

MANUALS

Instruction booklet and **IE**  
warning  
Installer  
User  
Maintenance Technician

\*1.041665ENG\*



# VICTRIX PRO 80 - 100 - 120 2 ErP





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## Dear Customer,

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

For assistance and routine maintenance, contact Authorised Technical Service Centres: they have original spare parts and are specifically trained directly by the manufacturer.

### GENERAL RECOMMENDATIONS

This book contains important information for the:

**Installer** (section 1);

**User** (section 2);

**Maintenance Technician** (section 3).

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



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

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

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

## SAFETY SYMBOLS USED.



### GENERIC HAZARD

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



### ELECTRICAL HAZARD

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



### MOVING PARTS

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



### HOT SURFACES

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



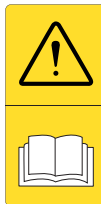
### SHARP SURFACES

The symbol indicates the appliance's components or parts that can cause cuts if touched.



### EARTH TERMINAL CONNECTION

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



### READ AND UNDERSTAND THE INSTRUCTIONS

Read and understand the appliance's instructions before performing any operation, carefully following the indications provided.



### INFORMATION

Indicates useful tips or additional information.



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

## PERSONAL PROTECTIVE EQUIPMENT.



### SAFETY GLOVES



### SAFETY GOGGLES



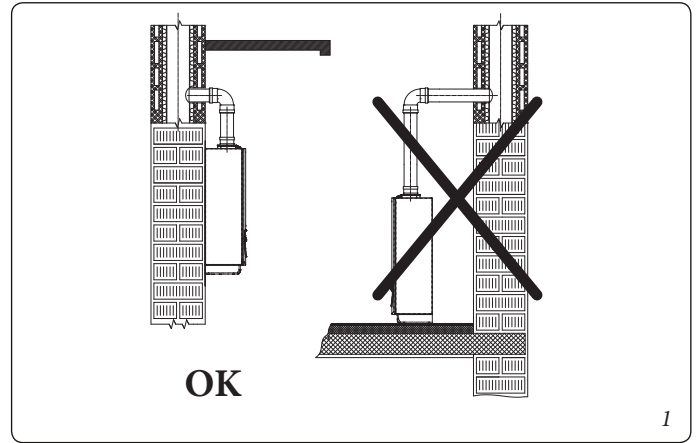
### SAFETY FOOTWEAR

# 1 BOILER INSTALLATION.

## 1.1 INSTALLATION RECOMMENDATIONS.

### ATTENTION:

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



OK

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### ATTENTION:

Individual and cascade installation Victrix Pro 80-100-120 2ErP boilers can be installed outdoors or in a suitable plant room).



The installation must comply with all laws and standards in force.



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



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

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) but exclusively for wall installation.

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

- **Type B<sub>23</sub> or B<sub>53</sub> 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 gas.

**Note:** appliance classification is provided in the depictions of the various installation solutions shown on the following pages.



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



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

### ATTENTION:

It is not permitted to install boilers that are removed and decommissioned from other systems. The manufacturer declines all liability for damages caused by boilers removed from other systems or for any non-conformities of such equipment.



### ATTENTION:

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



### ATTENTION:

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



### ATTENTION:

if installing a kit or servicing the appliance, always empty the system's domestic hot water circuit first so as not to compromise the appliance's electrical safety (Par. 2.10).



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; for the minimum installation distances refer to Fig. 3.

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



It is recommended to check that no flue gas recirculation is found in the air sample points (0.5% maximum permitted CO<sub>2</sub>).



Keep all flammable objects away from the appliance (paper, rags, plastic, polystyrene, etc.).

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

Do not place household appliances underneath the boiler as they could be damaged if the safety valve intervenes, if the drain trap is blocked, 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.

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

### Installation Standards:



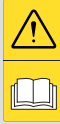
- This boiler can be installed outdoors, without additional protections.
- Installation of gas appliances, flue exhaust pipes and combustion air intake pipes is forbidden in places with a fire risk (for example: garages, closed parking stalls), and in potentially dangerous places.
- Installation is prohibited on the vertical projection of the cooking surface.
- Installation is forbidden in places/rooms that constitute public areas of apartment buildings, internal stairways or other escape routes (e.g. floor landings, entrance halls, etc.).
- Installation is also forbidden in places/rooms that constitute public areas of apartment buildings such as cellars, entrance halls, attics, lofts, etc., unless otherwise provided for by local regulations in force.
- These boilers are not suitable for installation on walls made of combustible material.

INSTALLER

USER

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**N.B.: wall mounting of the boiler must guarantee stable and efficient support for the boiler.** The plugs (standard supply) are only to be used to fix the boiler 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. The boilers must be installed in a way to prevent collisions and tampering.



**N.B.: the hex head screws supplied in the blister pack are to be used exclusively to fix the 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 domestic hot water circuit suited to their performance and capacity.



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

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



- Check that combustion air power supply is free from chlorine, sulphur, powders, etc.
- Make sure that no chemical substances are stored in the place of installation.
- If you want to install the product in beauty salons, paint workshops, carpenter's shop, cleaning companies or similar, choose a separate installation area that ensures combustion air supply that is free from chemical substances.
- Make sure the combustion air is not fed from chimneys that were used with gas boilers or other heating devices. In fact, these may cause an accumulation of soot in the chimney.

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

Leak sprays and liquids clog the reference hole P1 (Fig. 49) of the gas valve, damaging it irreparably.



During installation and maintenance, do not use spray or liquids in the upper area of the gas valve (side referring to the electric connections)

**Filling the condensate drain trap.**



On first lighting of the boiler, flue gas may come out from the condensate drain; after a few minutes' operation, check that this no longer occurs. This means that the drain trap is filled with condensate to the correct level preventing the passage of flue gas.

**ATTENTION:**



- **Type B open chamber boilers must not be installed in places where commercial, artisan or industrial activities take place, which use products that may develop volatile vapours or substances (e.g. acid vapours, glues, paints, solvents, combustibles, etc.), as well as dusts (e.g. dust deriving from the working of wood, coal fines, cement, etc.), which may be damaging for the components of the appliance and jeopardise functioning.**
- **Unless otherwise provided for by local regulations in force, configurations B<sub>23</sub> and B<sub>53</sub>: the boilers must not be installed in bedrooms, bathrooms or bedsits. They must neither be installed in rooms containing solid fuel heat generators nor in rooms communicating with said rooms.**
- **The installation rooms must be permanently ventilated, in compliance with the local regulations in force (at least 6 cm<sup>2</sup> for every kW of installed heat input, except in the event of any increases needed for electro-mechanical vacuum cleaners or other devices that could put the installation room under vacuum).**
- **Installation of appliances in B<sub>23</sub> and B<sub>53</sub> configuration is recommended in non-residential premises and which are permanently ventilated.**

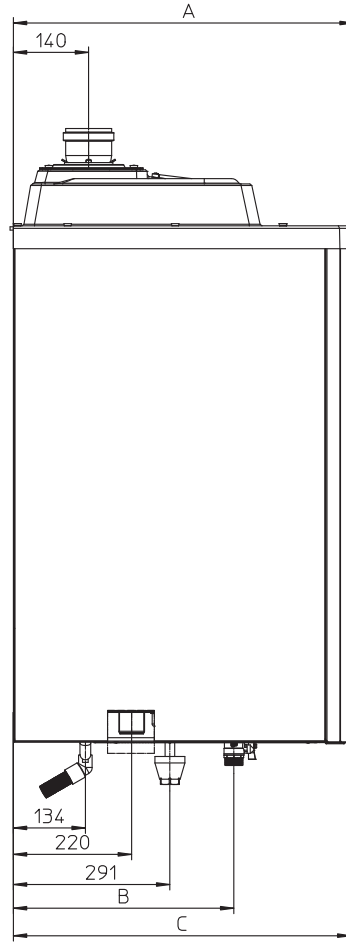
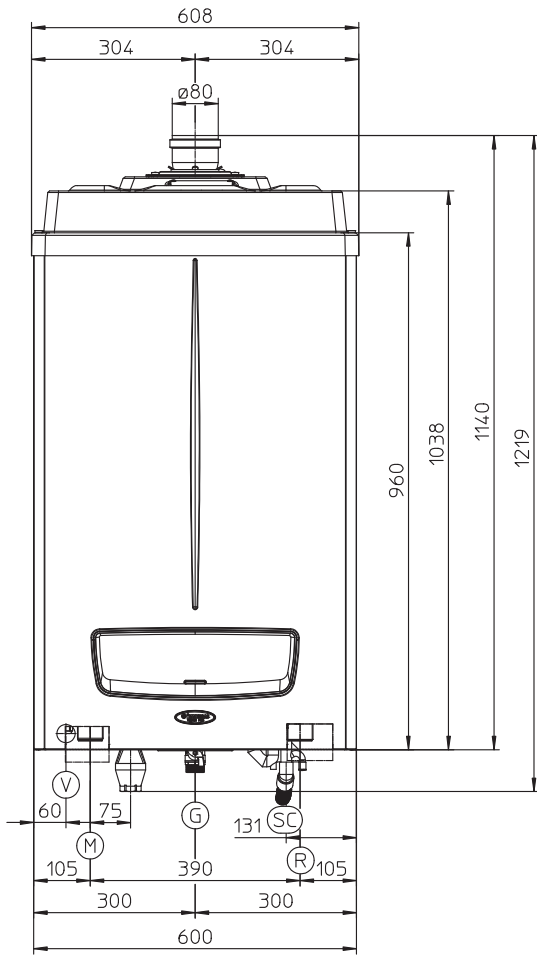
**ATTENTION:**



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



### 1.2 MAIN DIMENSIONS.



Key:

- V - Electrical connection
- G - Gas supply
- R - System return
- M - System flow
- SC - Condensate drain (minimum internal diameter Ø 13 mm)

Height (mm)	Width (mm)	Depth (mm)
1038	600	A
Connections		
GAS	SYSTEM	
G	R	M
*	1"1/2	1"1/2

A:

- Victrix Pro 80 2ErP = 502 mm
- Victrix Pro 100 - 120 2ErP = 632 mm

B:

- Victrix Pro 80 2ErP = 265 mm
- Victrix Pro 100 - 120 2ErP = 410 mm

C:

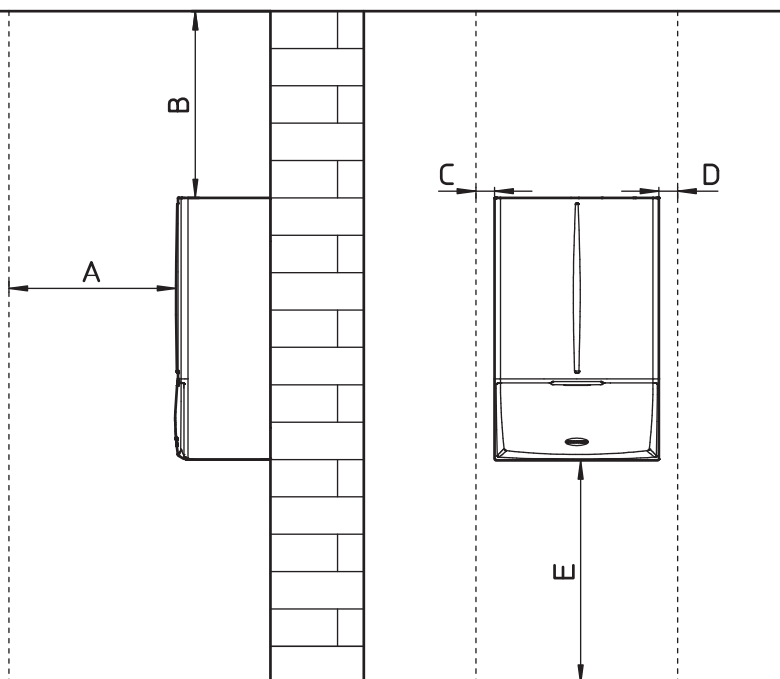
- Victrix Pro 80 2ErP = 497 mm
- Victrix Pro 100 - 120 2ErP = 627 mm

\*:

- Victrix Pro 80 2ErP = 3/4"
- Victrix Pro 100 - 120 2ErP = 1"

2

### 1.3 MINIMUM INSTALLATION DISTANCES.



Key:

- A - 450 mm
- B - 600 mm
- C - 350 mm
- D - 350 mm
- E - 1000 mm

3

INSTALLER

USER

MAINTENANCE TECHNICIAN

#### 1.4 POSITION OF THE APPLIANCES.

The boilers can be installed:

- outdoors;
- in outdoor environments, also adjoining the building served, located in uncovered space, as long as structurally separated and without walls in common, or situated on the flat covering of the building served, always without walls in common;
- in building also destined for other use or in places inserted in the volume of the building served.

These rooms must be intended exclusively to house CH systems and must have characteristics that comply with legislation in force.

#### ATTENTION:

**the installation of appliances powered with gas with a greater density than 0.8 (L.P.G.) is only allowed in places out of the ground, also communicating with places that are on the ground. In both cases the walkway must not have hollows or depressions such to create gas pockets that determine dangerous conditions.**



#### Height of the installation room.

*Installation of individual appliance:* the room must have a minimum ceiling height of 2 m.

*Installation of multiple appliances in cascade (2 ÷ 5 Victrix Pro 2 ErP):* considering the size of the boiler, the flue manifold (which must be installed on a 3% gradient) and the hydraulic manifolds, the room must have a minimum ceiling height of 2.3 m.

If the installed heat input in the room is between 350 kW and 580 kW, the minimum height of the room must be 2.60 m; the minimum room height is 2.90 m for heat inputs greater than 580 kW..

The aforementioned heights allow for correct installation of the appliances and observe the technical regulations in force.

#### Position of the appliances in the room.

*Individual appliance:* the distances between any external point of the boiler and the vertical and horizontal walls of the room must allow accessibility to the regulation, safety and control elements for routine maintenance.

*Multiple appliances, not interconnected, but installed in the same room:* the minimum distance to maintain between several boilers installed on the same wall must be 200 mm, in order to allow accessibility to the regulation, safety and control elements and routine maintenance of all appliances installed.

*Cascade installation (2 ÷ 5 Victrix Pro 2 ErP):* The instructions for correct cascade installation are provided in the respective documents or on the [www.immergas.com](http://www.immergas.com) website in the high power section.

#### 1.5 AERATION AND VENTILATION OF THE INSTALLATION ROOMS.

The rooms must have one or more permanent openings for aeration on external walls. The openings used for aeration can be protected using metal grills, meshes and/or rain-proof fins as long as the net aeration surface is not reduced.

The aeration openings must be realised and located in a way to prevent the formation of pockets of gas, independently from the conformation of the covering. The resulting total opening may be split in more openings, in all cases each opening must not have a net surface less than 100 cm<sup>2</sup>.

**Aeration for installation in outdoor places.** The minimum free surfaces, in relation to the overall heat input must not be below:

a) above-ground rooms ( $S \geq Q \times 10$ )

$S > 755 \text{ cm}^2$  for every Victrix Pro 80 2ErP

$S > 925 \text{ cm}^2$  for every Victrix Pro 100 2ErP

$S > 1145 \text{ cm}^2$  for every Victrix Pro 120 2ErP

(ex: to install 3 Victrix Pro 80 2ErP in cascade, the minimum surface is  $755 \times 3 = 2265 \text{ cm}^2$ )

b) basements and underground rooms up to a height of -5 m from the reference surface ( $S \geq Q \times 15$ ).

$S > 1130 \text{ cm}^2$  for every Victrix Pro 80 2ErP

$S > 1385 \text{ cm}^2$  for every Victrix Pro 100 2ErP

$S > 1712 \text{ cm}^2$  for every Victrix Pro 120 2ErP

(ex: to install 3 Victrix Pro 80 2ErP in cascade, the minimum surface is  $1130 \times 3 = 3390 \text{ cm}^2$ )

c) underground rooms at quota between -5 m and -10 m from the reference surface ( $S \geq Q \times 20$  with a minimum of 5000 cm<sup>2</sup>).

$S > 5000 \text{ cm}^2$  for all configurations

In all cases each opening must not have a net surface area less than 100 cm<sup>2</sup>.

#### ATTENTION:

**in the case of installation of appliances powered with gas with greater density than 0.8 (L.P.G.) in outdoor places, above-ground, at least 2/3 of the aeration surface must be flush with the floor, with a minimum height of 0.2 m.**

**The aeration openings must be at least 2 m for heating capacities not exceeding 116 kW and 4.5 m for higher heating capacities, cavities, depressions or openings communicating with rooms below the walkway surface or draining ducts.**

**Aeration for installation in building also destined for other use or in places inserted in the volume of the building served.**

The aeration surface must not be less than 3000 cm<sup>2</sup> in the case of natural gas and must not be less than 5000 cm<sup>2</sup> in the case of L.P.G.. The installation must comply with the requirements of all relevant codes and standards.

## 1.6 OUTDOOR INSTALLATION.

The boiler has an IPX5D electric insulation rating and can also be installed outdoors, without additional protections.

### ATTENTION:

**all optional kits that can be potentially connected to the boiler must be protected on the basis of their electrical protection rating.**



## 1.7 ANTI-FREEZE 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 5°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;
- Main switch is inserted;
- the boiler is not in no ignition block;
- 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 failed ignition 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.

**N.B.:** the excessive use of glycol could jeopardise the proper functioning of the appliance.

An aqueous solution must be made with a potential water pollution class 2 (EN 1717:2002 or local regulations in force). The materials used for the central heating circuit of Immergas boilers withstand ethylene and propylene glycol based anti-freeze liquids (if the mixtures are prepared perfectly).

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

- Protect the condensate drain trap and relative drain against freezing by using an accessory supplied on request (anti-freeze kit) comprising two electric resistances, 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 electricity power supply circuits;
- 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.

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

Note: the antifreeze systems described in this chapter are only to protect the boiler. The presence of these functions and devices does not exclude the possibility of parts of the system or domestic hot water circuit outside the boiler from freezing.

## 1.8 GAS CONNECTION.

Our boilers are designed to operate with with natural gas (G20) and L.P.G. Supply pipes must be the same as or larger than the boiler fitting Victrix Pro 80 2ErP, 1" Victrix Pro 100-120 2ErP.

### ATTENTION:

**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-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 L.P.G.) pressure must also be checked according to the type used in the boiler, which must comply with EN 437 and relative attachments and with the local technical regulations in force, as insufficient levels can reduce generator output and cause malfunctions. Ensure correct gas cock connection.**



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



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

The internal gas supply system must be built in compliance with the provisions and regulations and all legislation in force, and any other reference on good technique. If the generator does not exceed the maximum nominal heat input of 35 kW (Victrix Pro 35 2 ErP in individual installation) simply follow the provisions set forth in the technical regulation in force

Install a manual cut-off valve with quick closure manoeuvre for 90° rotation and end run stops in the all open or all closed positions on the gas supply pipe in a visible and easily reachable position outside the room where the appliance is installed.

#### ATTENTION:

**the appliance has been 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 problems with boiler operation.
- 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.

#### 1.9 HYDRAULIC CONNECTION.

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



A treatment of the heating and water 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. scale), slurry or other hazardous deposits.

Chemical conditioning treatment is always required in relation to the quality of the water used in the water systems for winter heating, with or without domestic hot water production, still following the provisions of the law in force. System water sweetening treatment required for systems with furnaces with heat output greater than 100 kW and supply water with hardness greater than 15 french degrees. Refer to the laws in force for the aforementioned treatments.

#### ATTENTION:

**the manufacturer is not liable in case of damage caused by the absence of heat and water systems water treatment.**



It is recommended to prepare a filter in the system to collect and separate any impurities present in the system (slurry remover filter).



In order to avoid deposits, scaling and corrosion in the central heating system, the provisions set forth in the technical regulation in force on water treatment in heating systems for civil use must be respected.

Water connections must be made in a rational way using the couplings on the boiler template. The discharge of the boiler safety valve must be connected to a tundish and then the waste should be connected to the sewer. 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 inclusion of automatic filling that is not its own brand.**



In order to meet the system requirements established by EN 1717 and in observance of local technical regulations in force on the pollution of drinking water, we recommend installing an anti-backflow kit to be used upstream of the cold water inlet connection of the boiler. We also recommend using category 2 heat transfer fluid (ex: water + glycol) in the boiler's primary circuit (C.H. circuit), as defined in standard EN 1717.

To preserve the duration of appliance efficiency features, we recommend the installation of a suitable device for water treatment in presence of water whose characteristics can lead to the deposit of lime scale.

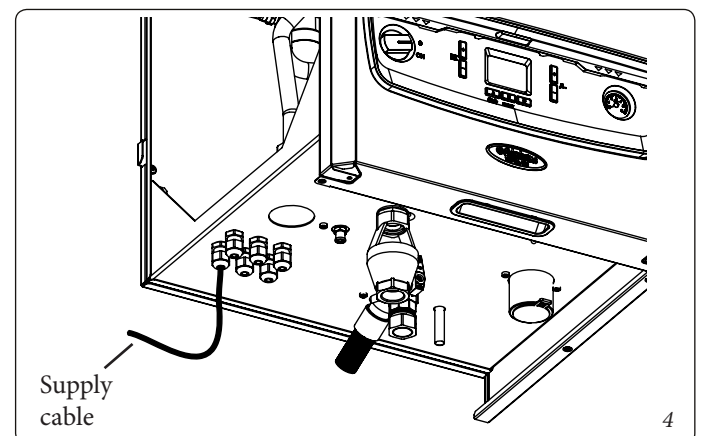


#### Condensate drain.

Condensate must be drained according to the laws in force.

To drain the condensate produced by the appliance, it is necessary to connect to the drainage system by means of acid condensate resistant pipes, with an internal Ø of at least 13 mm. The system connecting the appliance to the drainage system must be carried out in such a way as to prevent freezing of the liquid contained in it. Before appliance start-up, make sure that the condensate can be correctly removed, in accordance to the provisions of the laws in force; after first ignition, check that the drain trap is filled with condensate (para. 1.22). Also, comply with national and local regulations on discharging waste waters.

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



## 1.10 ELECTRICAL CONNECTION.

### ATTENTION:

**the electrical system must be built in compliance with technical standards and all legislation in force.**



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

### ATTENTION:

**the manufacturer declines any responsibility for damage or physical injury caused by failure to connect the boiler to an efficient earthing 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. The boilers are supplied complete with a "Y" H 05 VVF 3 x 0,75 mm<sup>2</sup> type power cable without plug.

### ATTENTION:

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



The main switch must be installed outside the rooms in a position that is indicated and accessible.

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

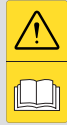
If the power cable is damaged, contact a qualified company (e.g. the Authorised Technical Assistance Centre) for its replacement to avoid a hazard.

The power cable must be laid as shown (Fig. 4).

If the network fuse on the connection terminal block needs replacing, this must also be done by qualified personnel: use a 3.15A F (quick) 250V fuse (size 5 x 20).

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

If the Digital 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.



### Installation with system operating at direct low temperature.

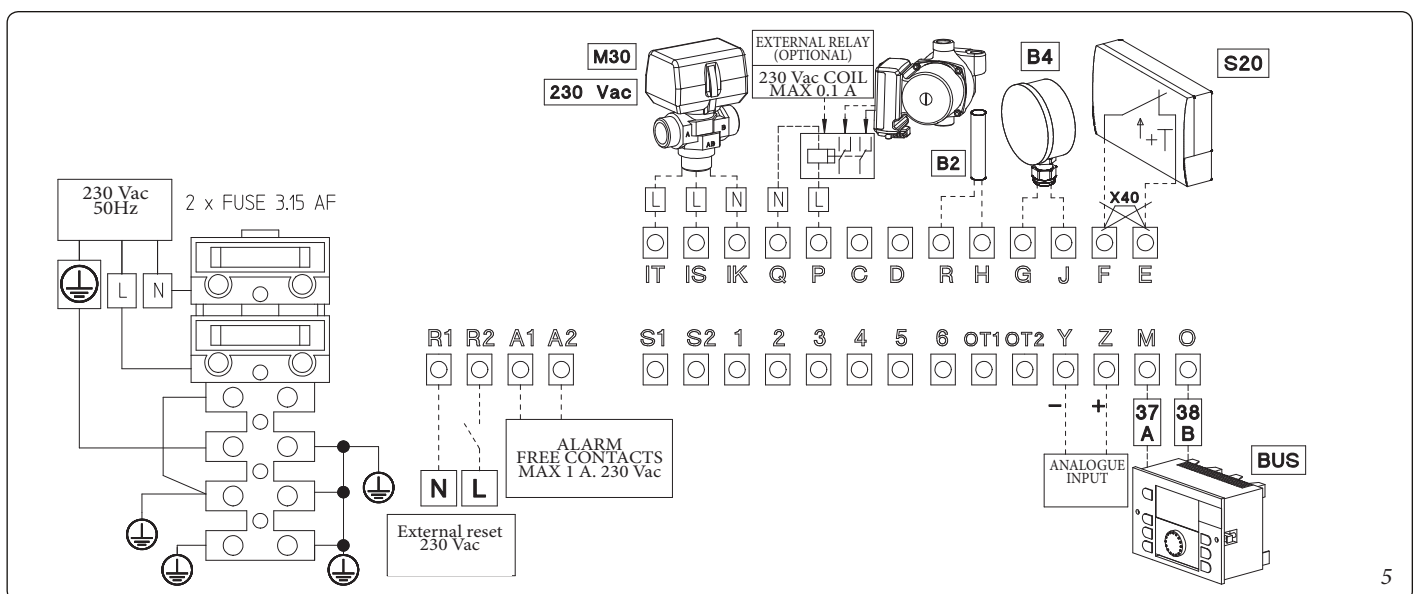
The boiler can directly feed a low temperature system. The value of parameter "P02" defines the maximum flow temperature of the generator. Use parameter "P02" to define the maximum flow temperature.

