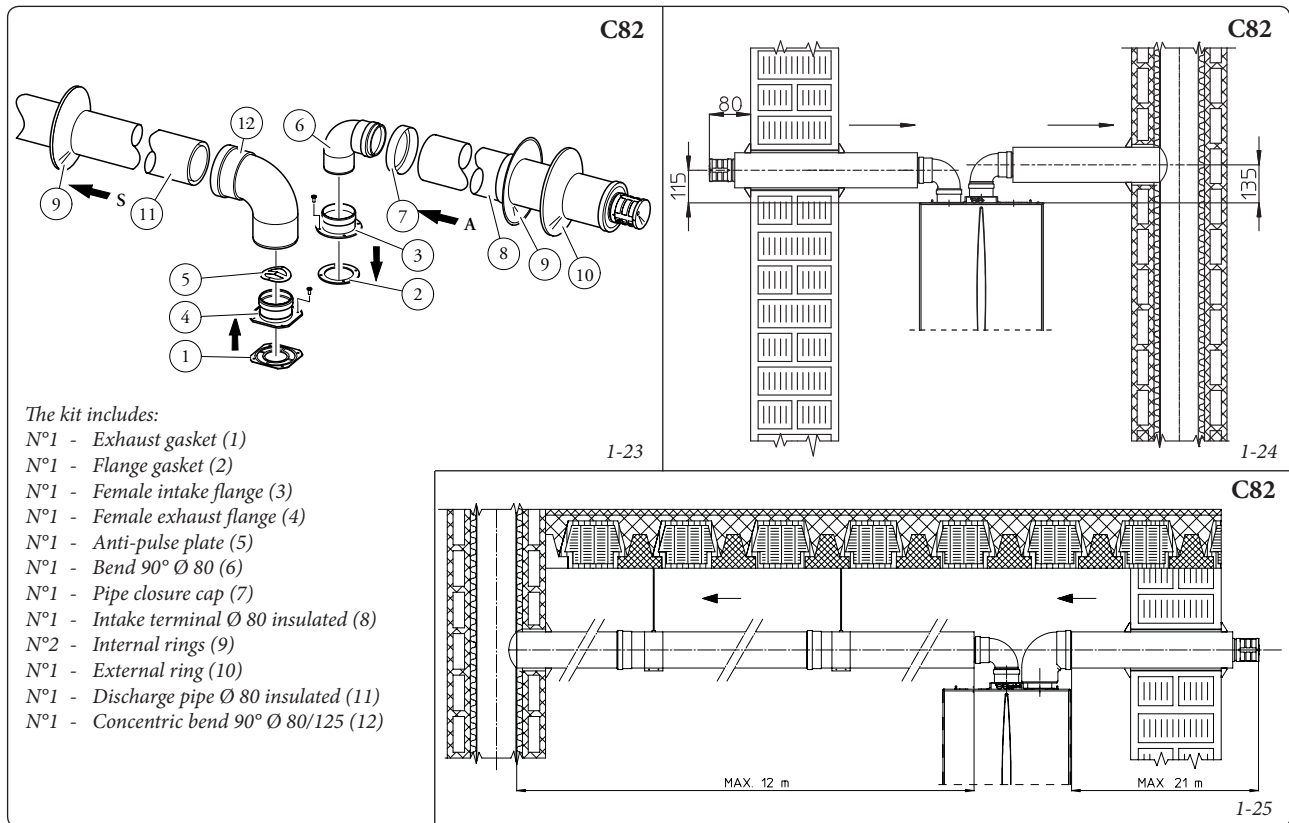
- Insulation of separator terminal kit. Whenever there are flue gas condensate problems in the exhaust pipes or on the external surface of the intake pipes, on request Immergas supplies insulated intake-exhaust pipes. Insulation may be necessary on the exhaust pipe, due to excessive loss of temperature of the flue gas on their route. Insulation may be necessary on the intake pipe as the air entering (if very cold) may cause the outside of the pipe to fall below the dew point of the environmental air.

The figures (Fig. 1-24 ÷ 1-25) illustrate different applications of insulated pipes.

Insulated pipes are formed of a Ø 80 internal concentric pipe and a Ø 125 external pipe with static air space. It is not technically possible to start with both Ø 80 elbows insulated, as clearances will not allow it. However starting with an insulated elbow is possible by choosing either the intake or exhaust pipe. When starting with the insulated intake bend it must be engaged on its flange until it is taken up to end stop on the flue gas exhaust flange, a situation that takes the two intake flue gas exhaust outlets to the same height.

- Temperature loss in insulated flue ducting. To prevent problems of flue gas condensate in the insulated exhaust pipe Ø 80, due to flue gas cooling through the wall, the length of the pipe must be limited to 12 metres. The figure (Fig. 1-25) illustrates a typical insulation application in which the intake pipe is short and the exhaust pipe is very long (over 5 m). The entire intake pipe is insulated to prevent moist air in the place where the boiler is installed, in contact with the pipe cooled by air entering from the outside. The entire exhaust pipe, except the elbow leaving the splitter is insulated to reduce heat loss from the pipe, thus preventing the formation of fume condensate.

**N.B.:** when installing the insulated pipes, a section clamp with gusset must be installed every 2 metres.



### 1.12 DUCTING OF FLUES OR TECHNICAL SLOTS.

Ducting is an operation through which by inserting one or more relevant pipes, one achieves a system for the evacuation of the combustion products of a gas appliance, consisting in the combination of an existing or new ducting pipe with a chimney, flue or technical slot (also in new buildings). 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 standards in force.

### 1.13 CONFIGURATION TYPE B<sub>22</sub>, OPEN CHAMBER AND FORCED DRAUGHT FOR INDOORS.

The appliance can be installed inside buildings in B<sub>22</sub> mode; in this eventuality, all technical rules and national and local regulations in force, must be complied with.

- 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 harmful for the components of the appliance and jeopardise operation.

- in type B<sub>22</sub> configuration, the boilers must not be installed in bedrooms, bathrooms or in studio flats.

- The installation of appliances in B<sub>22</sub> configuration is only recommended outdoors (in a partially protected place) or in places that are not lived in and which are permanently ventilated.

To install them one must use the coverage kit whose installation is referred to in paragraph 1.9.

### 1.14 FLUE EXHAUST TO FLUE/CHIMNEY.

Flue exhaust does not necessarily have to be connected to a branched type traditional flue. The flue exhaust, for boiler clots installed in C configuration, can be connected to a special LAS type multiple flue. For B<sub>22</sub> configurations, exhaust is only allowed into individual chimney or directly into the external atmosphere via a relevant terminal. Multiple and combined flues must be specially designed according to the calculation method and requirements of the standards in force, 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.

### 1.15 FLUES, CHIMNEYS, CHIMNEY POTS AND TERMINALS.

The flues, chimneys and chimney caps for the evacuation of combustion products must be in compliance with applicable standards. 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.

**Positioning the wall flue exhaust terminals.** The wall flue exhaust terminals must:

- be installed on external perimeter walls of the building;
- 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.

### 1.16 SYSTEM FILLING.

Once the boiler is connected, proceed with system filling via the filling valve (Fig. 2-2).

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

The boiler has a built-in automatic venting valve on the circulator. *Check if the cap is loose.* Open the radiator vent valves.

Close radiator vent valves when only water escapes from them.

Close the filling cock when the boiler pressure gauge indicates approx. 1.2 bar.

**N.B.:** during these operations turn on the circulation pump at intervals, by means of the stand-by button located on the control panel. *Vent the circulation pump by loosening the front cap and keeping the motor running.*

Tighten the cap after the operation.

### 1.17 GAS SYSTEM START-UP.

To start up the system, make reference to the Standard:

- open windows and doors;
- avoid presence of sparks or open flames;
- bleed all air from the pipelines;
- check that the internal system is properly sealed according to specifications.

### 1.18 BOILER START-UP (IGNITION).

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

- check that the internal system is properly sealed according to the regulations in force;
- make sure that the type of gas used corresponds to boiler settings;
- Check that there are external factors that may cause the formation of fuel pockets;
- switch the boiler on and check correct ignition;
- make sure that the gas flow rate and relevant pressure values comply with those given in the manual (Par. 3.16);

- ensure that the safety device intervenes in the event of gas supply failure and check the relative intervention time;

- check activation of the main switch located upstream of the boiler;

- check that the intake/exhaust concentric terminal (if fitted) is not blocked.

The boiler must not be started up even if only one of the checks should be negative.

**1.19 CIRCULATION PUMP.**

The Eolo Mythos 24 2 E series boilers are supplied with a built-in circulation pump with three-position electric speed control. The boiler does not operate correctly with the circulation pump on first speed. To ensure optimal boiler operation, in the case of new systems (single pipe and module) it is recommended to use the pump at maximum speed. The circulation pump is already fitted with a capacitor.

