IMMERGAS

Instruction and warning booklet IE

VICTRIX 50

1.034454IE

Dear Client,

Our compliments for having chosen a top-quality Immergas product, able to assure well-being and safety for a long period of time. As an Immergas customer you can also count on a qualified after-sales service, prepared and updated to guarantee constant efficiency of your boiler. Read the following pages carefully: you will be able to draw useful suggestions regarding the correct use of the appliance, the respect of which, will confirm your satisfaction for the Immergas product.

Contact our area authorised after-sales centre as soon as possible to request commissioning. Our technician will verify the correct functioning conditions; he will perform the necessary calibrations and will demonstrate the correct use of the generator.

For any interventions or routine maintenance contact Immergas Authorised Centres: these have original spare parts and boast of specific preparation directly from the manufacturer.

General recommendations

All Immergas products are protected with suitable transport packaging.

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

The instruction book is an integral and essential part of the product and must be consigned to the new user also in the case of transfer or succession of ownership.

It must be stored with care and consulted carefully, as all of the warnings provide important safety indications for installation, use and maintenance stages.

This instruction manual provides technical information for installing the Immergas kit. As for the other issues related to the kit installation (e.g.: safety in worksites, environment protection, injuries prevention), comply with the provisions specified in the current regulation and technical standards.

In compliance with legislation in force, the systems must be designed by qualified professionals, within the dimensional limits established by the Law. Installation and maintenance must be performed in compliance with the regulations in force, according to the manufacturer's instructions and by professionally qualified staff, intending staff with specific technical skills in the plant sector, as envisioned by the Law.

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

Maintenance must be carried out by skilled technical staff. The Immergas Authorised After-sales Service represents a guarantee of qualifications and professionalism.

The appliance must only be destined for the use for which it has been expressly declared. Any other use will be considered improper and therefore potentially dangerous.

If errors occur during installation, operation and maintenance, due to non compliance with technical laws in force, standards or instructions contained in this book (or however supplied by the manufacturer), the manufacturer is excluded from any contractual and extra-contractual liability for any damages and the appliance warranty is invalidated.

For further information regarding legislative and statutory provisions relative to the installation of gas heat generators, consult the Immergas site at the following address: www.immergas.com

CE DECLARATION OF CONFORMITY

Under the "Gas Appliances" Directive 2009/142/EC, "Electromagnetic Compatibility (EMC)" Directive 2004/108/EC, "Boiler Efficiency" Directive 92/42/EC and "Low Voltage" Directive 2006/95/EC.
The Manufacturer: Immergas S.p.A. v. Cisa Ligure n° 95 42041 Brescello (RE)

Mauro Guareschi

Research & Development Director

DECLARES THAT: the Immergas boiler model:
Victrix 50
is in compliance with the same European Community Directives

Signature:

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1 BOILER INSTALLATION

1.1 INSTALLATION RECOMMENDATIONS.

Only professionally qualified heating/plumbing technicians are authorised to install Immergas gas appliances.
The "Victrix 50" range boilers can be installed outdoors or in a suitable room (heating control unit).
The place of installation of the appliance and relative Immergas accessories must have suitable features (technical and structural) such to allow (always in safety, efficiency and easy 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.

Attention: these boilers must be used to heat rooms and the like; they are for heating water to a temperature lower that boiling point at atmospheric pressure. Therefore, they must be connected to a heating system that is suitable for their performance and their power.

Before installing the appliance, ensure that it is delivered in perfect condition; if in doubt, contact the supplier immediately.
Packaging materials (staples, nails, plastic bags, polystyrene foam, etc.) constitute a potential hazard and must be kept out of the reach of children.
Keep all flammable objects away from the appliance (paper, rags, plastic, polystyrene, etc.).
In the event of malfunctions, faults or incorrect operation, turn the appliance off immediately and contact a qualified technician (e.g. the Immergas Technical After-Sales Centre, which has specifically trained staff and original spare parts).
Do not attempt to modify or repair the appliance alone.
Failure to comply with the above implies personal responsibility and invalidates the warranty.

- Installation Standards: these boilers have not been designed to be installed on plinths or floors (Fig. 1-1), but for wall installation. The wall surface must be smooth, without any protrusions or recesses enabling access to the rear part. Wall mounting of the boiler must guarantee stable and efficient support for the boiler. *The plugs (standard supply) are to be used only in conjunction with the mounting brackets or fixing template to fix the appliance to the wall;* they only ensure adequate support if inserted correctly (according to technical standards) in walls made of solid or semi-hollow brick or block. In the case of walls made from hollow brick or block, partitions with limited static properties, or in any case walls other than those indicated, a static test must be carried out to ensure adequate support. 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 relative mounting bracket to the wall.

1.2 POSITION OF THE APPLIANCES.

The "Victrix 50" range boilers can be installed:

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

These places must be destined exclusively for heating plants.

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 an individual appliance: the minimum height of the room must be 2 m.

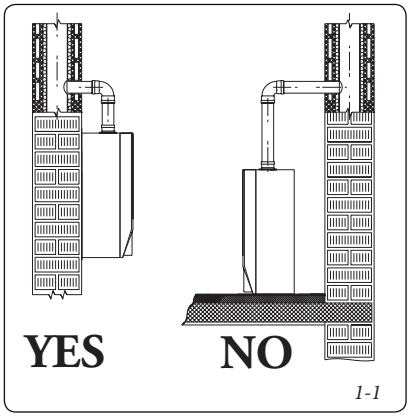
Installation of several appliances in cascade (2 or 3 Victrix 50): considering the dimensions of the boiler, of the flue collector (to be installed with gradient of 3%) and hydraulic collectors, the minimum height of the room must be 2.30 m.

The above-mentioned heights allow the correct installation of the appliances.

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.

Several appliances, not connected to each other, 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.

Installation in cascade (2 or 3 Victrix 50): see the indications supplied in par. 1.13.



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1.3 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.

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 ≥ Q x 10)
   S > 510 cm² for No. 1 individual Victrix 50
   S > 1,020 cm² for No. 2 Victrix 50 in cascade
   S > 1,530 cm² for No. 3 Victrix 50 in cascade
b) basements and underground rooms up to a height of -5 m from the reference surface (S ≥ Q x 15)
   S > 765 cm² for No. 1 individual Victrix 50
   S > 1,530 cm² for No. 2 Victrix 50 in cascade
   S > 2,290 cm² for No. 3 Victrix 50 in cascade
c) underground rooms at quota between -5 m and -10 m from the reference surface (S ≥ Q x 20 with a minimum of 5000 cm²)
   S > 5000 cm² for all configurations

In all cases each opening must not have a net surface area less than 100 cm².

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 cm² in the case of natural gas and must not be less than 5000 cm² in the case of L.P.G.

Discharge of combustion products.
The boiler must be connected to an individual safe and efficient chimney.

N.B.: in the event of individual installation, "Victrix 50" can be combined with the System for Ø80 mm flexible piping for condensing boilers (par. 1.12).

As an alternative, the boiler can discharge combustion products directly to the outside, using the relevant flue exhaust kit described in this book (par. 1.9, 1.10 and 1.11).

If the "Victrix 50" boilers are installed in cascade, the fume collector (supplied by Immergas) must be connected to a correctly dimensioned and efficient chimney (par. 1.13).

1.4 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.

1.5 ANTI-FREEZE PROTECTION.

Minimum temperature -5°C. The boiler comes as standard with an anti-freeze function that activates the pump and burner when the system water temperature in the boiler falls below 3°C.
The anti-freeze function is only guaranteed if:
- the boiler is correctly connected to gas and electricity power supply circuits;
- the boiler is powered constantly;
- the main switch is engaged;
- the boiler is not in failed ignition block;
- the boiler essential components are not faulty.

In these conditions the boiler is protected against freezing to an environmental 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:
- protects the central heating circuit from freezing by introducing a top quality anti-freeze liquid into this circuit, which is not noxious to health. The instructions of the manufacturer of this liquid must be followed scrupulously regarding the percentage necessary with respect to the minimum temperature at which the system must be kept. An aqueous solution must be made with potential pollution class of water 2.

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

For life and possible disposal, follow the supplier's instructions.
- Protect the condensate drain trap and P.C.B. against freezing by using an accessory that is 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 the power supply circuit;*
- *the main switch is engaged;*
- *the anti-freezing 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.

1.6 MAIN DIMENSIONS.

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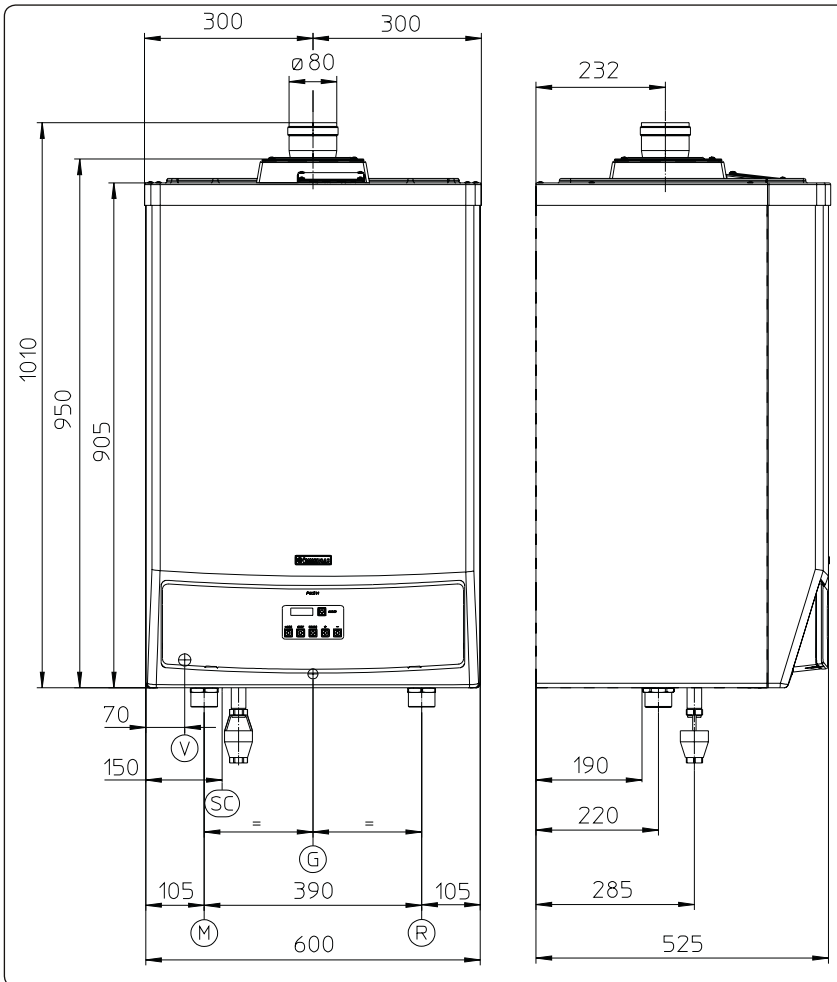

Key:
V - Electrical connection
G - Gas supply
R - System return
M - System flow
SC - Condensate drain (minimum internal diameter Ø13 mm)

Height (mm)	Width (mm)	Depth (mm)
950	600	525
Connections		
GAS	SYSTEM	
G	R	M
3/4"	1"1/2	1"1/2

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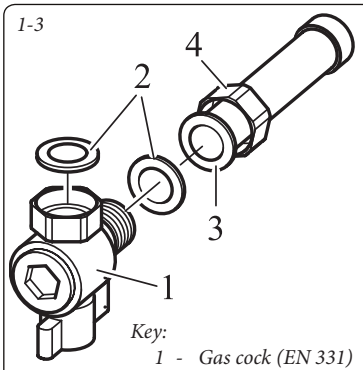

Key:
1 - Gas cock (EN 331)
2 - Flat gasket
3 - Gas pipe
4 - Nut

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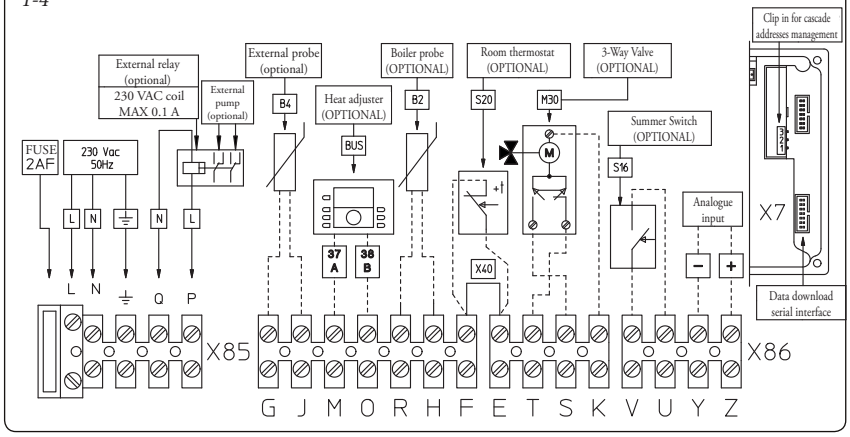

1.7 ATTACHMENTS.

Gas connection (Appliance category $II_{2H3B/P}$).
Our boilers are built to function with methane gas (G20) and L.P.G. The supply piping must be the same or greater than the 3/4" G boiler fitting.

N.B.: the gas supply pipe must be suitably dimensioned according to current regulations in order to guarantee correct gas flow to the boiler even in conditions of maximum generator output and to guarantee appliance efficiency (technical specifications). The coupling system must conform to standards.
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 LPG) pressure must also be checked according to the type used in the boiler, which must be in compliance, as insufficient levels can reduce generator output and cause malfunctions.
Ensure correct gas cock connection by following the mounting instructions (Fig. 1-3).
A manual cut-off valve with quick closure manoeuvre for 90° rotation and end run stops in the all open or all closed positions must be installed on the gas supply pipe in a visible and easily reachable position outside the room where the appliance is installed.

N.B.: the internal gas supply system must be in compliance with the provisions of the local Laws in force.

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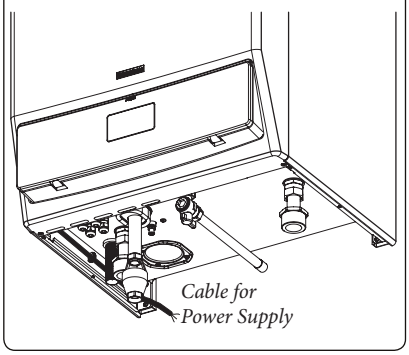


Fuel gas quality. The appliance has been designed to operate with gas free of impurities; otherwise it is advisable to fit special filters upstream from the appliance to restore the purity of the gas.

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 casing functioning anomalies.
- Due to the composition of the LPG mixture, layering of the mixture components may occur during the period of storage in the tanks. This can cause a variation in the heating power of the mixture delivered to the appliance, with subsequent change in its performance.

Hydraulic connection.

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

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

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 given in the regulations 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 discharge funnel that is present in the boiler but not installed and then connected to a sewer. Otherwise, the manufacturer declines any responsibility in case of flooding if the drain valve cuts in.