During the chimney sweep function, the flow temperature is not limited by the "P02" parameter but instead by the maximum allowable temperature (97°C).



To avoid the risk of exceeding the optimal temperature of operation in low temperature, due to external causes (e.g.: incorrect adjustment, prolonged system stop, etc.), you must insert in series with the supply voltage of the boiler, a special safety kit (optional) consisting of a thermostat (with adjustable temperature, depending on the characteristics of the system). The thermostat must be positioned on the system flow pipe at a distance of over 2 metres from the boiler.

In Fig. 5 describes the standard electrical connection with the pump connected to terminals "Q" and "P"; thus the external pump is fed making it run in parallel to the boiler pump.



### 1.11 OPTIONAL BOILER CONTROLLERS.

The boiler is prepared for the application of a cascade and zone regulator, zone manager and external probe.

These components are available as separate kits to the boiler and are supplied on request.

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

#### ATTENTION:

**disconnect power to the appliance before any electrical connection.**



- The cascade and area regulator (Fig. 6) is connected to the boiler using only two wires, powered at 230 V and allows to:
  - manage a hydraulic circuit with 2 mixed zones (mixing valve); 1 direct zone; 1 Storage tank unit and relative pumps;
  - self-diagnosis system to display any boiler functioning anomalies;
  - set two room temperature value: one for daytime (comfort temperature) and one for nighttime (lower temperature);
  - to manage the temperature of the DHW (with a storage tank unit);
  - to manage the boiler flow temperature depending on the external temperature;
  - to select the desired operating mode from the various possible alternatives for each individual hydraulic circuit:
    - permanent operation in comfort temp.;
    - permanent operation in lower temp.;
    - permanent operation in adjustable anti-freeze temp.

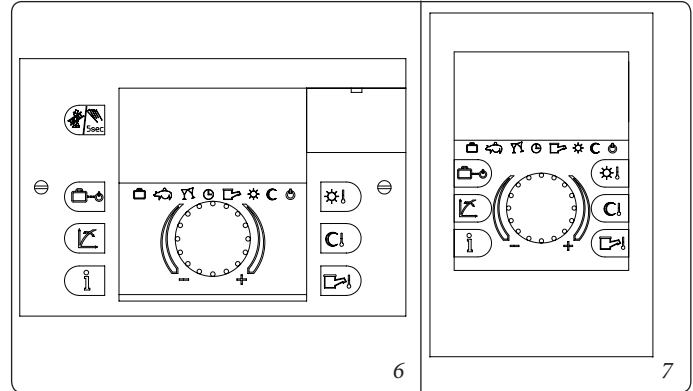
- Zone manager (Fig. 7). In addition to the functions described in the previous point, the zone manager panel allows to control all the important information regarding operation of the appliance and the heating system with the opportunity of easily intervening on the previously set parameters without having to go to the place where the appliance is installed. The climate chrono-thermostat incorporated into the zone manager 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. It also allows to display the effective room temperature and the external temperature (if external probe is present). The zone manager is powered directly by the cascade heat adjuster via 2 wires.

#### Thermoregulation electrical connection (Fig. 5).

Thermoregulation electrical connections must be carried out on the boiler terminal board eliminating jumper X40.

- Thermostat or On/Off environment chrono-thermostat: must be connected to clamps "E" and "F". 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.
- Cascade and zone regulator: must be connected through clamps 37 and 38 to clamps "M" and "O" respecting polarity. *The connection with incorrect polarity will not damage the thermoregulator, but will not allow it to operate.*

If the cascade and zone regulator is used, it is compulsory to set up separate lines with different power supply voltages, particularly it is essential to separate the very low voltage connections from the 230 V ones. 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.



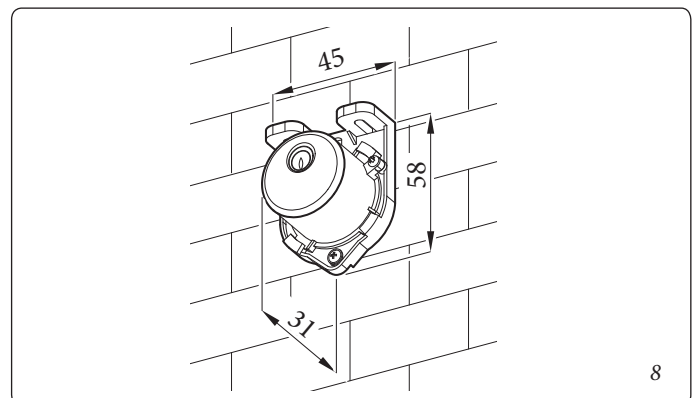
### 1.12 EXTERNAL TEMPERATURE PROBE (OPTIONAL).

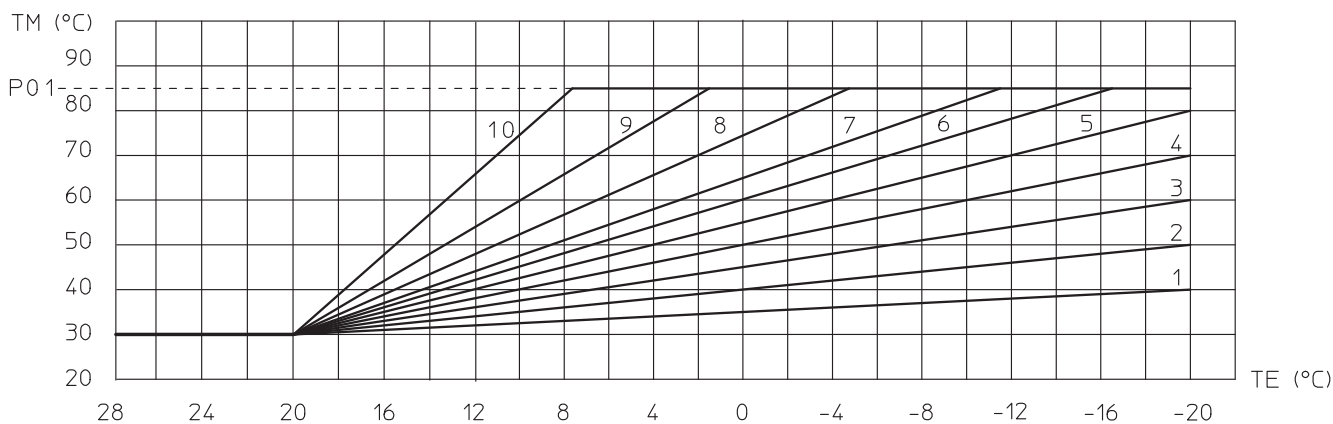
The boiler is designed for the application of the external temperature probe (Fig. 8), which is available as an optional kit. Refer to the relative instruction sheet for positioning of the external probe. The probe can be connected directly to the boiler electrical system and allows the max. system flow temperature to be automatically decreased when the external temperature increases, in order to adjust the heat supplied to the system according to the change in external temperature. The electric connection of the external probe must take place on clamps G and J on the connection in the boiler (Fig. 5).

By default, the external probe is not enabled. It is necessary to set parameters "P14" and "P15" for correct operation. The correlation between flow temperature to the system and external temperature is determined by the curves represented in the diagram (parameter "P14") and by setting the offset (parameter "P15") (Fig. 9).

In case "P32" is bigger than "P15", "P32" will be the minimum limit for the set. In case "P32" is lower than "P15", "P32" will not be considered.

The external probe may be used with the cascade and zone regulator by connecting it on the regulator or on the boiler (attention: the code of the external changes if it is connected to the regulator or the boiler); for specific installations refer to the diagrams on page 40. If the external probe is connected to the cascade regulator, boiler parameter "P14" must be set at "0", and external probe control is delegated to the cascade regulator.





Note: this graph is prepared with the offset value (P15) at 30°C (default value). By changing the offset value, the origin of the flow temperature curve will also change accordingly and not the inclination.  
 Ex: with Offset = 40 the graph origin is 40 and not 30 °C and curve 5 with TE = -4°C, TM goes from 60°C to 70°C.

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### 1.13 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 be installed exclusively with an original Immergas “Green Range” inspectionable air intake system and flue gas extraction system made of plastic, with the exception of the C6 configuration, as required by the regulations in force and by the product’s approval.**

**This flue can be identified by an identification mark and special distinctive marking bearing the note "only for condensation boilers".**

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

- **Configuration type B, open chamber and fan assisted.** The boiler leaves the factory with type “B<sub>23</sub>” configuration.

**Air intake takes place directly from the environment in which the boiler is installed via relevant slots made in the back of the boiler and flue exhaust in the individual flue or to the outside.** Boiler with this type of configuration are classified as type B<sub>23</sub> (in accordance with standard EN 297 and relative standards in force).

With this configuration:

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

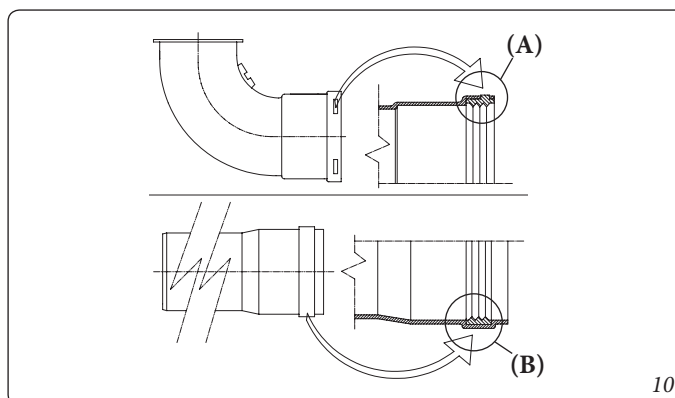
- Type B open chamber boilers must not be installed in places where commercial, artisan or industrial activities take place, which use products that may develop volatile vapours or substances (e.g. acid vapours, glues, paints, solvents, combustibles, etc.), as well as dusts (e.g. dust deriving from the working of wood, coal fines, cement, etc.), which may be harmful for the components of the appliance and jeopardise operation.

- **Type C configuration, sealed chamber and fan assisted.** The boiler leaves the factory with “B<sub>23</sub>” configuration, to change the configuration of the boiler to type “C” (sealed chamber and fan assisted), disassemble the 80 Ø adapter, the bracket and the gasket present on the boiler cover and install the designated flue.

- **Positioning of the gaskets (black) for “green range” flue extraction systems.** Position the gasket correctly (for bends and extensions) (Fig. 10):

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

**N.B.:** if component lubrication (already carried out by the manufacturer) is not sufficient, remove the residual lubricant using a dry cloth, then to ease fitting coat the parts with talc, supplied in the kit.



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- **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 section (with lip seal) to the end stop on the previously installed element in order to ensure sealing efficiency of the coupling.
- **N.B.:** 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.

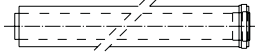


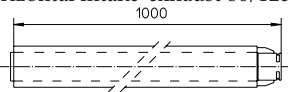

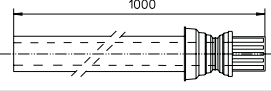

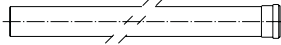
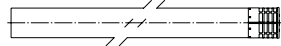



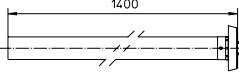
The various parts of the flue system must be checked to ensure that they have been laid in such a way as to prevent the coupled parts from detaching, in particular, the flue exhaust duct in the Ø80 separator kit configuration. Should the aforesaid condition not be adequately guaranteed, it will be necessary to use the special clamp ring nut clip kit.



- **N.B.:** when installing horizontal pipes, a minimum inclination of 3% must be maintained and a section clamp with pin must be installed every 3 metres.
- **Maximum extension.** Each individual component has a resistance corresponding to a certain length in metres of pipe with the same diameter (par. 1.14). With installations that involve using various types of parts, deduct the length of the added part from the maximum admissible length of the kit.

Example: if you need to add a 90° bend to a concentric system 125 Ø you will need to deduct 1.9 m from the maximum admissible length.

**1.14 TABLES OF EQUIVALENT LENGTH FACTORS.**

TYPE OF DUCT	Equivalent length in m of concentric pipe Ø 80/125
Concentric pipe Ø 80/125 m 1 	1.0 m
Concentric bend 90° 80/125 Ø 	1.9 m
Concentric bend 45° 80/125 Ø 	1.4 m
Terminal complete with concentric horizontal intake-exhaust 80/125 Ø 	5.5 m
Concentric horizontal intake-exhaust terminal 80/125 Ø 	4.7 m
Terminal complete with concentric vertical intake-exhaust 80/125 Ø 	3.4 m
Concentric vertical intake-exhaust terminal 80/125 Ø 	2.7 m
Pipe 80 Ø, 1 m 	Exhaust 1.0 m
Complete exhaust terminal 80 Ø, 1 m 	Exhaust 2.6 m
Exhaust terminal 80 Ø 	Exhaust 1.6 m
Bend 90° 80 Ø 	Exhaust 2.1 m
45° 80 Ø Bend 	Exhaust 1.3 m
Terminal complete with vertical exhaust 80 Ø 	Exhaust m 3



### 1.15 CONCENTRIC HORIZONTAL KIT INSTALLATION. Type C configuration, sealed chamber and fan assisted.

Installation of this terminal must comply with the provisions set forth by all of the legislation and regulations in force that may allow, in certain cases, wall flue exhaust for low-NOx condensing boilers.

The position of the terminal (in terms of distances from openings, overlooking buildings, decking, etc.) must be set up in compliance with regulations in force as well as the references of good technique.

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.

#### • External grid.

Both the Ø 60/100 and Ø 80/125 intake/exhaust terminal, if properly installed, is pleasant to look at on the outside of the building. Make sure that the external silicone sealing plate is properly inserted in the wall.

#### ATTENTION:

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

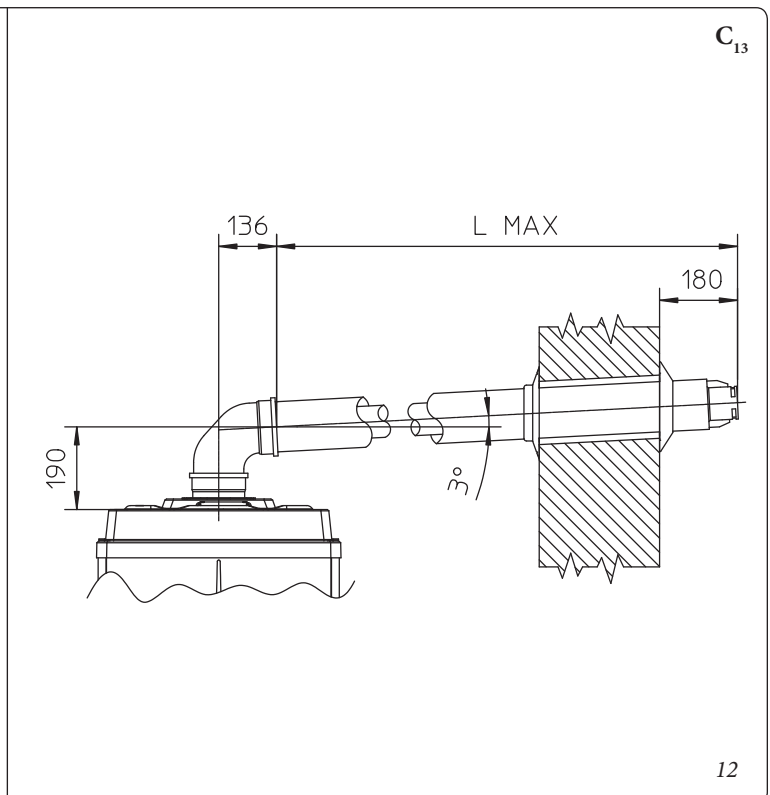
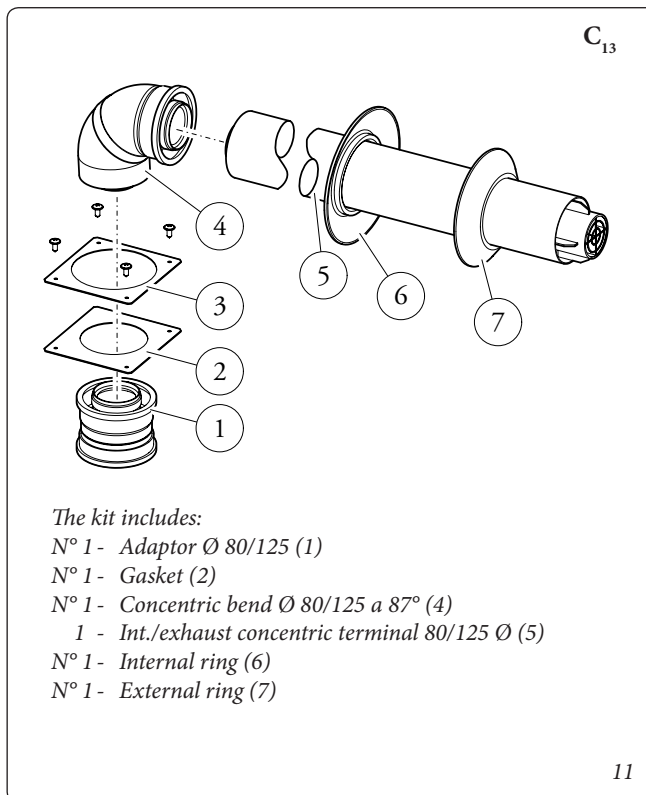


#### Horizontal intake-exhaust kit Ø 80/125.

Kit assembly (Fig. 11): install the 80/125 Ø adapter (1) on the central hole of the boiler fully home. Slide the gasket (2) along the adapter (1) up to the relevant groove, fix it to the lid using the previously disassembled sheet steel plate (3). Engage the bend (4) with the male side (smooth) until it is fully home on the adapter (1). Fit the Ø 80/125 (5) concentric terminal pipe with the male end (smooth) to the female end of the bend (4) (with lip seals) up to the stop; making sure that the internal (6) and external wall sealing plates (7) have been fitted, this will ensure sealing and joining of the elements making up the kit.

#### • Maximum length (MAX L) (Fig. 12).

The kit with this configuration can be extended up to a *max. measurement of 11.0 m with Victrix Pro 80 2ErP, 8.0 m with Victrix Pro 100 2ErP and 5.0 m with Victrix Pro 120 2ErP*, including the grid-covered terminal and the concentric bend on the boiler outlet.



INSTALLER

USER

MAINTENANCE TECHNICIAN

**1.16 CONCENTRIC VERTICAL KIT INSTALLATION.**

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

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

The vertical kit with aluminium 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 for Ø 60/100 and 260 mm for Ø 80/125) must always be observed.

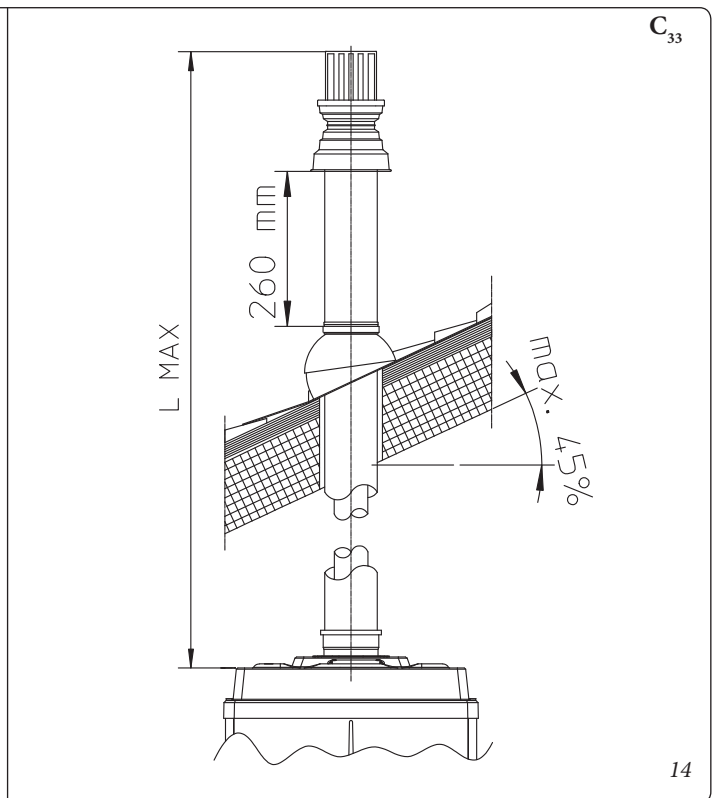
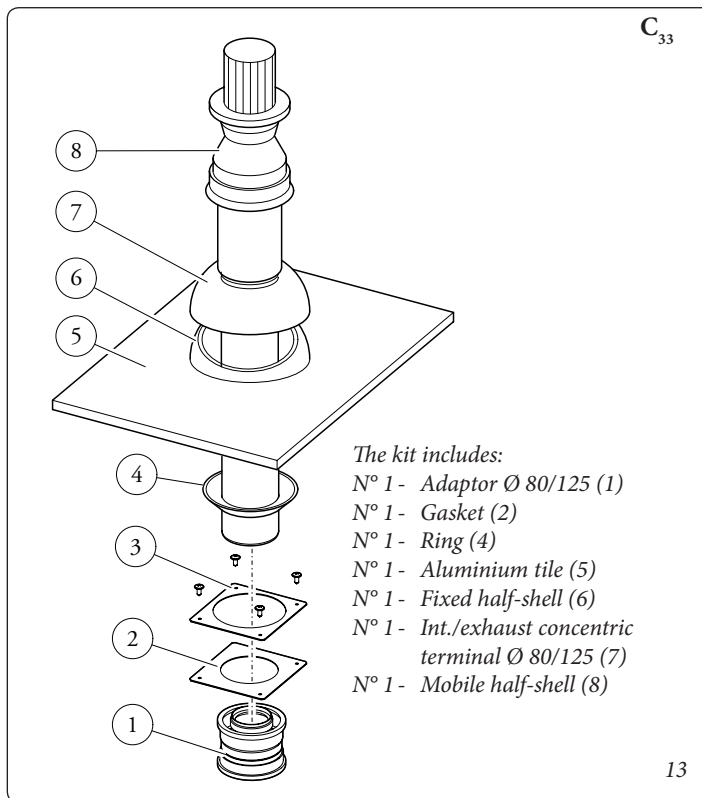


**Vertical kit with aluminium tile Ø 80/125.**

Kit assembly (Fig. 13): install the 80/125 Ø adapter (1) on the central hole of the boiler fully home. Slide the gasket (2) along the adapter (1) up to the relevant groove, Fix it to the lid using the previously-disassembled sheet steel plate (3).

Installation of the fake aluminium tile: replace the tiles with the aluminium sheet (5), shaping it to ensure that rainwater runs off. Position the fixed half-shell (6) on the aluminium tile and insert the intake-exhaust pipe (7). Fit the 80/125 Ø concentric terminal pipe with the male end (6) (smooth) to the female end of the adapter (1) (with lip gasket) up to the 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.

• **Maximum length (MAX L) (Fig. 14).** The kit with this configuration can be extended up to a max. measurement of 15.0 m with Victrix Pro 80 2ErP, 11.0 m with Victrix Pro 100 2ErP and 6.0 m with Victrix Pro 120 2ErP, including the terminal



**1.17 INSTALLATION OF VERTICAL TERMINALS 80 Ø.  
Configuration type B, open chamber and forced draught.**

**80 Ø Vertical kit (plastic for indoor applications).**

Kit assembly (Fig. 15): install the 80 Ø terminal (2) on the central hole on the boiler up to stop, making sure that the wall sealing plates (1) have been fitted. This will ensure the sealing efficiency of the kit components.