**Pump release.** If, after a prolonged period of inactivity, the circulation pump is blocked, unscrew the front cap and turn the motor shaft using a screwdriver. Take great care during this operation to avoid damage to the motor.

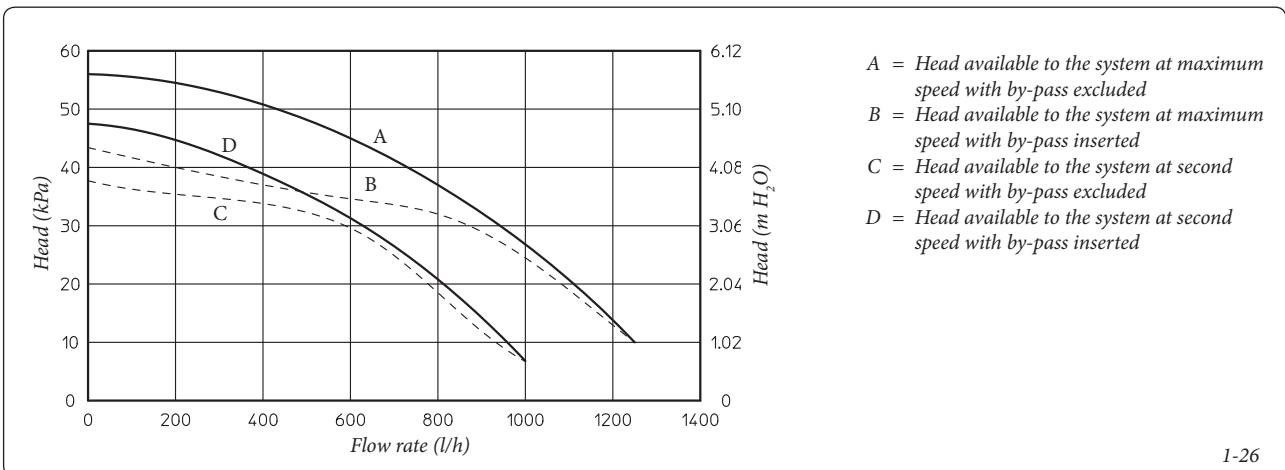
**By-pass adjustment (part.22 Fig. 1-27).** If necessary, the by-pass can be adjusted according to system requirements from a minimum (by-pass excluded) to a maximum (by-pass inserted) represented by the graph (Fig. 1-26). Make the adjustment using a flat head screwdriver, turn clockwise and insert the by-pass; by turning it anti-clockwise it is excluded.

**1.20 KITS AVAILABLE ON REQUEST.**

- Connection unit kit (on request). The kit includes pipes, fittings and cocks (including gas cock), to carry out all connections to the boiler system
- System shut-off valve kits with or without inspection filter (on request). The boiler is designed for installation of system interception cocks to be placed on flow and return pipes of the connection assembly. This kit is very useful for maintenance because it allows to empty just the boiler without having to empty the entire system. Moreover, the version with filter preserves the functioning characteristics of the boiler thanks to its inspectionable filter.
- Polyphosphate dispenser kit (on request). The polyphosphate dispenser reduces the formation of lime-scale and preserves the original heat exchange and domestic hot water production conditions. The boiler is prepared for application of the polyphosphate dispenser kit.
- Cover kit. In the case of installation with direct intake and open sky installation it is mandatory to mount the relevant top cover protection for correct functioning of the boiler and to protect it from weather.

The above-mentioned kits are supplied complete with instructions for assembly and use.

**Head available to the system.**



1-26

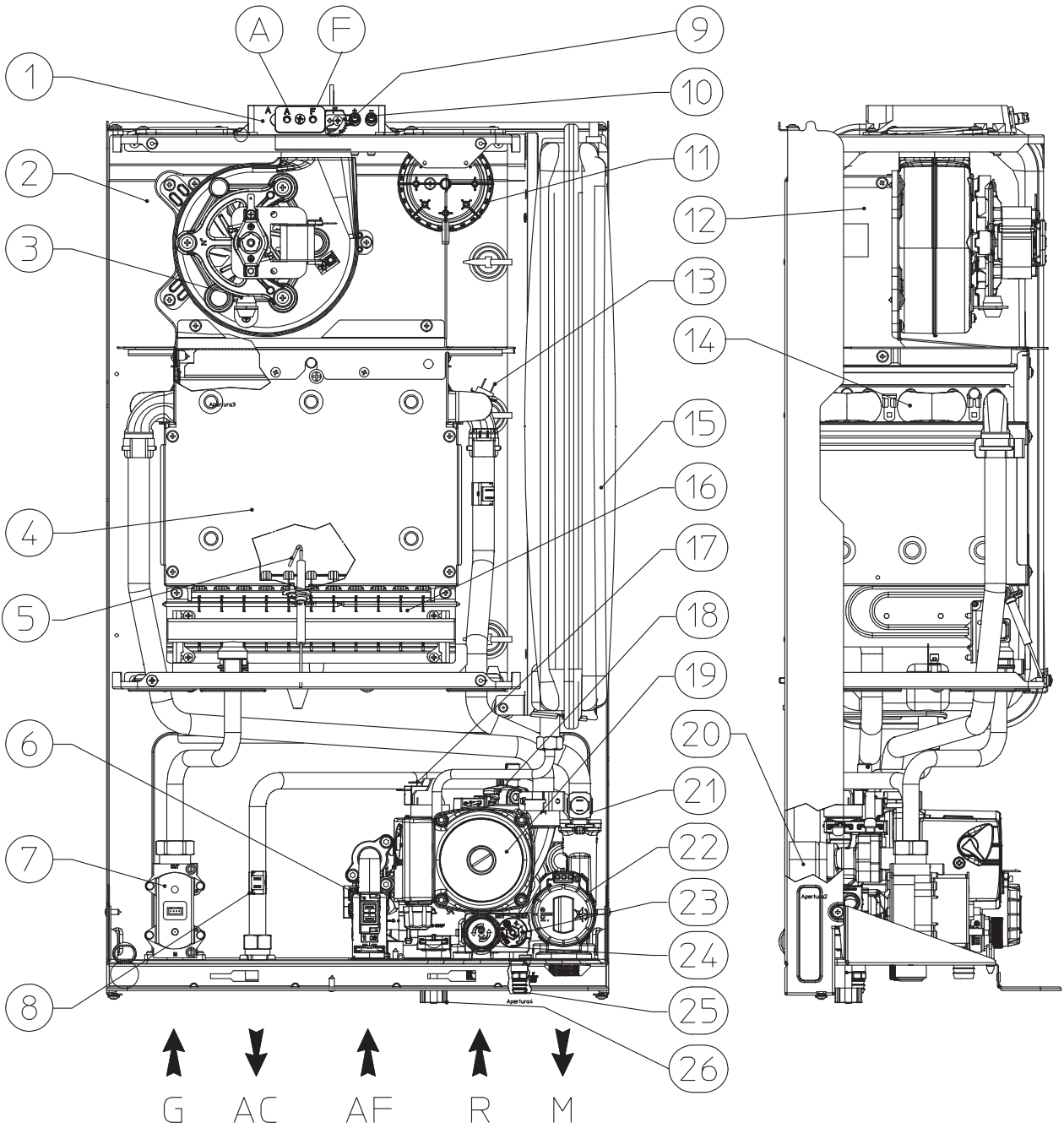


1.21 BOILER COMPONENTS.

INSTALLER

USER

MAINTENANCE TECHNICIAN



Key:

- 1 - Sample points (air A) - (flue gas F)
- 2 - Sealed Chamber
- 3 - Fan
- 4 - Combustion chamber
- 5 - Ignition and detection electrodes
- 6 - Domestic hot water flow switch
- 7 - Gas valve
- 8 - Domestic hot water probe
- 9 - Positive signal pressure point
- 10 - Negative signal pressure point
- 11 - Flue pressure switch
- 12 - Fumes hood

- 13 - Flow probe
- 14 - Primary heat exchanger
- 15 - System expansion vessel
- 16 - Burner
- 17 - System pressure switch
- 18 - Vent valve
- 19 - Boiler circulator pump
- 20 - DHW heat exchanger
- 21 - Safety thermostat
- 22 - Three-way valve (motorised)
- 23 - Adjustable by-pass
- 24 - 3 bar safety valve
- 25 - System draining fitting
- 26 - System filling valve

N.B.: connection group (optional)

## 2 USE AND MAINTENANCE INSTRUCTIONS

### 2.1 CLEANING AND MAINTENANCE.

**Attention:** to preserve the boiler's integrity and keep the safety features, performance and reliability, which distinguish it, unchanged over time, you must at least 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. Annual maintenance is essential to validate the conventional warranty of Immergas. We recommend stipulating a yearly cleaning and maintenance contract with professionally qualified personnel.

### 2.2 GENERAL WARNINGS.

Never expose the wall-mounted boiler to direct vapours from cooking hobs.