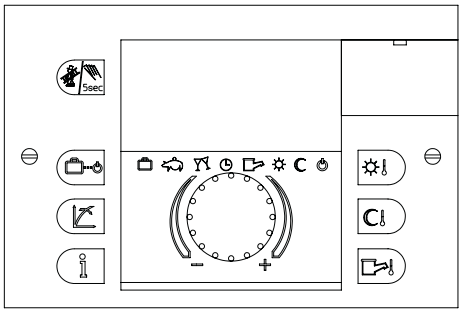
Important: *to preserve the duration of appliance efficiency features, we recommend installation of a suitable device for water treatment in presence of water whose characteristics can lead to the deposit of lime scale.*

Condensate drain. To drain the condensate produced by the appliance, it is necessary to connect to the drainage system by means of acid condensate resistant pipes having an internal diameter 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, ensure that the condensate can be correctly removed. Also, comply with national and local regulations on discharging waste waters.

Electrical connection: The electrical system must be made in compliance with the local laws in force. The boiler has an IPX5D protection rating for the entire appliance. Electrical safety of the appliance is reached only when it is correctly connected to an efficient earthing system as specified by current safety standards.

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

Also ensure that the electrical installation corresponds to maximum absorbed power specifications as shown on the boiler data-plate. Boilers are supplied complete with an "X" type power cable without plug. 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 an omnipolar circuit breaker with class III over-voltage category. The main switch must be installed outside the rooms in a position that is indicated and accessible. When replacing the power supply cable, contact a qualified technician (e.g. the Immergas After-Sales Technical Assistance Service). The power cable must be laid as shown in the figure below.
In the event of mains fuse replacement on the connection terminal board, use a 2A fast fuse. For the main power supply to the appliance, never use adapters, multiple sockets or extension leads. If during connection the L-N polarities are not respected, the boiler does not detect flame presence and goes into ignition block.



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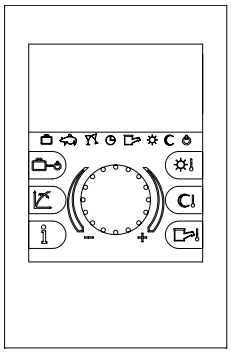

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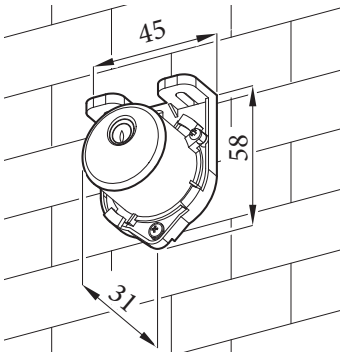

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Attention: also in the case in which the L-N polarity is not respected, if there is temporary residual voltage exceeding 30V on the neutral, the boiler could function all the same (but only temporarily). Measure the voltage using appropriate instruments, without trusting the voltage tester screwdriver.

1.8 COMMANDS FOR HEAT ADJUSTMENT (OPTIONAL).

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.

- The cascade and zone regulator (Fig. 1-6) 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;
  - to set two room temperature values: one for day (comfort temperature) and one for night (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. 1-7). 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 remote panel enables the system flow temperature to be adjusted to the actual needs of the room being heated, in order to obtain the desired room temperature with extreme precision and therefore with evident saving in running costs. 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.
- External temperature probe (Fig. 1-8). 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 external probe always operates when connected, regardless of the presence or type of heat adjuster used and can work in combination with both heat adjusters. The electric connection of the external probe must take place on clamps G and J on the X86 connection of the boiler. (Fig. 1-4).

Cascade and zone regulator electric connection or On/off chrono-thermostat (Optional). *The operations described below must be performed after having removed the voltage from the appliance.*
Any thermostat or On/Off environment chrono-thermostat must be connected to clamps "E" and "F" eliminating jumper X40 (Fig. 1-4). Make sure that the On/Off thermostat contact is of the "clean" type, i.e. independent of the mains supply, otherwise the P.C.B. would be damaged. Any cascade and zone regulator must be connected using clamps 37 and 38 to clamps "M" and "O" on the X86 connection terminal board (in boiler) respecting the polarity eliminating jumper X40, (Fig. 1-4) *the connection with incorrect polarity, even if not damaging the heat adjuster, does not allow its functioning.*

Important: 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, varying the maximum flow temperature of the boiler and setting a value between 20 e 85°C. To vary the maximum flow temperature of the boiler, modify the maximum flow temperature of the boiler of parameter No. 4 according to the "parameters mode" procedure. In this situation it is good practice to insert a safety device in series with the power supply and boiler. This device is made up from a thermostat with a temperature limit of 55°C. The thermostat must be positioned on the system flow pipe at a distance of over 2 metres from the boiler.

1.9 INSTALLATION OF THE AIR INTAKE AND FLUE EXHAUST TERMINALS.

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

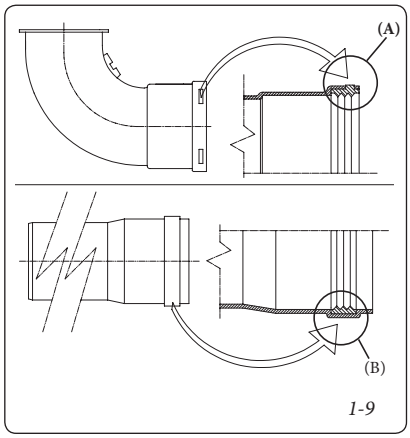
Attention: the boiler must be installed exclusively with an original Immergas "Green Range" air intake and fume extraction system in plastic, as envisioned by Standard in force. This system can be identified by an identification mark and special distinctive marking bearing the note: "only for condensing boilers".

For type B_{23} boilers:

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

- Resistance factors and equivalent lengths. Each flue extraction system component is designed with a Resistance Factor based on preliminary tests and specified in the table below. The Resistance Factor for individual components is independent from the type of boiler on which it is installed and has a dimensionless size. It is however, conditioned by the temperature of the fluids that pass through the pipe and therefore, varies according to applications for air intake or flue exhaust. Each individual component has a resistance corresponding to a certain length in metres of pipe with the same diameter; the so-called equivalent length. *All boilers have an experimentally obtainable maximum Resistance Factor equal to 100.* The maximum Resistance Factor allowed corresponds to the resistance encountered with the maximum allowed pipe length for each type of Terminal Kit. This information allows calculations to be made to verify the possibility of setting up various flue configurations.

Gasket for "green series" flue extraction elements. In the event component lubrication (already carried out by the manufacturer) is not sufficient, remove the residual lubricant using a dry cloth, then to ease fitting spread the elements with common or industrial talc.



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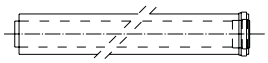
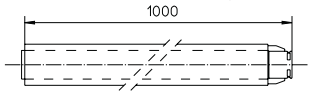
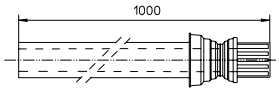
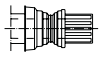
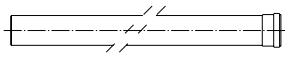
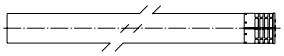
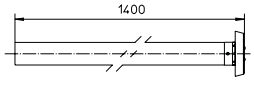
Tables of Resistance Factors and Equivalent Lengths.

DUCT TYPE	Resistance Factor (R)	Equivalent length in m of concentric pipe Ø80/125 	Equivalent length in metres of pipe Ø80 
Concentric pipe Ø80/125 m 1 	Intake and exhaust 4.9	**m 1.0**	Exhaust m 4.0
Concentric bend 90° Ø80/125 	Intake and exhaust 9.5	**m 1.9**	Exhaust m 7.9
Concentric bend 45° Ø80/125 	Intake and exhaust 6.8	**m 1.4**	Exhaust m 5.6
Terminal complete with concentric horizontal intake-exhaust Ø80/125 	Intake and exhaust 26.8	**m 5.5**	Exhaust m 22.3
Concentric horizontal intake-exhaust terminal Ø80/125 	Intake and exhaust 22.9	**m 4.7**	Exhaust m 19.0
Terminal complete with concentric vertical intake-exhaust Ø80/125 	Intake and exhaust 16.7	**m 3.4**	Exhaust m 13.9
Concentric vertical intake-exhaust terminal Ø80/125 	Intake and exhaust 13.3	**m 2.7**	Exhaust m 11.0
Pipe Ø80, 1 m 	Exhaust 1.2	m 0.24	**Exhaust m 1.0**
Complete exhaust terminal Ø80, 1 m 	Exhaust 3.1	m 0.63	**Exhaust m 2.6**
Exhaust terminal Ø80 	Exhaust 1.9	m 0.38	**Exhaust m 1.6**
Bend 90° Ø80 	Exhaust 2.6	m 0.53	**Exhaust m 2.1**
Bend 45° Ø80 	Exhaust 1.6	m 0.32	**Exhaust m 1.3**
Terminal complete with vertical exhaust Ø80 	Exhaust 3.6	m 0.73	**Exhaust m 3**

1.10 BOILER INSTALLATION IN TYPE "C" CONFIGURATION.

The "Victrix 50" boiler leaves the factory with "B_{23}" configuration (open chamber and fan assisted), to change the configuration of the boiler to type "C" (sealed chamber and fan assisted), disassemble the Ø80 adapter, the bracket and the gasket present on the boiler cover.

Horizontal intake-exhaust kit Ø80/125

Kit assembly (Fig. 1-10): install the Ø80/125 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 Ø80/125 (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.

- Coupling extension pipes and concentric elbows Ø80/125. To push-fit extensions with other elements of the flue extraction elements, operate 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. This will ensure sealing and joining of the elements correctly.

The kit Ø80/125 can be installed with the rear, right side, left side or front outlet.

- Extensions for horizontal kit. The horizontal intake-exhaust kit Ø80/125 can be extended up to a *max. horizontal distance of 14 m* (Fig. 1-11) including the terminal with grid and excluding the concentric bend leaving the boiler. This configuration corresponds to a resistance factor of 100. In these cases the special extensions must be requested.

N.B.: during the installation of pipes it is necessary to keep a minimum inclination of 3% and a dividing strip with gusset must be installed every 3 metres.

- External grille (Fig. 1-12). The Ø80/125 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.

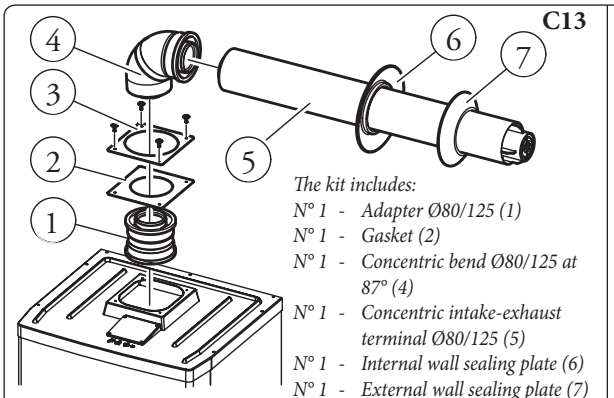
N.B.: for safety purposes, do not obstruct the boiler intake-exhaust terminal, even temporarily.

Vertical kit with aluminium tile Ø80/125.

Kit assembly (Fig. 1-13): install the Ø80/125 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) Imitation aluminium tile installation: replace the tile with the aluminium sheet (5), shaping it to ensure that rainwater runs off. Position the fixed half-shell (6) on the aluminium tile and insert the intake-exhaust pipe (7). Fit the Ø80/125 concentric terminal pipe with the male end (smooth) to the female end of the adapter (1) (with lip gaskets) 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.

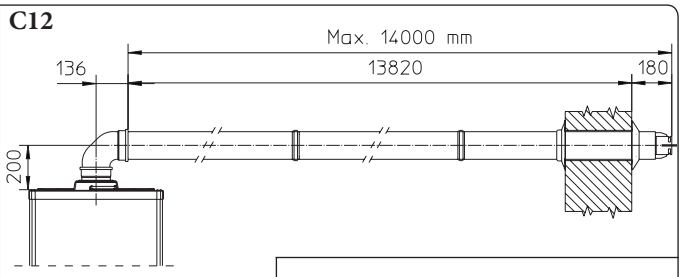
- Coupling extension pipes and concentric elbows Ø80/125. To snap-fit extensions with other elements of the flue extraction elements, operate as follows: Install the concentric pipe or elbow with the male side (smooth) on the female section (with lip seal) to the end stop on the previously installed element in order to ensure sealing efficiency of the coupling.

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

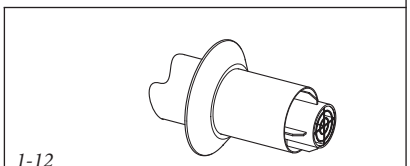


The kit includes:
N° 1 - Adapter Ø80/125 (1)
N° 1 - Gasket (2)
N° 1 - Concentric bend Ø80/125 at 87° (4)
N° 1 - Concentric intake-exhaust terminal Ø80/125 (5)
N° 1 - Internal wall sealing plate (6)
N° 1 - External wall sealing plate (7)

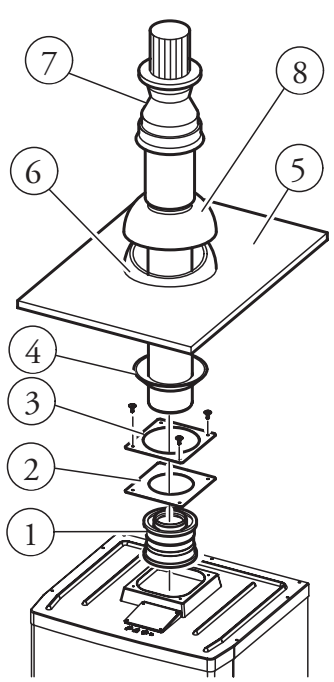
1-10



1-11

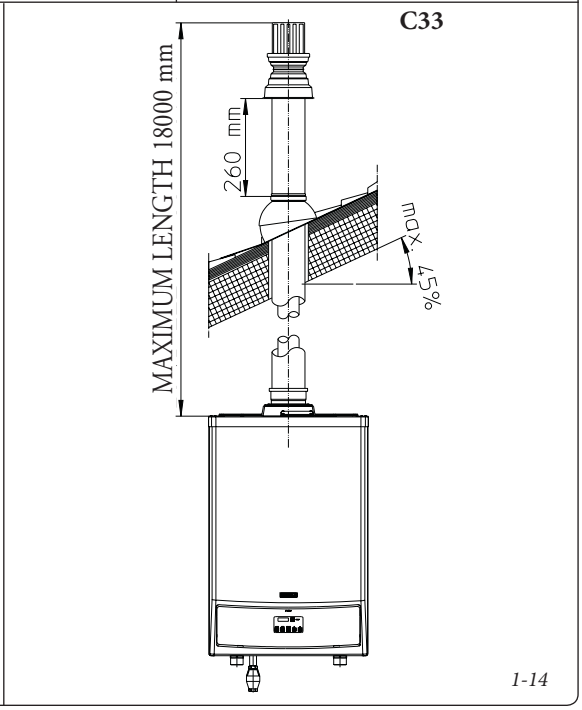


1-12



The kit includes:
N° 1 - Adapter Ø80/125 (1)
N° 1 - Gasket (2)
N° 1 - Wall sealing plate (4)
N° 1 - Aluminium tile (5)
N° 1 - Fixed half-shell (6)
N° 1 - Concentric intake-exhaust terminal Ø80/125 (7)
N° 1 - Mobile half-shell (8)

1-13



1-14

This specific terminal enables flue exhaust and air intake, necessary for combustion, in a vertical direction.