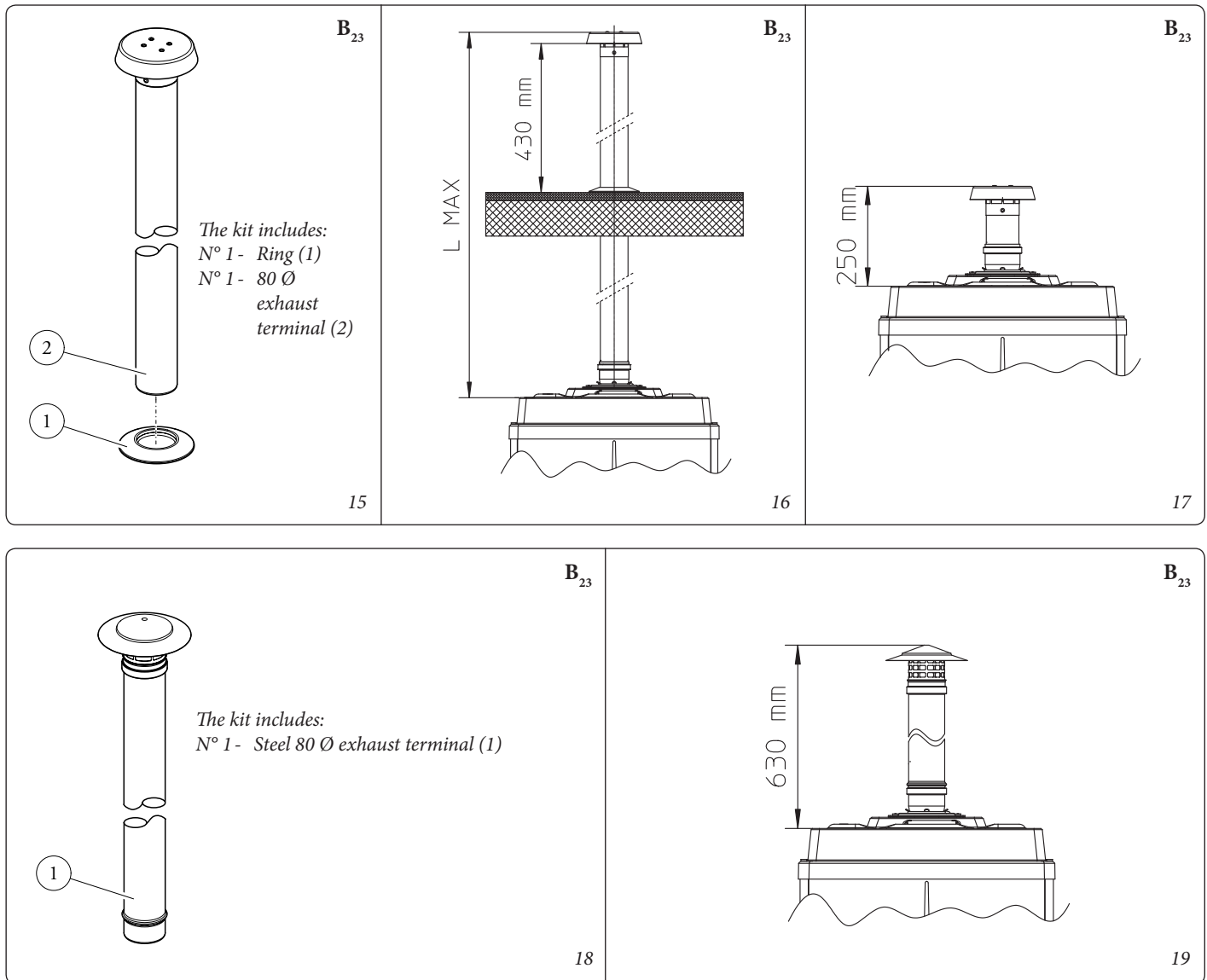
- **Maximum length (MAX L) (Fig. 16).** The kit with this configuration can be extended up to a *max. measurement of 28.0 m with Victrix Pro 80 2ErP, 14.0 m with Victrix Pro 100 2ErP and 8.5 m with Victrix Pro 120 2ErP*, including the terminal.

Using the Ø 80 vertical terminal for direct discharge of the combustion products, the terminal must be shortened (see quotas fig. 17). The wall sealing plate (1) must also be inserted in this case going up to stop on the boiler cover.

**80 Ø Vertical kit (steel for outdoor applications).**

Kit assembly (Fig. 18): install the 80 Ø terminal (1) on the central hole on the boiler up to the stop, ensuring the sealing efficiency of the kit components.

The 80 Ø steel terminal is used to install the boiler outdoors with a direct exhaust. The terminal cannot be shortened and once it is installed it will extend out by 630 mm (Fig. 19).



**1.18 INSTALLATION OF 80 Ø HORIZONTAL TERMINALS.**

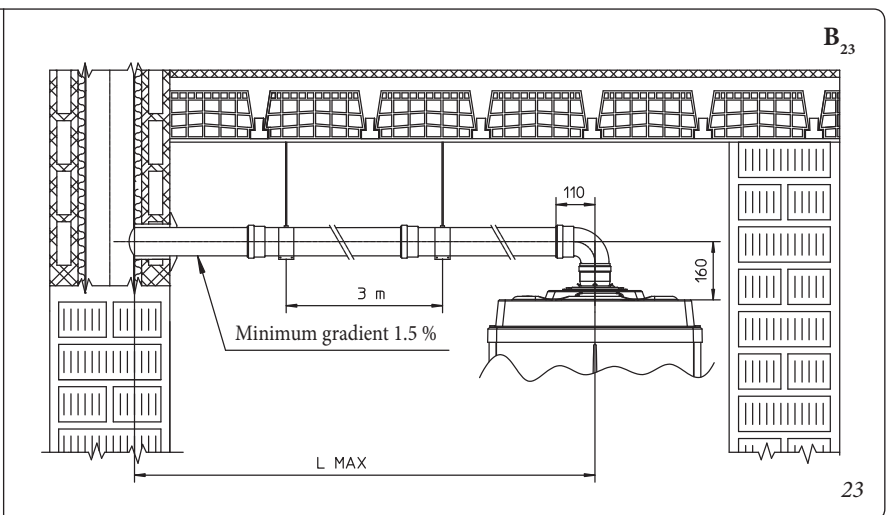
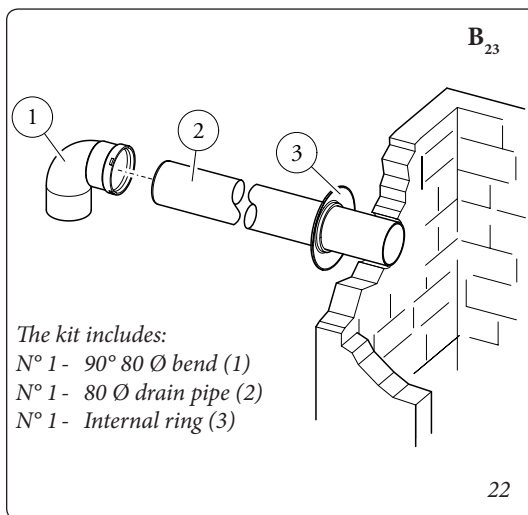
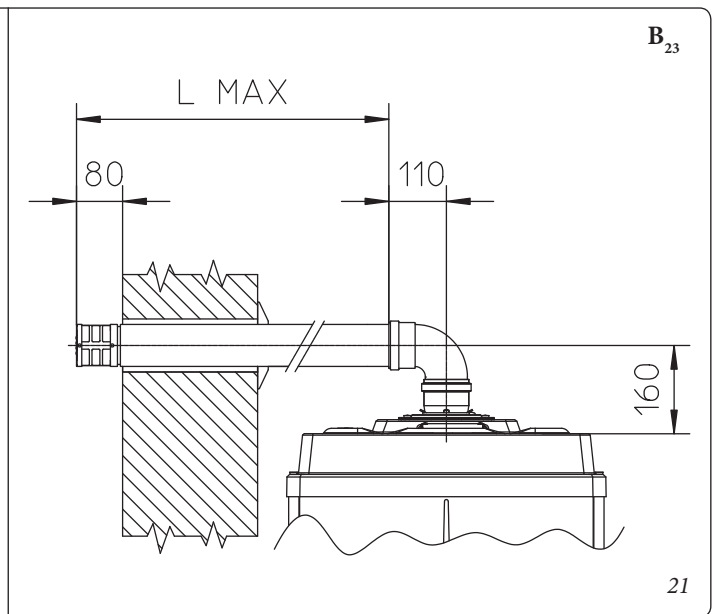
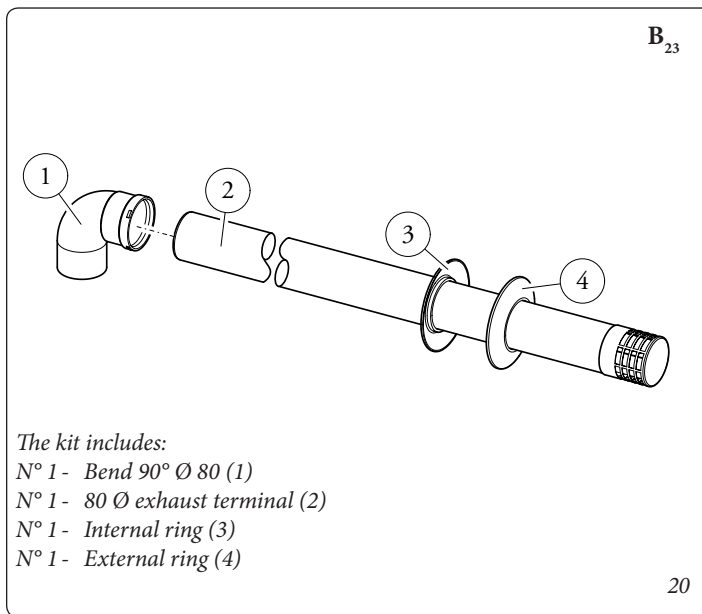
**Configuration type B, open chamber and forced draught.**

**Ø 80 horizontal kit with wall flue exhaust.**

Kit assembly (Fig. 20): install the 80 Ø bend (1) with the male side (smooth) fully home on the central hole of the boiler. Fit the exhaust terminal (2) with the male end (smooth) to the female end of the bend (1) up to the stop; making sure that the internal (3) and external (4) wall sealing plate has been fitted. This will ensure sealing and joining of the elements making up the kit.

**Horizontal kit Ø 80 with exhaust in flue.** Kit assembly (Fig. 22): install the 80 Ø bend (1) with the male side (smooth) fully home on the central hole of the boiler. Fit the exhaust pipe (2) with the male end (smooth) to the female end of the bend (1) up to the stop; making sure that the internal wall sealing plate (3) has been fitted. This will ensure sealing and joining of the elements making up the kit.

- **Maximum length (MAX L) (Fig. 21 and 23).** The kit with this configuration can be extended up to a *max. measurement of 28.0 m with Victrix Pro 80 2ErP, 14.0 m with Victrix Pro 100 2ErP and 8.5 m with Victrix Pro 120 2ErP, including the terminal.*



### 1.19 FLUE DUCT SYSTEMS FOR VOIDS AND CHIMNEYS.

Ducting is an operation through which by the introduction of one or more relevant pipes, a system is realised for the evacuation of the combustion products of a gas appliance made up from the coupling of an existing or new ducting pipe with a chimney, flue or technical slot (also in new buildings). Flue ducts may be installed in suitable voids or chimneys provided that the relevant building regulations permit this. Flue ducting systems must be installed in strict accordance with the manufacturers instructions.

**Immergas ducting system Ø 80 .** *The “Green Series” 80 Ø flexible ducting system must only be used with Immergas condensing boilers.* In any case, ducting operations must respect the provisions contained in the standard and in current technical regulations; in particular, the declaration of conformity must be compiled at the end of work and on commissioning of the ducted system. The

instructions in the project or technical report must likewise be followed, in cases provided for by the standard and current technical regulations. The system or components of the system have a technical life complying with current standards, provided that:

- it is used in average atmospheric and environmental conditions, according to current regulations (in particular, by the standards regarding: absence of combustion products, dusts or gases that can alter the normal thermophysical or chemical conditions; existence of temperatures coming within the standard range of daily variation, etc.).
- Installation and maintenance must be performed according to the indications supplied by the manufacturer and in compliance with the provisions in force.
- The max. possible length of the 80 Ø flexible ducting vertical section is equal to 28.0 m for Victrix Pro 80 2ErP, 14.0 m for Victrix Pro 100 2ErP and 8.5 m for Victrix Pro 120 2ErP. This length is obtained considering the complete exhaust terminal, 1m of 80 Ø pipe in exhaust, two 90° 80 Ø bends at the boiler outlet to connect to the ducting system and two direction changes of the flexible tube inside the flue/technical slot.

### 1.20 FLUE EXHAUST WITH BOILERS IN CASCADE.

The boilers installed in cascade composed of any number between 2 and 5 boilers, can be manifolded to a unique flue exhaust pipe, which flows into a flue.

Immergas supplied an appropriate and original flue exhaust system separately to the boilers.

### 1.21 SYSTEM FILLING.

When the boiler has been connected, fill the system. Filling is performed at low speed to ensure release of air bubbles in the water via the boiler and heating system vents.

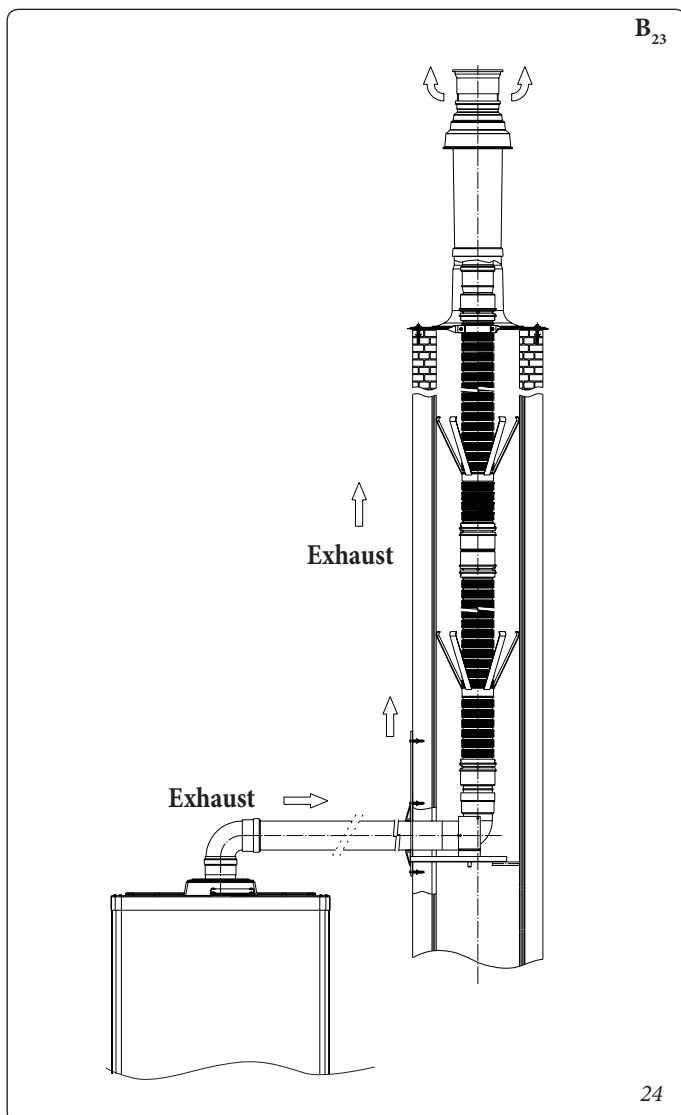
The boiler incorporates two automatic vent valves fitted on the circulator pump and on the condensing module. Check if the cap is loose. Open the radiator vent valves. Close radiator vent valves when only water escapes from them.

During these operations start up the circulation pump at intervals, acting on the main switch positioned on the control panel. *Vent the circulation pump by loosening the front cap and keeping the motor running.* Screw the cap back on after the operation.



#### ATTENTION:

**this boiler is not equipped with an expansion vessel on the system. It is mandatory to install a closed expansion vessel to guarantee correct boiler operation. The expansion vessel must comply with the European Standards in force. The dimensions of the expansion vessel depend on the data relative to the central heating system. Install a vessel whose capacity responds to the requisites of the Standards in force (“R” collection).**



### 1.22 CONDENSATE TRAP FILLING.

On first lighting of the boiler combustion products may come out the condensate drain; after a few minutes' operation check that this no longer occurs. This means that the trap is filled with condensate to the correct level preventing the passage of combustion products.

### 1.23 GAS SYSTEM START-UP.

To start up the system, refer to the technical standard in force: This divides the systems and therefore the start-up operations into three categories: new systems, modified systems, re-activated systems.

In particular, for new gas systems:

- open windows and doors;
- avoid presence of sparks or open flames;
- bleed all air from the pipelines;
- check the seal of the internal system by following the instructions provided by the technical regulations in force (refer to the pertaining local regulations for the "sealing test" on systems served by single or cascade generators with a nominal thermal capacity greater than 35 kW.

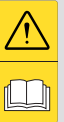
### 1.24 BOILER START UP (IGNITION).

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 specifications set forth by regulations in force. Up to operating pressures of 40 mbar it is also possible to use the testing method adopted by the technical regulations in force for systems served by single appliances (or in cascade set-up), with nominal thermal capacities greater than 35 kW. For greater pressure levels you will need to refer to legislation in force and/or other effectively tried and tested methods;
- 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 the fan rpm matches the value provided in the book (Par. 4.1);
- 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 from the boiler and in the boiler;
- check that the intake and/or exhaust terminals (if fitted) are not blocked.

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

The Immergas Authorised After-sales Centre can carry out the initial boiler check (point 2.3) required to activate the warranty of Immergas solely upon completion of commissioning by an installer. The test certificate and warranty is issued to the user



### 1.25 CIRCULATION PUMP.

The boilers are supplied with a variable speed circulator pump.

With boiler in central heating mode, the speed of the circulator changes between the value set in the “P27” parameter and the maximum value (100%) so that the boiler does not exceed the 18 °C ΔT between system flow and return.

With ΔT greater than 18 °C the circulator maintains maximum speed (100 %). It is appropriate to set the “P27” parameter to 100% for some types of systems.



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

#### 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.

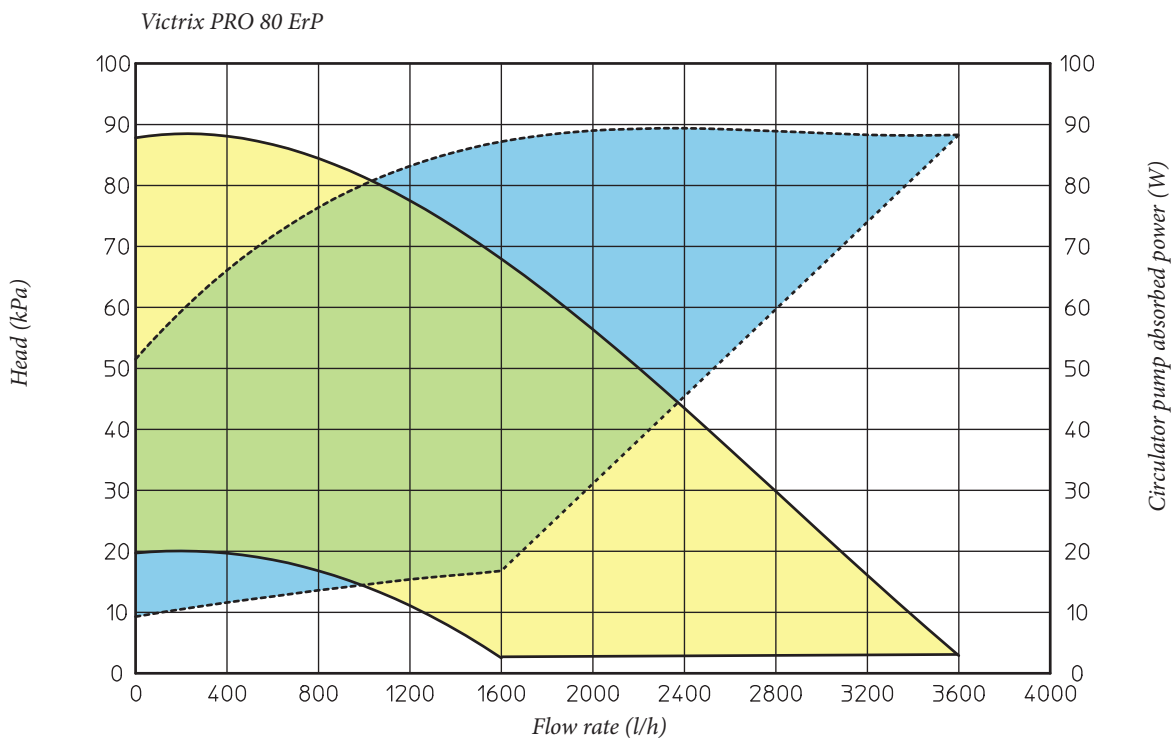
### 1.26 KITS AVAILABLE ON REQUEST.

- Cascade and zones heat adjuster kit.
- Support kit for fixing the heat adjuster to the wall.
- Zone manager kit.
- Modulating room thermostat kit.
- External probe kit.
- System flow probe kit.
- DHW probe kit for external storage tank.
- Anti-freeze with -15 °C resistance kit.

- Individual boiler safety devices stub pipes kit.
- Boilers in cascade safety devices stub pipes kit.
- Three-way valve kit for coupling external storage tank unit.
- Individual boiler hydraulic manifold kit.
- Hydraulic connection manifolds kit with two boilers in cascade.
- Additional boiler in cascade hydraulic manifold kit.
- Flue exhaust manifold kit with flue adjusting devices with two boilers in cascade.
- Flue exhaust manifold kit with flue adjusting device with additional boiler in cascade.
- Ø80/125 horizontal concentric kit.
- Ø80/125 vertical concentric kit.
- Ø 80 horizontal kit with flue exhaust.
- 80 Ø horizontal terminal kit with wall flue exhaust.
- Ø80 vertical terminal kit.

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

#### Head available to the system.



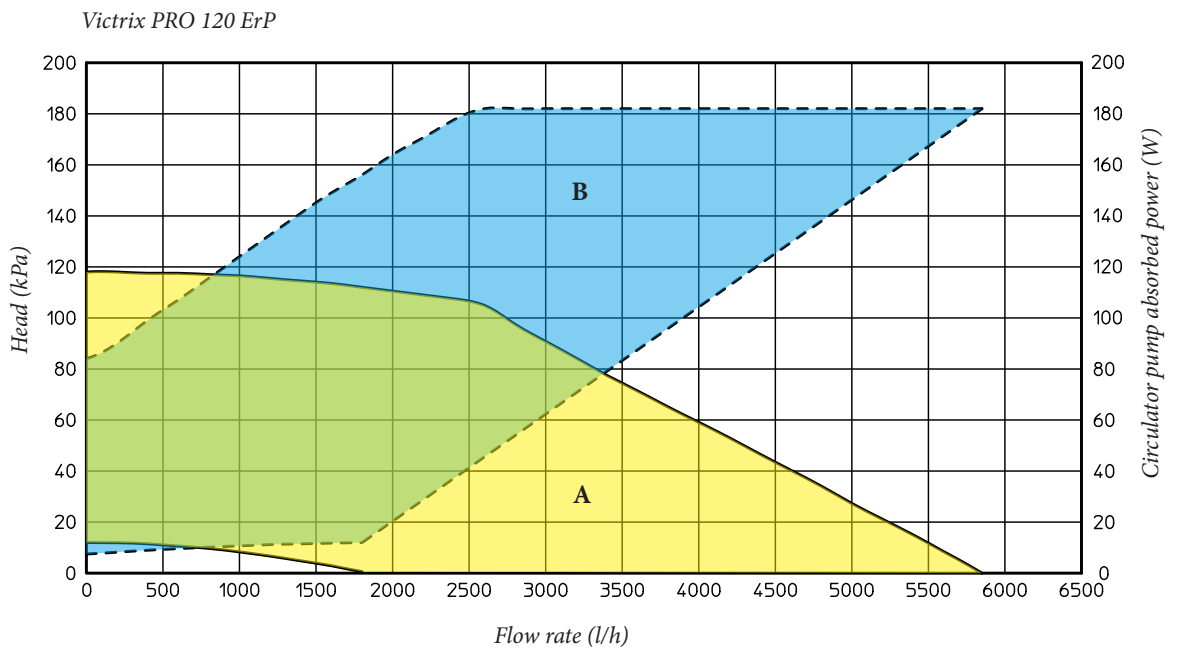
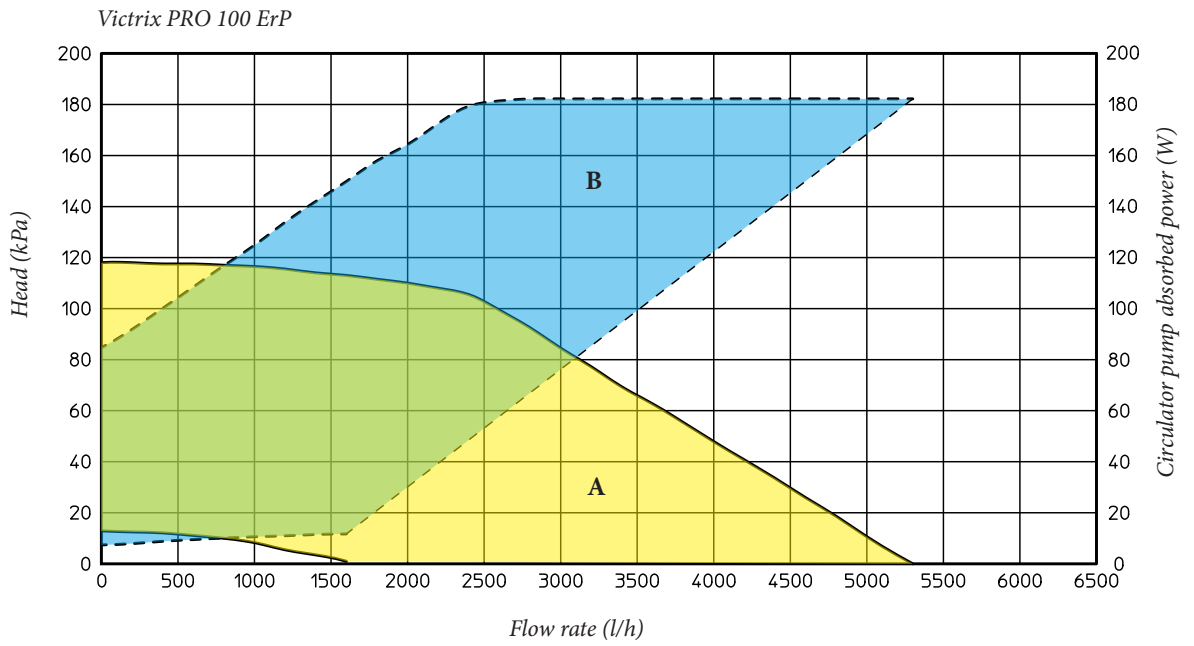
Key:  
 A = Available head  
 B = Power absorbed by the circulator pump (dotted area)

Head available to the system.