Use of the boiler by unskilled persons or children is strictly prohibited.

Do not touch the flue gas exhaust terminal (if present) due to the high temperatures it can reach; For safety purposes, check that the concentric air intake/flue exhaust terminal (if fitted), is not blocked.

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

- drain the heating system if anti-freeze is not used;
- 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.

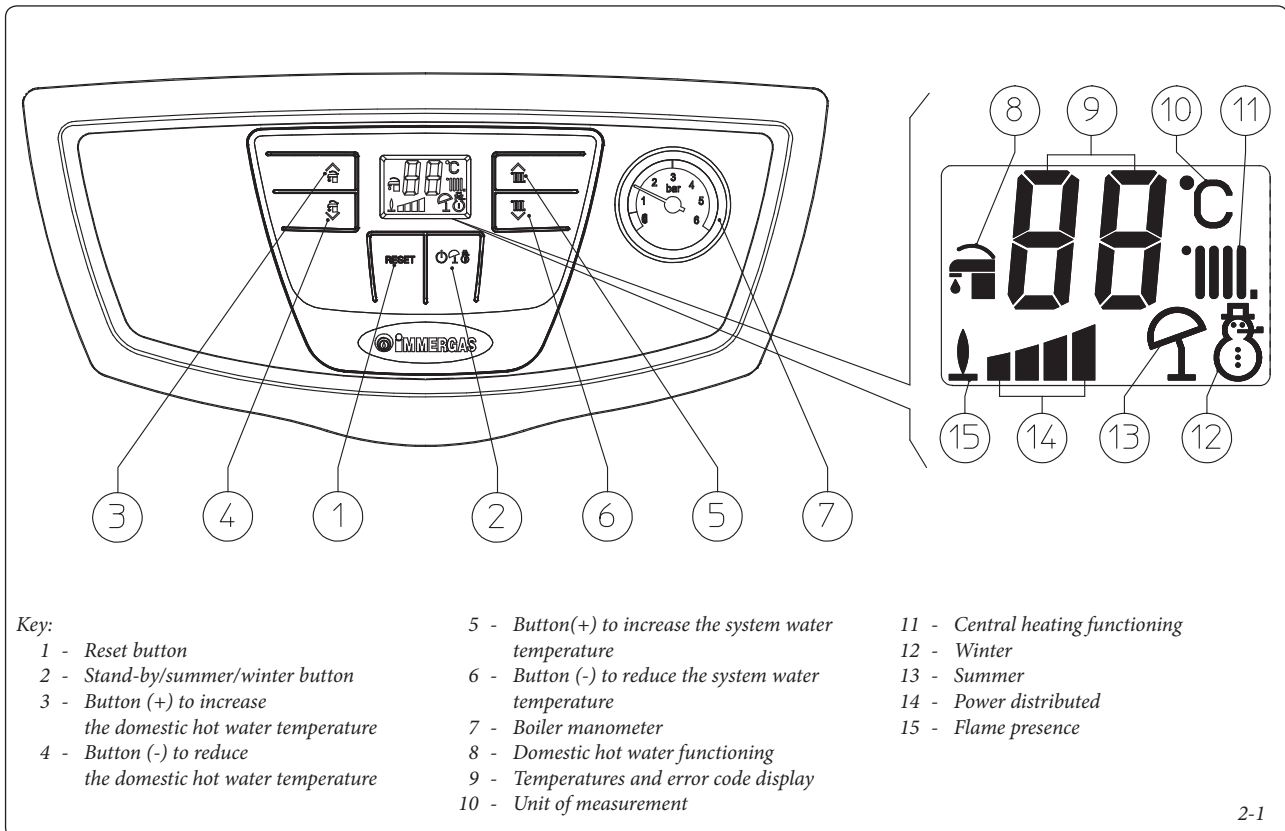
Never clean the appliance or connected parts with easily flammable substances.

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

• **Attenzione:** the use of components involving use of electrical power requires some fundamental rules to be observed:

- 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 weathering (rain, sunlight, etc.);
- the appliance power cable must not be replaced by the user;
- in the event of damage to the 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 power switch upstream of the appliance.

### 2.3 CONTROL PANEL.



**Boiler ignition.** Before ignition make sure the heating system is filled with water and that the manometer (7) indicates a pressure of  $1 \div 1.2$  bar.

- Open the gas cock upstream from the boiler.
- Press key (2) and set the boiler on Summer (☀) or Winter (❄).

**N.B.:** the button (2) must be pressed and held for the time required to switch from the Stand-by (---), Summer (☀) or Winter (❄) function.

**Attention:** after each switch the button must in any case be released to switch to the next function.

When in summer position (☀) the domestic hot water temperature is adjusted with the buttons (3-4).

When the winter position is selected (❄) the system water temperature is adjusted with the buttons (5-6), whilst the domestic hot water temperature is adjusted using the buttons (3-4), by pressing (+) to increase and (-) to reduce the temperature.

From this moment the boiler functions automatically. With no demand for heat (central heating or domestic hot water production) the boiler goes to "standby" function, equivalent to the boiler being powered without presence of flame. Each time the boiler ignites, the relative flame present symbol is displayed (15).

#### 2.4 TROUBLESHOOTING.

In case of an anomaly, the letter "E" appears on the display alternately with the relevant error code occurred. The error codes are listed in the following table.

Error Code	Anomaly signalled	Cause	Boiler 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 (over-temperature)	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 anomaly	Incorrect setting of parameter P14 (Para. 3.7).	Set parameter P14 according to the type of boiler in use. If necessary, press the Reset button (1).
05	Flow probe anomaly	The board detects an anomaly on the flow NTC probe.	The boiler does not start (1).
06	Domestic hot water probe anomaly	The board detects an anomaly on the domestic hot water NTC probe. In this case the antifreeze function is also inhibited	In this case the boiler continues to produce domestic hot water but not with optimal performance (1).
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 on the boiler pressure gauge (1) that the system pressure is between $1 \div 1.2$ bar and restore the correct pressure if necessary.
11	Flue pressure switch anomaly	This occurs in case of a fault in the flue pressure switch or the fan.	If normal conditions are restored the boiler restarts without having to be reset (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).
24	Push button control panel anomaly	The board detects an anomaly on the pushbutton panel.	If normal conditions are restored the boiler restarts without having to be reset (1).
27	Insufficient circulation	This occurs if there is overheating in the boiler due to insufficient water circulating in the primary circuit; the causes can be: - low system circulation; check that no shut-off devices are closed on the heating circuit and that the system is free of air (deaerated); - pump blocked; free the pump.	If normal conditions are restored the boiler restarts without having to be reset (1).
31	Loss of communication with the CAR <sup>V2</sup>	This occurs 1 minute after communication is lost between the boiler and the CAR <sup>V2</sup> .	Switch the boiler on and off again (1).

(1) If the block or anomaly persists, contact an authorised company (e.g. Authorised Technical After-Sales Service).



Error Code	Anomaly signalled	Cause	Boiler status / Solution
37	<b>Low power supply voltage</b>	This occurs when the power supply voltage is lower than the allowed limits for the correct boiler operation.	If normal conditions are restored the boiler restarts without having to be reset (1).
38	<b>Loss of flame signal</b>	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. <b>Note:</b> when attempting ignition, the minimum heat output of the boiler increased to a maximum of two consecutive ignitions; the minimum heat output conditions are reached once again, as per gas valve calibration, following the "P.C.B. PERIODIC AUTO-VERIFICATION" function or simply disconnecting the power supply to the boiler.	(1).
43	<b>Block due to loss of flame signal</b>	This occurs if the "Flame signal loss (38)" error occurs many times in a row within a preset period.	Press the Reset button (1).
44	<b>Block for exceeding the maximum openings close to the gas valve</b>	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).
59	<b>Supply voltage frequency anomaly</b>	The board detects a main supply voltage frequency anomaly.	The boiler does not start (1).
80	<b>Block - gas valve driver issue</b>	- This occurs in the event of malfunctions of the P.C.B. that controls the valve.	Press the Reset button (1).
85	<b>Afterburner problem block</b>	Potential gas valve, electrode or P.C.B. problem.	Press the Reset button (1).
98	<b>Block - maximum no. of software errors</b>	The maximum number of software errors possible has been reached.	Press the Reset button (1).

(1) If the block or anomaly persists, contact an authorised company (e.g. Authorised Technical After-Sales Service).

## 2.5 INFORMATION MENU.

Pressing the buttons (3) and (4) simultaneously for 5 seconds, the "Information menu" is activated, which displays some boiler functioning parameters.

Press buttons (3) and (4) to scroll through the various parameters. To exit the menu, press buttons (3) and (4) simultaneously again for 5 seconds or wait for 5 minutes.

