USER'S MANUAL

IMMERGAS

Instruction and recommendation booklet **IE**

HERCULES SOLAR 26 2 ErP

1.037974ENG

Dear Customer,

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

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 assistance and scheduled maintenance contact Authorised After-Sales centres: they have original spare parts and are specifically trained directly by the manufacturer.

General recommendations

All Immergas products are protected with suitable transport packaging.

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

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

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

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

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

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

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

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

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

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
(according to ISO/IEC 17050-1)

The company **IMMERGAS S.p.A.**, with registered office in via Cisa Ligure 95 42041 Brescello (RE) whose design, manufacturing, and after sale assistance processes comply with the requirements of standard **UNI EN ISO 9001:2008**,

DECLARES that:

The boiler model Hercules Solar 26 2 ErP complies with European Directives and Delegated European Regulations listed below:
"Eco-design" Directive 2009/125/EC, "Energy labelling" Directive 2010/30/EC, EU Regulation 811/2013, EU Regulation 813/2013, "Gas Appliance" Directive 2009/142/EC, "Electromagnetic Compatibility" Directive 2004/108/EC, "Performance" Directive 92/42/EC and "Low Voltage" Directive 2006/95/EC.

Mauro Guareschi

Research & Development Director

Signature:

INDEX

INSTALLER page

USER page

MAINTENANCE TECHNICIAN page

1 BOILER INSTALLATION

1.1 INSTALLATION RECOMMENDATIONS.

The Hercules Solar 26 2 ErP boiler has been designed uniquely for floor-installation, for heating and production of DHW in domestic and similar uses, with the possibility of coupling to a solar panel system.
In the event the unit is installed in damp places, one must provide an insulation system underneath it, to insulate it from the ground.
The place of installation of the appliance and relative Immergas accessories must have suitable features (technical and structural) such to allow (always in safety, efficiency and comfortable conditions):

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

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

- **Type B_{23} or B_{53}** boiler if installed using the relevant terminal for air intake directly from the room in which the boiler has been installed.
- **Type C boiler** if installed using concentric pipes or other types of pipes envisioned for sealed chamber boilers for air intake and expulsion of flue gas.

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

Only professionally enabled companies are authorised to install Immergas gas appliances.
Installation must be carried out according to regulation standards, current legislation and in compliance with local technical regulations and the required technical procedures.
Before installing the appliance, ensure that it is delivered in perfect condition; if in doubt, contact the supplier immediately. Packing materials (staples, nails, plastic bags, polystyrene foam, etc.) constitute a hazard and must be kept out of the reach of children. If the appliance is installed inside or between cabinets, ensure sufficient space for normal servicing; therefore it is advisable to leave clearance of at least 40 cm on the right of the boiler in order to open the lateral hatch and a space of 3 cm between the remaining sides of the boiler and the sides of the cabinet. Leave adequate space above the boiler for possible water and flue connections. 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 and contact an authorised company (e.g. the Authorised Technical Assistance centre, which has specifically trained staff and original spare parts). Do not attempt to modify or repair the appliance alone. Failure to comply with the above implies personal responsibility and invalidates the warranty.