INSTALLER

USER

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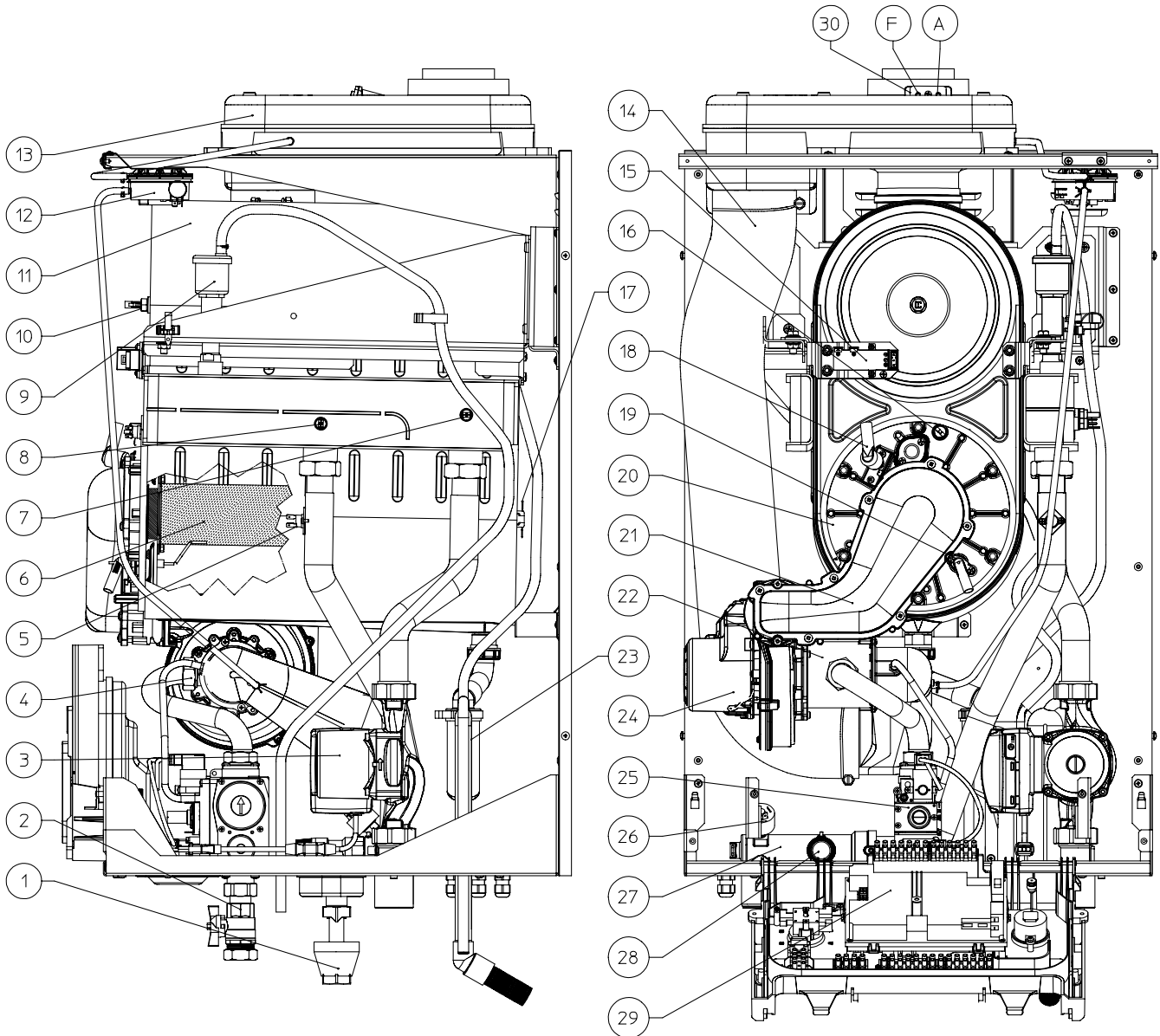
Key:

A = Available head

B = Power absorbed by the circulator pump (dotted area)



## 1.27 BOILER COMPONENTS.



**Key:**

- |  |   |
|--|---|
| 1 - Draining funnel.                                 | 18 - Ignition electrode                   |
| 2 - Gas cock   | 19 - Detection electrode                  |
| 3 - Pump   | 20 - Condensation module cover            |
| 4 - Gas nozzle                                       | 21 - Manifold cover                       |
| 5 - Overheating safety thermostat                    | 22 - Sleeve with seats for Venturi        |
| 6 - Burner   | 23 - Condensate trap                      |
| 7 - System return regulation NTC probe               | 24 - Air fan                              |
| 8 - System flow regulation NTC probe                 | 25 - Gas valve                            |
| 9 - Condensing module air vent valve                 | 26 - System pressure switch               |
| 10 - Flue probe                                      | 27 - Flow manifold                        |
| 11 - Condensation module                             | 28 - 4 bar safety valve                   |
| 12 - Air pressure switch                             | 29 - P.C.B.                               |
| 13 - Fumes hood                                      | 30 - Sample points (air A) - (flue gas F) |
| 14 - Air intake pipe                                 |   |
| 15 - Igniter   |   |
| 16 - Heat-exchanger safety thermostat (manual reset) |   |
| 17 - Heat exchanger safety thermal fuse              |   |

INSTALLER

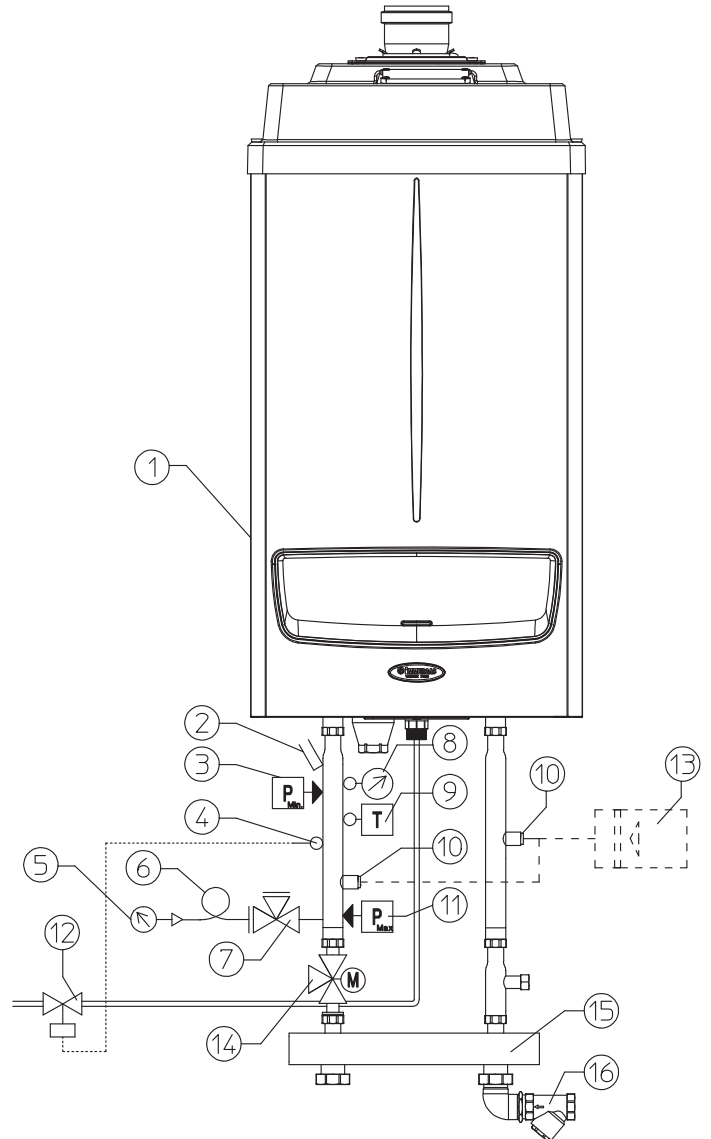
USER

MAINTENANCE TECHNICIAN

## 1.28 HYDRAULIC DIAGRAM WITH OPTIONAL.


## Key:


- 1 - Generator
- 2 - Manometer pocket
- 3 - Minimum pressure switch
- 4 - Probe for fuel shut-off valve bulb
- 5 - Manometer
- 6 - Damper coil
- 7 - Manometer-holder cock
- 8 - Thermometer
- 9 - Manual rearm thermostat
- 10 - Attachment for expansion vessel
- 11 - Manual rearm pressure switch
- 12 - Fuel shut-off valve
- 13 - Expansion vessel
- 14 - Boiler connection 3-way valve
- 15 - Hydraulic manifold/mixer
- 16 - Slurry collection brass filter



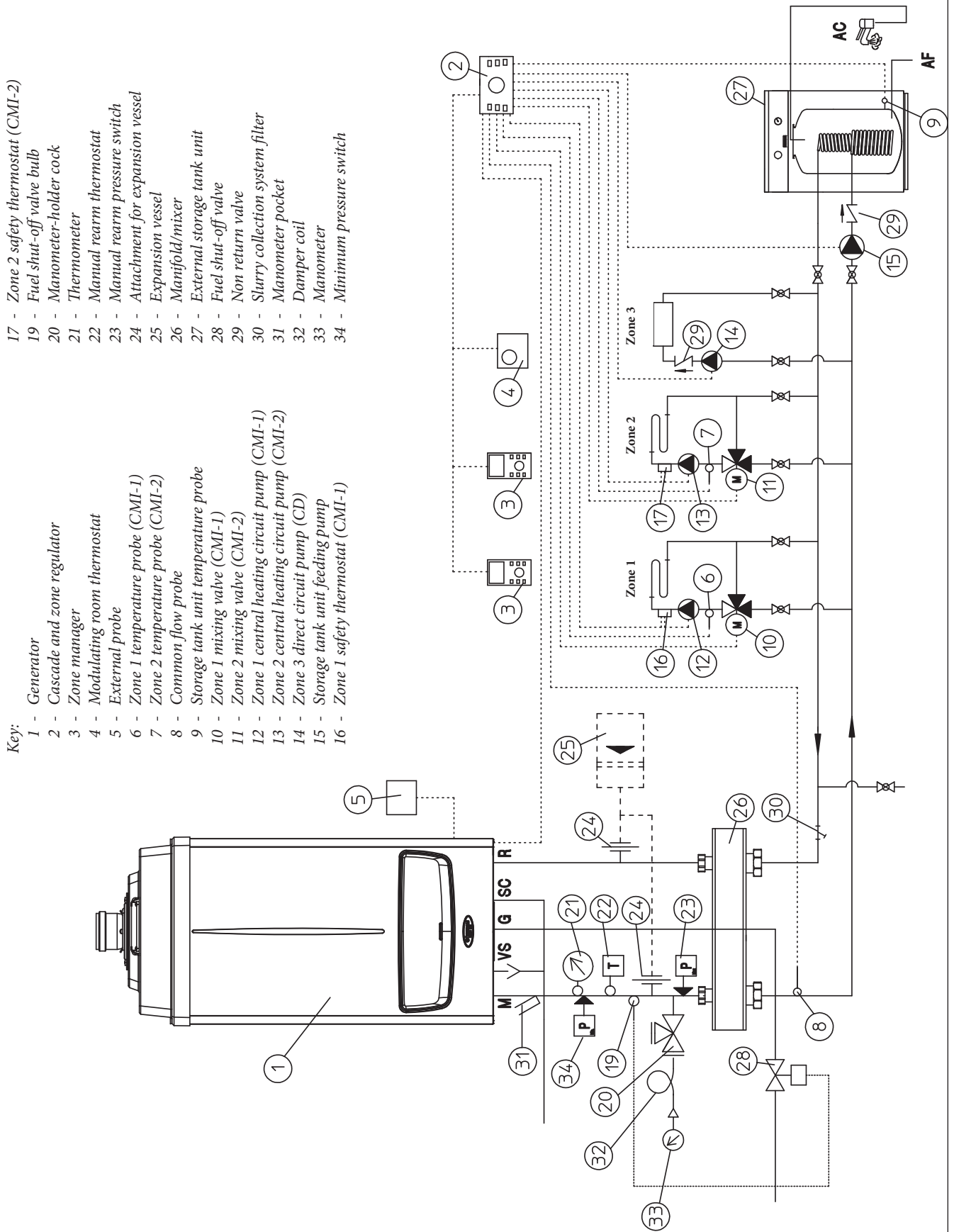
27

**ATTENTION:**

the sensitive elements of the automatic regulation and block circuit breaker switches and of the thermometer (not supplied as standard with the boiler) must be set-up as described in the installation instructions in compliance with the provisions of the "R" collection. Whenever the generators are not installed in cascade according to the instructions and the Immergas original kits, the sensitive elements must be installed on the flow piping to the central heating system, immersed in the current of water at not more than 0.5 metres from the boiler outlet. 

The boilers must be installed in the configurations and with their own original Immergas cascade and safety kits.  The manufacturer declines all liability whenever the installer does not use the devices and Immergas original kits or uses them improperly.

## 1.29 INSTALLATION EXAMPLES OF INDIVIDUAL BOILER.



## 2 INSTRUCTIONS FOR USE AND MAINTENANCE.

### 2.1 GENERAL WARNINGS.

#### ATTENTION:



- Access to the heating control unit and therefore use and adjustment of the device is only allowed to individuals envisioned by current law, which are respectively:
  - system manager;
  - system conductor;
  - third manager.
- For safety purposes, check that the air intake/flue exhaust terminals (if fitted) are not blocked.
- If temporary shutdown of the boiler is required, proceed as follows:
  - a) drain the heating system if antifreeze is not used;
  - b) 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.
- Do not open or tamper with the appliance.
- Do not take apart or tamper with the intake and exhaust pipes.
- Only use the user interface devices listed in this section of the booklet.
- Do not climb on the appliance, do not use the appliance as a supporting surface.

In the case of maintenance interventions on the boiler that lead to the closure of one or both system cut-off cocks, the boiler must be off.



#### ATTENTION:



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

- do not touch the appliance with wet or moist parts of the body; do not touch when bare-foot;
- never pull electrical cables;
- 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.

#### ATTENTION:



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

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



**ATTENTION:**



**if you smell gas in the building:**

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

**ATTENTION:**



**if you smell burning or see smoke coming out of the appliance, switch it off, disconnect the power, close the main gas cock, open the windows and call an authorised company (for example contact the Authorised Technical Service Centre).**

**ATTENTION:**



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

## 2.2 CLEANING AND MAINTENANCE.

To preserve the boiler's integrity and keep the safety features, performance and reliability which distinguish it unchanged over time, maintenance operations must be carried out on a yearly basis in compliance with that stated in the "annual check and maintenance of the appliance" section, in compliance with national, regional, or local standards in force.



## 2.3 AERATION AND VENTILATION OF THE INSTALLATION ROOMS.

Consult the "Aeration and ventilation of installation rooms" chapter contained herein and, in any case, always refer to the provisions set forth by standards and all legislation in force.

INSTALLER

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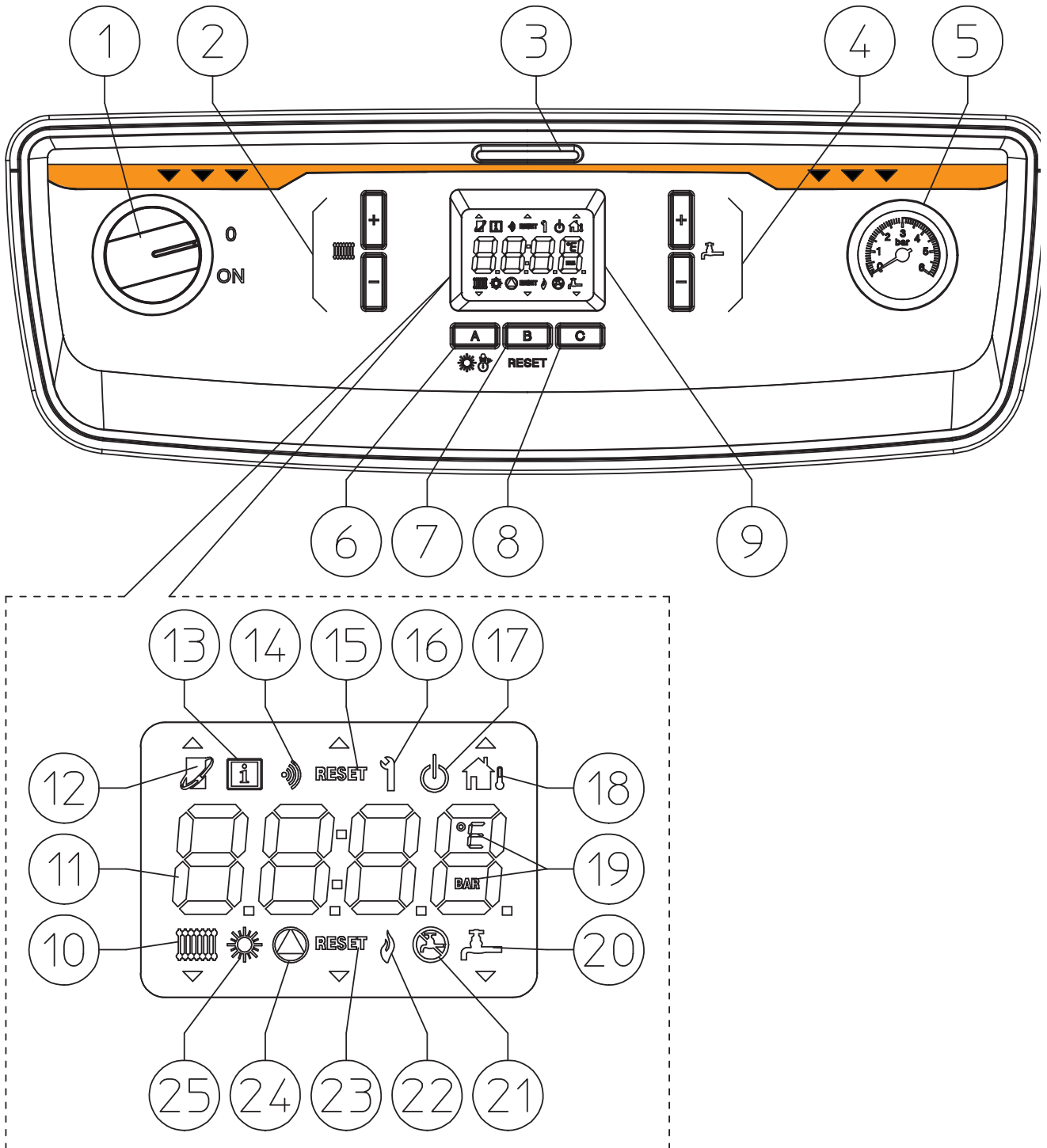
MAINTENANCE TECHNICIAN

## 2.4 CONTROL PANEL.

INSTALLER

USER

MAINTENANCE TECHNICIAN



**Key:**

- |  |  |
|--|--|
| 1 - Main switch  | 14 - Not used  |
| 2 - CH temperature adjustment buttons                          | 15 - Not used  |
| 3 - Sliding door   | 16 - Parameter adjustment in progress                  |
| 4 - DHW temperature adjustment buttons (optional)              | 17 - Boiler in stand-by                                |
| 5 - Boiler manometer   | 18 - External probe connected (optional)               |
| 6 - Summer / winter mode button (A)                            | 19 - Unit of measurement                               |
| 7 - Reset, info, confirm parameters button (B)                 | 20 - DHW production phase operation enabled (optional) |
| 8 - Multifunction button: anomalies records, DHW exclusion (C) | 21 - Domestic hot water exclusion                      |
| 9 - Multi-function display                                     | 22 - Flame detection symbol                            |
| 10 - CH function enabled                                       | 23 - Resettable presence of anomalies                  |
| 11 - Temperature indicator, boiler info and error codes        | 24 - Pump running                                      |
| 12 - Not used  | 25 - Summer mode                                       |
| 13 - Boiler parameter and info display                         |  |

## 2.5 USING THE BOILER.

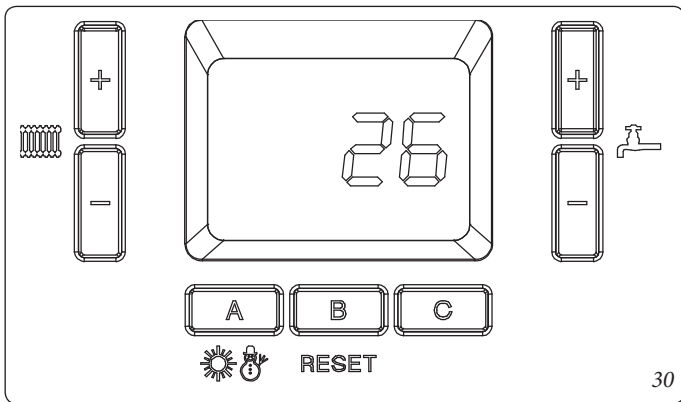
Before ignition, make sure that the system is full of water, checking that the manometer (5) indicates a base value at which the system has been designed and calculated and however not less than 0.5 bar.

- Open the gas cock upstream from the boiler.
- Turn the main switch, and the boiler run a self-diagnosis. It will then go back to the status it was in prior to being switched off.
- **“A” operating mode button** (☀️🔧): with the boiler on, press the button (A) repeatedly to change the operating mode. It will alternate from summer mode (☀️) (DHW heating only) to winter mode (room and DHW heating).

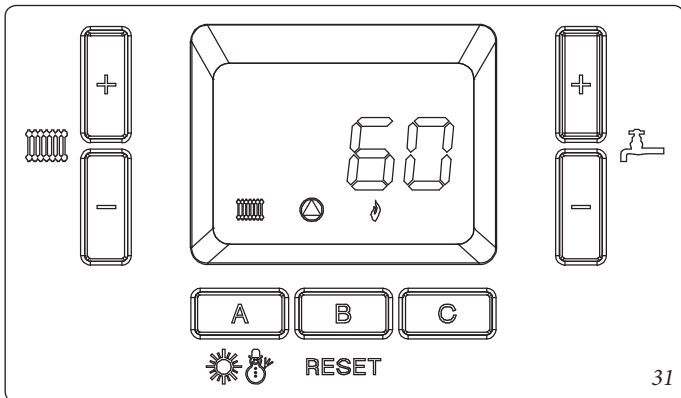
The DHW heating function is only active in presence of the specific optional kit (tank probe automatic recognition).



With the boiler on but not running, the screen will display the flow probe temperature reading.