### List of parameters

Id Parameter	Description
d1	Displays the flame signal
d2	Displays the primary exchanger output instant heating flow temperature (flow probe)
d3	Displays the instant output temperature from the DHW exchanger
d4	Not used
d5	View the operating instantaneous power (value in %).
d6	Displays the temperature set for the central heating set (if remote control is present)
d7	Displays the temperature set for the DHW set (if remote control is present)
E1 - E8	Display the anomaly history, of which E1 is the most recent

## 2.6 RESETTING THE ANOMALY HISTORY.

Press the Reset button on the information menu for > 2 seconds and < 4.5 seconds. "E-" will appear on the display.

Only during this time, if you release the button, it resets the anomaly history.

## 2.7 BOILER SHUTDOWN

Press the button (2 Fig. 2-1) (⏻) until the symbol (↔) appears on the display.

**N.B.:** in these conditions the boiler is still powered.

Disconnect the omnipolar switch outside the boiler and close the gas cock upstream of the appliance. Never leave the boiler switched on if left unused for prolonged periods.

## 2.8 RESTORING CENTRAL HEATING SYSTEM PRESSURE.

Periodically check the system water pressure. The boiler pressure gauge should read a pressure between 1 and 1.2 bar.

*If the pressure is below 1 bar (with the circuit cool) restore normal pressure via the filling cock located in the lower part of the boiler (Fig. 2-2).*

**N.B.:** close the filling cock after the operation. If pressure values reach around 3 bar the safety valve may be activated.

In this case, remove water from an air vent valve of a radiator until reaching pressure of 1 bar, or ask for assistance from professionally qualified personnel.

In the event of frequent pressure drops, contact qualified staff for assistance to eliminate the possible system leakage.

## 2.9 SYSTEM DRAINING.

To drain the boiler, use the special draining valve (Fig. 2-2).

Before draining, ensure that the filling cock is closed.

## 2.10 ANTI-FREEZE PROTECTION.

The boiler is supplied with an antifreeze function as per standard that activates the function of the pump and the burner when the internal system water temperature in the boiler falls below 4 °C (protection range to a minimum temperature of -5°C) and stops when it exceeds 42°C. The antifreeze function is guaranteed if the boiler is fully operative, is not in "block" status and is electrically powered. To avoid keeping the system switched on in case of a prolonged absence, the system must be drained completely or antifreeze substances must be added to the heating system water. In both cases the boiler domestic hot water circuit must be drained. In systems that are

drained frequently, filling must be carried out with suitably treated water to eliminate hardness that can cause lime-scale.

All information relative to the antifreeze protection is stated in par. 1.3. In order to guarantee the integrity of the appliance and the domestic hot water heating system in areas where the temperature falls below zero, we recommend the central heating system is protected using anti-freeze liquid and installation of the *Immergas Anti-freeze Kit* in the boiler. In the case of prolonged inactivity (second case), we also recommend that:

- disconnect the electric power supply;
- empty the boiler domestic hot water circuit via the drain valves (Fig. 1-27) and the internal domestic hot water distribution network.

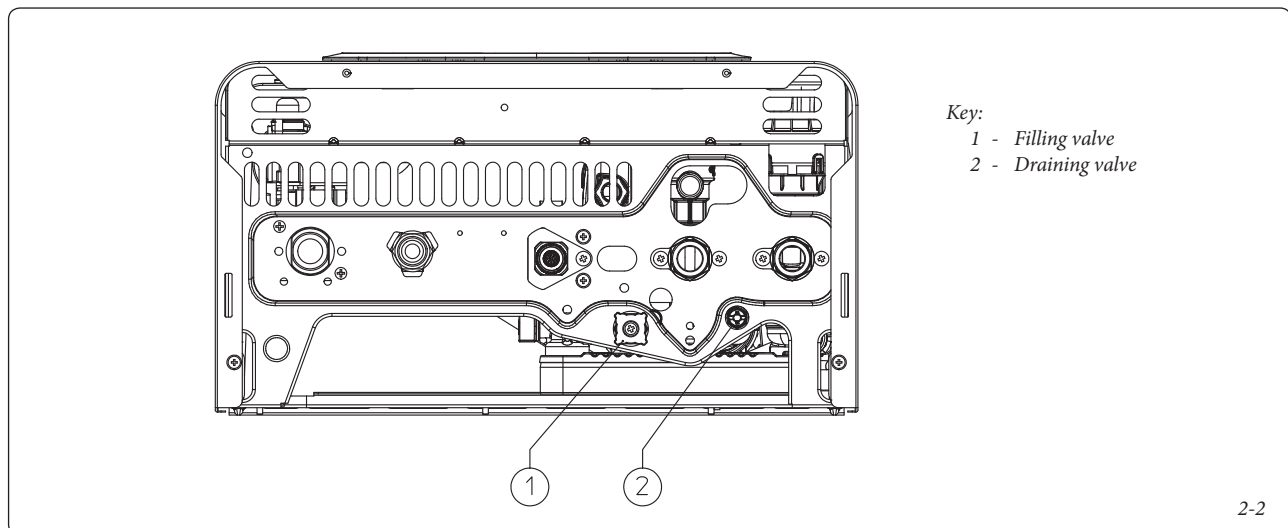
## 2.11 CASE CLEANING.

Use damp cloths and neutral detergent to clean the boiler casing. Never use abrasive or powder detergents.

## 2.12 DECOMMISSIONING.

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

Bottom view.



Key:  
 1 - Filling valve  
 2 - Draining valve

### 3 BOILER COMMISSIONING (INITIAL CHECK)

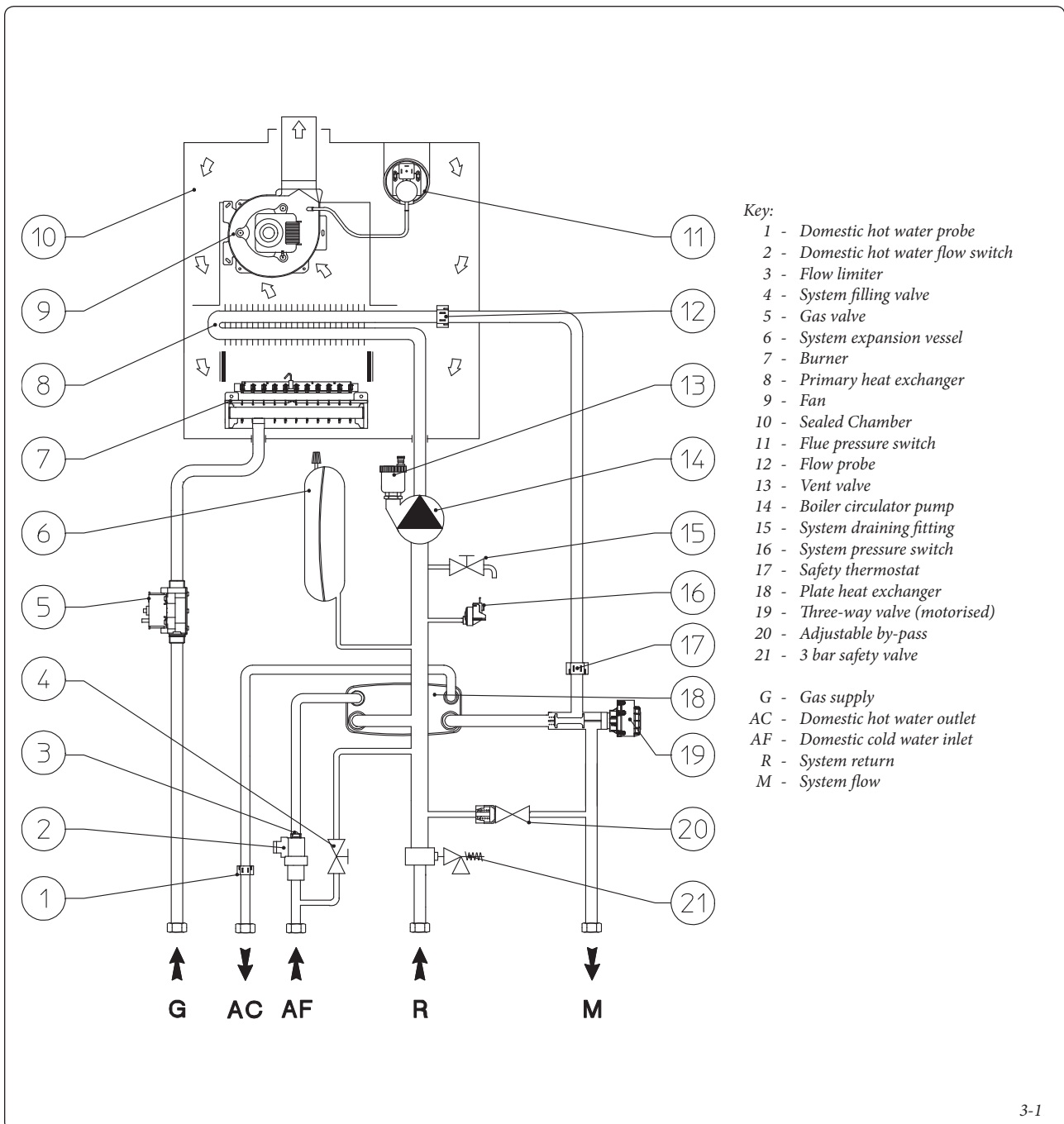
To commission the boiler:

- make sure that the type of gas used corresponds to boiler settings;
- 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 that the manometer indicates a pressure of 1±1.2 bar.
- make sure the air valve cap is open and that the system is well deaerated;
- switch the boiler on and check correct ignition;
- make sure the gas maximum, intermediate and minimum flow rate and pressure values correspond to those given in the handbook (Par. 3.16);

- make sure the gas supply failure safety device is working, within its relative intervention time;
- check activation of the main switch located upstream of the boiler;
- check that the intake and/or exhaust terminals are not blocked;
- check activation of the “no air” safety pressure switch;
- ensure activation of all adjustment devices;
- seal the gas flow rate regulation devices (if settings are modified);
- check the production of domestic hot water;
- check sealing efficiency of water circuits;
- check ventilation and/or aeration of the installation room where required.