The Ø80/125 vertical kit with aluminium tile enables installation on terraces and roofs with a maximum slope between 25% and 45% (24°), the height between the terminal cap and half-shell (260 mm) must always be respected.

The vertical kit with this configuration can be extended up to a *maximum of 18* vertical rectilinear metres (Fig. 1-14), including the terminal. This configuration corresponds to a resistance factor of 100. In this case the special extensions must be requested.

1.11 BOILER INSTALLATION IN TYPE "B_{23}" CONFIGURATION.

The "Victrix 50" boiler leaves the factory with type "B_{23}" configuration (open chamber and fan assisted).

Air intake takes place directly from the environment in which the boiler is installed via relevant slots made in the back of boiler and flue exhaust in individual flue or to the outside. The boiler in this configuration the boiler is classified as type B_{23}.

With this configuration:

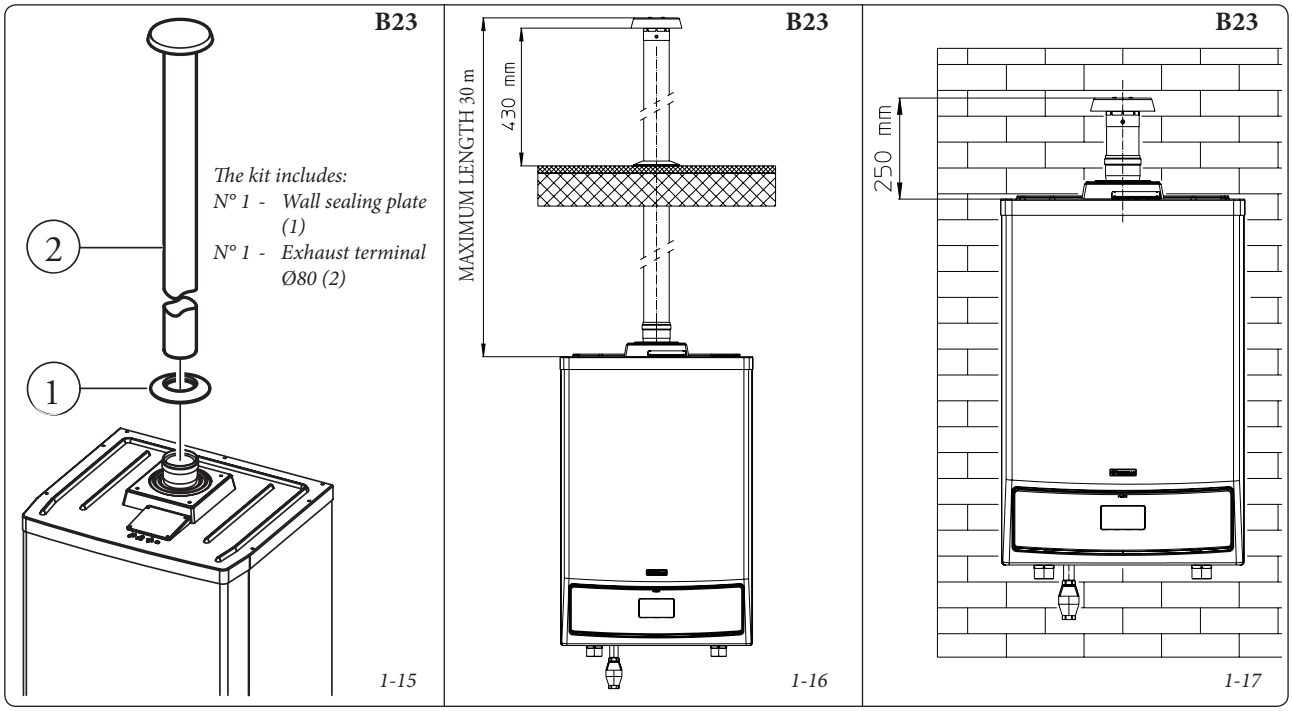
- air intake takes place directly from the room in which the appliance is installed;
- the flue exhaust must be connected to its own individual flue or channelled directly into the external atmosphere.
- Type B open chamber boilers must not be installed in places where commercial, artisan or industrial 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 damaging for the components of the appliance and jeopardise functioning.

Vertical kit Ø80.

Kit assembly (Fig. 1-15): install the Ø80 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.

- Coupling of extension pipes and elbows. To install push-fitting extensions with other elements of the flue, proceed as follows: Couple the pipe or elbow with the male side (smooth) in the female side (with lip seal) to the end stop on the previously installed element. This will ensure sealing efficiency of the coupling.
- Extensions for vertical exhaust kits. The maximum vertical straight length (without bends), used for Ø80 exhaust pipes*is 30 metres* (Fig. 1-16).

Using the Ø80 vertical terminal for direct discharge of the combustion products, the terminal must be shortened (see quotas fig. 1-17). The wall sealing plate (1) must also be inserted in this case going up to stop on the boiler cover.



Ø80 horizontal kit with wall flue exhaust.
Kit assembly (Fig. 1-18): install the bend Ø80 (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.

- Coupling of extension pipes and elbows. To install push-fitting extensions with other elements of the flue, proceed as follows: Couple the pipe or elbow with the male side (smooth) in the female side (with lip seal) to the end stop on the previously installed element. This will ensure sealing efficiency of the coupling.

Horizontal kit Ø80 with exhaust in flue. Kit assembly (Fig. 1-20): install the bend Ø80 (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.

- Coupling of extension pipes and elbows. To install push-fitting extensions with other elements of the flue, proceed as follows: Couple the pipe or elbow with the male side (smooth) in the female side (with lip seal) to the end stop on the previously installed element. This will ensure sealing efficiency of the coupling.
- Extensions for exhaust kits. The maximum horizontal straight length (without bend in exhaust), used for Ø80 exhaust pipes *is 30 metres* (Fig. 1-21).

N.B.: to favour the removal of possible condensate forming in the exhaust pipe, tilt the pipes towards the boiler with a min. slope of 1.5%. When installing the Ø80 ducts, a section clamp with pin must be installed every 3 metres.

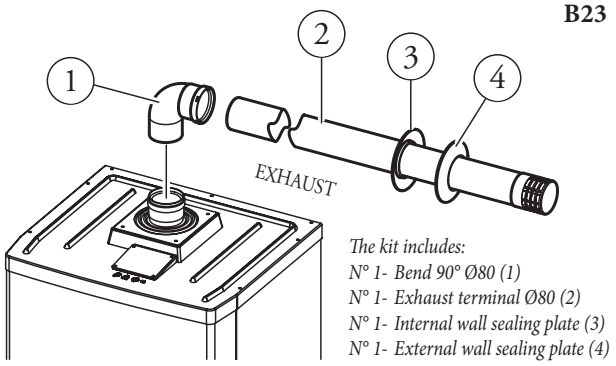
1.12 DUCTING OF EXISTING FLUES.

Ducting is an operation through which, within the context of restructuring a system and with the introduction of one or more special ducts, a new system is executed for evacuating the combustion products of a gas appliance, starting from an existing flue (or a chimney) or a technical slot. Ducting requires the use of ducts declared to be suitable for the purpose by the manufacturer, following the installation and user instructions, provided by the manufacturer and the requirements of the standards in force.

Immergas ducting system Ø80. *The "Green Series" Ø80 flexible ducting system must only be used with Immergas condensing boilers.*

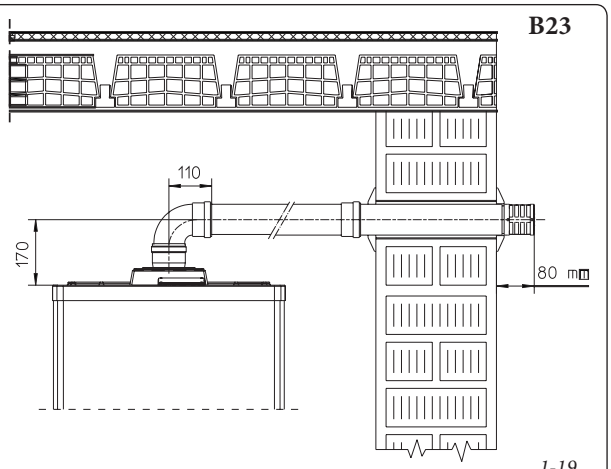
In any case, ducting operations must respect the provisions contained in the standard and in current technical regulations; in particular, the declaration of conformity must be compiled at the end of work and on commissioning of the ducted system. The instructions in the project or technical report must 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 (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 maximum length of that the Ø80 flexible ducted tract can run *is equal to 30 m*. This length is obtained considering the terminal complete with exhaust, 1m of Ø80 pipe in exhaust. The two 90° Ø80 bends on boiler outlet for connecting the ducting system and two direction changes of the flexible pipe inside the chimney/technical slot.

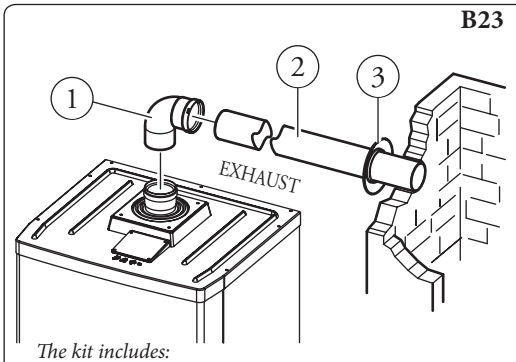


The kit includes:
N° 1- Bend 90° Ø80 (1)
N° 1- Exhaust terminal Ø80 (2)
N° 1- Internal wall sealing plate (3)
N° 1- External wall sealing plate (4)

1-18

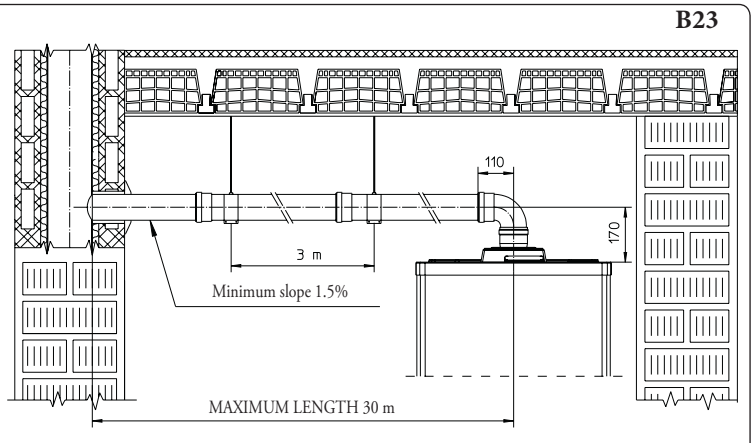


1-19

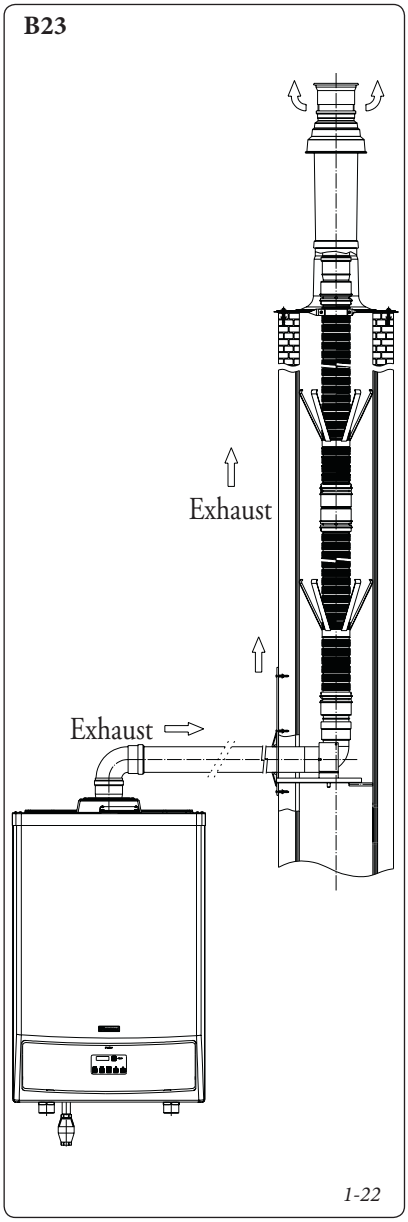


The kit includes:
N° 1 - Bend 90° Ø80 (1)
N° 1 - Exhaust pipe Ø80 (2)
N° 1 - Internal wall sealing plate (3)

1-20



1-21



1.13 FLUE EXHAUST WITH BOILERS IN CASCADE.

The "Victrix 50" boilers installed in cascade (set) composed of 2 or 3 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.

For correct assembly of the kit, the following indications must be considered.

- the distance between the boilers (2 or 3) must be 800 mm (Fig. 1-23);
- the boilers must be positioned on the same horizontal line;
- the Ø125 exhaust collector must have a minimum inclination of 3°;
- the discharge of the condensate water produced by the appliances must be made to flow into a sewer system;
- the flue gas evacuation collector kit cannot be installed outdoors (the pipes must not be exposed to the ultraviolet rays of the sun).

N.B.: check and if necessary regulate the heating capacity of each individual appliance (see heat output regulations par.).

Flue exhaust collector assembly (Fig. 1-23): for proper installation refer to the relative instructions sheets.

1.14 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.

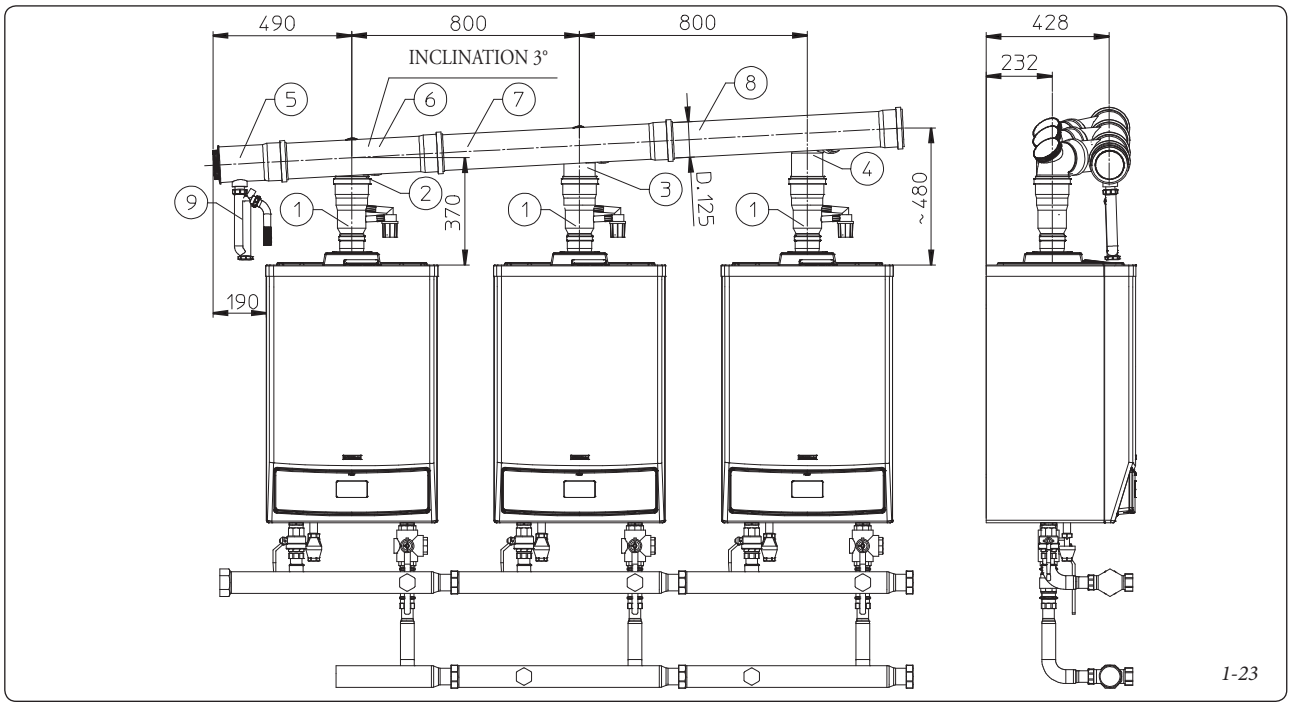
The boiler has a built-in automatic venting valve on the circulator. Check if the cap is loose. Open the radiator vent valves. Close radiator vent valves when only water escapes from them.