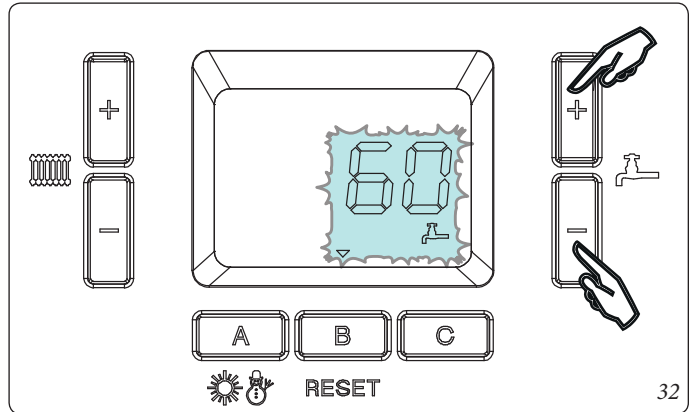
If requested, the boiler switches on and the relative symbols will be displayed, indicating the flow probe temperature reading.



- **Summer** (☀️): in this mode the boiler only operates for domestic hot water heating.

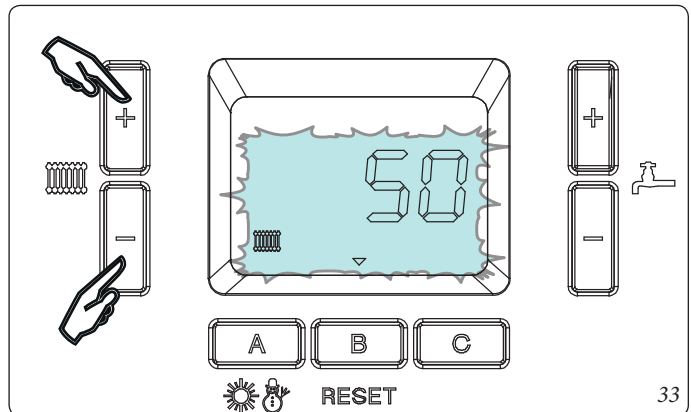
By pressing the + or - buttons just once (4 fig. 29) it is possible to read the temperature setting. By pressing them again you can change the settings as needed.

You will need to press “B” to save the new value. The temperature reading will flash during adjustment. If a certain amount of time lapses without saving the value, the boiler will exit setting mode and maintain the previous setting.

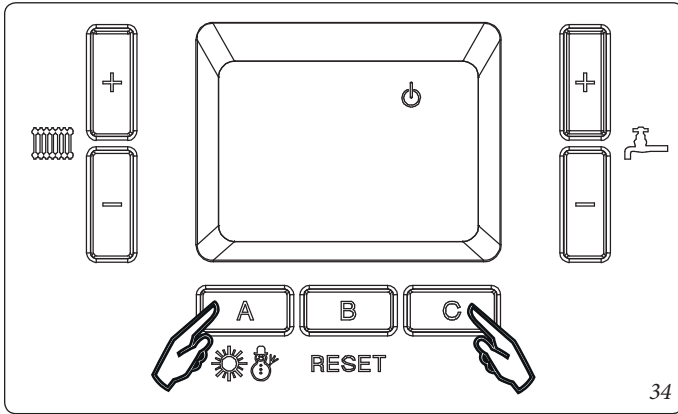


- **Winter:** in this mode the boiler functions both for heating domestic hot water and heating the environment.

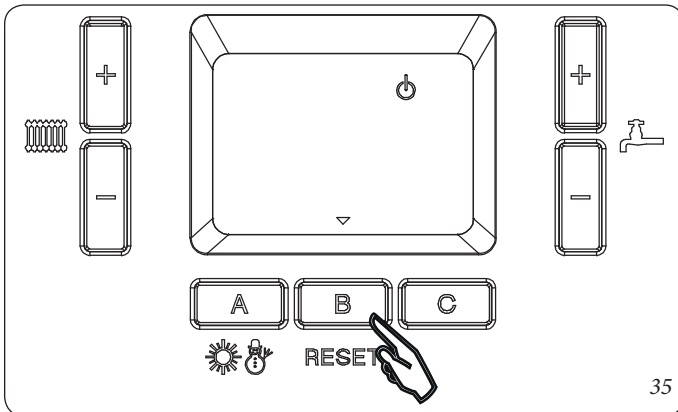
By pressing the + or - (2 fig. 29) buttons once, you can view the temperature setting. By pressing them again you can change the setting as needed. You will need to press “B” to save the new value. The temperature reading will flash during adjustment. If a certain amount of time lapses without saving the value, the boiler will exit setting mode and maintain the previous setting.



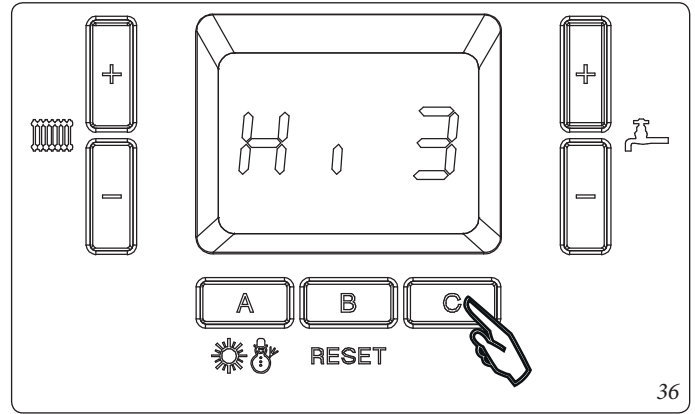
- **Stand-by mode** (🔌): by pressing buttons “A” and “C” at the same time it is possible to place the boiler in stand-by.




In this mode the boiler is considered powered on but not active. Accordingly, the appliance's anti-freeze function is guaranteed. To turn it back on simply press "B".



- **DHW exclusion** (☹️): with the boiler set up for DHW heating, press "C" momentarily to exclude DHW heating mode operation. To restore DHW heating, press "C" again.
- **Anomaly records**: press and hold "C" down to access the records of the last 8 anomalies that have affected the boiler (list from H i 0 to H i 7, where H i 0 is the most recent anomaly). When you are in the menu, the screen will display, in order, number "bu 0", the number and code for the anomaly.



To scroll through the list, press buttons + and - (ref. 2 fig. 29). To exit the menu, press and hold "C" down again.

Anomalies with a code over "90" are not saved in the anomaly records. 

- **Slave boiler anomalies** (simple cascade installation). Slave boiler anomalies are displayed on the Master boiler. After entering the menu, press + and - (ref. 2 fig. 29) to alternate between Master "bu 0" and Slave "bu 1" boilers.

**2.6 FAULT AND ANOMALY SIGNALS.**

The boiler will let you know of any anomalies by the flashing screen and code. There are different types of codes that can be divided up as follows:

- "0Axx" for resettable anomalies (fig. 37). (Before resetting the anomaly you will need to wait for the boiler to finish its post-ventilation function, which lasts approximately 60 seconds).
- "0Exx" and "FExx" for non-resettable anomalies.

The "xx" suffix stands for the error code described in the following tables.

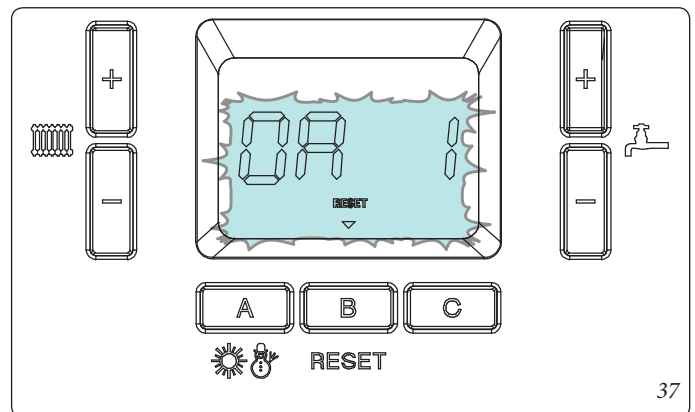
**Simple cascade:** in case of simple cascade, anomalies will be displayed on the master boiler (without the "0" suffix on the Slave boiler) and slave boiler anomalies are displayed on the master boiler with suffix "1".

Example: "0A1" anomaly

Anomaly on Master boiler = 0A1

Anomaly on Slave boiler = A1

Slave boiler anomaly displayed on Master boiler = 1A1





Error Code	Anomaly signalled	Cause	Boiler status /Solution
0A1	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)
0A2	Parasite flame block	This occurs during the power-on phase in the event of a leak on the detection circuit or anomaly in the flame control unit.	Press the Reset button (1)
0A3	Overheating block	During normal operation, if a fault causes excessive overheating internally, the boiler goes into overheating block.	Press the Reset button (1)
0A4	Air/flue pressure switch	During the heat request phase, the board detects the stuck/open contacts of the air/flue pressure switch.	Press the Reset button (1)
0A5	Fan signal anomaly	This occurs if the fan speed is incorrect.	Press the Reset button (1)
0A7	Flue temperature anomaly	If the boiler fails, the flue circuit will provide an excessively high temperature reading and the boiler will switch off.	Press the Reset button (1)
0A8	Flame circuit anomaly	During the ignition phase an anomaly was detected on the electronic flame control circuit and the boiler switches off.	Press the Reset button (1)
0A9	Gas valve electric circuit anomaly	The board detects an anomaly in the gas valve circuit. Before replacing the board, verify the absence of short circuits on gas valve and related connector.	Press the Reset button (1)
0A15	Flow and return NTC probe temperature detection incorrect (in stand-by)	With the boiler in stand-by, the board detects an anomalous difference between the NTC probe flow and return temperatures. The error may be caused by a failure in one of the two probes	Press the Reset button (1)
0A18	Flow and return NTC probe temperature detection incorrect	If the board detects a sudden drop in temperature on one of the two NTC probes (flow and return), it will report an anomaly. This may be caused by the failure of one of the two probes	Press the Reset button (1)
0A21	P.C.B. error	An error is detected on the P.C.B. and the boiler does not start up	Press the Reset button (1)
0A37	Insufficient system flow	If the system flow/pressure is too low for a certain period, the boiler will detect the anomaly.	Check the flow meter, check the pressure switch and check the system. Press the Reset button (1)
0A80	Flow and return NTC probe connection error	If the electrical connection between the two NTC probes is switched around, the board will detect the anomaly (it may be necessary to wait 3 minutes for the error to be detected).	Press the Reset button (1)

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

Error Code	Anomaly signalled	Cause	Boiler status / Solution
0E2	Parasite flame block	This occurs during the power-on phase in the event of a leak on the detection circuit or anomaly in the flame control unit.	(2) (1)
0E13	Maximum N° of reset	Number of allowed resets that have already performed.	<b>Attention:</b> it is possible to reset the anomaly up to 5 consecutive times within 15 minutes. (1) By switching the appliance on and off the 5 attempts are re-acquired.
0E25	P.C.B. error	An error is detected on the P.C.B. and the boiler does not start up	(2) (1)
0E30	Flow NTC probe in short circuit	The board detects a short circuit on the flow NTC probe.	(2) (1)
0E31	Flow NTC probe outside the operating range	The board detects an open contact on the flow NTC probe.	(2) (1)
0E32	DHW NTC probe in short circuit	The board detects a short circuit on the DHW NTC probe	(2) (1)
0E33	DHW NTC probe outside the operating range	The board detects an open contact on the DHW NTC probe.	(2) (1)
0E34	Low power supply voltage	This occurs when the power supply voltage is lower than the allowed limits for the correct boiler operation.	(2) (1)

(1) If the block or anomaly persists, contact an authorised company (for example contact the Authorised Technical Service Centre).  
(2) If normal operating conditions are restored, the boiler re-starts without having to be reset.

Error Code	Anomaly signalled	Cause	Boiler status / Solution
0E37	Insufficient system pressure or flow	If the system flow rate / pressure is too low the boiler switches off.	Check on the boiler pressure gauge (1) that the system pressure is between 1÷1.2 bar and restore the correct pressure if necessary. (2) (1)
0E43	Return NTC probe in short circuit	The board detects a short circuit on the return NTC probe	(2) (1)
0E44	Return NTC probe outside the operating range	The board detects an open contact on the return NTC probe.	(2) (1)
0E45	Flue NTC probe in short circuit	The board detects a short circuit on the flue NTC probe.	(2) (1)
0E46	Flue NTC probe outside the operating range	The board detects an open contact on the flue NTC probe.	(2) (1)
0E81	Flow and return NTC probe temperature detection incorrect (in stand-by)	With the boiler in stand-by, the board detects an anomalous difference between the NTC probe flow and return temperatures. The error may be caused by a failure in one of the two probes	(2) (1)
0E98	Simple cascade communication anomaly	Occurs if the communication between the display boards breaks down (simple cascade).	Check the bus' electric connection. Perform the Auto detection. Check whether the software versions match. (2) (1)
0E99	Internal communication anomaly	In the event of simple cascade, even in the case of a communication error between the display boards.	Check the boiler's wiring. Check the bus' electric connection. Perform the Auto detection in the event of simple cascade installation. (2) (1)

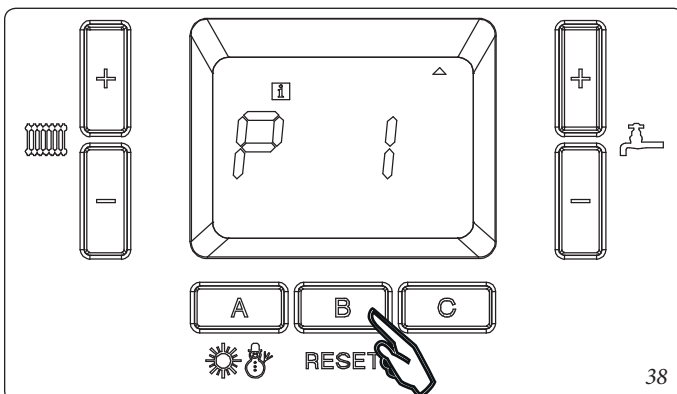
- (1) If the block or anomaly persists, contact an authorised company (for example contact the Authorised Technical Service Centre).  
 (2) If normal operating conditions are restored, the boiler re-starts without having to be reset.

Error Code	Anomaly signalled	Cause	Solution
FE94	Display board anomaly	An error is detected on the display's P.C.B..	(2) (1)
FE95	Shared common flow probe short-circuited or out of range	The board detects an incorrect value on the flow NTC probe or "P38" parameter not set correctly.	(2) (1)
FE96	External probe anomaly	An anomaly is detected on the external probe.	Check the boiler configuration, check the external probe (2) (1)
FE97	Configuration error	Display board configuration error, or not configured (typically in case of display board replacement). It may occur also in the event of replacement of the electronic boards with an incorrect model.	Perform the Auto detection (2) (1)

- (1) If the block or anomaly persists, contact an authorised company (for example contact the Authorised Technical Service Centre).  
 (2) If normal operating conditions are restored, the boiler re-starts without having to be reset.

## 2.7 INFO MENU.

Press and hold down "B" to access the info menu containing all of the various information relative to boiler operation.



Once you are inside the menu, you will momentarily see the parameter number followed by the value.

To scroll through the various parameters, press buttons + and - (ref. 2 fig. 29).

To exit the menu, press and hold "B" down again.

While the parameter value is being displayed it is possible to momentarily see the relative code again by pressing button "A". The viewable parameters are listed in the following tables.

## 2.8 BOILER SHUTDOWN.

Disconnect the main switch (1) taking it to the “0” position and close the gas cock upstream from the appliance.

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

## 2.9 RESTORE CENTRAL HEATING SYSTEM PRESSURE.

Periodically check the system water pressure.

The boiler manometer should indicate a value not below 0.5 bar.

*If the pressure is below 0.5 bar (with cold system) the water inside the system must be restored.*

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.

Close the valve after the operation.

If pressure values reach around 4 bar the safety valve may be activated.



## 2.10 DRAINING THE SYSTEM.

To drain the boiler, use the appropriate system drain fitting.

Before draining, ensure that the system filling valve is closed.

### ATTENTION:

**if glycol was input in the system's circuit, make sure it is discharged into the waste water system, pursuant to regulation EN 1717.**



## 2.11 ANTIFREEZE PROTECTION.

The boiler is supplied with an antifreeze function as standard that activates the function of the pump and the burner when the system water temperature in the boiler falls below 5°C. The antifreeze function is guaranteed if the boiler is fully operative, if it is not in “block” status and is electrically powered with the main switch on “ON”. 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 systems that are drained frequently, filling must be carried out with suitably treated water to eliminate hardness that can cause lime-scale.

## 2.12 CLEANING THE CASE.

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

## 2.13 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.

Info menu		
Menu item	Description	Unit of measurement
P01	Flame current	μA
P02	Flow NTC probe temperature reading	°C / °F
P03	Return NTC probe temperature reading	°C / °F
P04	DHW NTC probe temperature reading (if installed)	°C / °F
P05	Not used	-
P06	Operating power	%
P07	Fan speed requested by the system	RPM / 50
P08	Current fan speed	RPM / 50
P09	Flue NTC probe temperature reading	°C / °F
P10	Common flow probe temperature reading (if installed) or boiler flow probe (based on the system's configuration)	°C / °F
P11	External probe temperature reading (if installed)	°C / °F
P12	Not used	-
P13	Flow temperature requested by the system in heating	°C / °F
P14	Flow temperature requested by the system in DHW	°C / °F
P15	Not used	-
P16	Number of burners on in simple cascade mode	no.
P17	Number of displays on	no.

### 3 INSTRUCTIONS FOR MAINTENANCE AND INITIAL CHECK.

#### 3.1 GENERAL WARNINGS.

##### ATTENTION:

operators who install and service the appliance must wear the personal protective equipment (PPE) required by applicable law.



Note: the list of possible PPE is not complete as they are indicated by the employer.

##### ATTENTION:

before performing any maintenance operation, make sure:

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



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

Leak sprays and liquids clog the reference hole P1 (Fig. 49) of the gas valve, damaging it irreparably.

During installation and maintenance, do not use spray or liquids in the upper area of the gas valve (side referring to the electric connections)



##### Supply of spare parts.

The device's warranty shall be rendered null and void if unapproved or unsuitable parts are used for maintenance or repairs. These will also compromise the product's compliance, and the said product may no longer be valid and fail to meet the current regulations.

With regard to the above, only use Immergas original spare parts when replacing parts.



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



#### 3.2 INITIAL CHECK.

##### To commission the boiler:



- ensure that the type of gas used corresponds to the 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 boiler manometer indicates a pressure of 1÷1.2 bar;
- switch the boiler on and ensure correct ignition;
- check the proper calibration of the number of fan revolutions (Par. 4.1);
- check the CO<sub>2</sub> in the fumes at maximum and minimum flow rate:
  - the values must comply with what is indicated in the relative tables (Par. 3.3);
- check activation of the safety device in the event of no gas, as well as the relative activation time;
- check activation of the main switch located upstream of the boiler;
- check that the intake and/or exhaust terminals are not blocked;
- ensure activation of all adjustment devices;
- seal the gas flow rate regulation devices (if settings are modified);
- ensure production of domestic hot water;
- ensure sealing efficiency of water circuits;
- check ventilation and/or aeration of the installation room where provided.
- check the existing draught during normal functioning of the appliance, e.g. a draught gauge positioned at the exit of the appliance combustion products;
- check that there is no backflow of combustion products into the room, even during functioning of fans;

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

### 3.3 YEARLY APPLIANCE CHECK AND MAINTENANCE.



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

- Clean the flue side of the heat exchanger.
- Clean the main burner.
- Check the correct positioning, integrity and cleanliness of the detection and ignition electrode; remove any oxide present.
- If deposits are detected in the combustion chamber they must be removed and the heat exchanger coils must be cleaned using nylon or broomcorn brushes; it is forbidden to use brushes made of metal or other materials that may damage the combustion chamber. It is also forbidden to use alkaline or acid detergents.
- Check the integrity of the insulating panels inside the combustion chamber and if damaged replace them.
- Visually check for water leaks or oxidation from/on connections and traces of condensate residues inside the sealed chamber.
- Check the contents of the condensate drain trap.
- Check that there are no material residues in the condensate drain siphon clogging the condensate passage; also check that the entire condensate drainage circuit is clear and efficient. In the event of obstructions (dirt, sediment, etc.) with consequent leakage of condensate in the combustion chamber, one must replace the insulating panels.
- Check that the burner and gas manifold seal gaskets are intact and perfectly efficient, otherwise replace them. In any case the gaskets must be replaced at least every two years, regardless of their state of wear.
- Check that the burner is intact, that it has no deformations or cuts and that it is properly fixed to the combustion chamber lid; otherwise it must be replaced.
- Visually check that the water safety drain valve is not blocked.
- Check that, after discharging the system pressure and bringing it to zero (read on boiler pressure gauge), the expansion vessel pressure is at 1.0 bar.
- Check that the system static pressure (with system cold and after refilling the system by means of the filling valve) is between 1 and 1.2 bar.
- Check visually that the safety and control devices have not been tampered with and/or shorted, in particular:
- Check the condition and integrity of the electrical system and in particular:
  - electrical power cables must be inside the fairleads;
  - there must be no traces of blackening or burning.

- Check correct lighting and operation.
- Check the CO<sub>2</sub> by using the chimney sweep function at the three reference heat outputs, using the parameters in the table below. Should values out of the indicated tolerance range be detected, check the integrity of the ignition / detection electrode and, if required, change it, also changing the relative gasket. At this point, activate the “complete calibration” function.
- Check correct operation of control and adjustment devices and in particular:
  - system regulation probes intervention;
  - domestic hot water control thermostat intervention.
- Check sealing efficiency of gas circuit and the internal system.
- Check the intervention of the device against no gas ionisation flame control. Intervention time must be less than 10 seconds.