If even only a single safety check offers a negative result, do not commission the system.

#### 3.1 HYDRAULIC DIAGRAM.

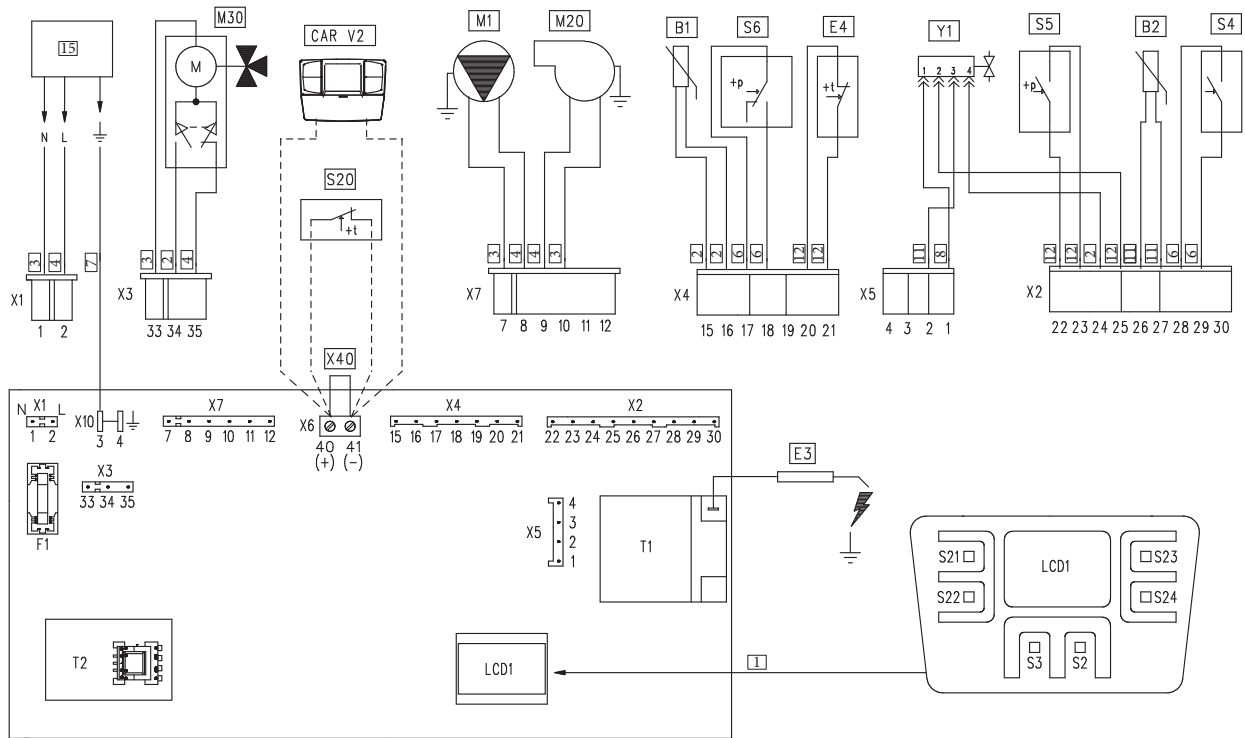


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### 3.2 WIRING DIAGRAM.



**Key:**

- B1 - Flow probe
- B2 - Domestic hot water probe
- CAR<sup>V2</sup> - Comando Amico Remoto remote control <sup>V2</sup> (optional)
- E3 - Ignition and detection electrode
- E4 - Safety thermostat
- F1 - Phase fuse
- LCD1 - Display
- M1 - Boiler circulator pump
- M20 - Fan
- M30 - Three-way valve
- S2 - Operation selector
- S3 - Block reset button
- S4 - Domestic hot water flow switch
- S5 - System pressure switch
- S6 - Flue pressure switch

- S20 - Room thermostat (optional)
- S21 - Domestic hot water temperature increase button
- S22 - Domestic hot water temperature decrease button
- S23 - Heating temperature increase button
- S24 - Heating temperature decrease button
- T1 - Ignition transformer
- T2 - Boiler board transformer
- X40 - Room thermostat jumper
- Y1 - Gas valve

- 7 - Yellow/Green
- 8 - Orange
- 9 - Purple
- 10 - Pink
- 11 - Red
- 12 - White
- 13 - Yellow
- 14 - White/Black
- 15 - 230 Vac 50 Hz power supply

The X6 connector is used for automatic inspection.

**Note:** The user interface is on the welding side of the boiler board.

3-2

Comando Amico Remoto<sup>V2</sup>: the boiler is set-up for the application of the Comando Amico Remoto remote control <sup>V2</sup> (CAR<sup>V2</sup>) which must be connected to clamps 40 and 41, by observing polarity and eliminating jumper X40.

Room thermostat: the boiler is set-up for the application of the Room Thermostat (S20) which must be connected to clamps 40 and 41 and by eliminating jumper X40.

### 3.3 TROUBLESHOOTING.

**N.B.:** maintenance interventions must be carried out by an authorised company (e.g. Authorised After-Sales Technical Assistance Service).

- Smell of gas. Caused by leakage from gas circuit pipelines. Check sealing efficiency of gas intake circuit.
- Irregular combustion (red or yellow flame). Can be caused by: dirty burner, clogged lamellar pack, intake - exhaust terminal not installed properly. Clean the above components and ensure correct installation of the terminal.

- Frequent interventions of the over heating safety thermostat. It can depend on reduced water pressure in the boiler, little circulation in the heating system, the blocked pump or an anomaly of the boiler P.C.B. Check on the pressure gauge that the system pressure is within established limits. Check that radiator valves are not all closed.
- The boiler produces condensate. It can be determined by functioning at boiler temperatures that are excessively low. In this case, make the boiler run at higher temperatures.
- Presence of air in the system. Check opening of the special air vent valve cap (Fig. 1-27). Make sure the system pressure and expansion vessel factory-set pressure values are within the set limits; the factory-set value for the expansion vessel must be 1.0 bar, and system pressure between 1 and 1.2 bar.
- Ignition block. (Par. 2.4).

### 3.4 CONVERTING THE BOILER TO OTHER TYPES OF GAS

If the boiler has to be converted to a different gas type to that specified on the data plate, request the relative conversion kit for quick and easy conversion. The gas conversion operation must be carried out by an authorised company (e.g. Authorised After-Sales Technical Assistance Service).

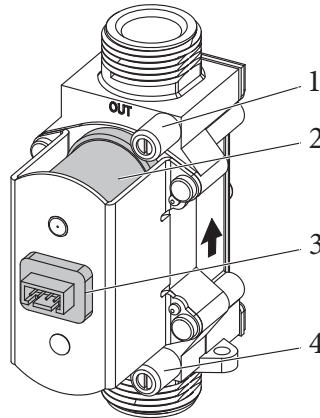
To convert to another type of gas the following operations are required:

- disconnect the appliance;
- replace the main burner injectors, making sure to insert the special seal rings supplied in the kit, between the gas manifold and the injectors;
- re-power the appliance;
- select, using the boiler key, the gas parameter type (P01) and select (nG) in the case of methane supply or (LG) in the case of LPG supply;
- Perform complete gas valve calibration
  - adjust the boiler nominal heat output;
  - adjust the boiler nominal heat output in domestic hot water phase;

## GAS valve SGV 100 B&P

Key:

- 1 - Gas valve outlet pressure point
- 2 - Coil
- 3 - Wiring connector
- 4 - Gas valve inlet pressure point



3-3

- adjust the boiler nominal heat output in heating phase (para. 3.7);
- adjust (eventually) the maximum heating power (para. 3.7);
- after completing the conversion, apply the sticker, contained in the conversion kit, near the data nameplate. Using an indelible marker pen, delete the data relative to the old type of gas.