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

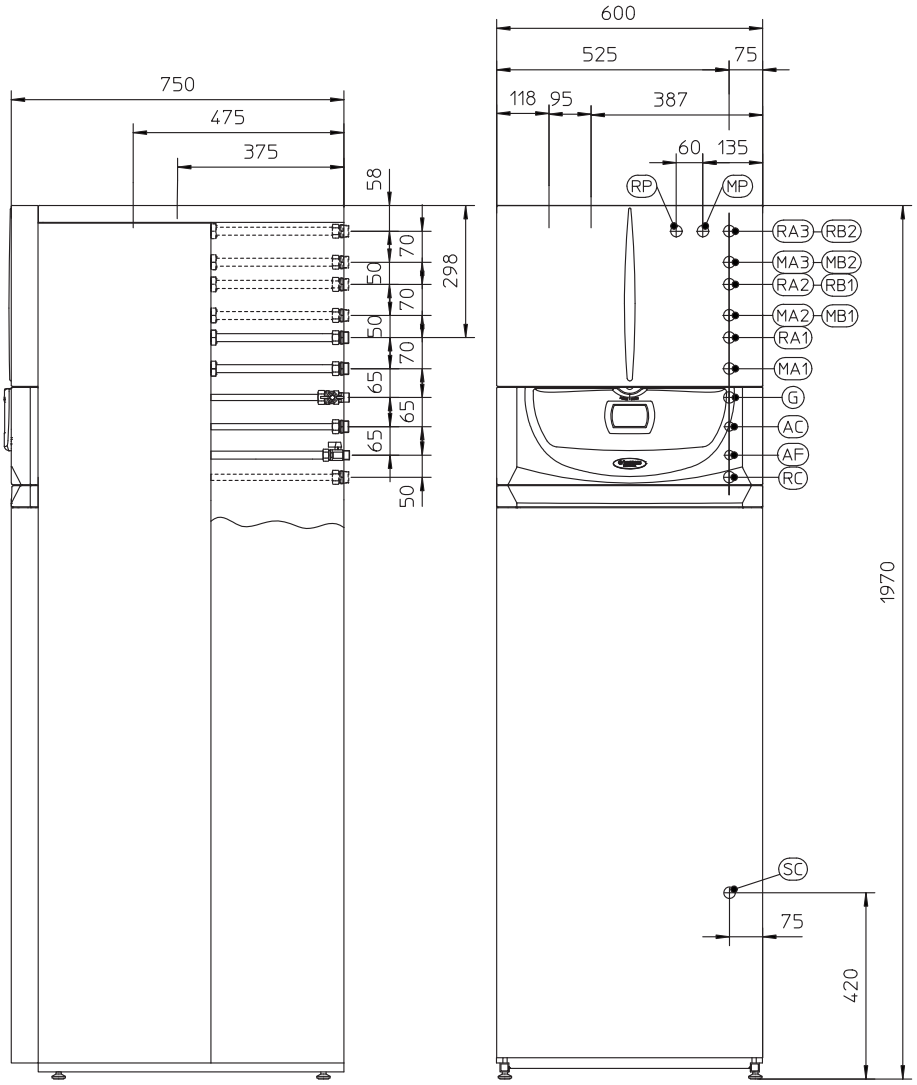
Attention: these boilers are used to heat water to below boiling temperature in atmospheric pressure.
They must be connected to a central heating system and domestic hot water circuit suited to their performance and capacity. They must be installed in rooms where the temperature cannot fall below 0°C and must not be exposed to atmospheric agents.

"Anti-legionella" heat treatment of the Immergas storage tank (activated by the specific function present on the predisposed thermoregulatory systems): during this stage, the temperature of the water inside the storage tank exceeds 60°C with a relative risk of burns. Keep this domestic water treatment under control (and inform the users) to prevent unforeseeable damage to people, animals, things.

N.B.: before starting the solar system, the solar collector must be covered to protect the absorber from overheating and the operator from scalding. The solar circuit must only be filled when the hydraulic system has been completely assembled and cannot be started before it has been possible to eliminate the heat generated by the solar collector.

Attention: to size the solar system, contact a qualified heating engineer.

1.2 MAIN DIMENSIONS.



Key:

RP - Return to solar panels G 3/4"
MP - Flow from solar panels G 3/4"
RA3 - Zone 3 high temperature system return G 3/4" (optional)
MA3 - Zone 3 high temperature system flow G 3/4" (optional)
RA2 - Zone 2 high temperature system return G 3/4" (optional)
MA2 - Zone 2 high temperature system flow G 3/4" (optional)
RB2 - Zone 2 low temperature system return G 1" (optional)
MB2 - Zone 2 low temperature system flow G 1" (optional)
RB1 - Zone 1 low temperature system return G 1" (optional)
MB1 - Zone 1 low temperature system flow G 1" (optional)
RA1 - Zone 1 high temperature system return G 3/4"
MA1 - Zone 1 high temperature system flow G 3/4"
G - Gas supply G 1/2"
AC - DHW output G 3/4"
AF - DHW inlet G 3/4"
RC - Recirculation G 3/4" (optional)
SC - Condensate drain (min. internal diameter Ø 13 mm)