#### Victrix Pro 80 ErP

	CO <sub>2</sub> at nominal output	CO <sub>2</sub> at minimum output
G 20	9.95% + 0.2 / - 0.3	8.95% + 0.2 / - 0.3
G 31	10.60% + 0.2 / - 0.3	9.75% + 0.2 / - 0.3

#### Victrix Pro 100 ErP

	CO <sub>2</sub> at nominal output	CO <sub>2</sub> at minimum output
G 20	9.40% + 0.2 / - 0.3	9.00% + 0.2 / - 0.3
G 31	10.60% + 0.2 / - 0.3	10.10% + 0.2 / - 0.3

#### Victrix Pro 120 ErP

	CO <sub>2</sub> at nominal output	CO <sub>2</sub> at minimum output
G 20	9.80% + 0.2 / - 0.3	9.00% + 0.2 / - 0.3
G 31	10.60% + 0.2 / - 0.3	10.00% + 0.2 / - 0.3

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



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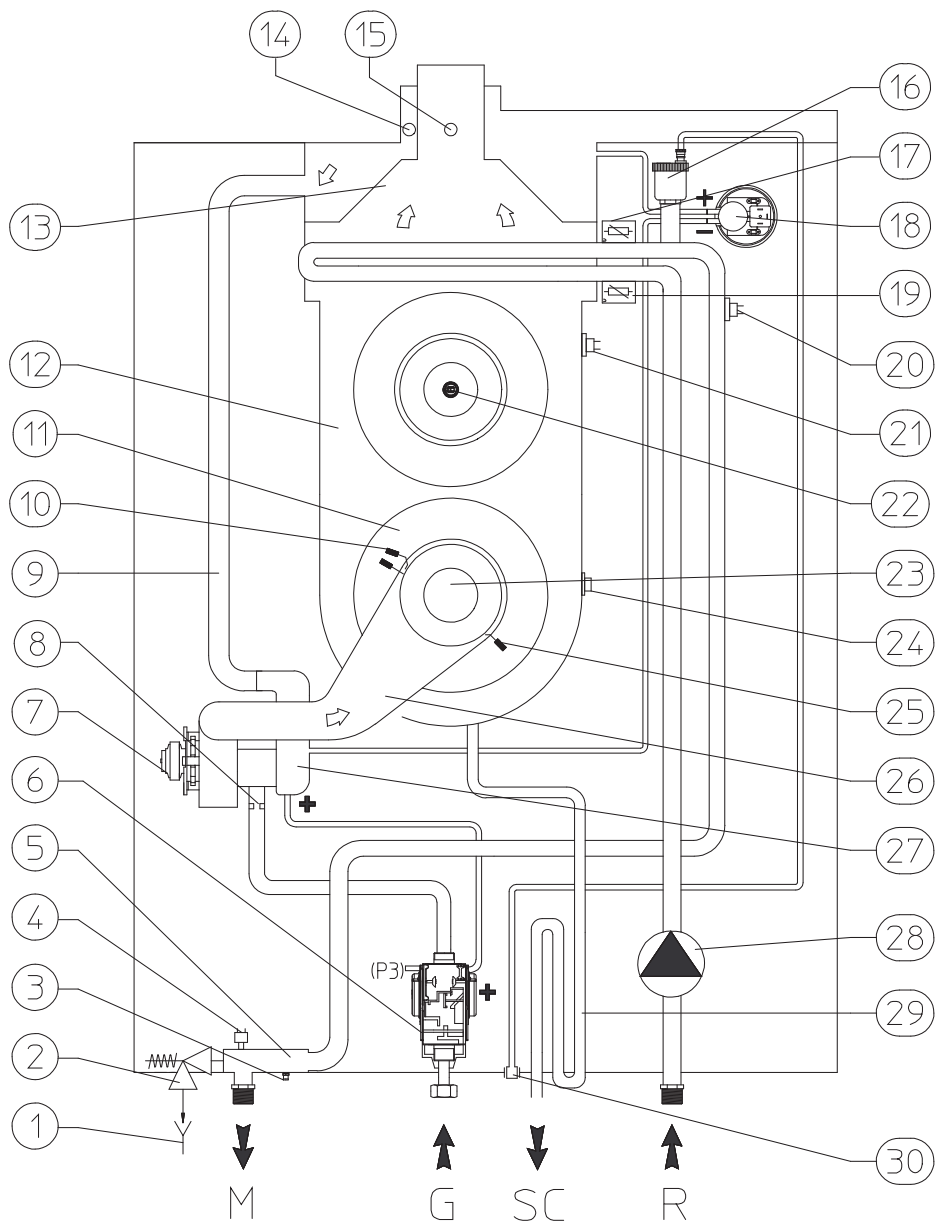
MAINTENANCE TECHNICIAN

### 3.4 HYDRAULIC DIAGRAM.

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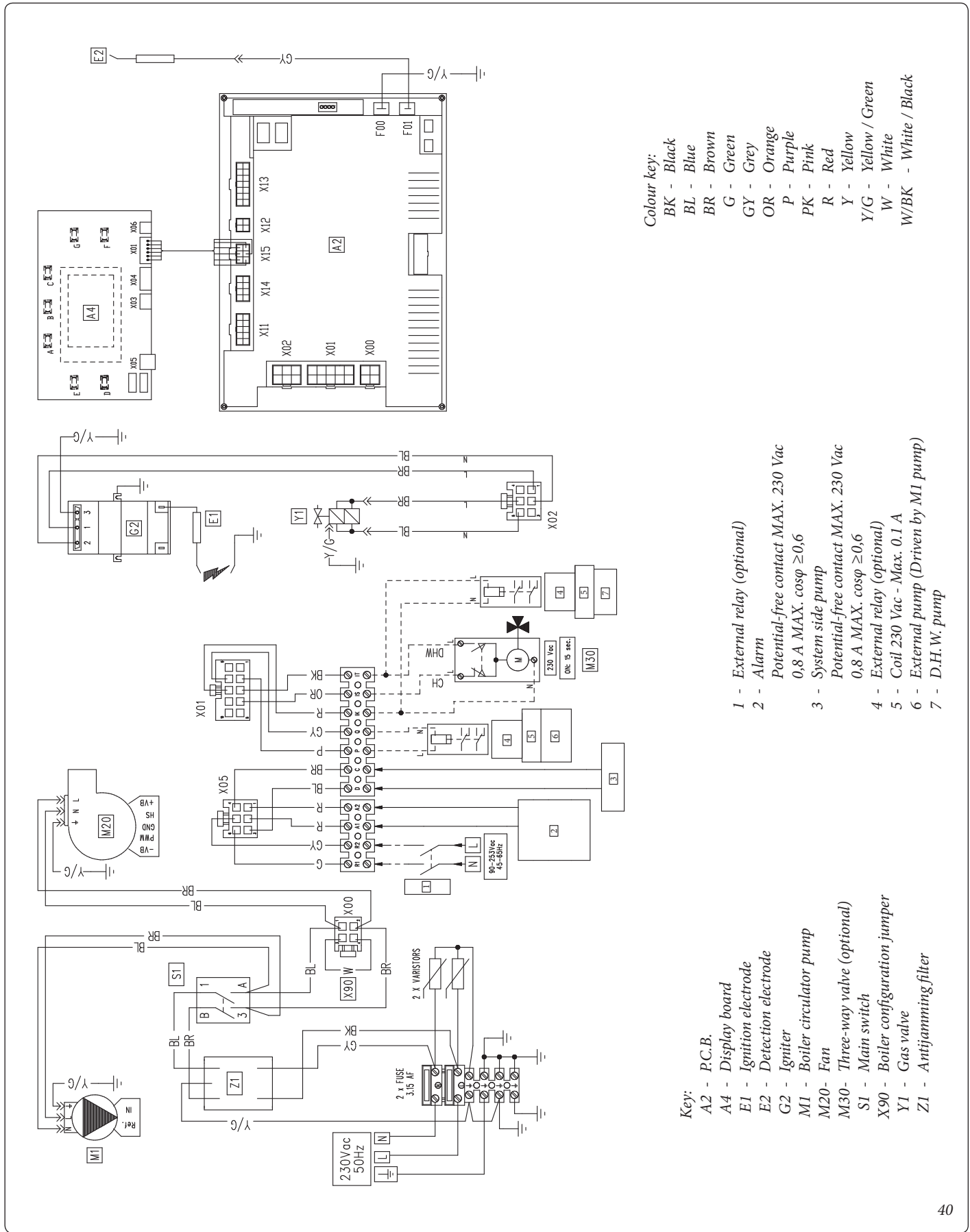
MAINTENANCE TECHNICIAN



Key:

- 1 - Draining funnel on view
  - 2 - 4 bar safety valve
  - 3 - Boiler draining valve
  - 4 - System pressure switch
  - 5 - Flow manifold
  - 6 - Gas valve
  - 7 - Air fan
  - 8 - Gas nozzle
  - 9 - Air intake pipe
  - 10 - Detection electrode
  - 11 - Condensation module cover
  - 12 - Condensation module
  - 13 - Fumes hood
  - 14 - Air sample point
  - 15 - Flue sample point
  - 16 - Condensing module air vent valve
  - 17 - System flow regulation probe
  - 18 - Air pressure switch
  - 19 - System return regulation probe
  - 20 - Over temperature safety thermostat
  - 21 - Heat-exchanger safety thermostat (manual reset)
  - 22 - Flue probe
  - 23 - Burner
  - 24 - Thermofuse
  - 25 - Ignition electrode
  - 26 - Manifold cover
  - 27 - Sleeve with seats for Venturi
  - 28 - Boiler circulator pump
  - 29 - Condensate trap siphon
- M - System flow  
 SC - Condensate drain  
 G - Gas supply  
 R - System return

### 3.5 230 V CIRCUIT WIRING DIAGRAM.



For safety reasons the P.C.B. envisions a fuse that cannot be restored in series with the electric power supply of the gas valve. Configure the corresponding parameters when connecting in

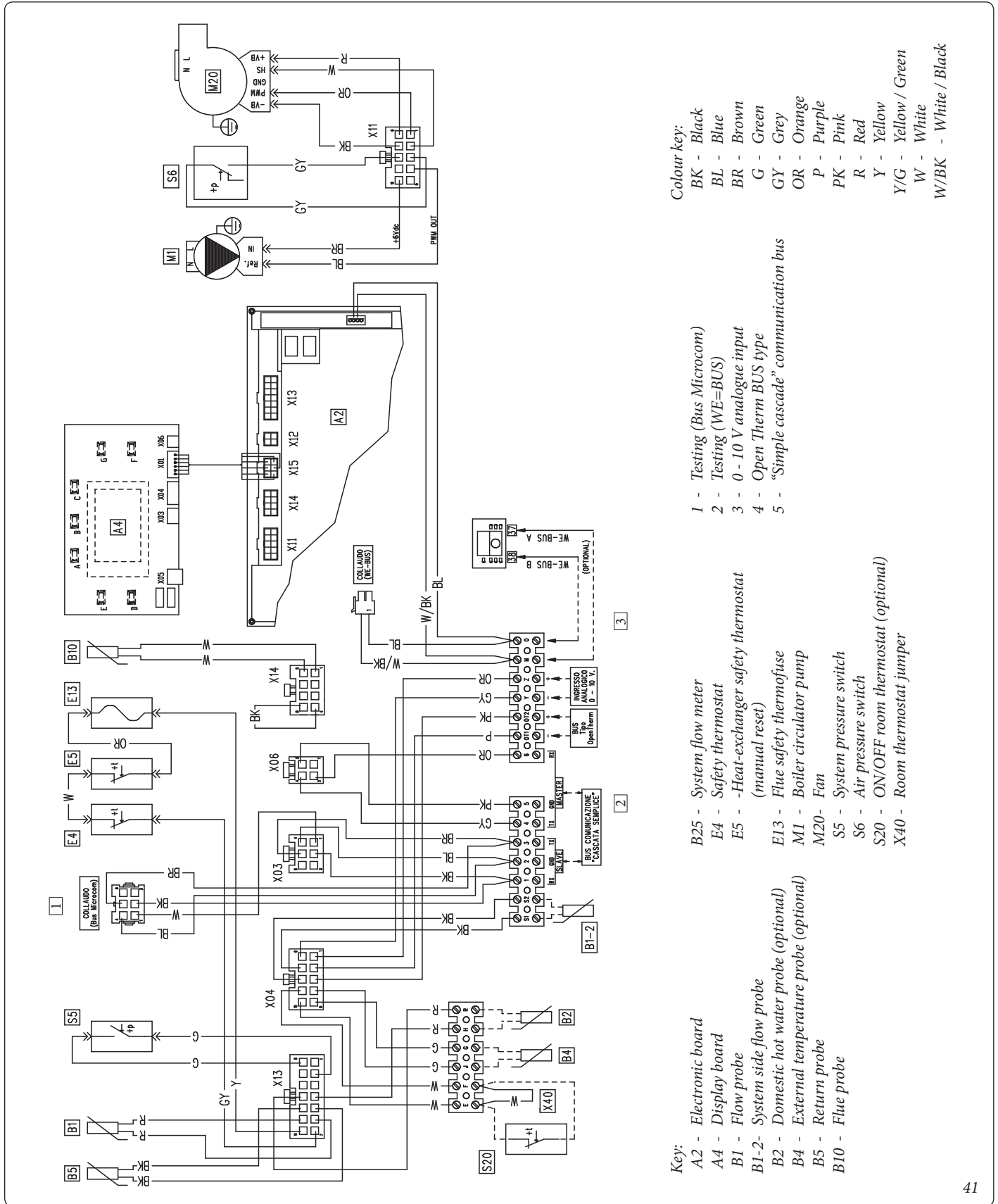
“simple cascade”, or when connecting in “system side flow probe”, or “D.H.W. pump”.

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3.6 VERY LOW VOLTAGE WIRING DIAGRAM.



Jumper X40 must be removed when the Room thermostat is connected; in addition, it must be eliminated also in case of connection to "WE-BUS", "0-10", "Simple cascade BUS", BUS OT.

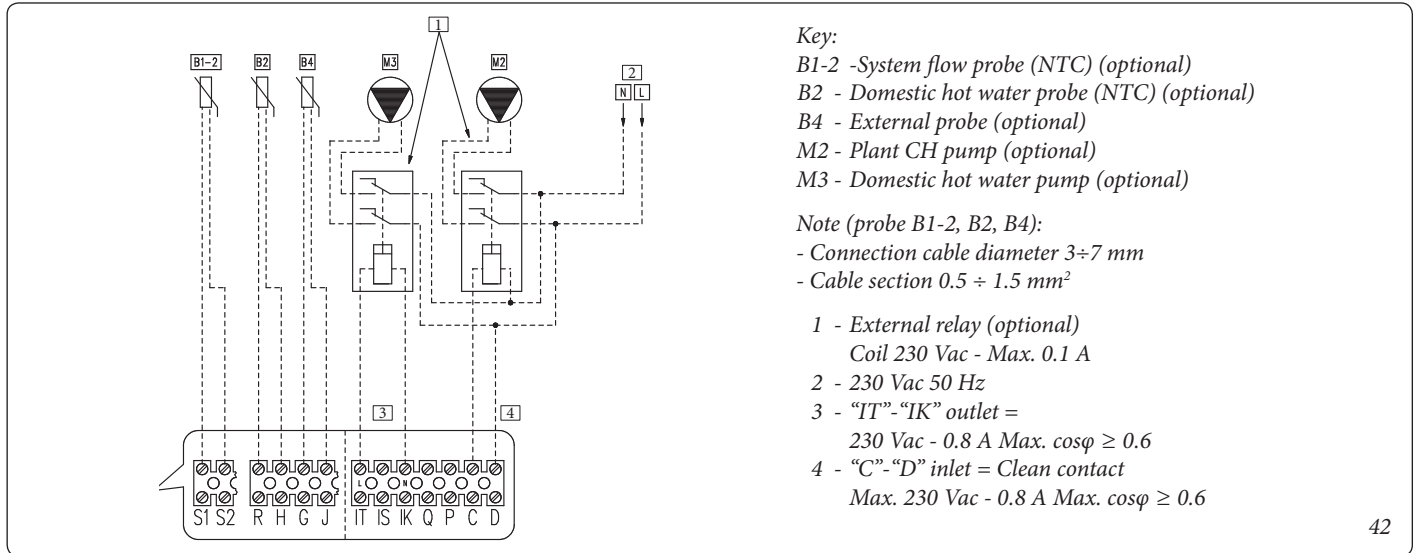
A thermostat can be used instead of B2 (set the P29 = 17 parameter).

Configure the corresponding parameters when connecting in "simple cascade", or when connecting in "system side flow probe", or "D.H.W. pump".

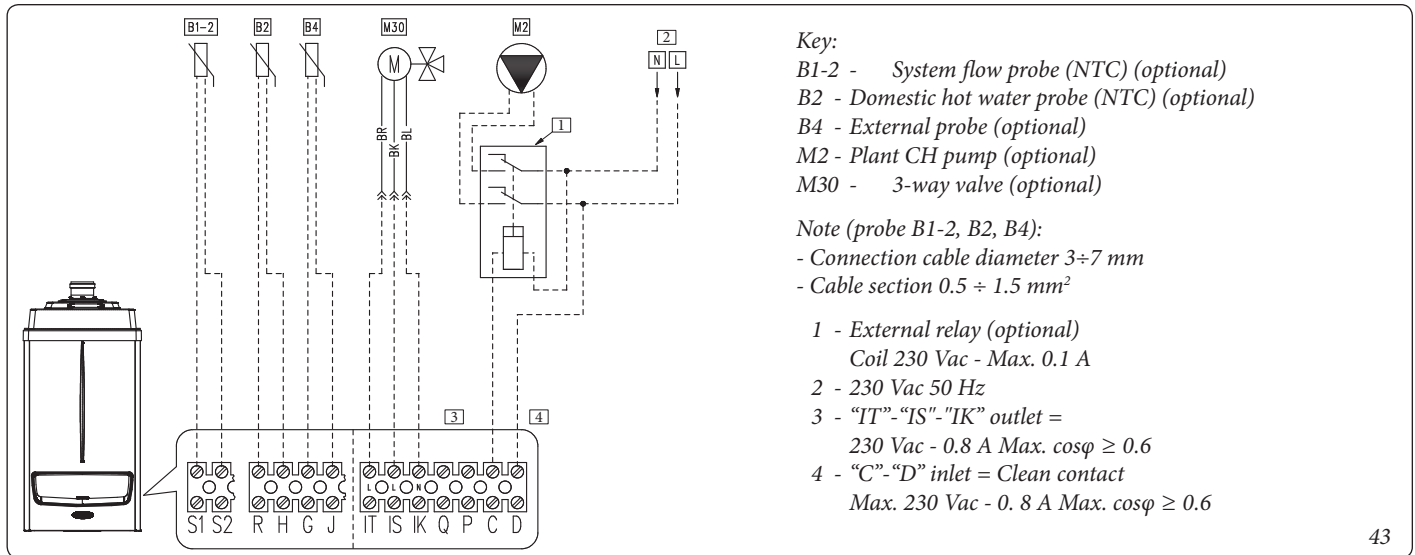
OT1 and OT2 are used for an OpenTherm "type" connection: complete functionality and compatibility with all devices is not guaranteed.



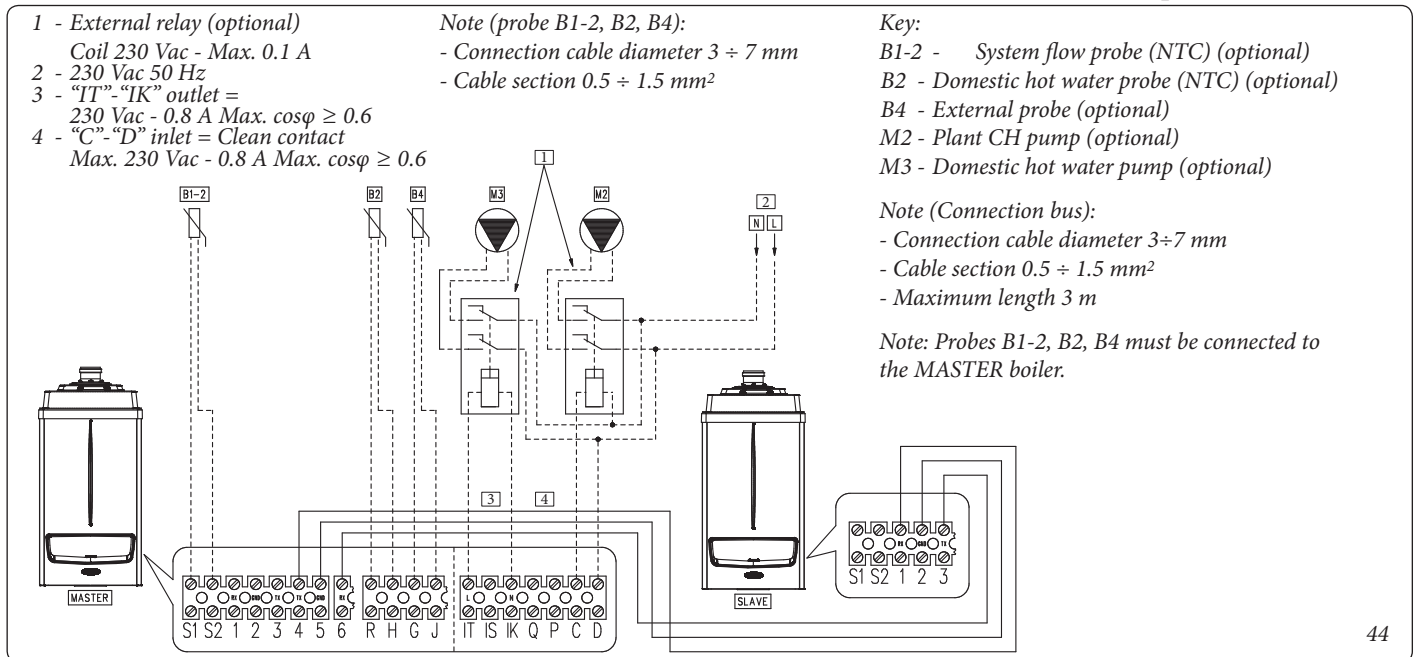
### 3.7 D.H.W. PUMP BOILER AND TANK PROBE WIRING DIAGRAM (optional).



### 3.8 COMMON FLOW PROBE AND 3-WAY BOILER WIRING DIAGRAM (optional).

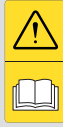


### 3.9 SIMPLE CASCADE BOILER WITH D.H.W. PUMP AND TANK PROBE WIRING DIAGRAM (optional).



### 3.10 TROUBLESHOOTING.

Maintenance interventions must be carried out by an authorised company (for example contact the Authorised Technical Service Centre).



- Smell of gas. Caused by leakage from gas circuit pipelines. Check sealing efficiency of gas intake circuit.
- Repeated ignition blocks. No gas, check the presence of pressure in the network and that the gas adduction valve is open. Incorrect adjustment of the gas valve, check the correct calibration of the gas valve.
- Irregular combustion or noisiness. It may be caused by: a dirty burner, incorrect combustion parameters, intake-exhaust terminal not correctly installed. Clean the above components and ensure correct installation of the terminal, check correct setting of the gas valve (Off-Set setting) and correct percentage of CO<sub>2</sub> in flue gases.
- The over temperature safety thermostat, the flow probe or the return probe are triggered frequently. It can depend on the lack of water in the boiler, little water circulation in the system or blocked pump. Check on the manometer that the system pressure is within established limits. Check that the radiator valves are not closed and also the functionality of the pump.

In addition:

- check that the exchanger safety thermostat has not intervened. If it has, check the integrity of the module and ceramic fibre panel, replace the cover gasket of the manifold and reset the thermostat by pressing the specific button.
- check that the exchanger safety thermostat has not intervened. If it has, check the integrity of the module and ceramic fibre panel, replace the cover gasket of the manifold and reset the thermostat by pressing the specific button

Also check the integrity of the thermofuse, and if it has been triggered it will be necessary to check the integrity of the module and the flue circuit.

- Drain trap clogged. This may be caused by dirt or combustion products deposited inside. Check, by means of the condensate drain cap, that there are no residues of material blocking the flow of condensate.
- Heat exchanger clogged. This may be caused by the trap being blocked. Check, by means of the condensate drain cap, that there are no residues of material blocking the flow of condensate.
- Noise due to air in the system. Check opening of the special air vent valve cap (Fig. 26 Ref. 27). Check that system filling and air bleeding has been performed according to the requirements.

- Noise due to air inside the condensation module. Use the manual air vent valve (Fig. 26 Ref. 20) to eliminate any air present in the condensation module. When the operation has been performed, close the manual vent valve.
- No DHW is produced. The boiler is equipped with a function that automatically recognises when there is an optional DHW probe, and an anomaly is reported if there is a failure affecting the DHW NTC probe. If there is a power outage, or if the boiler is switched off and back on again during the failure, it will not be possible to detect said failure, but it will, however, be recorded in the errors anomaly records.

In case of  $\Delta T > 35\text{ }^{\circ}\text{C}$ , the boiler lowers the power to avoid surpassing that value. When this status is on, the flow temperature symbol flashes.

### 3.11 CONTROL FUNCTION AIR FLOW RATE.

With ignition request, before the start of the fan, the condition of the pressure switch contact is verified. If this is detected closed, the continuation of the cycle is prevented.

After a delay time of about 50 seconds, there is a permanent block and fault "0A4" is signalled.

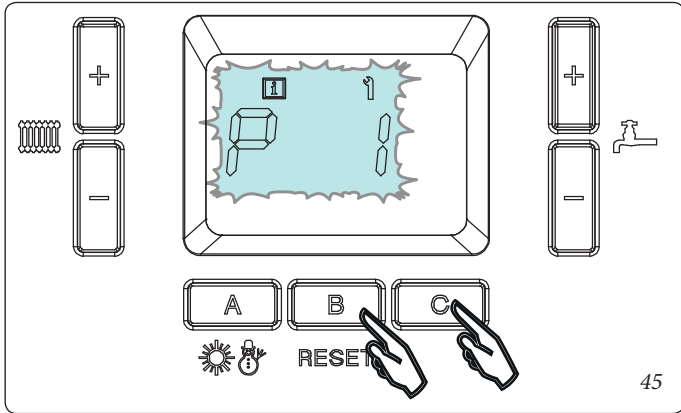
If the detected contact is open, the fan activates at the "air pressure switch control" speed (3300 rpm). When the pressure switch is closed, the fan switches to the ignition speed, and the ignition cycle continues ignoring the pressure switch condition.

If during operation at the "air pressure switch control" speed (3300 rpm) the pressure switch does not close, after a time of about 50 seconds there is a permanent block and the fault "0A4" is signalled.

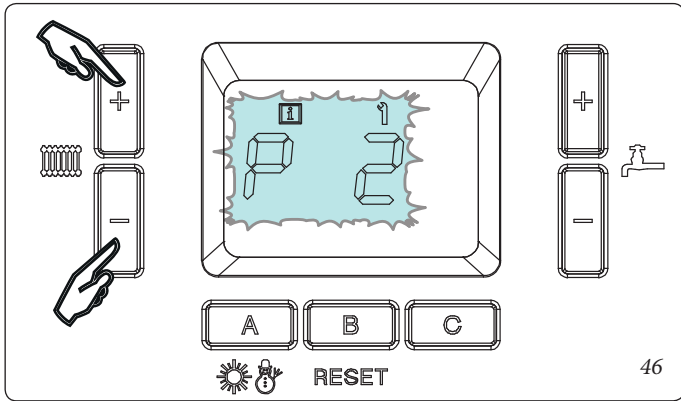
### 3.12 PROGRAMMING THE BOILER P.C.B.

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.