These adjustments must be made with reference to the type of gas used, following that given in the table (Par. 3.16).

### 3.5 CHECKS FOLLOWING CONVERSION TO ANOTHER TYPE OF GAS.

After making sure that conversion was carried out with a nozzle of suitable diameter for the type of gas used and the settings are made at the correct pressure, check 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)
- the pressure testers used for calibration are perfectly closed and there are no leaks from the gas circuit.

**N.B.:** all boiler adjustment operations must be carried out by an authorised company (e.g. Authorised After-Sales Assistance). Burner adjustment must be carried out using a differential "U" or digital type pressure gauge connected to the pressure socket located above the sealed chamber (part. 9 Fig. 1-27) and the gas valve pressure outlet (part. 1 Fig. 3-3), keeping to the pressure value given in the table (Par. 3.16) according to the type of gas for which the boiler is prepared.

### 3.6 GAS VALVE CALIBRATION.

The valve calibration must be carried out when the gas valve or the P.C.B. is replaced or in the case of conversion to a different type of gas.

To access the calibration phase, proceed as described below (references Fig. 2-1):

#### Complete calibration

Access the valve calibration function.

**Note:** there must be no D.H.W. demand to access the gas valve calibration function.

Set parameter P15 to 5 and exit from the menu.

- Adjustment of boiler nominal heat output
  - Press buttons (2) and (5) simultaneously for 5 seconds until "Au" + "to" (Automatic) appears alternately on the display.  
**Note:** press buttons (2) and (5) again for 5 seconds or wait 2 minutes without implementing any adjustment to exit from the complete calibration phase.
  - Wait until the parameter b02 appears (adjustment of the boiler nominal heat output).  
**Note:** the boiler starts up in heating mode; if you wish to adjust the D.H.W., open a hot water tap after the burner goes on.
  - Adjust parameter b02, observing the maximum pressure values stated in the tables (Para. 3.16) depending on the type of gas.
  - Press the button (5) to increase the thermal power and button (6) to decrease it. After the adjustment, press and hold the reset button (1) to save the parameter. Confirmation that the parameter has been saved is given by the value flashing.
  - Attention:** if during the adjustment phase, the boiler nominal heat output value is exceeded by 0.2 mbar (table para. 3.16) you must exit and re-enter from the calibration step to rerun the adjustment.
- Adjustment of boiler minimum thermal heat output.
  - Press button (3) or (4) to select parameter b01 (minimum boiler heat output during D.H.W.).  
**Note:** only proceed after having calibrated the boiler nominal heat output.

- Press the button (5) to increase the thermal power and button (6) to decrease it. After the adjustment, press and hold the reset button (1) to save the parameter. Confirmation that the parameter has been saved is given by the value flashing.

#### Calibration correction.

The procedure described below allows the parameters set with the "Complete calibration" to be partially changed.

Access the valve calibration function.

**Note:** there must be no D.H.W. demand to access the gas valve calibration function.

If parameter P15 has recently been set to 5 (e.g. for full gas valve calibration), a different value must be set to access the "Calibration correction".

- Correction of boiler nominal heat output calibration.
  - Press buttons (2) and (5) simultaneously for 5 seconds until "Ma" + "nu" (Manual) appears alternately on the display.  
**Note:** press buttons (2) and (5) again for 5 seconds or wait 2 minutes without implementing any adjustment to exit from the calibration correction phase.
  - Wait until the parameter b02 appears (adjustment of the boiler nominal heat output).  
**Note:** the boiler starts up in heating mode; if you wish to adjust the D.H.W., open a hot water tap after the burner goes on.
  - Adjust parameter b02, observing the maximum pressure values stated in the tables (Para. 3.16) depending on the type of gas.

- Press the button (5) to increase the thermal power and button (6) to decrease it. After the adjustment, press and hold the reset button (1) to save the parameter. Confirmation that the parameter has been saved is given by the value flashing.
- Correction of boiler minimum heat output calibration.
  - Press button (3) or (4) to select parameter b01 (minimum boiler heat output during D.H.W.).
  - Press the button (5) to increase the thermal power and button (6) to decrease it. After the adjustment, press and hold the reset button (1) to save the parameter. Confirmation that the parameter has been saved is given by the value flashing.

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### 3.7 PROGRAMMING THE P.C.B.

The boiler is prepared for possible programming of several operation parameters. By modifying these parameters as described below, the boiler can be adapted according to specific needs.

To access the programming phase, proceed as follows (references Fig. 2-1):

- press buttons (1) and (2) for 5 about seconds until the programming mode is accessed on the display;
- using buttons (3) and (4), select the parameter to be changed indicated in the following table:
- adjust the corresponding value consulting the table using keys (5) and (6)

- confirm the value set by pressing the Reset button (1) for about 5 seconds.

**Note:** 2 minutes after no button is touched will automatically cancel the operation or by pressing buttons (1) and (2) simultaneously for about 5 seconds.

Id Parameter	Parameter	Description	Range (ref. 9 Fig. 2-1)	Default
P01	Gas type selection	The setting of this function is used to adjust the boiler so that it can operate with the correct type of gas	nG - Methane LG - LPG	Set according to the gas being used
P02	Heating switch-on delay request from room thermostat and remote control.	The boiler is set to switch-on 3 seconds after the request. In the event of particular systems (e.g. area systems with motorised thermostatic valves etc.) it may be necessary to delay ignition	0 - 20 (00 = 3 seconds 01 = 30 seconds 02 = 1 minute 20 = 10 minutes)	0
P03	Fixed or correlated domestic hot water set-point	By setting the parameter P3 in <b>on</b> mode, burner disabling is correlated to the adjustment of the domestic hot water temperature. In <b>OFF</b> mode, the burner is switched off at maximum value.	<b>on</b> - related <b>oF</b> - fixed	oF
P05	Minimum CH output	The boiler also has electronic modulation that adapts the boiler potentiality to the effective heating demand of the house. Then the boiler works normally in a variable gas pressure field between the minimum heating output and the maximum heating output depending on the system's heating load.	0 - 63 %	Set according to factory inspection
P06	Maximum CH output	<b>N.B.:</b> the boiler is produced and calibrated in the central heating phase at nominal output. Approximately 10 minutes are needed to reach the nominal heat output, which can be changed using the parameter (P06). <b>N.B.:</b> the selection of the "Minimum heating output" and "Maximum heating output" parameters, in presence of a heating request, allows boiler ignition and power supply of the modulator with current equal to the value of the respective set value.	0 - 100 %	100
P07	Central heating ignitions timer	The boiler has electronic timing, which prevents the burner from igniting too often in central heating mode	0 - 10 minutes (0 = 30 seconds)	3
P08	Central heating ramp timer	In the ignition phase, the boiler performs an ignition ramp in order to arrive at the maximum nominal power set.	0 - 10 minutes (0 = 30 seconds)	10
P10	Power block	Establishes the power at which the boiler must switch on. The 1st gas valve step soft ignition step can be set. The ignition power increases as the parameter value is increased.	0 - 40	0
P13	Temperature gradient	Change the insufficient circulation intervention value (E27)	0 - 15 (0 = Function deactivated)	11
P14	Boiler type	Establishes the boiler type and its functioning mode <b>1</b> = open chamber boiler (NIKE) <b>2</b> = sealed chamber boiler (EOLO)	1 - 2	2
P15	Gas valve calibration	Allows the gas valve to be calibrated <b>5</b> = complete calibration <b>different from 5</b> = calibration correction	0 - 20	0
P16	Valve check	Attention: do not change this parameter	0 - 2	2
P17	Flow off temperature increase (Central heating)	Increases the flow off temperature at ignition only in the first 30 seconds.	on - oF	on

**Note:** parameters P00, P04, P09, P11 and P12 are not used for this boiler model.

### 3.8 "CHIMNEY SWEEP FUNCTION"

When activated, this function forces the boiler at max. output (P06) for 15 minutes.

In this state all adjustments are excluded and only the temperature safety thermostat and the limit thermostat remain active. To activate the chimney sweep function, press the Reset key for at least 5 seconds. Its activation is indicated by the flashing symbols (8 and 11 Fig. 2-1). This function allows the technician to check the combustion parameters. After the checks disable the function, switching the boiler off and then on again or simply by pressing the reset button for about 5 seconds (1 Fig. 2-1). The maximum heating power can be set to P06 and P05 by pressing buttons (3 or 4). The power can be adjusted by one percentage point by pressing buttons (5 or 6).

If you wish to run the "chimney sweep" function

in D.H.W., open a D.H.W. tap after switching the burner on.

The maximum boiler power can be set to 0% and 100% by pressing buttons (3 or 4). The power can be adjusted by one percentage point by pressing buttons (5 or 6).

**Note:** the display of the boiler power percentage alternates with the display of the temperature read by the flow probe.