N.B.: 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*. Tighten the cap after the operation.

Attention: the "Victrix 5" 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.

1.15 FILLING THE CONDENSATE TRAP.

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.



1.16 GAS SYSTEM START-UP.

To start up the system, make reference to the Standard: 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 naked flames;
- bleed all air from pipelines;
- check that the internal system is properly sealed according to the regulations in force.

1.17 BOILER START UP (IGNITION).

For issue of the Declaration of Conformity provided for by Italian Law, the following must be performed for boiler start-up:

- check that the internal system is properly sealed according to the regulations in force;
- ensure that the type of gas used corresponds to boiler settings;
- switch the boiler on and ensure correct ignition;
- check that the no. of fan revs is that indicated in the book (Par. 3.21);
- ensure that the safety device is engaged in the event of gas supply failure and check activation time;
- check activation of the master switch located upstream from the boiler and in the boiler;
- check that the concentric intake-exhaust terminal (if fitted) is not blocked.

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

N.B.: *the boiler preliminary check must be carried out by a qualified technician. The conventional boiler warranty is valid as of the date of testing. The test certificate and warranty is issued to the user.*

1.18 CIRCULATION PUMP.

The "Victrix 50" series boilers are supplied with a built-in circulation pump with 3-position electric speed control. The boiler does not operate correctly with the circulation pump on first speed. To ensure optimal boiler operation, in the case of new systems (single pipe and module) it is recommended to use the pump at maximum speed. The circulation pump is already fitted with a capacitor.

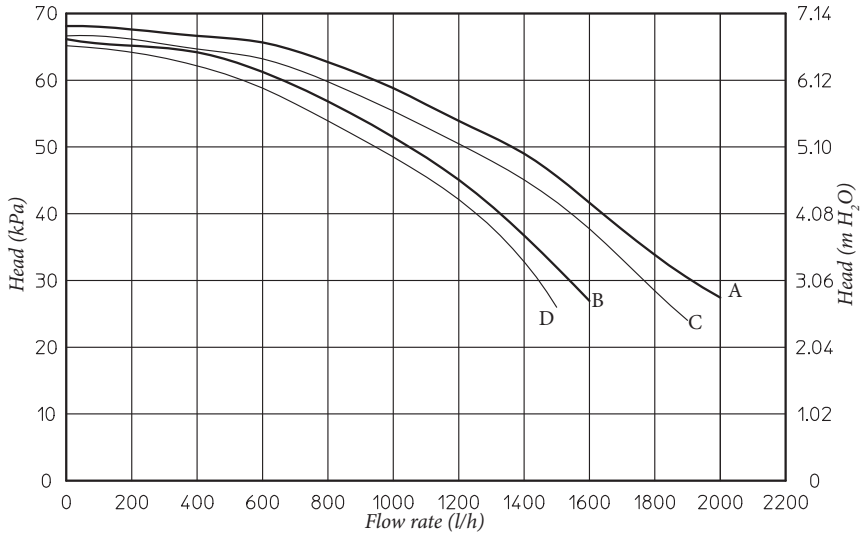
Pump release. If, after a prolonged period of inactivity, the circulation pump is blocked, unscrew the front cap and turn the motor shaft using a screwdriver. Take great care during this operation to avoid damage to the motor.

1.19 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 kit with -15°C resistance.
- 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 circuit breaker kit.
- Hydraulic connection collectors kit with two boilers in cascade.
- Additional boiler in cascade hydraulic collector kit.
- Flue exhaust collector kit with flue adjusting devices with two boilers in cascade.
- Flue exhaust collector kit with flue adjusting device with additional boiler in cascade.
- Ø80/125 horizontal concentric kit.
- Ø80/125 vertical concentric kit.
- Ø80 horizontal kit with flue exhaust.
- Ø80 horizontal terminal kit with wall flue exhaust.
- Ø80 vertical terminal kit.

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

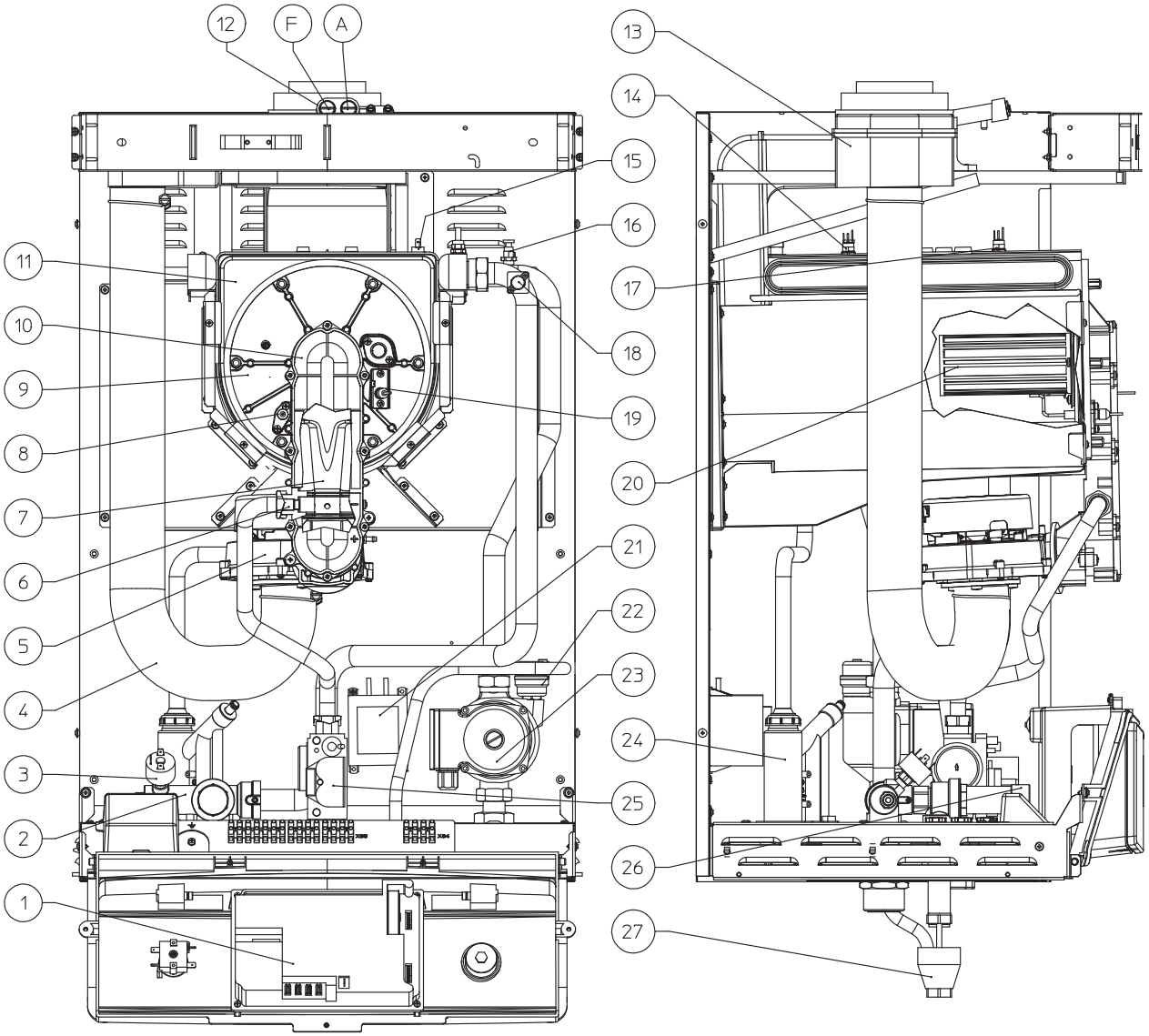
Head available to the system.



A = Head available to the system on the individual boiler maximum speed
B = Head available to the system on the individual boiler second speed
C = Head available to the system on maximum speed with non-return valve for boilers in cascade (set)
D = Head available to the system on second speed with non-return valve for boilers in cascade (set)

1-24

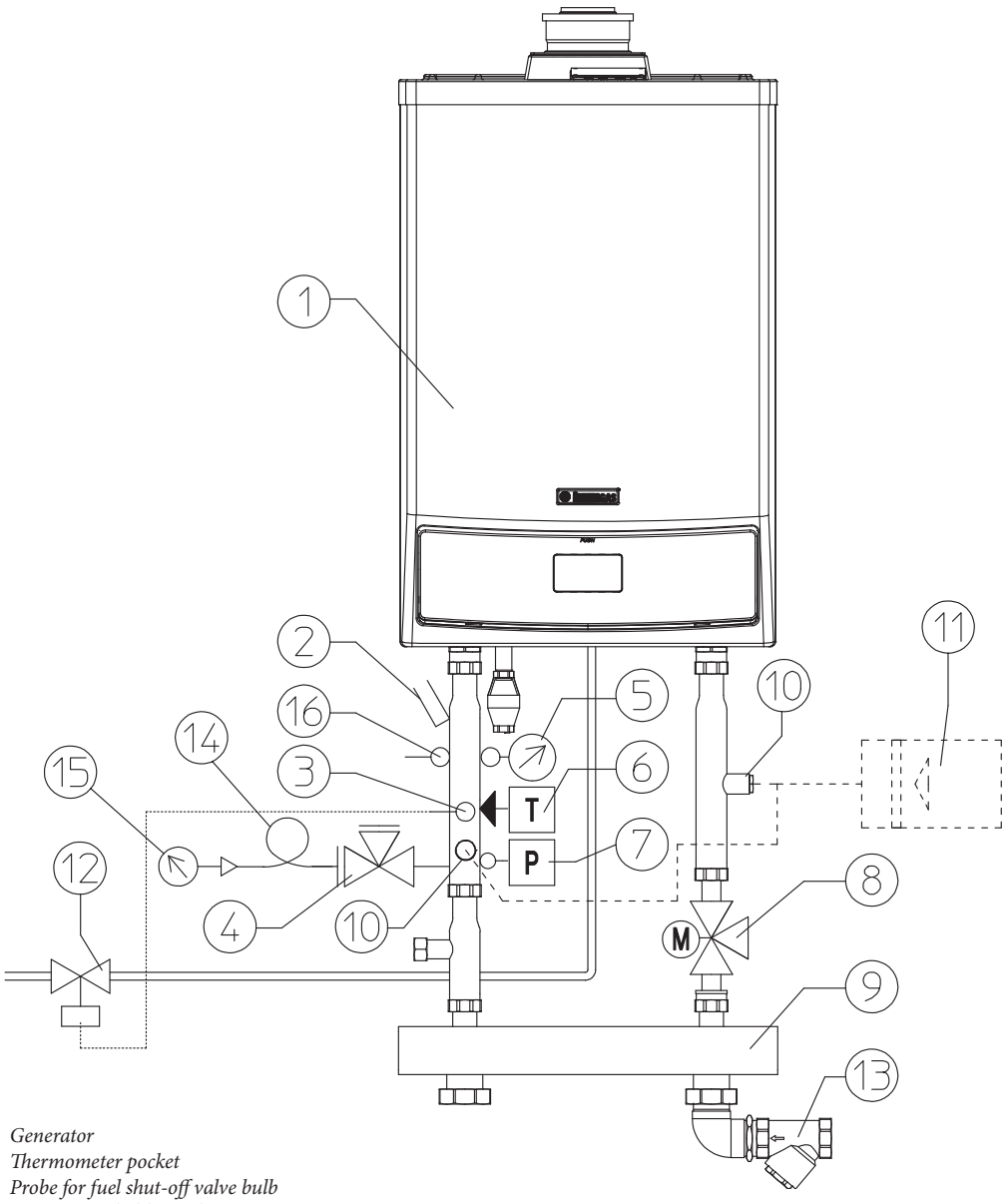
1.20 BOILER COMPONENTS.



Key:

1 - P.C.B.
2 - Flow collector
3 - System pressure switch
4 - Air intake pipe
5 - Air fan
6 - Gas nozzle
7 - Venturi pipe
8 - Detection electrode
9 - Condensation module cover
10 - Sleeve with seats for Venturi pipe
11 - Condensation module
12 - Sample points (air A) - (flue gases F)
13 - Flue hood
14 - System return regulation NTC probe
15 - Flue safety thermostat
16 - Manual air vent valve
17 - System flow regulation NTC probe
18 - Over-heating safety thermostat
19 - Ignition electrode
20 - Burner
21 - Current transformer
22 - Air vent valve
23 - Pump
24 - Condensate siphon
25 - Gas valve
26 - 4 bar safety valve
27 - Draining funnel

1.21 HYDRAULIC DIAGRAM CON OPTIONAL.



Key:

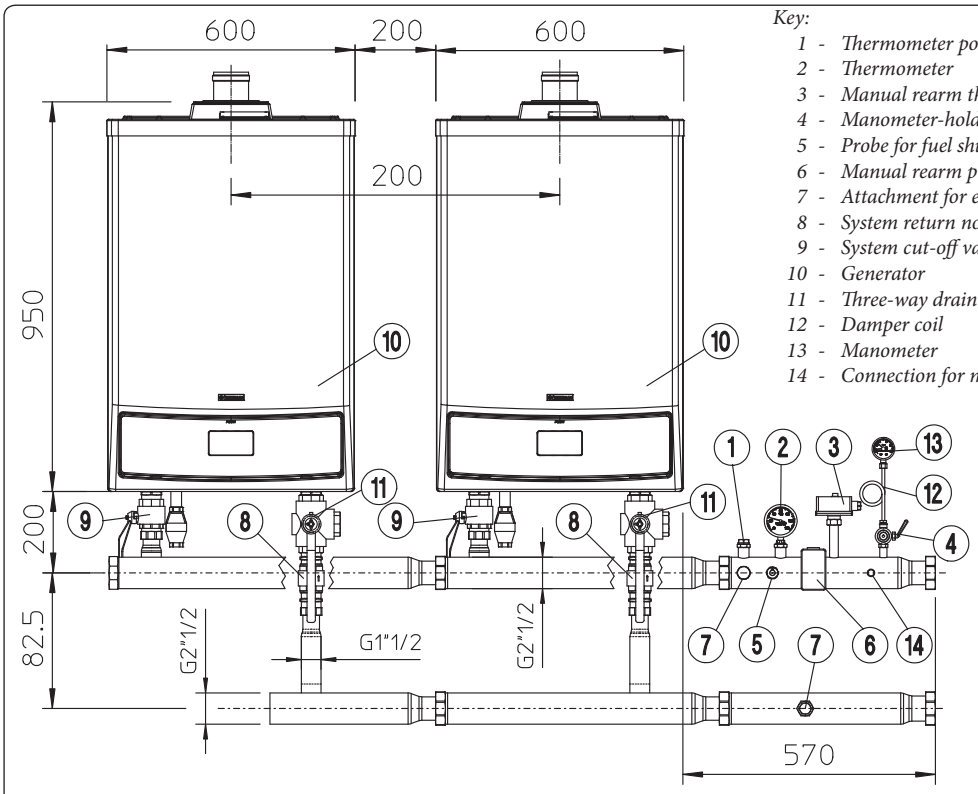
1 - Generator
2 - Thermometer pocket
3 - Probe for fuel shut-off valve bulb
4 - Manometer-holder cock
5 - Thermometer
6 - Manual rearm thermostat
7 - Manual rearm pressure switch
8 - Boiler connection 3-way valve
9 - Hydraulic/mixing collector
10 - Attachment for expansion vessel
11 - Expansion vessel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

1-26

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 arranged as described in the installation instructions. Whenever the generators are not installed in set 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 Immergas original set and safety kits. Immergas S.p.a. declines all liability whenever the installer does not use the devices and Immergas original kits or uses them improperly.