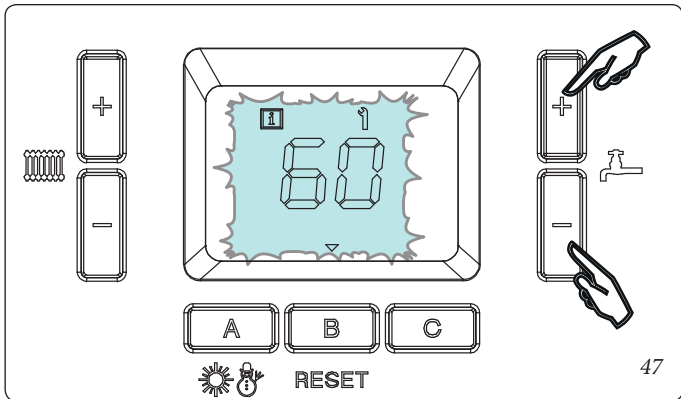
- Access programming by pressing and holding down buttons “B” and “C”



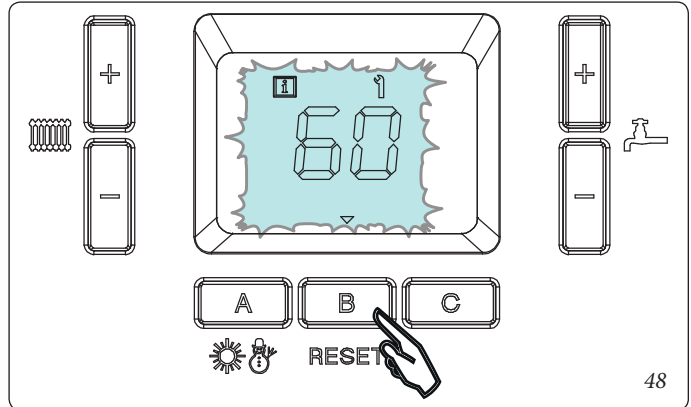
- Scroll through the parameters by pressing the + and - heating adjustment buttons,



- Change the parameter by pressing the + and - DHW adjustment buttons.



- Save the parameters by switching from one parameter to the next or by pressing “B”.



- Exit the programming mode by pressing and holding down buttons “B” and “C”, or wait approximately 2 minutes without touching the buttons. The boiler will then run a self-diagnosis of the parameters by displaying “PARA” followed by “Auto”.
- While the value of a parameter is being displayed, press “B” quickly to see the code again.

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Programming menu					
Menu item		Description	Adjustment range	Default value	Customised Value
P01	CH Set	This defines the boiler's flow temperature during heating	20 ÷ P02 °C	85	
P02	Max CH Set	This defines the maximum settable flow temperature during heating	20 ÷ 95 °C	85	
P03	Heating Hysteresis	This defines the power-off hysteresis during the heating phase	2 ÷ 10 °C	5	
P04	Anti-cycle CH	This is used to set a waiting time to avoid the boiler from switching on multiple times and frequently during CH mode	0 ÷ 15 minutes	3 minutes	
P05	CH min time	This is the amount of time that the boiler needs to stabilise, when the burner runs at minimum power for the set amount of time	3 ÷ 10 minutes	3 minutes	
P06	CH ramp	The amount of time that the boiler takes to reach the required temperature, number of degrees per minute (0 means no ramp)	0 ÷ 60 °C/minute	4 °C/minute	
P07	CH post-circulation	The amount of CH post circulation once the CH phase is finished	1 ÷ 30 minutes	3 minutes	
P08	Available max heat out	This defines the maximum power percentage to be used during the set CH phase	P09 ÷ 100%	100%	
P09	Available max heat out	This defines the minimum power percentage to be used during the set CH phase	0 ÷ P08%	0%	
P10	-	Not used		14 l/minutes	
P11	Electrodes anti-humidity	This defines fan speed and operating mode, to avoid humidity inside the condensing module, which could otherwise cause the electrodes to malfunction (0 = disabled function, recommended value = 40) (RPM speed is calculated by multiplying the value displayed by 50)	P26 ÷ 120	0	
P12	Boiler's modulation ratio	It defines the boiler's modulation ratio (Do not modify)	0 ÷ 100%	10%	
P13	Boiler power	Used to calculate the boiler power in the event of simple cascade.	0 ÷ 255 kW	80 kW = 75 100 kW = 90 120 kW = 115	
P14	External probe curve	This is used to select the external probe operating curve (optional) (0 = disabled probe)	0 ÷ 10	0	
P15	External probe offset	This defines the CH offset in relation to the selected external probe curve	20 ÷ 70 °C	30 °C	
P16	DHW set	This defines the DHW temperature	35 ÷ 65 °C	65 °C	
P17	P17 External D.H.W / 3-way pump	- With single boiler and common flow probe, it lets you choose between an external D.H.W pump and a 3-way one. - With a simple cascade, it manages a D.H.W. pump (downstream an hydraulic separator).	0 = 3 Ways 1 = D.H.W. pump		
P18	DHW hysteresis	This defines the DHW power-on hysteresis during CH	2 ÷ 10 °C	5 °C	
P19	DHW post-circulation	This is the post circulation time during DHW once DHW production is finished	0 ÷ 180 seconds	60 seconds	
P20	Available max DHW pow	This defines the maximum power percentage to be used during the set DHW phase	P21 ÷ 100 %	50 %	
P21	Available max DHW pow	This defines the minimum power percentage to be used during the set DHW phase	0 ÷ P20 %	0 %	
P22	DHW flow temperature with thermostat	In combination with a storage tank and a separate thermostat, this defines the flow temperature during DHW operation	35 ÷ 90 °C	80 °C	
P23	DHW modulation	Summed with the "Set San" (P16) parameter, this defines the flow temperature set that the boiler has to modulate the power on during DHW	5 ÷ 30 °C	15 °C	
P24	DHW off increment	This defines the time that the boiler allows the burner to switch off during DHW, by an increment of 5 °C on top of the flow temperature	0 ÷ 255 seconds	60 seconds	

Programming menu					
Menu item		Description	Adjustment range	Default value	Customised Value
P25	Max fan Speed	This defines the max fan speed and therefore the maximum relative boiler operating power (RPM speed is calculated by multiplying the value displayed by 50)	P26 ÷ 255	80 kW Met. 132 80 kW LPG 131 100 kW Met. 134 100 kW LPG 127 120 kW Met. 140 120 kW LPG 140	
P26	Min fan Speed	This defines the min fan speed and therefore the minimum relative boiler operating power (RPM speed is calculated by multiplying the value displayed by 50)	0 ÷ P25	80 kW Met. 27 80 kW LPG 25 100 kW Met. 26 100 kW LPG 25 120 kW Met. 26 120 kW LPG 25	
P27	Min pump speed	Defines the minimum pump speed in heating mode at the minimum boiler power. <b>Attention:</b> do not go below 30%	1 ÷ 100 %	30 %	
P28	Pump speed during burner ignition	Defines the minimum pump speed in heating mode during burner ignition <b>Attention:</b> do not go below 40 %	1 ÷ 100 %	40 %	
P29	DHW configuration	This is used to select the DHW operating mode, choosing between NTC probe or on/off thermostat	1 = NTC probe 17 = on/off thermostat	1	
P30	Velocità in accensione ventilatore (Speed during fan power-on)	This defines the fan speed during burner ignition <b>Attention:</b> do not change this parameter (RPM speed is calculated by multiplying the value displayed by 50)	0 ÷ 114 RPM x 50 (range limited by parameters P25 and P26)	44	
P31	Unit of measurement	This defines the unit of measure on the display, whether metric or Imperial	0 ÷ 127 = °C - kW 128 ÷ 256 = °F - kBTu/h	0	
P32	Set Resc Min	Limits the minimum value of the heating set. (The parameter takes priority in relation to the value set from the pushbutton panel)		0	
P33	Antifreeze function activated by the common flow probeIt activates the antifreeze function launched by the common flow probe.	The boiler turns on once there is a drop below the set value	2 ÷ 20 °C	5°C	
P34	Antifreeze function deactivated by the common flow probeIt deactivates the antifreeze function launched by the common flow probe.	The boiler turns off once the set temperature is reached	2 ÷ 20 °C	15°C	
P35	Delayed Activation / Deactivation of the second boiler	With its simple cascade operation, it avoids unnecessarily turning the second boiler on and off	0 ÷ 255 seconds	60 seconds	
P36	Temperature adjustment calculation time	This defines the time interval to calculate the boiler temperature <b>Attention:</b> do not change this parameter	1 ÷ 10 seconds	3 seconds	
P37	0 ÷ 10 V input	It defines whether the boiler must function with the temperature or probe set0 = temperature set	1 = power set		
P38	Common flow probe configuration	It activates the common flow probe functioning.	0 = no probe 1 = probe present		

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### 3.13 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 (for example contact the Authorised Technical Service Centre).

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

- disconnect the appliance;
- change the sleeve with Venturi (det. 5 fig. 26);
- change the gas nozzle (det. 4 fig. 26);
- re-power the appliance;
- regulate the maximum heat output by varying the number of fan revs. (parameter P25 "Max number of fan revs in CH mode") according to par. 4.1;
- regulate the minimum heat output by varying the number of fan revs. (parameter P26 "Min number of fan revs in CH mode") according to par. 4.1;
- activate the chimney sweep function;
- check the CO<sub>2</sub> value on the table in par. 4.2, especially:
  - check the CO<sub>2</sub> value in the flue with chimney sweep at 0%;
  - check the CO<sub>2</sub> value in the flue with chimney sweep at 100%;
- exit the chimney sweep function;
- seal the gas flow rate regulation devices (if settings are modified);
- after completing the conversion, apply the sticker, contained in the conversion kit, near the data-plate. Using an indelible marker pen, cancel 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 (Paragraph 4.1).



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

After making sure that transformation was carried out with the Venturi and a nozzle of suitable diameter for the type of gas used and the calibration has been performed at the correct num. of revs, check that:

- the burner flame is not too high and that it is stable (does not detach from burner);
- there are no leaks from the gas circuit.

All boiler adjustment operations must be carried out by a qualified technician (for example contact the Authorised Technical Service Centre).



### 3.15 CO<sub>2</sub> ADJUSTMENT.

Calibration of minimum CO<sub>2</sub>

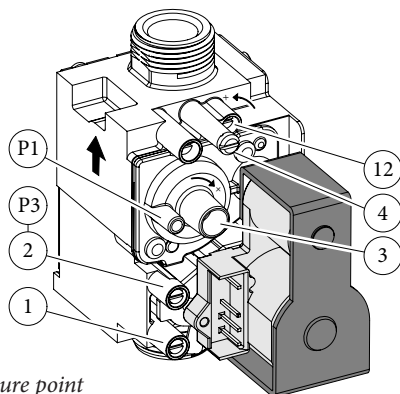
Turn the boiler on and start the chimney sweep functions at minimum output (0%). To have an exact value of CO<sub>2</sub> the technician must insert the sampling probe to the bottom of the sample point, then check that the CO<sub>2</sub> value is that specified in the table in par. 3.25, on the contrary, regulate the screws (3 fig. 49) (Off-Set regulator). To increase the CO<sub>2</sub> value, turn the adjustment screw (3) in a clockwise direction and vice versa to decrease it.

Calibration of maximum CO<sub>2</sub>.

When you finish the minimum CO<sub>2</sub> adjustment, turn the boiler on and start the chimney sweep function at the maximum output (100%). To have an exact value of CO<sub>2</sub> the technician must insert the sampling probe to the bottom of the sample point, then check that the CO<sub>2</sub> value is that specified in the table in par. 4.1, otherwise, adjust the screw (12 fig. 49) (gas flow rate regulator). To increase the CO<sub>2</sub> value, turn the adjustment screw (12) in an anti-clockwise direction and vice versa to decrease it.

At every adjustment variation on the screw (12) it is necessary to wait for the boiler to stabilise itself at the value set (about 30 sec.).

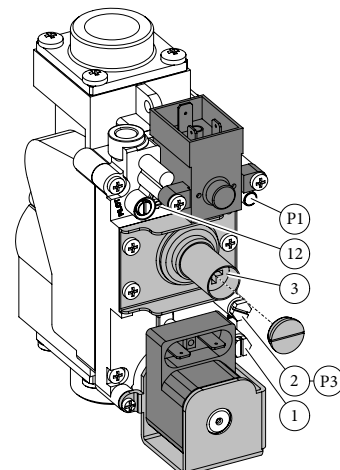
848 Gas Valve (Victrix Pro 80 2ErP)



Key:

- 1 - Gas valve inlet pressure point
- 2 - Gas valve outlet pressure point
- 3 - Off/Set adjustment screw
- 4 - Pressure regulator connection (PR)
- 12 - Outlet gas flow rate regulator

8222 Gas Valve (Victrix Pro 100 - 120 2ErP)



### 3.16 CH OUTPUT ADJUSTMENT.

If it is necessary to change the CH output, you will need to adjust the “P08” maximum CH output and “P09” minimum CH output parameters.

To check the regulated heat output value, compare the no. of fan revs with that in the table (par. 4.1).

### 3.17 OUTPUT ADJUSTMENT DURING DHW (ONLY IN COMBINATION WITH AN OPTIONAL EXTERNAL STORAGE TANK).

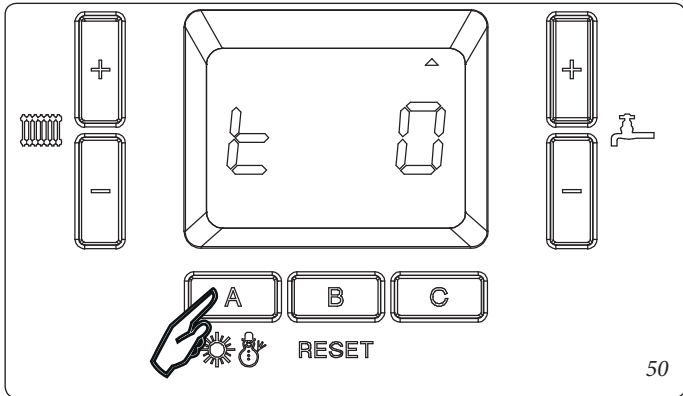
If it is necessary to change the DHW output, you will need to adjust the “P20” maximum DHW output and “P21” minimum DHW output parameters.

To check the regulated heat output value, compare the no. of fan revs with that in the table (par. 4.1).

### 3.18 “CHIMNEY SWEEP” FUNCTION.

This function allows the technician to check the combustion parameters. Boiler operation in chimney sweep function can be adjusted to an output between 0% and 100%.

To enable the function press and hold down “A”



If there is a common flow probe, it is possible to activate the chimney sweep function by pressing buttons “A” and “B” simultaneously. In this case, the plant pump is activated as well as the boiler (in the “simple cascade” both boilers are activated).

The output is adjusted from the + and - DHW adjustment buttons at a range between 0 and 100%, while using the + and - buttons for CH adjustment, the percentage changes by 1% each time they are pressed.

In this state all adjustments are excluded and only the temperature safety thermostat and the limit thermostat remain active. When the checks are finished disable the function by pressing and holding down button “A” (or “A” + “B” in the other case).

If you enable the function, you will need to wait approximately 30” to reach the set output (3’ on the Slave boiler).

### 3.19 3-WAY PUMP ANTI-BLOCK FUNCTION (OPTIONAL).

The boiler has a function that starts the pump and 3-way valve at least once every 24 hours for the duration of 20 seconds in order to reduce the risk of the pump becoming blocked due to prolonged inactivity.

### 3.20 RADIATORS ANTI-FREEZE FUNCTION.

The boiler has a function that makes the pump start when the system flow water reaches 8 °C. If the system flow water is at a temperature below 5 °C, the boiler starts to operate until it reaches approximately 16 °C.

### 3.21 ANTI-HUMIDITY ELECTRODE FUNCTION.

With cascade installations combined with their relative flue manifold kits with flue adjusting devices, humidity may develop on the electrodes, causing them to fail. Avoid the formation of humidity by enabling this function (by setting a value other than 0), which turns the fan on at the speed set in parameter “P11” (5 minutes on and 5 minutes off). The function is active when the burner is off and the flow NTC probe temperature reading is greater than 35°C. The function is disabled when the temperature drops below 30 °C.

### 3.22 INLET 0 ÷ 10 V.

The microprocessor has an analogue 0 ÷ 10 V inlet (“Y” and “Z” terminals fig. 5) that enables the boiler to be controlled from the outside.

By setting the “P37” parameter, it is possible to set-up the inlet by choosing the functioning mode between temperature set and power set.

The inlet activates a 2 V (minimum) request and increases it proportionally up to 9.5 V (maximum). The request is deactivated below 1 V.

#### Notes:

- If “P37” is set at “0”, it is not active when the boiler is in “stand-by” or “summer” mode.

The calculated set is limited by the “P02” ÷ 20 °C range. The maximum and minimum temperature within the set is limited by “P01” and “P32”.

- If “P37” is set on “1” it is always active.

It is not limited by the “P08” and “P09” parameters and does not have priority over the DHW request.

- Input voltage = -2.5 ÷ 12.5 V

- Input = 200 µA

- Impedance = > 50 KΩ

**3.23 FUNCTIONING WITH COMMON FLOW PROBE.**

With a hydraulic circuit breaker, there must be a common flow probe (with boiler flow probe functions) and a pump to be connected downstream of the plant.

The probe must be connected to terminals “S1” and “S2” and parameter “P38” must be set up, whereas the pump must be connected to terminals “C” and “D”.

If there is a DHW circuit, it can be connected via an external 3-way to be connected to “IT”, “IS” and IK terminal, or use a suitable pump to be connected to “IT” and “IK” terminals. The DHW circuit has priority over the heating circuit.

Please refer to chart fig. 51 for the correct configuration

**3.24 AUTODETECTION.**

This function enables the association of the display board to the boiler’s P.C.B. In addition, in case of “simple cascade” installation, it enables the detection and combination of cascade boilers.

Turn the boiler on, programme it according to your needs, press and hold the “-” (fig. 29 ref. 2) button down until “AUTO” appears, then press “RESET” until “bu 1” appears.

**3.25 SIMPLE CASCADE (MAX. 2 BOILERS)**

It is possible to create a “simple cascade” by directly connecting two boilers.


The two boilers turn on alternatively based on the plant’s requirements.

Carry out the connection as indicated in the diagram (fig. 43). With this configuration, there must be a common flow probe on the thermal plant, see the chart (fig. 51) for the possible options. In order for the system to recognise the two boilers, you must activate the Autodetection on the Master boiler and make sure both boilers are on..

They are associated when “bu 2” appears on the Master boiler and “SLA 2” appears on the Slave boiler.

From this moment on, all programming is carried out on the Master boiler, while the “SLA 2” caption always appears on the Slave boiler, except in case of anomaly.

The customised parameters of the Master boiler are automatically replicated on the Slave boiler.

It is not possible to combine the cascade and zone regulator to the plant in this case. It is possible to connect an On/Off room thermostat or use the 0 ÷ 10 V inlet (which must only be connected to the Master) to control the plant. 

N° boilers	Parameter “P38”		Parameter “P17 *”		Common flow probe	Boiler flow probe
	Common flow probe present = 1	Common flow probe absent = 0	DHW pump (downstream the distribution manifold) = 1	3-way valve = 0		
1		X		X	No	Central heating Domestic hot water
1	X			X	Central heating	Domestic hot water
1	X		X		Central heating Domestic hot water	Just as limit thermostat
2	X			Not admitted	Central heating	Just as limit thermostat
2	X		X		Central heating Domestic hot water	Just as limit thermostat

\*NOTE: valve 3 is supplied only for 15 seconds

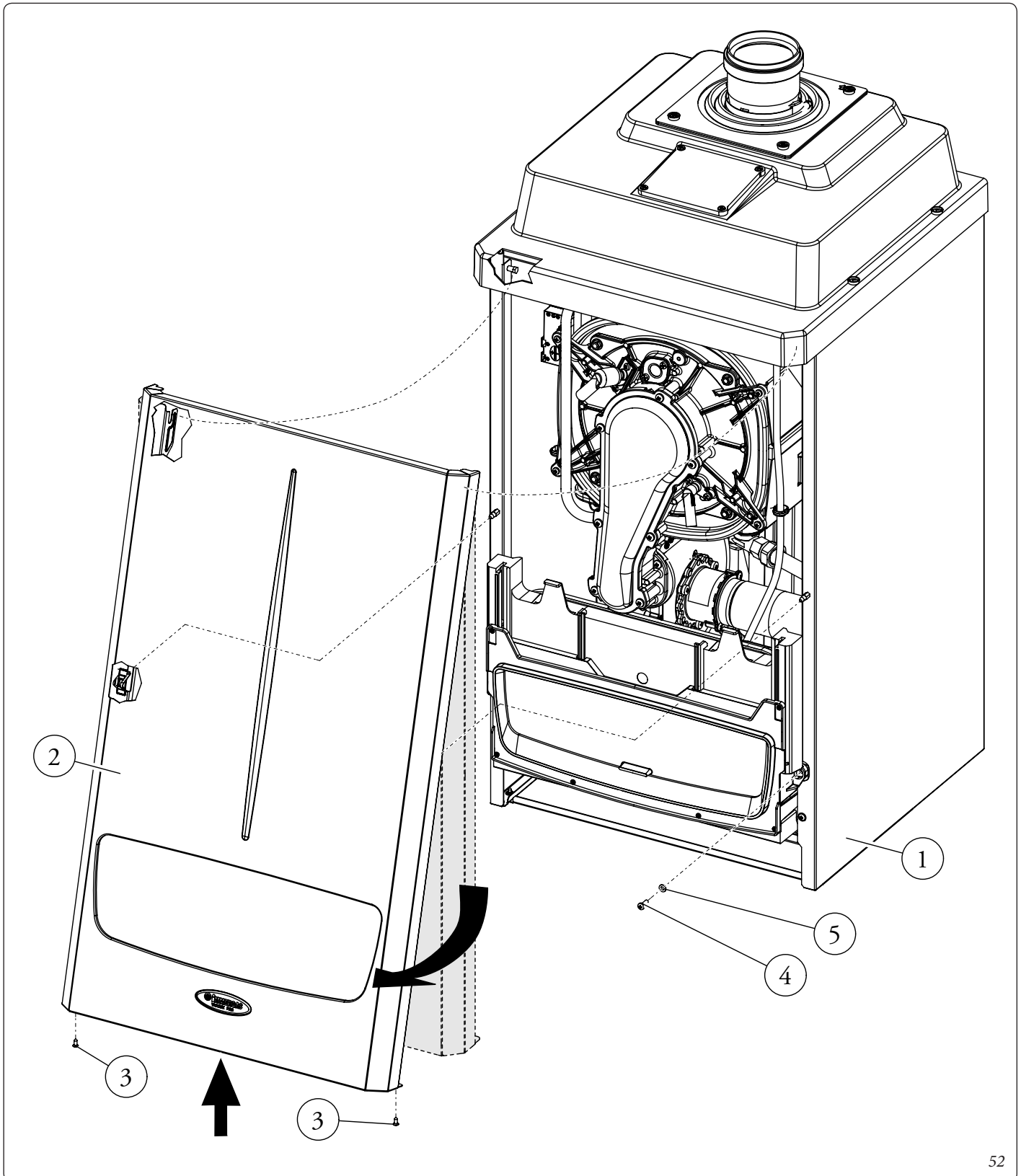


### 3.26 CASING REMOVAL.

To facilitate boiler maintenance the casing can be completely removed as follows:

- take the two screws out (3) from the bottom of the front (2);
- take the front down (2) by gripping its bottom handle, then pulling it towards yourself to detach it from the central hooks, and then slide it downwards;
- take the two clamping screws out (4) from the control panel, with their rings (5);

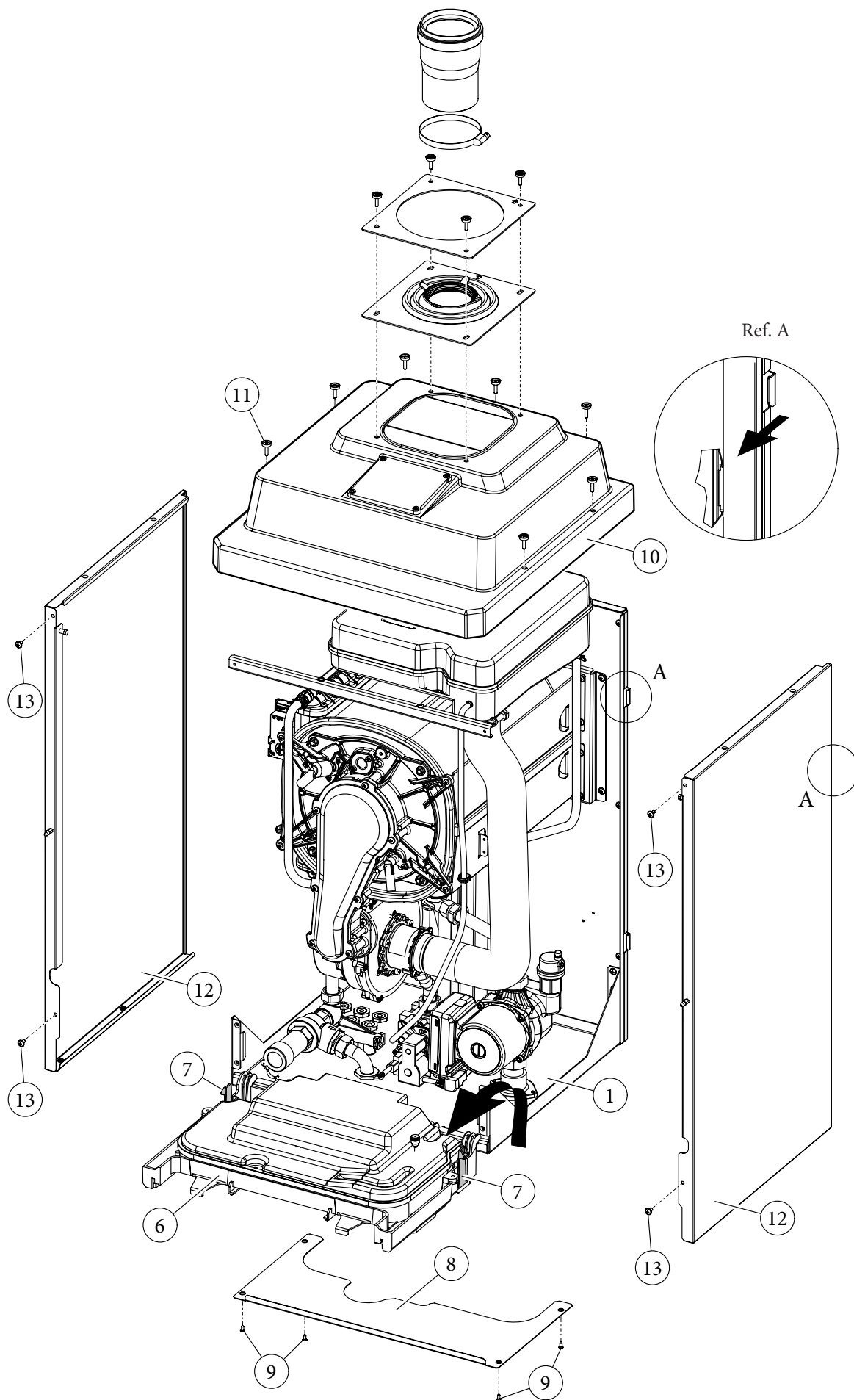
- press the two side hooks (7) and tilt the control panel (6);
- remove the lower grid (8) by loosening the 4 screws (9);
- at this point, if necessary, you can take down the protective cover (10) and side panels (12);
- take the cover down (10) by removing the relative screws (11);
- take down the two side panels (12) by removing the front screws (13) and unhooking the panels (ref. A fig. 53).