### 3.9 HEATING TIMER.

The boiler has an electronic timing device that prevents the burner from igniting too often in the heating phase. The boiler is supplied as per standard with a timer adjusted at 3 minutes. To adjust the timer values, follow instructions for parameter settings by selecting parameter (P07) and set it with one of the values indicated on the relative table.

### 3.10 THREE-WAY ANTI-BLOCK FUNCTION.

The boiler is supplied with a function that activates the motorised three-way unit every 24 hours, carrying out a complete cycle in order to reduce the risk of three-way block due to prolonged inactivity.

### 3.11 PUMP ANTI-BLOCK FUNCTION.

In the "summer" functioning mode (☀) the boiler has a function that starts the pump at least once every 24 hours for 30 seconds in order to reduce the risk of the pump becoming blocked due to prolonged inactivity.

In the "winter" functioning mode (❄) the boiler has a function that makes the pump start at least once every 3 hours for 30 seconds.

### 3.12 RADIATORS ANTI-FREEZE FUNCTION.

If the system return water is below 4°C, the boiler starts up until reaching 42°C.

### 3.13 P.C.B. PERIODIC SELF-CHECK.

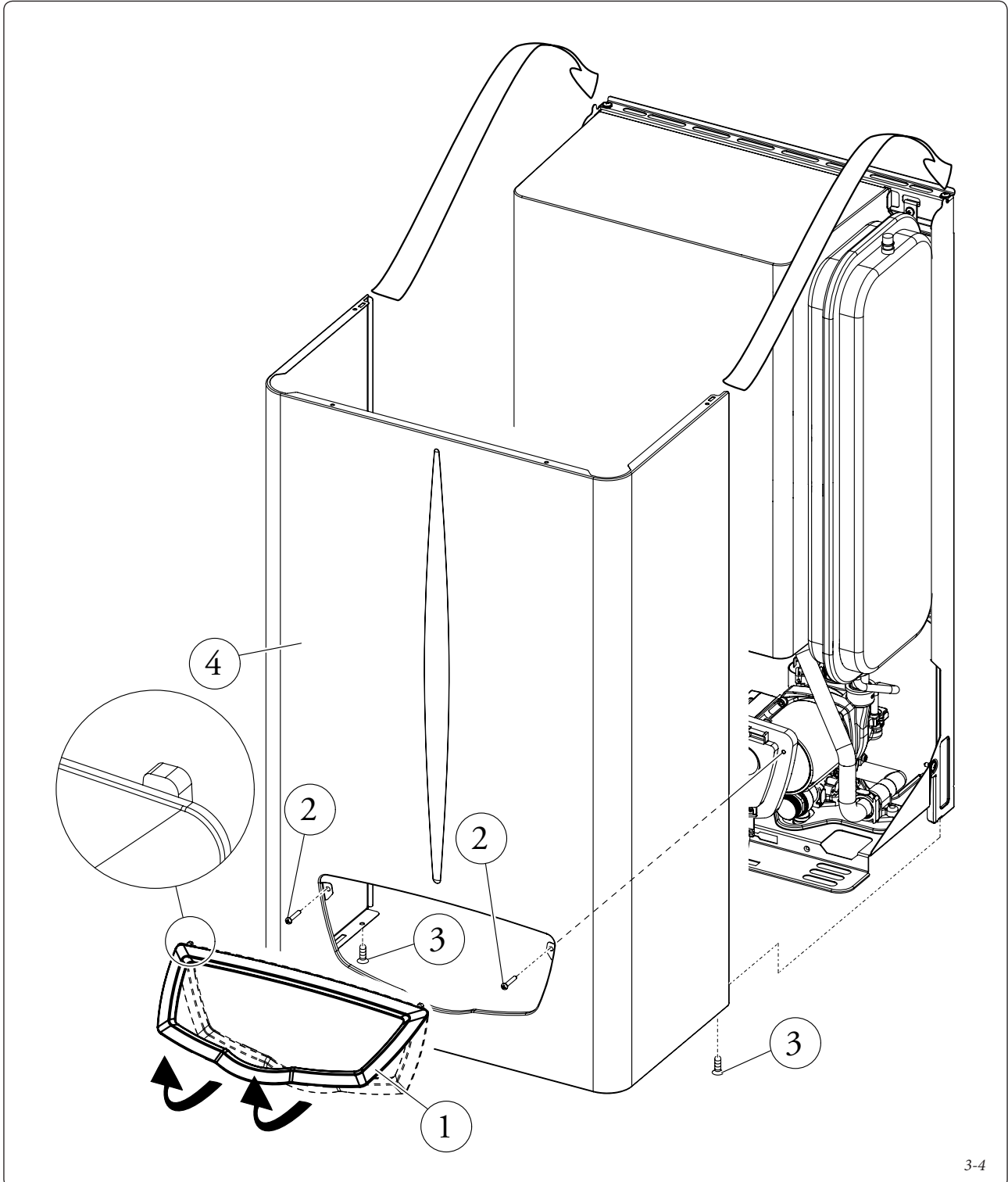
During functioning in central heating mode or with boiler in standby, the function activates every 18 hours after the last boiler check/power supply. In case of functioning in domestic hot water mode the self-check starts within 10 minutes after the end of the withdrawing in progress, for duration of approx. 10 seconds.

**N.B.:** during self-check, the boiler remains off, including signalling.

### 3.14 CASING REMOVAL.

To facilitate boiler maintenance the casing can be completely removed as follows (Fig. 3-4):

- Remove the frame (1) holding the edges and pulling it towards you as indicated by the arrows.
- Undo the 2 front screws (2) and the 2 lower screws (3) which fasten the casing (4).
- Pull the casing (4) towards yourself and upwards at the same time in order to detach it from the upper hooks.



3-4

### 3.15 YEARLY APPLIANCE CHECK AND MAINTENANCE.

The following checks and maintenance should be performed at least once a year.

- Clean the flue side of the heat exchanger.
- Clean the main burner.
- Visually check the flue hood for deterioration or corrosion.
- Check ignition and operation.
- Check correct calibration of the burner in domestic hot water and central heating phases.
- Check the operation of the appliance control and adjustment devices and in particular:
  - intervention of main electrical switch positioned outside of the boiler;
  - system control thermostat intervention;
  - domestic hot water control thermostat intervention.
- Check sealing efficiency of the gas circuit and the internal system.
- Check the intervention of the device against no gas ionisation flame control. Intervention time must be less than 10 seconds.
- Visually check for water leaks or oxidation from/on connections.
- Visually check that the water safety drain valves is not blocked.
- Check that, after discharging system pressure and bringing it to zero (read on boiler pressure gauge), the expansion vessel load is at 1.0 bar.
- Check that the system static pressure (with system cold and after refilling the system by means of the filling cock) 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:
  - temperature safety thermostat;
  - water pressure switch;
- Check the function of the electrode.
- Check the condition and integrity of the electrical system and in particular:
  - supply voltage cables must be inside the fairleads;
  - there must be no traces of blackening or burning.

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

### 3.16 VARIABLE HEAT OUTPUT.

		METHANE (G20)			BUTANE (G30)			PROPANE (G31)		
THERMAL POWER	THERMAL POWER	BURNER GAS FLOW RATE	PRESS. BURNER NOZZLES		BURNER GAS FLOW RATE	PRESS. BURNER NOZZLES		BURNER GAS FLOW RATE	PRESS. BURNER NOZZLES	
(kW)	(kcal/h)		(m <sup>3</sup> /h)	(mbar)		(mm H <sub>2</sub> O)	(kg/h)		(mbar)	(mm H <sub>2</sub> O)
24.0	20640	2.77	13.15	134.1	2.07	29.30	298.8	2.03	37.50	382.4
23.0	19780	2.65	12.24	124.8	1.98	26.60	271.2	1.95	33.78	344.4
22.0	18920	2.54	11.38	116.0	1.89	24.09	245.7	1.86	30.35	309.5
21.0	18060	2.42	10.55	107.6	1.81	21.77	222.0	1.78	27.19	277.3
20.0	17200	2.31	9.76	99.5	1.72	19.62	200.1	1.70	24.29	247.7
19.0	16340	2.20	9.00	91.8	1.64	17.63	179.8	1.61	21.63	220.6
18.0	15480	2.09	8.27	84.3	1.56	15.79	161.1	1.53	19.20	195.8
17.0	14620	1.98	7.57	77.2	1.48	14.10	143.7	1.46	16.97	173.1
16.0	13760	1.88	6.89	70.3	1.40	12.53	127.8	1.38	14.95	152.5
15.0	12900	1.77	6.24	63.6	1.32	11.10	113.2	1.30	13.13	133.9
14.0	12040	1.66	5.61	57.2	1.24	9.78	99.8	1.22	11.49	117.2
13.0	11180	1.55	5.00	51.0	1.16	8.59	87.6	1.14	10.03	102.3
12.0	10320	1.45	4.40	44.9	1.08	7.52	76.7	1.06	8.76	89.3
11.0	9460	1.34	3.83	39.0	1.00	6.56	66.9	0.98	7.67	78.2
10.0	8600	1.23	3.27	33.3	0.92	5.72	58.3	0.90	6.75	68.9
9.0	7740	1.12	2.72	27.7	0.84	5.00	50.9	0.82	6.03	61.4
8.0	6880	1.01	2.19	22.3	0.75	4.39	44.8	0.74	5.49	56.0
7.2	6192	0.92	1.77	18.0	0.69	4.00	40.8	0.67	5.20	53.0

**N.B.:** the pressures indicated in the tables represent the difference in existing pressures between the gas valve outlet and the combustion chamber. The adjustments should therefore, be carried out using a differential manometer (small "U"-shaped

column or digital manometer) with the probes inserted in the pressure test gas valve outlet and on the sealed chamber positive pressure test. The power data given in the table is obtained with 0.5m long intake/exhaust pipe. Gas flow rates

refer to heating power below a temperature of 15°C and pressure of 1013 mbar. Burner pressure values refer to use of gas at 15°C.