1.22 HYDRAULIC DIAGRAM FOR NO. 2 BOILERS IN CASCADE WITH OPTIONAL.

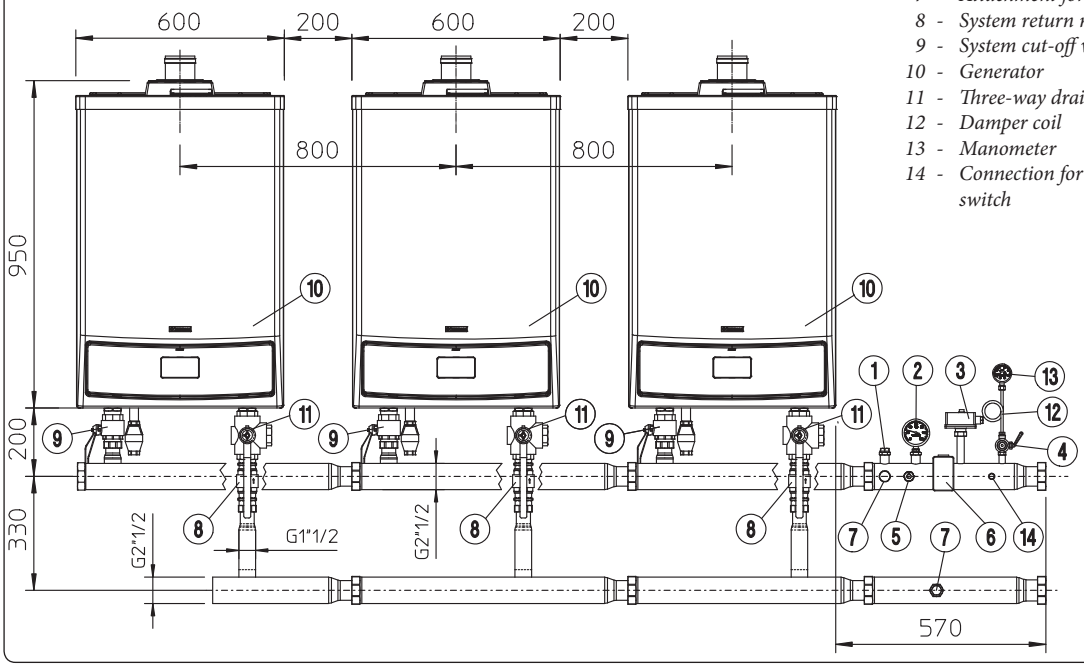


Key:
1 - Thermometer pocket
2 - Thermometer
3 - Manual rearm thermostat
4 - Manometer-holder cock
5 - Probe for fuel shut-off valve bulb
6 - Manual rearm pressure switch
7 - Attachment for expansion vessel
8 - System return non-return valve
9 - System cut-off valves
10 - Generator
11 - Three-way draining valve
12 - Damper coil
13 - Manometer
14 - Connection for minimum pressure switch

1-27

Attention: the modular boilers, i.e. installed in cascade (set) with an Immergas original connection kit, must be considered a unique appliance, which assumes the serial number (factory number) of the boiler nearest to the safety devices.

1.23 HYDRAULIC DIAGRAM FOR NO. 3 BOILERS IN CASCADE WITH OPTIONAL.



Key:
1 - Thermometer pocket
2 - Thermometer
3 - Manual rearm thermostat
4 - Manometer-holder cock
5 - Probe for fuel shut-off valve bulb
6 - Manual rearm pressure switch
7 - Attachment for expansion vessel
8 - System return non-return valve
9 - System cut-off valves
10 - Generator
11 - Three-way draining valve
12 - Damper coil
13 - Manometer
14 - Connection for minimum pressure switch

1-28

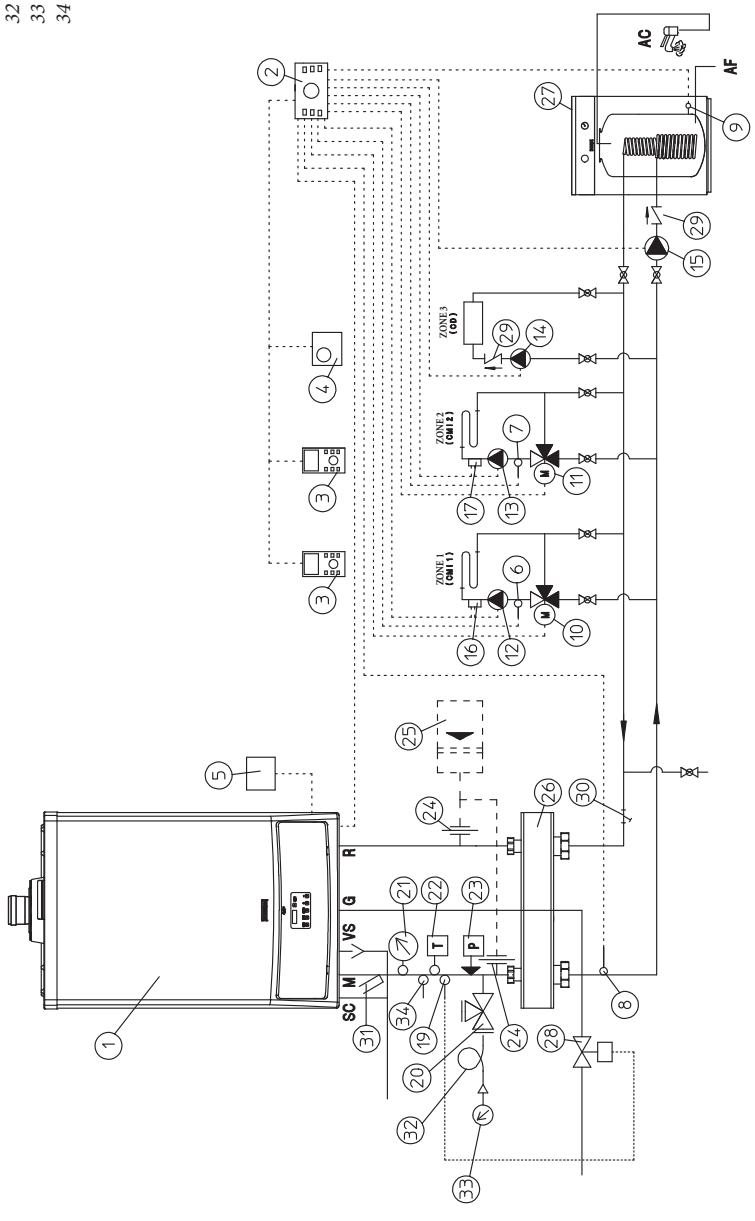
Attention: the modular boilers, i.e. installed in cascade (set) with an Immergas original connection kit, must be considered a unique appliance, which assumes the serial number (factory number) of the boiler nearest to the safety devices.

N.B.: before closing one or both the system cut-off cocks (9), the boiler must be switched off.

1.24 INSTALLATION EXAMPLES OF INDIVIDUAL BOILER.

Key:

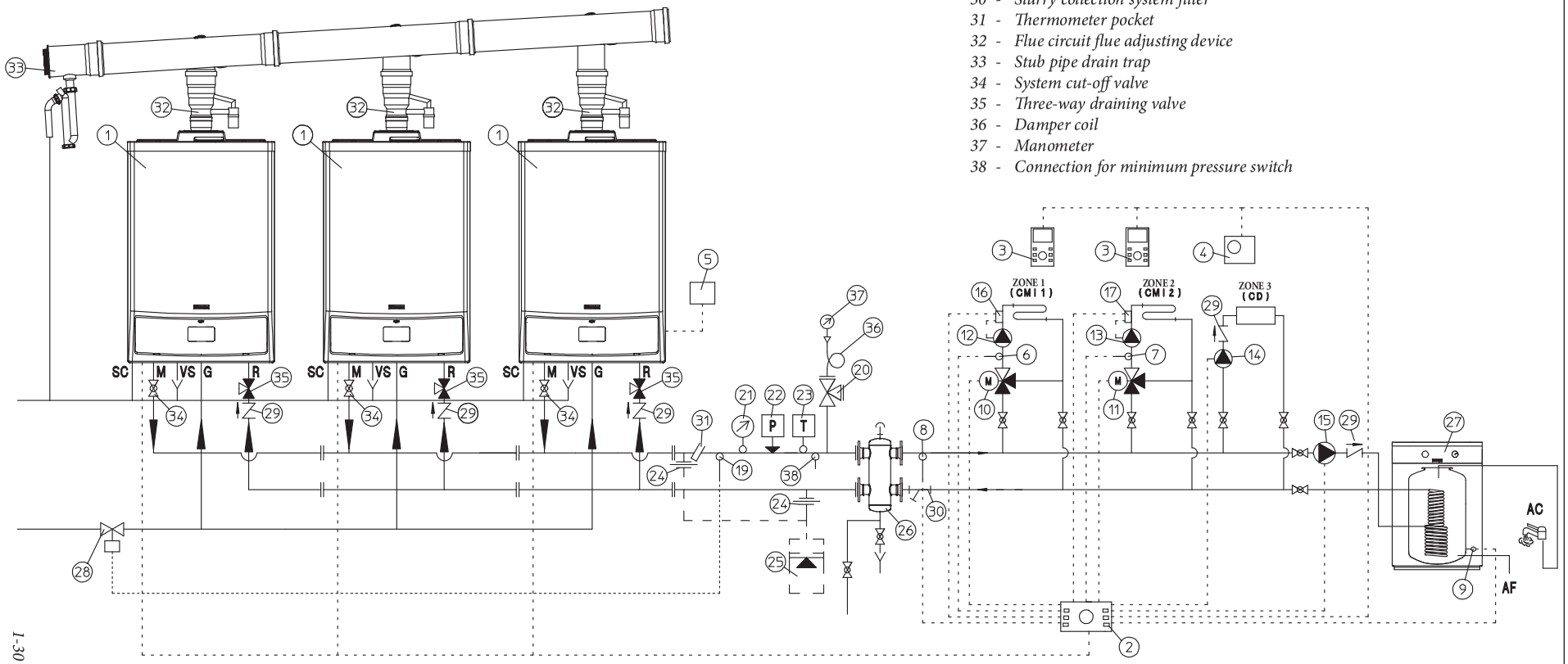
1 - *Generator*
2 - *Cascade and zone regulator*
3 - *Zone manager*
4 - *Modulating room thermostat*
5 - *External probe*
6 - *Zone 1 temperature probe (CMI-1)*
7 - *Zone 2 temperature probe (CMI-2)*
8 - *Common flow probe*
9 - *Storage tank unit temperature probe*
10 - *Zone 1 mixing valve (CMI-1)*
11 - *Zone 2 mixing valve (CMI-2)*
12 - *Zone 1 central heating circuit pump (CMI-1)*
13 - *Zone 2 central heating circuit pump (CMI-2)*
14 - *Zone 3 direct circuit pump (CD)*
15 - *Storage tank unit feeding pump*
16 - *Zone 1 safety thermostat (CMI-1)*
17 - *Zone 2 safety thermostat (CMI-2)*
19 - *Fuel shut-off valve bulb*
20 - *INAIL type-approved manometer-holder cock*
21 - *Thermometer*
22 - *Manual rearm thermostat*
23 - *Manual rearm pressure switch*
24 - *Attachment for expansion vessel*
25 - *Expansion vessel*
26 - *Collector/mixer*
27 - *External storage tank unit*
28 - *Fuel shut-off valve*
29 - *Non return valve*
30 - *Slurry collection system filter*
31 - *Thermometer pocket*
32 - *Damper coil*
33 - *Manometer*
34 - *Connection for minimum pressure switch*



1-29

Key:

1 - Generator
2 - Cascade and zone regulator
3 - Zone manager
4 - Modulating room thermostat
5 - External probe
6 - Zone 1 temperature probe (CMI-1)
7 - Zone 2 temperature probe (CMI-2)
8 - Common flow probe
9 - Storage tank unit temperature probe
10 - Zone 1 mixing valve (CMI-1)
11 - Zone 2 mixing valve (CMI-2)
12 - Zone 1 central heating circuit pump (CMI-1)
13 - Zone 2 central heating circuit pump (CMI-2)
14 - Zone 3 direct circuit pump (CD)
15 - Storage tank unit feeding pump
16 - Zone 1 safety thermostat (CMI-1)
17 - Zone 2 safety thermostat (CMI-2)
19 - Fuel shut-off valve bulb
20 - Manometer-holder cock
21 - Thermometer
22 - Manual rearm pressure switch
23 - Manual rearm thermostat
24 - Attachment for expansion vessel
25 - Expansion vessel
26 - Collector/mixer
27 - External storage tank unit
28 - Fuel shut-off valve
29 - Non return valve
30 - Slurry collection system filter
31 - Thermometer pocket
32 - Flue circuit flue adjusting device
33 - Stub pipe drain trap
34 - System cut-off valve
35 - Three-way draining valve
36 - Damper coil
37 - Manometer
38 - Connection for minimum pressure switch



2 INSTRUCTIONS FOR USE AND MAINTENANCE.

2.1 CLEANING AND MAINTENANCE.

Attention: the heating systems must undergo periodical maintenance (regarding this, see the section dedicated to the technician, relative to "yearly control and maintenance of the appliance") and regular checks of energy efficiency in compliance with national, regional or local provisions in force.
This ensures that the optimal safety, performance and operation characteristics of the boiler remain unchanged over time.
We recommend stipulating a yearly cleaning and maintenance contract with your zone technician

2.2 AERATION AND VENTILATION OF THE INSTALLATION ROOMS.

Consult the "Aeration and ventilation of installation rooms" chapter in this book.