1.3 GAS CONNECTION (APPLIANCE CATEGORY $II_{2H3B/P}$).

Our boilers are designed to operate with methane gas (G20) and LPG. Supply pipes must be the same as or larger than the 1/2"G boiler fitting. Before connecting the gas line, carefully clean inside all the fuel feed system pipes to remove any residue that could impair boiler efficiency. Also make sure the gas corresponds to that for which the boiler is prepared (see boiler data name plate). If different, the appliance must be converted for operation with the other type of gas (see converting appliance for other gas types). The dynamic gas supply (methane or LPG) pressure must also be checked according to the type used in the boiler, which must comply with the technical standards in force, as insufficient levels can reduce generator output and cause malfunctions. Ensure correct gas cock connection. The gas supply pipe must be suitably dimensioned according to current regulations in order to guarantee correct gas flow rate to the burner even in conditions of maximum generator output and to guarantee appliance efficiency (technical specifications). The coupling system must conform to technical standards in force.

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

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

- New LPG storage tanks may contain residual inert gases (nitrogen) that degrade the mixture delivered to the appliance 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.

1.4 BOILER HYDRAULIC CONNECTION.

Attention: in order not to void the condensation module warranty, before making the boiler connections, carefully wash 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.

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

Attention: Immergas declines all liability in the event of damage caused by the inclusion of automatic filling that is not its own brand.

In order to meet the system requirements established by the technical regulation in force in relation to the pollution of drinking water, we recommend installing the IMMERGAS anti-backflow kit to be used upstream of the cold water inlet connection of the boiler. It is also recommended that the heat transfer fluid (e.g. water + glycol) entered in the primary circuit of the boiler (heating circuit), complies with the local regulations in force.

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

1.5 SOLAR CIRCUIT HYDRAULIC CONNECTION.

Attention: when installing the solar circuit (pipes and fittings), only use suitable materials that withstand high temperatures.

The pump unit allows you to connect the storage tank to the solar collector, making the water circulate according to the request of the control unit.

N.B.: the pipes for connection to the solar collector must be ordered separately.

- Every time the solar system is emptied, the system must be rinsed well with running water.
- The circulation unit is not designed for use in direct contact with swimming pool water.

Condensate drain. To drain the condensate produced by the appliance, it is necessary to connect to the drainage system by means of acid condensate resistant pipes, with an internal Ø of at least 13 mm. The system connecting the appliance to the drainage system must be carried out in such a way as to prevent freezing of the liquid contained in it. Before appliance ignition, ensure that the condensate can be correctly removed. After first ignition, check that the drain trap is filled with condensate (para. 1.21). Also, comply with national and local regulations on discharging waste waters.

1.6 ELECTRICAL CONNECTION.

The "Hercules Solar 26 2 ErP" 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. disclaims any liability for damage or physical injury caused by failure to connect the boiler to an efficient earthing system or failure to comply with the reference standards.

Also ensure that the electrical installation corresponds to maximum absorbed power specifications as shown on the boiler data nameplate.
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 the earth connection ⏚ on this network must also feature a multi-pole circuit breaker of class III overvoltage category.
When replacing the power supply cable, contact a qualified firm (e.g. the Authorised After-Sales Technical Assistance Service).
The power cable must be laid as shown (Fig. 1-3).
In the event of mains fuse replacement on the P.C.B., use a 3.15A quick-blow fuse. For the main power supply to the appliance, never use adapters, multiple sockets or extension leads.

Solar panels electrical connection. Only use an appropriately sized cable to make the connections. Making them follow the same route as the power supply cable (in the relevant pipe), make the connections on the control panel on clamps 45 and 46, eliminating the resistance R15 (Fig. 1-2). Connect the supplied probe on the solar panel and position it in the relevant seat.