### 3.17 COMBUSTION PARAMETERS.

		G20	G30	G31
Gas nozzle diameter	mm	1.30	0.79	0.79
supply pressure	mbar (mm H <sub>2</sub> O)	20 (204)	29 (296)	37 (377)
Flue flow rate at nominal heat output	kg/h	55	50	54
Flue flow rate at min heat output	kg/h	57	53	51
CO <sub>2</sub> at Q. Nom./Min.	%	6.80 / 2.05	8.80 / 2.56	8.00 / 2.65
CO with 0% O <sub>2</sub> at Nom./Min. Q. Nom./Min.	ppm	50 / 140	109 / 173	62 / 111
NO <sub>x</sub> at 0% of O <sub>2</sub> at Q. Nom./Min.	mg/kWh	150 / 134	250 / 140	310 / 180
Flue temperature at nominal output	°C	127	142	132
Flue temperature at minimum output	°C	96	94	96
Intake / exhaust available head Ø 87	Pa	73		
Intake / exhaust available head Ø 85	Pa	63		

Combustion parameters: measuring conditions of useful efficiency (flow temperature/return temperature= 80 / 60 °C), ambient temperature reference = 15°C.

### 3.18 TECHNICAL DATA.

Nominal heat input	kW (kcal/h)	26.2 (22508)
DHW minimum heat input	kW (kcal/h)	8.7 (7460)
CH minimum heat input	kW (kcal/h)	10.6 (9108)
Nominal heat output (useful)	kW (kcal/h)	24 (20640)
DHW minimum heat output (useful)	kW (kcal/h)	7.2 (6192)
CH minimum heat output (useful)	kW (kcal/h)	9.0 (7740)
Efficiency at nominal heat output	%	91.7
Efficiency at 30% nominal heat output load	%	87.3
Heat loss at case with burner On/Off	%	1.1 / 0.08
Heat loss at flue with burner On/Off	%	7.2 / 0.01
Central heating circuit max. operating pressure	bar	3
Maximum heating temperature	°C	90
Adjustable central heating temperature	°C	38-85
System expansion vessel total volume	l	4.2
Heating expansion tank pre-charge	bar	1.0
Appliance water content	l	1.9
Head available with 1000 l/h flow rate	kPa (m H <sub>2</sub> O)	24.50 (2.5)
Domestic hot water adjustable temperature	°C	30 - 60
Domestic hot water circuit min. pressure (dynamic)	bar	0.3
Domestic hot water circuit max. operating pressure	bar	10
Minimum D.H.W. flow rate	l/min	--
Flow rate capacity in continuous duty (ΔT 30°C)	l/min	--
Weight of full boiler	kg	31.1
Weight of empty boiler	kg	29.2
Electrical connection	V/Hz	230/50
Nominal absorption	A	0.62
Installed electric power	W	125
Pump absorbed power	W	83
Fan power absorbed power	W	29
Equipment electrical system protection	-	IPX5D
NO <sub>x</sub> class	-	3
Weighted NO <sub>x</sub>	mg/kWh	129
Weighted CO	mg/kWh	131
Type of appliance	C12 / C32 / C42 / C52 / C62 / C82 / B22p / B32	
Category	II 2H3+	

- 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 boiler outlet considering that to obtain the data declared mixing with cold water is necessary.

- The maximum sound level emitted during boiler operation is < 55dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat output, with extension of flue gas exhaust system according to product standards.

**3.19 KEY FOR DATA PLATE.**

Md		Cod. Md	
Sr N°	CHK	Cod. PIN	
Type			
Q <sub>nw</sub> /Q <sub>n</sub> min.	Q <sub>nw</sub> /Q <sub>n</sub> max.	P <sub>n</sub> min.	P <sub>n</sub> max.
PMS	PMW	D	TM
NO <sub>x</sub> Class			

**N.B.:** the technical data is provided on the data plate on the boiler

	<b>ENG</b>
Md	Model
Cod. Md	Model code
Sr N°	Serial Number
CHK	Check
Cod. PIN	PIN code
Type	Type of installation (ref. CEN TR 1749)
Q <sub>nw</sub> min.	Minimum DHW heat input
Q <sub>n</sub> min.	CH minimum heat input
Q <sub>nw</sub> max.	DHW maximum heat input
Q <sub>n</sub> max.	CH maximum heat input
P <sub>n</sub> min.	Minimum heat output
P <sub>n</sub> max.	Maximum heat output
PMS	Maximum system pressure
PMW	Maximum domestic hot water pressure
D	Specific flow rate
TM	Maximum operating temperature
NO <sub>x</sub> Class	NO <sub>x</sub> Class

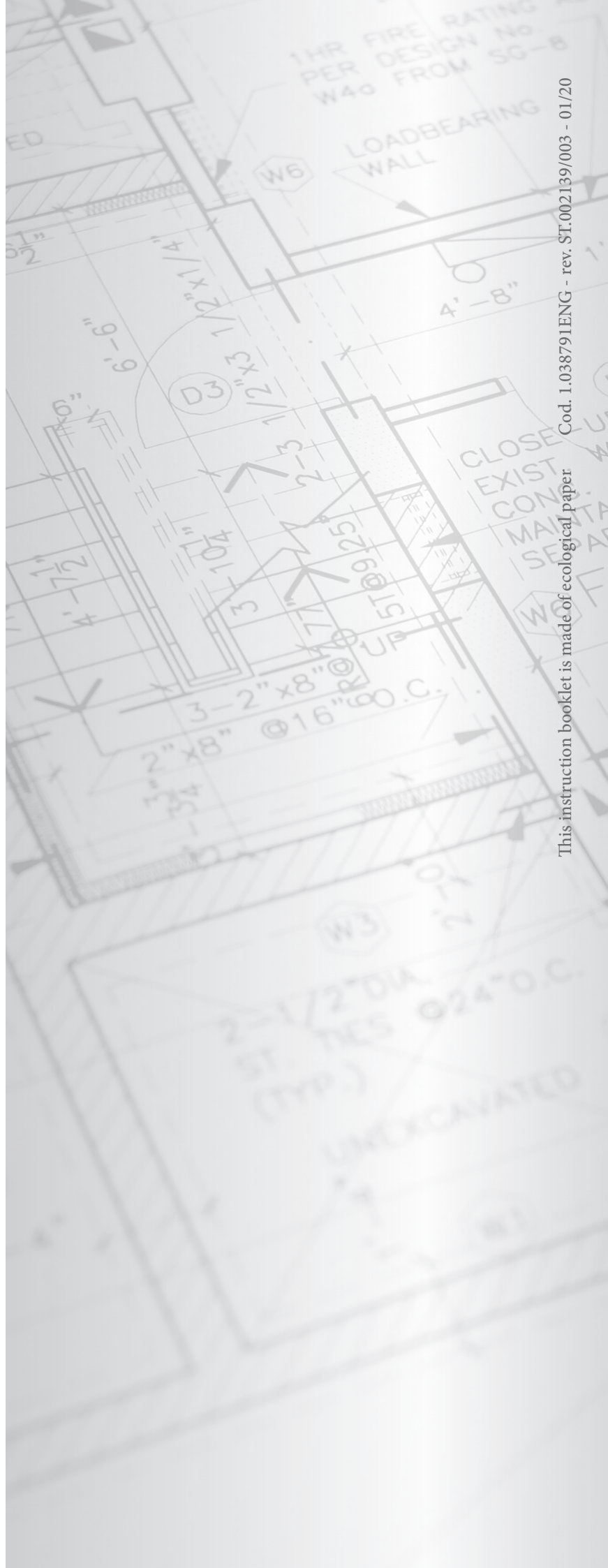




[immergas.com](http://immergas.com)

Immergas S.p.A.  
42041 Brescello (RE) - Italy  
Tel. 0522.689011  
Fax 0522.680617

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