2.3 GENERAL WARNINGS.

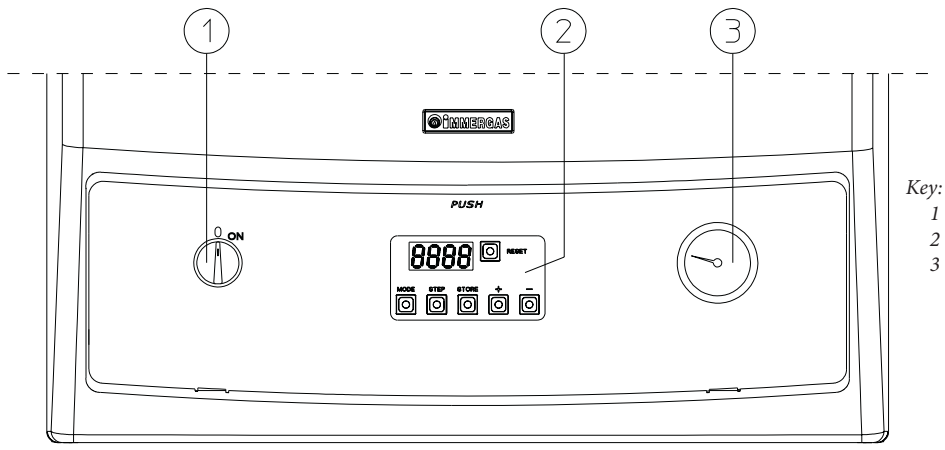
Use of the boiler by unskilled persons or children is strictly prohibited.
For safety purposes, check that the concentric air intake/flue exhaust terminal (if fitted), is not blocked.
If temporary shutdown of the boiler is required, proceed as follows:

a) drain the heating system if anti-freeze is not used;
b) shut-off all electrical, water and gas supplies.

N.B.: in the event of maintenance interventions of the boiler that lead to the closure of one or both system cut-off cocks (34 Fig. 1-30), the boiler must be switched-off.
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.

- **Attention:** the use of components involving use of electrical power requires some fundamental rules to be observed:
  - do not touch the appliance with wet or moist parts of the body; do not touch when barefoot;
  - do not pull the electric 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.

2.4 CONTROL PANEL.



Key:
1 - Main switch
2 - User interface viewer display
3 - Boiler manometer

2-1

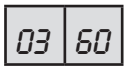
Boiler ignition. Before ignition, make sure that the system is full of water, checking that the manometer (3) indicates a base value at which the system has been designed and calculated and however not less than 0.5 bar.

- Open the gas cock upstream from the boiler.
- Turn the main switch (1) taking it to the ON position.

The boiler is supplied with a self-regulation board, accessible only after the hatch is opened, which is made up from a display of 4 characters and 6 keys. These keys can be used to regulate the boiler as in the presence of traditional selectors and knobs.
Each key has the following function:

RESET	Manual restore of any boiler block
MODE	Display menu selection key
STEP	Selection of the parameter to display or modify
STORE	Key for confirmation of data and memorisation
+	Increasing the value set
-	Decreasing the value set

In the functioning phase the 4 character display indicates the functioning mode(using the first two characters on the left) and the boiler flow temperature (the other two characters on the right).



For example, if these values are read on the display it means that the appliance is functioning in CH mode with flow temperature of 60°C.

The boiler functioning modes are indicated successively:

0	Stand-by, no functioning request
1	Pre-ventilation
2	Burner ignition
3	Burner on (system CH operation)
4	Burner on (DHW operation)
5	Fan control
6	Burner off due to requested temperature reached
7	Pump post-circulation in central heating mode
8	Pump post-circulation in domestic hot water mode
9/b alternating flash	Burner off due to one of the blocks listed in the table in par. 3.5 (e.g.: bxx)
A	Check 3-way valve

PARAMETERS mode. Press the MODE key once to access the PARAMETERS MODE. In this situation the pre-set functioning values can be varied. The first two figures indicate the number of the parameter, the last two give the setting value. Proceed as follows to modify the boiler settings:

- press the MODE key once to access the parameters mode;
- select the parameter to be modified using the STEP key;
- change the value by acting on the + or - keys;
- press the STORE key to memorise the new value;
- press MODE to make the new value effective.

Parameters that can be modified by the user.

Parameter	Description	Upper limit value	Upper limit value	Factory value	Value set by the User
1	DHW set value	20°C	70°C	20°C	
2	DHW operating mode	0 = excluded 1 = active 2 = excluded + continuous pump 3 = active + continuous pump		0	
3	CH operating mode	0 = excluded 1 = active 2 = excluded + continuous pump 3 = active + continuous pump		1	
4	Maximum CH flow temperature	20°C	85°C	85°C	

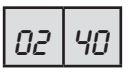
Parameter 1: allows to set the temperature of the DHW if controlled with the NTC probe.

Parameter 2: allows to activate or exclude the production of DHW. From factory setting the production of DHW is excluded.

Parameter 3: allows to exclude functioning in system CH mode (Summer)or to enable it (Winter). From factory settings the system central heating is active.

Parameter 4: allows to set the CH flow temperature. If the external temperature probe is connected to the boiler, the electronics automatically determines the ideal temperature value of the system water. This parameter represents the maximum temperature that the CH system flow water can reach.

info MODE. Press the MODE key twice to access the INFO mode. In this situation it is possible to display and control the instant functioning values without, however, making variations. The first two figures indicate the step number, the last two give the setting value.



For example, if these values are read on the display it means that the return temperature is 40°C.

Pitch	Display	Value
1	Flow temperature	Value in°C
2	Return temperature	Value in°C
3	DHW temperature, when the DHW probe is present (optional); without probe, the value is non influential.	Value in°C
4	External temperature, when the external probe is present (optional); without probe, the value is non influential	Value in°C
6	Flow temperature set point	Value in°C
7, 8, 9	Temperature gradients (cannot be modified)	°C / S
E	Flame current value	µA

Boiler blocks with manual rearm.

Code	Description	Remedy
E 00	Flame presence not allowed	Reset
E 02	Ignition block	Reset
E 03	Gas valve supply error	Reset, if the phenomenon continues, contact a qualified technician
E 05, E 11, E 15, E 16, E 17, E 44, E 60	Internal block *(electronic)*	Reset, if the phenomenon continues, contact a qualified technician
E 04	Non volatile block *(occurs in the case of block and power cut)*	Reset
E 06	Fault in P.C.B. input detected	Reset, if the phenomenon continues, contact a qualified technician
E 07	Gas valve relay error	Reset, if the phenomenon continues, contact a qualified technician
E 12	over-temperature safety thermostat intervention or flue safety thermostat intervention	Reset, if the phenomenon continues, contact a qualified technician
E 13	Error detected in P.C.B. output	Reset, if the phenomenon continues, contact a qualified technician
E 14	Block in the flow probe control circuit	Reset, if the phenomenon continues, contact a qualified technician
E 18	System flow temperature too high *(over 95°C)*	Reset
E 19	System return temperature too high *(over 87°C)*	Reset
E 25	Increase of the system flow temperature too quick	Reset
E 30	Temperature difference between system flow and return too great	Reset
E 31	System flow probe anomaly *(short circuit)*	Reset, if the phenomenon continues, contact a qualified technician
E 32	System return probe anomaly *(short circuit)*	Reset, if the phenomenon continues, contact a qualified technician
E 36	System flow probe anomaly *(open)*	Reset, if the phenomenon continues, contact a qualified technician
E 37	System return probe anomaly *(open)*	Reset, if the phenomenon continues, contact a qualified technician
114	Cascade address not valid	Reset, if the phenomenon continues, contact a qualified technician
FUSE	24 Vac missing	Reset, if the phenomenon continues, contact a qualified technician

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.

2.5 RESTORE 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.

N.B.: close the valve after the operation.
If pressure values reach around 4 bar the safety valve may be activated.
In this case contact a professional technician for assistance.
In the event of frequent pressure drops, contact qualified staff for assistance to eliminate possible system leakage.

2.6 DRAINING THE SYSTEM.

To drain the boiler, use the appropriate system drain fitting.
Before draining, ensure that the system filling valve is closed.

2.7 ANTI-FREEZE 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 3°C. The antifreeze function is guaranteed if the boiler is fully operative, if it is not in "block" status and is electrically powered. To avoid keeping the system switched on in case of a prolonged absence, the system must be drained completely or antifreeze substances must be added to the heating system water. In systems that are drained frequently, filling must be carried out with suitably treated water to eliminate hardness that can cause lime-scale.

2.8 CASE CLEANING.

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

2.9 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.

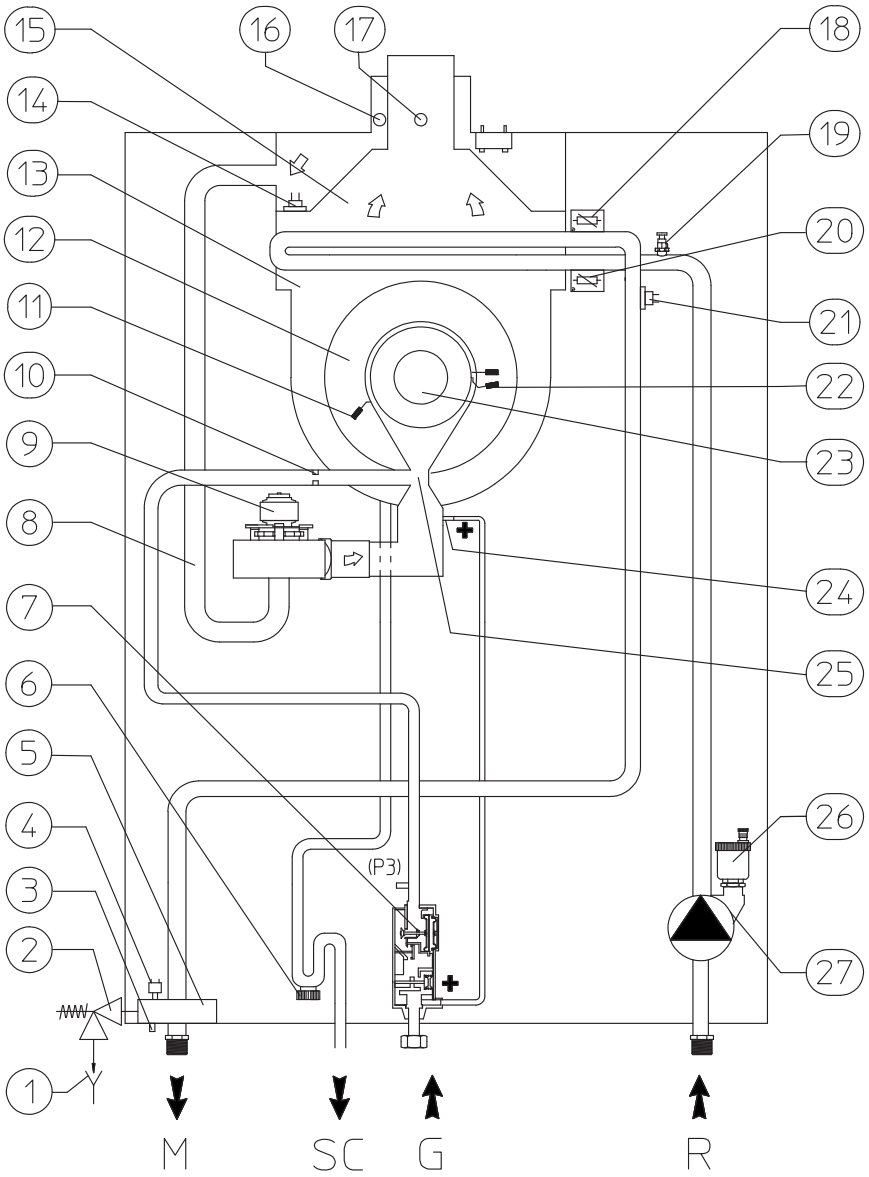
3 BOILER COMMISSIONING (INITIAL CHECK)

To commission the boiler:

- ensure that the declaration of conformity of installation is supplied with the appliance;
- ensure that the type of gas used corresponds to boiler settings;
- check connection to a 230V-50Hz power mains, correct L-N polarity and the earthing connection;
- make sure the heating system is filled with water and that the manometer indicates a pressure of 1÷1.2 bar;
- switch the boiler on and ensure correct ignition;
- check the CO_2 in the combustion products at maximum and minimum flow rate;
- check that the no. of fan revs is that indicated in the book (Par. 3.21);
- 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 from the boiler and in the boiler;
- 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;
- 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 sealing efficiency of water circuits;
- check ventilation and/or aeration of the installation room where provided.

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

3.1 HYDRAULIC DIAGRAM.



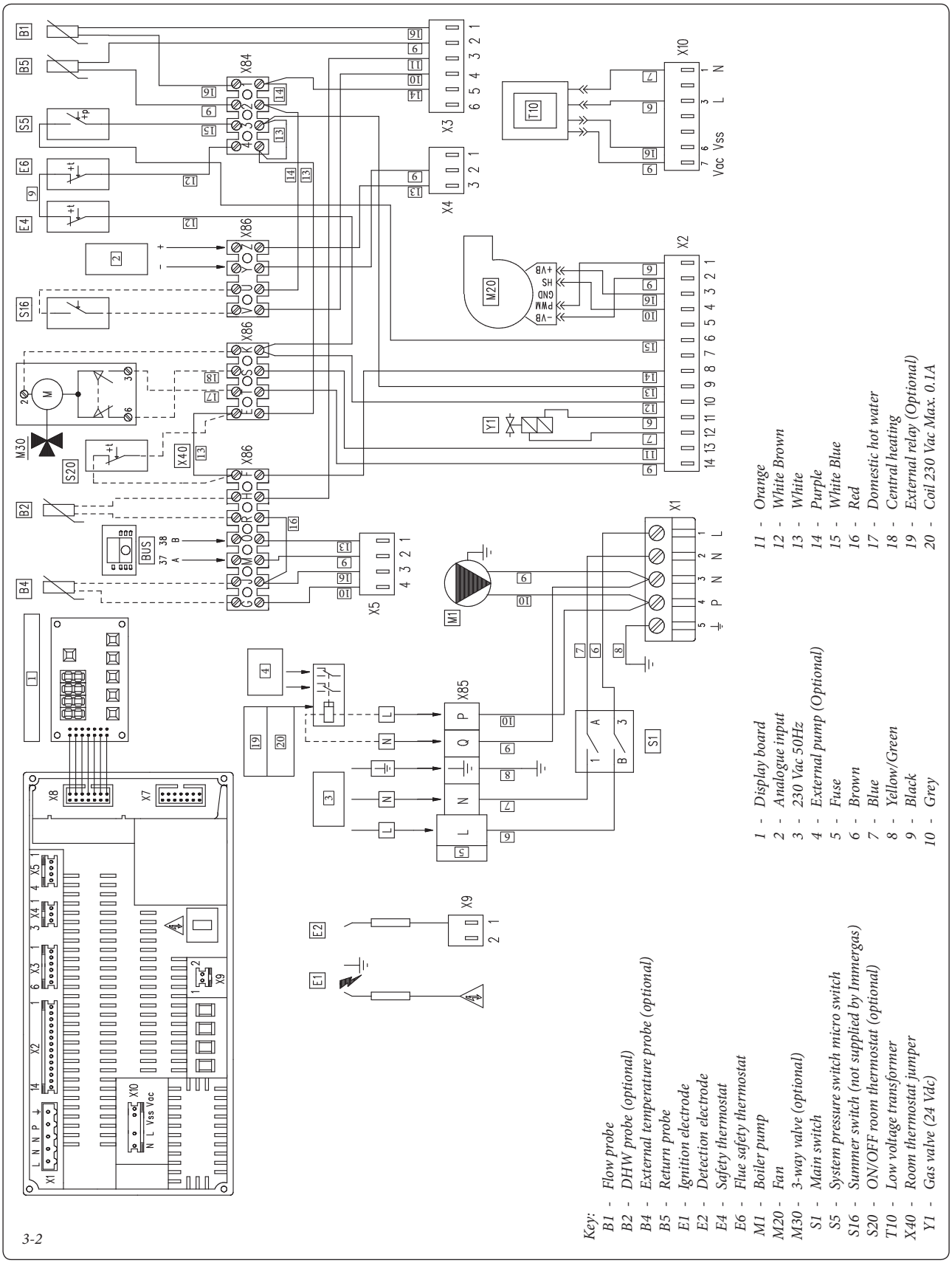
Key:

1 - Draining funnel on view
2 - 4 bar safety valve
3 - Boiler draining valve
4 - Absolute pressure switch
5 - Flow collector
6 - Condensate trap siphon
7 - Gas valve
8 - Air intake pipe
9 - Air fan
10 - Gas nozzle
11 - Detection electrode
12 - Condensation module cover
13 - Condensation module
14 - Flue safety thermostat
15 - Flue hood
16 - Air sample point
17 - Flue sample point
18 - System flow regulation probe
19 - Manual air vent valve
20 - System return regulation probe
21 - Over-heating safety thermostat
22 - Ignition electrode
23 - Burner
24 - Venturi pipe positive sign (P1)
25 - Air/gas Venturi pipe collector
26 - Automatic air vent valve
27 - Boiler pump

M - System flow
SC - Condensate drain
G - Gas supply
R - System return

3-1

3.2 WIRING DIAGRAM.



Key:

B1 - Flow probe
B2 - DHW probe (optional)
B4 - External temperature probe (optional)
B5 - Return probe
E1 - Ignition electrode
E2 - Detection electrode
E4 - Safety thermostat
E6 - Flue safety thermostat
M1 - Boiler pump
M20 - Fan
M30 - 3-way valve (optional)
S1 - Main switch
S5 - System pressure switch micro switch
S16 - Summer switch (not supplied by Immergas)
S20 - ON/OFF room thermostat (optional)
T10 - Low voltage transformer
X40 - Room thermostat jumper
Y1 - Gas valve (24 Vdc)

1 - Display board
2 - Analogue input
3 - 230 Vac 50Hz
4 - External pump (Optional)
5 - Fuse
6 - Brown
7 - Blue
8 - Yellow/Green
9 - Black
10 - Grey
11 - Orange
12 - White Brown
13 - White
14 - Purple
15 - White Blue
16 - Red
17 - Domestic hot water
18 - Central heating
19 - External relay (Optional)
20 - Coil 230 Vac Max. 0.1A

The Bus connection of clamps M and O are used to manage the boilers in cascade.
The jumper X40 must be eliminated whenever the room thermostat or cascade regulator are connected.

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.

3.3 APPLIANCE FUNCTIONING PARAMETERS.

The following table gives boiler functioning parameters with factory settings.
To modify the parameters reserved for the technician, an access code must be inserted, which is supplied on request.

To insert the code:
- press the MODE and STEP keys at the same time for 2 seconds, CODE will appear on the display;
- press STEP and "C" will appear on the display and subsequently a random number on the last two digits;
- change the value by acting on the + or - keys on reaching the code;
- press the STORE key to confirm.

Possible settings for technician and user					
Parameter	Description	Upper limit value	Upper limit value	Factory value	Value set by Technician
1	DHW set value	20°C	70°C	20°C	
2	DHW operating mode	0 = excluded 1 = active 2 = excluded + continuous pump 3 = active + continuous pump		**0**	
3	CH operating mode.	0 = excluded 1 = active 2 = excluded + continuous pump 3 = active + continuous pump		**1**	
4	Maximum CH flow temperature	20°C	85°C	**85°C**	

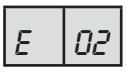
Settings only possible by the Technician (with insertion of the access code)					
10	CH minimum flow temperature	15°C	60°C	**20°C**	
11	External temperature lower limit	-30°C	10°C	**-5°C**	
12	External temperature upper limit	15°C	25°C	**20°C**	
13	Anti-freeze temperature	-30°C	10°C	**0°C**	
14	External probe reading correction	-5°C	5°C	**0°C**	
15	Second CH circuit maximum temperature	10°C	85°C	**NOT ACTIVE (40°C)**	
16	Second CH circuit minimum temperature	10°C	40°C	**NOT ACTIVE (10°C)**	
17	Second CH circuit hysteresis	1°C	30°C	**NOT ACTIVE (10°C)**	
18	Minimum set point value for the temperature	0 = Off 1°C	60°C	**0**	
19	Booster time	0 = no booster 1 minute	30 minutes	**0**	
20	Compensation of the flow temperatures with the room temperature	0°C	80°C	**0**	
21	Temperature increase with respect to DHW set	0	30°C	**15°C**	
22	Max number of fan revs. in CH mode (in hundreds)	13	60	**Methane = 52 LPG = 46**	
23	Max number of fan revs. in CH mode (in units)	0	99	**0**	
24	Max number of fan revs. in DHW mode (in units)	13	60	**Methane = 38 LPG = 38**	
25	Max number of fan revs. in DHW mode (in units)	0	99	**0**	
26	Max number of fan revs. in CH mode (in hundreds)	12	60	**Methane = 13 LPG = 12**	
27	Max number of fan revs. in CH mode (in units)	0	99	**Methane = 0 LPG = 50**	
28	Fan speed in switch on phase (in hundreds)	21	27	**23**	
29	Fan speed during stabilisation time (in hundreds)	12	38	**16**	
30	Stabilisation time (multiply the value shown on the display by 9 to achieve the time value in seconds)	0 seconds	100	**06**	
31	CH ascent ramp 0=not active (to change this parameter, contact the service centre)	-128	128	**02**	
32	Pump post-circulation time at the end of the central heating cycle	0 = 10 seconds 1 minute	99 minutes	**3**	
33	Pump post-circulation time at the end of the domestic hot water cycle (multiply the value shown on the display by 10.2 to achieve the time value in seconds)	0 seconds	30	**06**	
34	Modulation in hysteresis in CH mode ON	0°C	20°C	**0**	
35	Modulation in hysteresis in CH mode OFF	0°C	10°C	**5**	
36	Modulation in hysteresis in DHW mode ON	-5°C	30°C	**0**	
37	Modulation in hysteresis in DHW mode OFF	0°C	30°C	**5**	

38	Hysteresis detection in DHW mode ON	0°C	30°C	**5**	
39	Hysteresis detection in DHW mode OFF	-5°C	30°C	**0**	
40	Heating time (multiply the value shown on the display by 10.2 to achieve the time value in seconds)	0 seconds	30	**18**	
41	DHW time (multiply the value shown on the display by 10.2 to achieve the time value in seconds)	0 seconds	30	**0**	
42	Timing in the passage from DHW functioning to CH functioning mode (multiply the value shown on the display by 10.2 to achieve the time value in seconds)	1 (0=passage with burner on)	30	**0**	
43	DHW priority maximum time	1 min. (0=domestic hot water priority always)	120 min.	**0**	
44	Cascade address	NOT ACTIVE		**0**	
45	Type of control for CH system	00 = room thermostat 01 = external probe 02 = 0-10 V Power 03 = 0-10 V Temperature		**00**	
46	Type of DHW system	00 = Instant with probe 01 = Instant without probe 02 = Storage tank with probe 03 = Storage tank without probe		**02**	
47	Manual fan speed	-1 = Off 0%	100%	**-1**	
48	PWM signal level for pump	1	4	**NOT ACTIVE (32)**	
49	PWM signal level for pump	10	50	**NOT ACTIVE (15)**	
50	PWM signal level for pump	15	50	**NOT ACTIVE (20)**	
51	PWM hysteresis	1°C	10°C	**NOT ACTIVE (02)**	
53	Low/Off cycle and pump cycle	x0 = Off x1 = On] Low/Off cycle 0x = Normal central heating pump and DHW cycle		**00**	
54	Minimum number of revs for pressure switch (in hundreds)	5	70	**NOT ACTIVE (5)**	
55	Boiler minimum maintenance temperature	0°C	80°C	**0°C**	
56	CH ramp or CH and DHW	0 = heating only 1 = heating+DHW		**0**	

3.4 FUNCTIONING ANOMALIES WITH MANUAL REARM.

Code	Description	Remedy
E 00	Flame presence not allowed	Check detection electrode Check P.C.B.
E 02	Ignition block	Check gas valve Check P.C.B. Check electrodes position Check flame signal at minimum, greater than 6 µA
E 03	Gas valve supply error	Check gas valve/P.C.B. Replace the P.C.B.
E 05, E 11, E 15, E 16, E 17, E 44, E 60	Internal block *(electronic)*	Check P.C.B. Replace the P.C.B.
E 04	Non volatile block *(occurs in the case of block and power cut)*	Check cause of block
E 06	Fault in P.C.B. input detected	Check P.C.B. Replace the P.C.B.
E 07	Gas valve relay error	Check gas valve/P.C.B. Replace the P.C.B.

E 12	over-temperature safety thermostat intervention or flue safety thermostat intervention	Check water overheating thermostat Check flue safety thermostat
E 13	Error detected in P.C.B. output	Check P.C.B. Replace the P.C.B.
E 14	Block in the flow probe control circuit	Check delivery probe/P.C.B. Replace the P.C.B.
E 18	System flow temperature too high *(over 95°C)*	Check the circulation of water in the system
E 19	System return temperature too high *(over 87°C)*	Check the circulation of water in the system
E 25	Increase of the system flow temperature too quick	Check the circulation of water in the system Check main exchanger
E 30	Temperature difference between system flow and return too great	Check the circulation of water in the system
E 31	System flow probe anomaly *(short circuit)*	Replace system flow probe
E 32	System return probe anomaly *(short circuit)*	Replace system return probe
E 36	System flow probe anomaly *(open)*	Replace system flow probe
E 37	System return probe anomaly *(open)*	Replace system return probe
E 114	Cascade address not valid	Check address set on the board *(See cascade and zone regulator assistance board)*
FUSE	24 Vac missing	Check the external transformer. Check P.C.B.



For example, if these values are read on the display it means that the appliance is in ignition block conditions. To eliminate the block, press the RESET button positioned on the boiler panel.

3.5 FUNCTIONING ANOMALIES WITH ELECTRIC REARM.

Code	Description	Remedy
b 18	System flow temperature over 92°C	Check the circulation of water in the system
b 19	System return temperature over 87°C	Check the circulation of water in the system
b 24	Inverted flow return probes	Check probes position
b 25	Increase of the system flow temperature too quick	Check the circulation of water in the system
b 26	No water/Water pressure insufficient	Check the correct water pressure inside the system Take the water pressure in the system to a value between 1 and 1.2 bar Check for any leaks in the circuit
b 28	Fan breakdown *(no Hall signal)*	Check fan Check fuse "F3" Check P.C.B.
b 29	Fan fault	Check fan Check fuse "F3" Check P.C.B.
b 30	Temperature difference between system flow greater than 40°C	Check the circulation of water in the system
b 33	DHW probe anomaly *(short circuit)*	Check/replace DHW probe
b 38	DHW probe anomaly *(open)*	Check/replace DHW probe
b 65	Fan start stand-by *(insufficient air flow rate)*	Check fan functioning
b 118	Ionisation current loss during burner ignition *(after 3 attempts becomes "02" error ignition block)*	Check presence of gas and electric power supply Check the gas supply pressure

For example, if these values are read on the display it means that the appliance has a temperature difference (Δt) between system flow and return greater than 40°C. The blocks are temporary and the boiler rearms automatically when the anomaly disappears.

N.B.: maintenance interventions must be carried out by a qualified technician (e.g. Immergas After-Sales Technical Assistance Service).

- Smell of gas. Caused by leakage from gas circuit pipelines. Check sealing efficiency of gas intake circuit.
- Irregular combustion or noisiness. This 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_2 in flue gases.
- Siphon blocked. 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 blocked. This may be caused by the trap being blocked. Check, by means of the condensate drain cap, (accessible only after the casing front has been removed) that there are no residues of material blocking the flow of condensate.

- Noise due to air in the system. Check opening of the hood of the special air vent valve (Fig. 1-25). Make sure the system pressure and expansion vessel factory-set pressure values are within the calculated limits.

N.B.: in the case of maintenance interventions on the boiler that lead to the closure of one or both system cut-off cocks (part. 34 fig. 1-30), the boiler must be off.

3.6 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.
Boiler conversion must be carried out by a qualified technician (e.g. Immergas After-Sales Technical Assistance Service).
To convert to another type of gas the following operations are required:
- remove the voltage from the appliance;
- replace the nozzle located between the gas pipe and gas/air mixing sleeve (part. 6 fig. 1-25);
- apply voltage to the appliance;
- regulate the maximum heat output by varying the number of fan revs. (parameter No. 22 "Max number of fan revs in CH mode") according to par. 3.21;
- regulate the minimum heat output by varying the number of fan revs. (parameter No. 26 "Min number of fan revs in CH mode") according to par. 3.21;
- check the value of CO_2 in the flue gas at maximum heat output with respect to the table in par. 3.22;
- check the value of CO_2 in the flue gas at minimum heat output with respect to the table in par. 3.22;
- seal the gas flow rate regulation devices (if settings are modified);
- after completing conversion, apply the sticker, present 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.

3.7 CHECKS FOLLOWING CONVERSION TO ANOTHER TYPE OF GAS.

After making sure that transformation was carried out with a nozzle of suitable diameter for the type of gas used and the calibration has been performed at the correct n°. 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.

N.B.: all boiler adjustment operations must be carried out by a qualified technician (e.g. Immergas Assistance Service).

3.8 POSSIBLE ADJUSTMENTS

Check the nominal heat output.
The boiler heat output is correlated to the length of the air intake and flue exhaust pipes. This decreases slightly with the increase of pipe length.
If installed in set and with the flue kit, after 5 minutes of burner functioning and when the intake air and exhaust gas temperatures have stabilised, it is necessary to update the number of fan revs. in CH mode according to the table at the end of the page:

3.9 ADJUSTMENT OF THE AIR-GAS RATIO.

Calibration of the maximum CO_2.
Switch the boiler on and take it to chimney sweep mode by pressing the "**MODE**" and "+" keys simultaneously for two seconds. This way the boiler is forced to maximum and "**H**" appears on the display followed by a 2-figure number.
To have an exact value of CO_2 the technician must insert the sampling probe to the bottom of the sample point, then check that the CO_2 value is that specified in the table in par. 3.22, otherwise, adjust the screw (12 fig. 3-4) (gas flow rate regulator).
To increase the CO_2 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.).