INSTALLER

USER

MAINTENANCE TECHNICIAN



## 4 TECHNICAL DATA.

### 4.1 VARIABLE HEAT OUTPUT.

**N.B.:** the power data in the table has been obtained with intake-exhaust pipe measuring 0.5 m in length.

Gas flow rates refer to net calorific value below a temperature of 15°C and at a pressure of 1013 mbar.

Burner pressure values refer to use of gas at 15°C.

The number of revs for the fan on the display is expressed in revs / 50 (Ex.: 1000 revs = 20).

#### Victrix PRO 80 ErP.

		METHANE (G20)		PROPANE (G31)	
HEAT THERMAL	HEAT THERMAL	GAS FLOW RATE BURNER	REVS FAN	GAS FLOW RATE BURNER	REVS FAN
(kW)	(kcal/h)	(m <sup>3</sup> /h)	(n°)	(kg/h)	(n°)
73.0	62780	7.96	6600	5.85	6550
71.0	61060	7.74	6410	5.68	6350
69.0	59340	7.52	6230	5.52	6150
67.0	57620	7.30	6050	5.36	5960
65.0	55900	7.09	5860	5.20	5760
63.0	54180	6.87	5680	5.04	5570
61.0	52460	6.65	5500	4.88	5370
59.0	50740	6.43	5320	4.72	5180
57.0	49020	6.21	5140	4.56	4990
55.0	47300	5.99	4960	4.40	4800
53.0	45580	5.77	4790	4.24	4620
51.0	43860	5.56	4610	4.08	4440
49.0	42140	5.34	4440	3.92	4260
47.0	40420	5.12	4270	3.76	4080
45.0	38700	4.91	4100	3.60	3910
43.0	36980	4.69	3940	3.44	3740
41.0	35260	4.48	3780	3.29	3580
39.0	33540	4.26	3620	3.13	3420
37.0	31820	4.05	3460	2.97	3260
35.0	30100	3.83	3310	2.81	3110
33.0	28380	3.62	3150	2.65	2960
31.0	26660	3.40	3000	2.50	2810
29.0	24940	3.19	2850	2.34	2670
27.0	23220	2.97	2710	2.18	2520
25.0	21500	2.75	2560	2.02	2380
23.0	19780	2.54	2410	1.86	2240
21.0	18060	2.32	2270	1.70	2110
19.0	16340	2.10	2120	1.54	1970
17.0	14620	1.88	1980	1.38	1840
15.0	12900	1.67	1840	1.22	1700
13.0	11180	1.45	1690	1.06	1570
11.0	9460	1.23	1550	0.90	1440
9.0	7740	1.00	1410	0.74	1300
8.2	7052	0.92	1350	0.67	1250

**Victrix PRO 100 ErP.**

		METHANE (G20)		PROPANE (G31)	
HEAT THERMAL	HEAT THERMAL	GAS FLOW RATE BURNER	REVS FAN	GAS FLOW RATE BURNER	REVS FAN
(kW)	(kcal/h)	(m³/h)	(n°)	(kg/h)	(n°)
90.0	77400	9.77	6700	7.17	6350
87.0	74820	9.44	6470	6.93	6140
84.0	72240	9.11	6230	6.68	5930
81.0	69660	8.78	6000	6.44	5730
78.0	67080	8.45	5780	6.20	5530
75.0	64500	8.12	5560	5.96	5320
72.0	61920	7.79	5340	5.72	5130
69.0	59340	7.47	5120	5.48	4930
66.0	56760	7.14	4910	5.24	4730
63.0	54180	6.82	4700	5.00	4540
60.0	51600	6.49	4490	4.77	4340
57.0	49020	6.17	4280	4.53	4150
54.0	46440	5.85	4080	4.29	3960
51.0	43860	5.52	3880	4.05	3770
48.0	41280	5.20	3680	3.82	3580
45.0	38700	4.88	3480	3.58	3400
42.0	36120	4.56	3290	3.34	3210
39.0	33540	4.23	3090	3.11	3030
36.0	30960	3.91	2900	2.87	2840
33.0	28380	3.59	2710	2.63	2660
30.0	25800	3.27	2530	2.40	2480
27.0	23220	2.94	2340	2.16	2300
24.0	20640	2.62	2160	1.92	2120
21.0	18060	2.30	1980	1.68	1940
18.0	15480	1.97	1800	1.45	1760
15.0	12900	1.64	1630	1.21	1580
12.0	10320	1.32	1450	0.97	1400
9.4	8084	1.03	1300	0.76	1250

Victrix PRO 120 ErP.

		METHANE (G20)		PROPANE (G31)	
HEAT THERMAL	HEAT THERMAL	GAS FLOW RATE BURNER	REVS FAN	GAS FLOW RATE BURNER	REVS FAN
(kW)	(kcal/h)	(m³/h)	(n°)	(kg/h)	(n°)
111.0	95460	12.07	7000	8.86	7000
108.0	92880	11.74	6810	8.62	6800
105.0	90300	11.41	6620	8.37	6600
102.0	87720	11.08	6430	8.13	6400
99.0	85140	10.75	6240	7.89	6200
96.0	82560	10.42	6050	7.65	6010
93.0	79980	10.09	5870	7.40	5810
90.0	77400	9.76	5680	7.16	5620
87.0	74820	9.43	5500	6.92	5440
84.0	72240	9.10	5320	6.68	5250
81.0	69660	8.78	5140	6.44	5070
78.0	67080	8.45	4970	6.20	4880
75.0	64500	8.13	4790	5.97	4700
72.0	61920	7.80	4620	5.73	4530
69.0	59340	7.48	4440	5.49	4350
66.0	56760	7.15	4270	5.25	4170
63.0	54180	6.83	4100	5.01	4000
60.0	51600	6.51	3930	4.78	3830
57.0	49020	6.18	3760	4.54	3660
54.0	46440	5.86	3590	4.30	3490
51.0	43860	5.54	3430	4.06	3330
48.0	41280	5.21	3260	3.83	3160
45.0	38700	4.89	3100	3.59	3000
42.0	36120	4.57	2930	3.35	2840
39.0	33540	4.24	2770	3.12	2680
36.0	30960	3.92	2610	2.88	2520
33.0	28380	3.60	2450	2.64	2360
30.0	25800	3.27	2290	2.40	2200
27.0	23220	2.95	2130	2.16	2050
24.0	20640	2.62	1970	1.92	1900
21.0	18060	2.30	1820	1.69	1750
18.0	15480	1.97	1660	1.45	1600
15.0	12900	1.64	1510	1.21	1450
12.0	10320	1.32	1350	0.97	1300
11.0	9460	1.21	1300	0.89	1250

## 4.2 COMBUSTION PARAMETERS.

<b>Victrix PRO 80 ErP</b>			
		<b>G20</b>	<b>G31</b>
Gas nozzle diameter	mm	12.70	8.50
Supply pressure	mbar (mm H <sub>2</sub> O)	20 (204)	37 (377)
Flue flow rate at nominal heat output	kg/h (g/s)	114 (31.67)	120 (33.33)
Flue flow rate at min heat output	kg/h (g/s)	14 (3.89)	15 (4.17)
CO <sub>2</sub> at Q. Nom./Min.	%	9.95 / 8.95 (+ 0.2 / - 0.3 %)	10.60 / 9.75 (+ 0.2 / - 0.3 %)
CO with 0% O <sub>2</sub> at Nom./Min. Q. Nom./Min.	ppm	233 / 4	175 / 4
NO <sub>x</sub> at 0% of O <sub>2</sub> at Q. Nom./Min.	mg/kWh	34 / 1	65 / 6
Flue temperature at nominal output	°C	62	61
Flue temperature at minimum output	°C	43	45

<b>Victrix PRO 100 ErP</b>			
		<b>G20</b>	<b>G31</b>
Gas nozzle diameter	mm	11.30	8.40
Supply pressure	mbar (mm H <sub>2</sub> O)	20 (204)	37 (377)
Flue flow rate at nominal heat output	kg/h (g/s)	146 (40.56)	148 (41.11)
Flue flow rate at min heat output	kg/h (g/s)	16 (4.44)	16 (4.44)
CO <sub>2</sub> at Q. Nom./Min.	%	9.40 / 9.00 (+ 0.2 / - 0.3 %)	10.60 / 10.10 (+ 0.2 / - 0.3 %)
CO with 0% O <sub>2</sub> at Nom./Min. Q. Nom./Min.	ppm	210 / 5	230 / 1
NO <sub>x</sub> at 0% of O <sub>2</sub> at Q. Nom./Min.	mg/kWh	62 / 8	67 / 10
Flue temperature at nominal output	°C	53	54
Flue temperature at minimum output	°C	45	45

<b>Victrix PRO 120 ErP</b>			
		<b>G20</b>	<b>G31</b>
Gas nozzle diameter	mm	16,50	9,70
Supply pressure	mbar (mm H <sub>2</sub> O)	20 (204)	37 (377)
Flue flow rate at nominal heat output	kg/h (g/s)	174 (48.33)	183 (50.83)
Flue flow rate at min heat output	kg/h (g/s)	19 (5.28)	19 (5.28)
CO <sub>2</sub> at Q. Nom./Min.	%	9.80 / 9.00 (+ 0.2 / - 0.3 %)	10.60 / 10.00 (+ 0.2 / - 0.3 %)
CO with 0% O <sub>2</sub> at Nom./Min. Q. Nom./Min.	ppm	257 / 1	220 / 1
NO <sub>x</sub> at 0% of O <sub>2</sub> at Q. Nom./Min.	mg/kWh	95 / 9	77 / 13
Flue temperature at nominal output	°C	56	56
Flue temperature at minimum output	°C	46	46

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

### 4.3 TECHNICAL DATA TABLE.

		Victrix PRO 80 ErP	Victrix PRO 100 ErP	Victrix PRO 120 ErP
Nominal heat input	kW (kcal/h)	75.3 (64722)	92.3 (79385)	114.1 (98109)
Minimum heat input	kW (kcal/h)	8.6 (7439)	9.8 (8401)	11.4 (9813)
Nominal heat output (useful)	kW (kcal/h)	73.0 (62780)	90.0 (77400)	111.0 (95460)
Minimum heat output (useful)	kW (kcal/h)	8.2 (7052)	9.4 (8084)	11.0 (9460)
Effective thermal efficiency 80/60 Nom./Min.	%	97.0 / 94.8	97.5 / 96.2	97.3 / 96.4
Effective thermal efficiency 50/30 Nom./Min.	%	106.6 / 106.9	107.0 / 107.4	106.7 / 107.2
Effective thermal efficiency 40/30 Nom./Min.	%	107.3 / 107.2	107.4 / 107.6	107.2 / 107.5
Heat loss at casing with burner On/Off (80-60°C)	%	0.34 / 0.80	0.41 / 0.60	0.28 / 0.70
Heat loss at flue with burner On/Off (80-60°C)	%	0.01 / 2.20	0.01 / 1.90	0.01 / 2.0
Central heating circuit max. operating pressure	bar	4.4 (0.44)	4.4 (0.44)	4.4 (0.44)
Central heating circuit max. operating temperature	°C	90	90	90
Adjustable central heating temperature	°C	20 - 85	20 - 85	20 - 85
Head available with 1000 l/h flow rate	kPa (m H <sub>2</sub> O)	81.40 (8.30)	116.5 (11.88)	116.5 (11.88)
Weight of full boiler	kg	83.5	106.0	114.2
Weight of empty boiler	kg	79.5	95.9	102.5
Boiler water content	l	4.0	10.1	11.7
Electrical connection	V/Hz	230/50	230/50	230/50
Nominal absorption	A	1.5	2.3	2.5
Installed electric output	W	195	345	385
Pump consumption	W	82	183	186
EEI	-	≤ 0.23 - Part. 3	≤ 0.23 - Part. 3	≤ 0.23 - Part. 3
Fan power consumption	W	100	154	184
Equipment electrical system protection	-	IPX5D	IPX5D	IPX5D
Max. operating room temperature	°C	+50	+50	+50
Min. operating room temperature	°C	-5	-5	-5
Min. operating room temperature with anti-freeze kit (Optional)	°C	-15	-15	-15
Flue gas max. temperature	°C	75	75	75
Max. flue overheating temperature	°C	120	120	120
NO <sub>x</sub> class	-	6	6	6
Weighted NO <sub>x</sub>	mg/kWh	25.0	20.0	33.0
Weighted CO	mg/kWh	16.0	12.0	18.0
Type of appliance		C13-C13x-C33-C33x-C43-C43x-C53-C63-C83-C93-C93x-C(10)3-C(12)3-C(15)3-C(10)3X-C(15)3X B23p-B33-B53p	C13 / C33 / C63 / B23p / B33 / B53p	
Category		II2H3 P		

- \* Efficiencies refer to the net calorific value.
- Flue temperature values refer to an air inlet temperature of 15°C and flow temperature of 50°C.
- 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.
- \*\* For type C63 it is forbidden to install the appliance as it came out of the factory, in configurations that require shared flues in positive pressure.

#### 4.4 KEY FOR DATA NAMEPLATE.

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			
			CONDENSING

**Note:** the technical data is provided on the data nameplate on the boiler

	ENG
Md	Model
Code Md	Model code
Sr N°	Serial Number
CHK	Check
Code 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.	Central heating minimum heat input
Q <sub>nw</sub> max.	DHW maximum heat input
Q <sub>n</sub> max.	Central heating 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
CONDENSING	Condensing boiler



#### 4.5 TECHNICAL PARAMETERS FOR MIXED BOILERS (IN COMPLIANCE WITH REGULATION 813/2013).

The yields in the following tables refer to the higher heating value.

Model/s:				Victrix Pro 80 2ErP				
Condensing Boilers:				SI				
Low temperature boiler:				NO				
Boiler type B1:				NO				
Co-generation appliance for central heating:				NO			Fitted with supplementary heating system:	NO
Mixed heating appliance:				SI				
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit	
Nominal heat output	$P_n$	73	kW	Seasonal energy efficiency of central heating	$\eta_s$	91	%	
For central heating only and mixed boilers: useful heat output				For central heating only and mixed boilers: useful efficiency				
At nominal heat output in high temperature mode (*)	$P_4$	73.0	kW	At nominal heat output in high temperature mode (*)	$\eta_4$	87.5	%	
At 30% of nominal heat output in a low temperature mode (**)	$P_1$	21.9	kW	At 30% of nominal heat output in a low temperature mode (**)	$\eta_1$	96.0	%	
Auxiliary electricity consumption				Other items				
At full load	$el_{max}$	0.119	kW	Heat loss in standby	$P_{stby}$	0.143	kW	
At partial load	$el_{min}$	0.024	kW	Ignition burner energy consumption	$P_{ign}$	0.000	kW	
In standby mode	$P_{SB}$	0.004	kW	Emissions of nitrogen oxides	$NO_x$	22	mg / kWh	
For mixed central heating appliances								
Stated load profile				Domestic hot water production efficiency				
				$\eta_{WH}$				
				%				
Daily electrical power consumption	$Q_{elec}$		kWh	Daily gas consumption	$Q_{fuel}$		kWh	
Contact information	IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY							
(*) High temperature mode means 60°C on return and 80°C on flow.								
(**) Low temperature mode for condensation Boilers means 30°C , for low temperature boilers 37°C and for other appliances 50°C of return temperature.								

Model/s:				Victrix Pro 100 2ErP				
Condensing Boilers:				SI				
Low temperature boiler:				NO				
Boiler type B1:				NO				
Co-generation appliance for central heating:				NO			Fitted with supplementary heating system:	NO
Mixed heating appliance:				SI				
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit	
Nominal heat output	$P_n$	90	kW	Seasonal energy efficiency of central heating	$\eta_s$	92	%	
For central heating only and mixed boilers: useful heat output				For central heating only and mixed boilers: useful efficiency				
At nominal heat output in high temperature mode (*)	$P_4$	90.0	kW	At nominal heat output in high temperature mode (*)	$\eta_4$	88.0	%	
At 30% of nominal heat output in a low temperature mode (**)	$P_1$	27.0	kW	At 30% of nominal heat output in a low temperature mode (**)	$\eta_1$	96.8	%	
Auxiliary electricity consumption				Other items				
At full load	$el_{max}$	0.143	kW	Heat loss in standby	$P_{stby}$	0.145	kW	
At partial load	$el_{min}$	0.017	kW	Ignition burner energy consumption	$P_{ign}$	0.000	kW	
In standby mode	$P_{SB}$	0.005	kW	Emissions of nitrogen oxides	$NO_x$	18	mg / kWh	
For mixed central heating appliances								
Stated load profile				Domestic hot water production efficiency				
				$\eta_{WH}$				
				%				
Daily electrical power consumption	$Q_{elec}$		kWh	Daily gas consumption	$Q_{fuel}$		kWh	
Contact information	IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY							
(*) High temperature mode means 60°C on return and 80°C on flow.								
(**) Low temperature mode for condensation Boilers means 30°C , for low temperature boilers 37°C and for other appliances 50°C of return temperature.								

Model/s:				Victrix Pro 120 2ErP				
Condensing Boilers:				SI				
Low temperature boiler:				NO				
Boiler type B1:				NO				
Co-generation appliance for central heating:				NO			Fitted with supplementary heating system:	NO
Mixed heating appliance:				SI				
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit	
Nominal heat output	$P_n$	111	kW	Seasonal energy efficiency of central heating	$\eta_s$	92	%	
For central heating only and mixed boilers: useful heat output				For central heating only and mixed boilers: useful efficiency				
At nominal heat output in high temperature mode (*)	$P_4$	111.0	kW	At nominal heat output in high temperature mode (*)	$\eta_4$	87.9	%	
At 30% of nominal heat output in a low temperature mode (**)	$P_1$	33.3	kW	At 30% of nominal heat output in a low temperature mode (**)	$\eta_1$	96.5	%	
Auxiliary electricity consumption				Other items				
At full load	$el_{max}$	0.190	kW	Heat loss in standby	$P_{stby}$	0.168	kW	
At partial load	$el_{min}$	0.019	kW	Ignition burner energy consumption	$P_{ign}$	0.000	kW	
In standby mode	$P_{SB}$	0.004	kW	Emissions of nitrogen oxides	$NO_x$	28	mg / kWh	
For mixed central heating appliances								
Stated load profile				Domestic hot water production efficiency	$\eta_{WH}$		%	
Daily electrical power consumption	$Q_{elec}$		kWh	Daily gas consumption	$Q_{fuel}$		kWh	
Contact information	IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY							
(*) High temperature mode means 60°C on return and 80°C on flow.								
(**) Low temperature mode for condensation Boilers means 30°C , for low temperature boilers 37°C and for other appliances 50°C of return temperature.								





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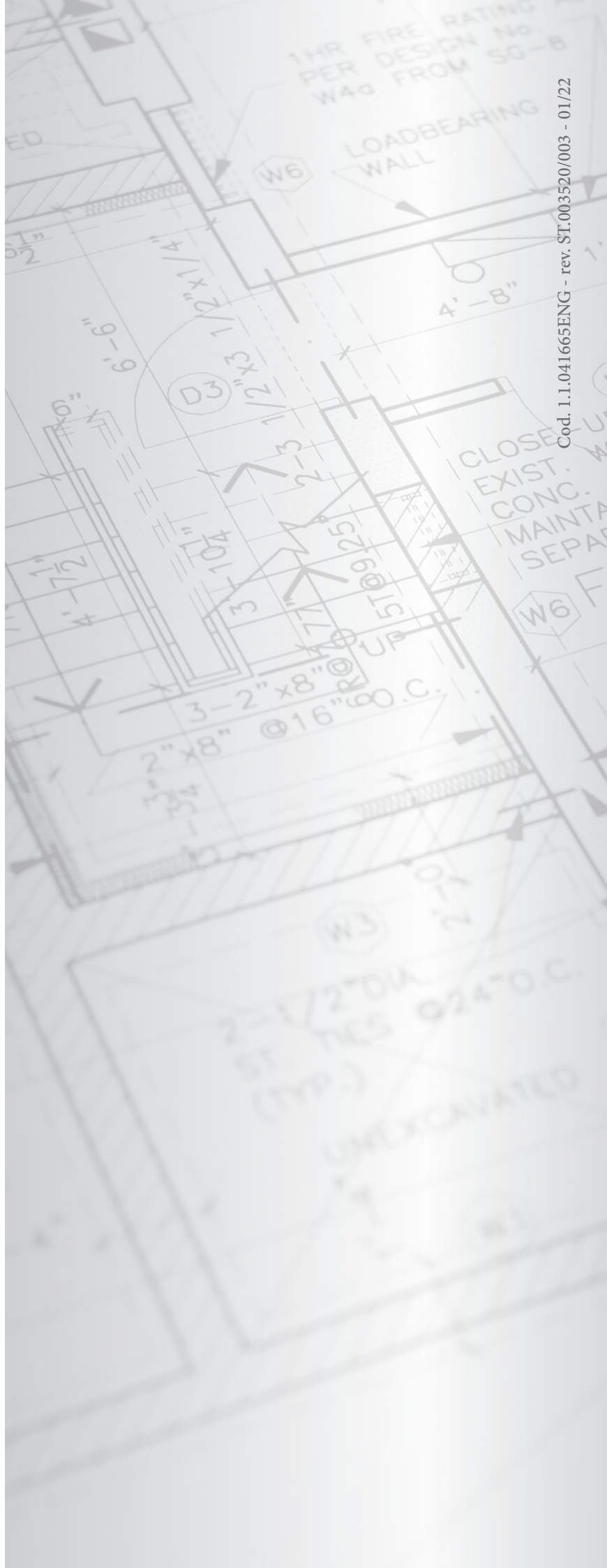
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**IMMERGAS**  
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Design, manufacture and post-sale assistance of gas  
boilers, gas water heaters and related accessories



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