Calibration of the minimum CO_2.
On completion of regulation of the maximum CO_2, switch the boiler on and allow it to function at minimum heat capacity by pressing the "**MODE**" and "-" keys at the same time for two seconds. This way the boiler is forced to minimum and "**L**" appears on the display followed by a two digit number. To have an exact value of CO_2 the technician must insert the sampling probe to the bottom of the sample point, then check that the CO_2 value is that specified in the table in par. 3.22, on the contrary, regulate the screws (3 fig. 3-4) (Off-Set regulator).
To increase the CO_2 value, turn the adjustment screw (3) in a clockwise direction and vice versa to decrease it.

3.10 CHECK COMBUSTION PARAMETERS.

To regulate the minimum and maximum heat outputs take the boiler into the chimney sweep phase by pressing the "MODE" and "+" keys at the same time for a few seconds. Then check the maximum fan speed (with burner on) in order to obtain the value given in the table (par. 3.21), if the parameters are modified, see the successive chapters.

3.11 REGULATION OF THE CH NOMINAL OUTPUT.

The"Victrix 50" boiler is produced with heat output on CH calibrated at maximum. It is recommended not to touch this setting again.
Whenever it is necessary to reduce the heat output, the value of parameter No. 22 "Max number of fan revs. in CH mode" must be modified, after having inserted the technician's code, as described in par. 3.3.
To check the regulated heat output value, compare the no. of fan revs with that in the table (par. 3.21).

3.12 REGULATION OF THE CH MINIMUM OUTPUT.

Whenever it is necessary to modify the CH minimum heat output, the value of parameter No. 26 "Min number of fan revs. in CH mode" must be modified, after having inserted the technician's code, as described in par. 3.3.
To check the regulated heat output value, compare the no. of fan revs with that in the table (par. 3.21).

3.13 REGULATION OF THE HEAT OUTPUT IN DHW MODE.

Whenever it is necessary to modify DHW the heat output, the value of parameter No. 24 "Max number of fan revs. in DHW mode" must be modified, after having inserted the technician's code, as described in par. 3.3.
Adjust the no. of fan revs according to the table (par. 3.21).

	G20	G30	G31
Single boiler	Max. N°. revs 5180	Max. N°. revs 4600	Max. N°. revs 5200
	Min. N°. revs 1280	Min. N°. revs 1150	Min. N°. revs 1250
Exhaust collector kit with flue adjusting devices	Max. N°. revs 5180	Max. N°. revs 4600	Max. N°. revs 5200
	Min. N°. revs 1580	Min. N°. revs 1450	Min. N°. revs 1550

3.14 PUMP OPERATING MODE.
By modifying the parameter No. 3 according to the "parameters mode" procedure to value "3", it is possible to have continuous pump functioning.

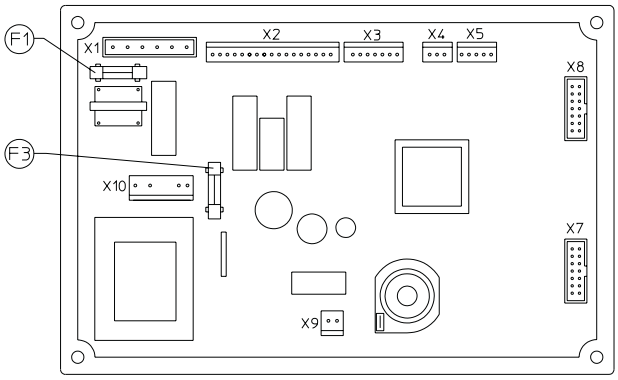
3.15 "CHIMNEY SWEEP FUNCTION".
When activated, this function forces the boiler at max. output for 15 minutes.
In this state all adjustments are excluded and only the temperature safety thermostat and the limit thermostat remain active. To activate the chimney sweep function, press the "**MODE**" and "+" keys at the same time for two seconds. This function allows the technician to check the combustion parameters, the boiler is forced to maximum and "**H**" appears on the display. On completion of the checks, deactivate the function by pressing the "+" and "-"keys at the same time for 2 seconds.

3.16 PUMP ANTI-BLOCK FUNCTION.
During the "Summer" phase the boiler has a function that starts the pump at least once every 24 hours for the duration of 10 seconds in order to reduce the risk of the pump becoming blocked due to prolonged inactivity.

3.17 RADIATORS ANTI-FREEZE FUNCTION.
The boiler has a function that makes the pump start when the system flow water reaches 7°C. If the system flow water is at a temperature below 3°C, the boiler starts to operate until it reaches 10°C.

3.18 MAXIMUM FLOW TEMPERATURE VALUE IN CENTRAL HEATING MODE.
It is possible to vary the maximum flow temperature of the boiler by modifying parameter No.4 "parameters mode", setting a value between 20 and 85°C.

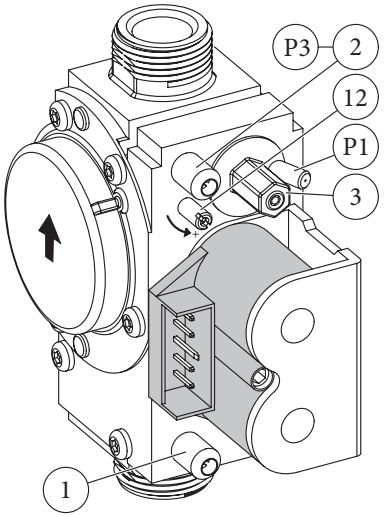
Victrix 50 circuit board



Key:
F1 - Fuse 2A - 230 V
F3 - Fuse 4A - 24 V

3-3

DUNGS Gas Valve.



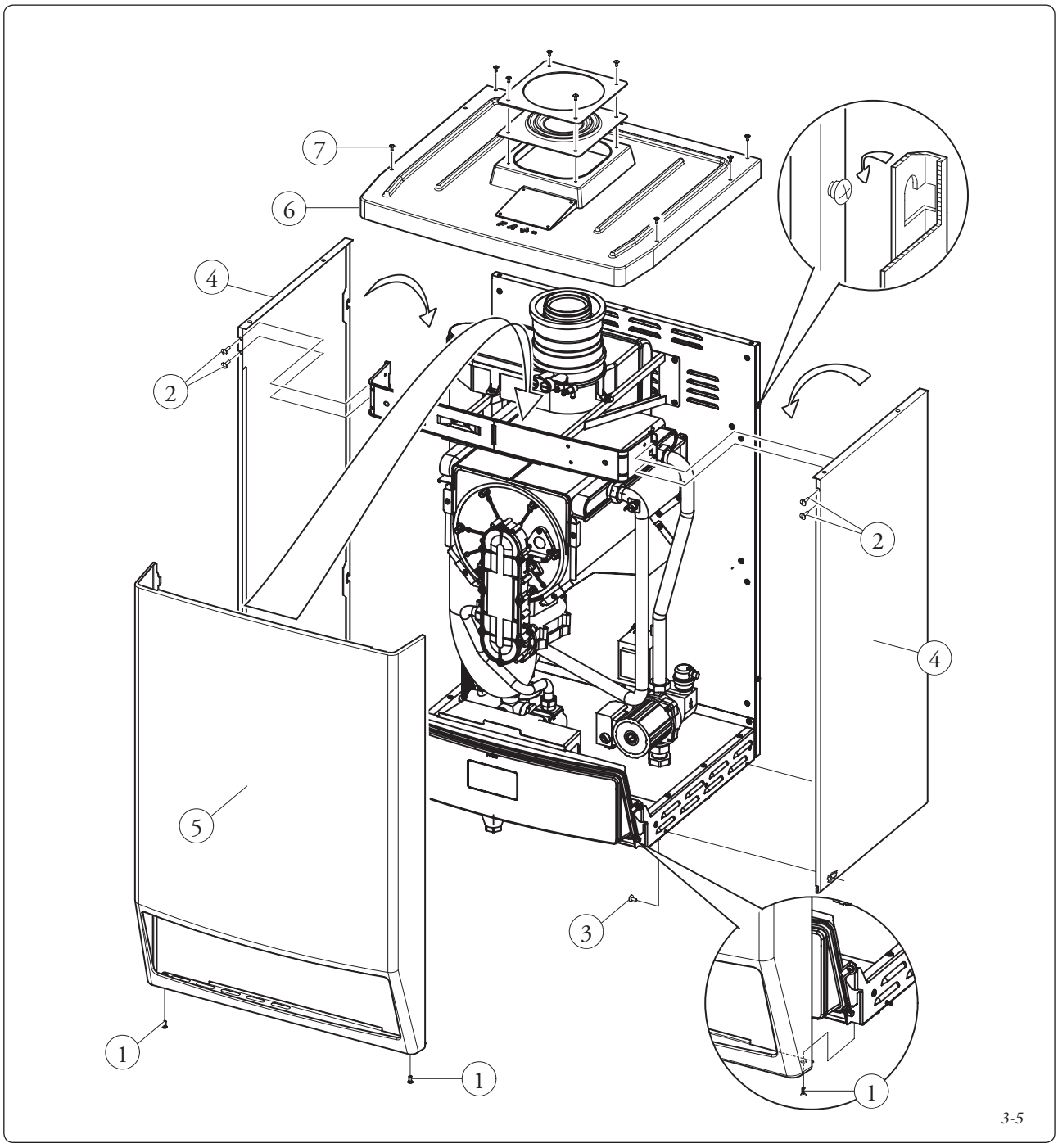
Key:
1 - Gas valve inlet pressure point
2 - Gas valve outlet pressure point
3 - Off-Set adjustment screw
12 - Outlet gas flow rate adjuster

3-4

3.19 CASING REMOVAL.

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

- remove the lower protection sheet steel grill;
- loosen the screws (1) present in the lower part of the casing front (5);
- fully loosen the screws (7) present in the upper part of the cover (6) (see figure);
- pull the front casing (5) slightly in the lower part towards yourself and push upwards at the same time (see figure);
- loosen the screws (2) present in the upper part of the front casing support sheet (see figure);
- loosen the screws (3) present in the lower side of the boiler and then push upwards slightly in order to release the side (4).



3-5

3.20 YEARLY CONTROL AND MAINTENANCE OF THE APPLIANCE.

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

- Clean the flue side of the heat exchanger.
- Clean the main burner.
- If deposits are detected in the combustion chamber one must remove them and clean the exchanger coils using nylon or sorghum brushes; it is forbidden to use brushes made of metal or other materials that may damage the combustion chamber itself.
- 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 contents of the condensate drain trap.
- Via the condensate drain cap check that there are no residues of material that clog condensate passage; also check that the entire condensate drainage circuit is free 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 seal gaskets and the lid 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 the system static pressure (with system cold and after refilling the system by means of the filler cock) is not below 0.5 bar.
- Check visually that the safety and control devices have not been tampered with and/or shorted, in particular:
  - temperature safety thermostat.
- 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 correct calibration of the burner in central heating phase.
- Check correct operation of control and adjustment devices and in particular:
  - intervention of main electrical switch on boiler;
  - system regulation probes 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.

N.B.: on occasion of periodical maintenance of the appliance it is appropriate also to check and perform maintenance on the heating system, in compliance with that indicated by the regulations in force.

3.21 VARIABLE HEAT POWER.

		METHANE (G20)		BUTANE (G30)		PROPANE (G31)	
HEAT OUTPUT	HEAT OUTPUT	BURNER GAS FLOW RATE	REVS FAN	BURNER GAS FLOW RATE	REVS FAN	BURNER GAS FLOW RATE	REVS FAN
(kW)	(kcal/h)	(m^3/h)	(n°)	(kg/h)	(n°)	(kg/h)	(n°)
50.0	43000	5.37	5180	4.01	4600	3.94	5200
48.0	41280	5.16	5000	3.85	4430	3.79	5000
46.0	39560	4.95	4810	3.70	4260	3.64	4790
44.0	37840	4.74	4620	3.54	4090	3.48	4590
42.0	36120	4.53	4430	3.38	3910	3.33	4380
41.2	35398	4.45	4350	3.32	3840	3.26	4300
38.0	32680	4.11	4050	3.07	3570	3.02	3980
36.0	30960	3.90	3860	2.91	3390	2.86	3780
34.0	29240	3.69	3670	2.75	3220	2.71	3580
32.0	27520	3.48	3470	2.59	3050	2.55	3380
30.0	25800	3.26	3280	2.44	2880	2.40	3180
28.0	24080	3.05	3080	2.28	2700	2.24	2980
26.0	22360	2.84	2890	2.12	2530	2.08	2790
24.0	20640	2.62	2690	1.96	2360	1.92	2590
22.0	18920	2.41	2490	1.80	2190	1.77	2400
20.0	17200	2.19	2290	1.63	2010	1.61	2200
18.0	15480	1.97	2090	1.47	1840	1.45	2010
16.0	13760	1.76	1890	1.31	1670	1.29	1820
14.0	12040	1.54	1690	1.15	1500	1.13	1630
12.0	10320	1.32	1490	0.99	1330	0.97	1440
10.0	8600	1.10	1280	0.82	1150	0.81	1250

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

3.22 COMBUSTION PARAMETERS.

		G20	G30	G31
Gas nozzle diameter	mm	7.85	5.40	5.40
Supply pressure	mbar (mm H_2O)	20 (204)	29 (296)	37 (377)
Flue flow rate at nominal heat output	kg/h	81	72	81
Flue flow rate at min heat output	kg/h	17	15	17
CO_2 at Nom Q./Min.	%	9.32 / 9.25	12.30 / 11.70	10.60 / 10.10
CO with 0% O_2 at Nom Q /Min.	ppm	130 / 5	425 / 10	120 / 7
NO_x with 0% O_2 at Nom Q /Min.	mg/kWh	69 / 28	342 / 85	119 / 43
Flue temperature at nominal output	°C	41	46	42
Flue temperature at minimum output	°C	47	51	47

3.23 TECHNICAL DATA.

Nominal heat input	kW (kcal/h)	50.8 (43655)
Minimum heat input	kW (kcal/h)	10.4 (8958)
Nominal heat output (useful)	kW (kcal/h)	50.0 (43000)
Minimum heat output (useful)	kW (kcal/h)	10.0 (8600)
Efficiency 80/60 Nom./Min.	%	98.5 / 96.0
Efficiency 50/30 Nom./Min.	%	106.0 / 106.5
Efficiency 40/30 Nom./Min.	%	107.0 / 107.0
Heat loss at casing with burner On/Off (80-60°C)	%	0.47 / 0.20
Heat loss at flue with burner On/Off (80-60°C)	%	0.02 / 1.30
Central heating circuit max. operating pressure	bar	4.4
Central heating circuit max. operating temperature	°C	90
Adjustable central heating temperature	°C	20 - 85
Head available with 1000 l/h flow rate	kPa (m H_2O)	55.4 (5.65)
Weight of full boiler	kg	66.7
Weight of empty boiler	kg	63.0
Boiler water content	l	3.7
Electrical connection	V/Hz	230/50
Power input	A	0.85
Installed electric power	W	180
Pump consumption	W	115
Fan power consumption	W	59
Equipment electrical system protection	-	IPX5D
Functioning room max. temperature	°C	+50
Functioning room min. temperature	°C	-5
Functioning room min. temperature with anti-freeze kit (Optional)	°C	-15
Flue gas max. temperature	°C	75
NO_x class	-	5
Weighted NO_x	mg/kWh	38.5
Weighted CO	mg/kWh	37.6
Type of appliance	C13 / C33 / C63 / B23p / B33 / B53p	
Category	II2H3B/P	

- Flue temperature values refer to an air inlet temperature of 15°C and flow temperature of 50°C.
- The max. 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.

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