Installation with system operating at direct low temperature. The boiler can directly feed a low temperature system by acting on parameter "P66" (Par. 3.8) and setting the delivery temperature adjustment range "P66/A" and "P66/B". 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 60°C. The thermostat must be positioned on the system flow pipe at a distance of at least 2 metres from the boiler.

1.7 REMOTE CONTROLS AND ROOM CHRONO-THERMOSTATS (OPTIONAL).

The boiler is prepared for the application of room chrono-thermostats or remote controls, which are available as optional kits. All Immergas chrono-thermostats are connected with 2 wires only. Carefully read the user and assembly instructions contained in the accessory kit.

- On/Off digital Immergas chrono-thermostat (Fig. 1-3). The chrono-thermostat allows:
  - set two room temperature value: one for daytime (comfort temperature) and one for night-time (reduced temperature);
  - set a weekly program with four daily switch on and switch off times;
  - select the required operating mode from the various possible alternatives:
  - manual mode (with adjustable temperature).
  - automatic mode (with set program).
  - forced automatic mode (momentarily changing the temperature of the automatic program).

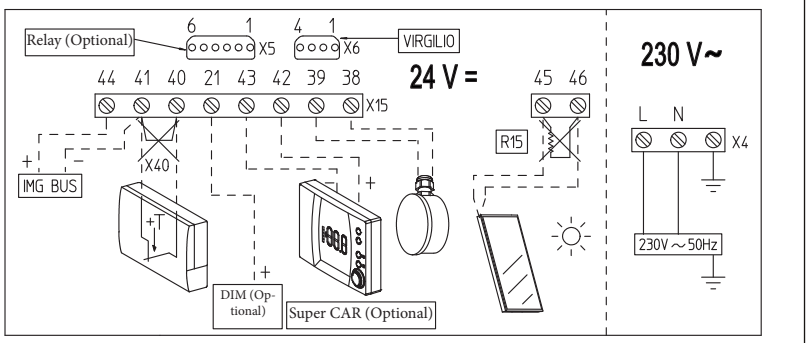
  The chrono-thermostat is powered by two 1.5V LR 6 type alkaline batteries.
- There are two types of remote controls available: Comando Amico Remoto remote control^{V2} (CAR^{V2}) (Fig. 1-4) and Super Comando Amico Remoto remote control (Super CAR) (Fig. 1-5) both with a climate chrono-thermostat operation. In addition to the functions described in the previous point, the chrono-thermostat panels enable the user to control all the important information regarding operation of the appliance and the central 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 panel is provided with self-diagnosis to display any boiler functioning anomalies. The climate chrono-thermostat incorporated into the remote panel enables the system flow temperature to be adjusted to the actual needs of the room being heated, in order to obtain the desired room temperature with extreme precision and therefore with evident saving in running costs. The chrono-thermostat is fed directly by the boiler by means of the same 2 wires used for transmitting data between boiler and device.

Important: if the system is subdivided into areas using the relevant kit, the CAR ^{V2} and the Super CAR must be used with its climate thermostat function disabled, i.e. it must be set to On/Off mode.

CAR ^{V2}, Super CAR or On/Off chrono-thermostat electrical connection (Optional). *The operations described below must be performed after having removed the voltage from the appliance.* Any On/Off room chrono-thermostat must be connected to clamps 40 and 41 eliminating jumper X40 (Fig. 3-2). Make sure that the On/Off thermostat contact is of the "clean" type, i.e. independent of the mains voltage, otherwise the P.C.B. would be damaged. Any CAR ^{V2} or Super CAR must be connected by means of terminals IN+ and IN- to terminals 42 and 43 on the P.C.B. (in the boiler), eliminating jumper X40 and respecting polarity (Fig. 3-2). Connection with the wrong polarity prevents functioning, but without damaging the CAR^{V2} The boiler can only be connected to one remote control.

Important: if the Comando Amico Remoto remote control^{V2} 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.

1-2



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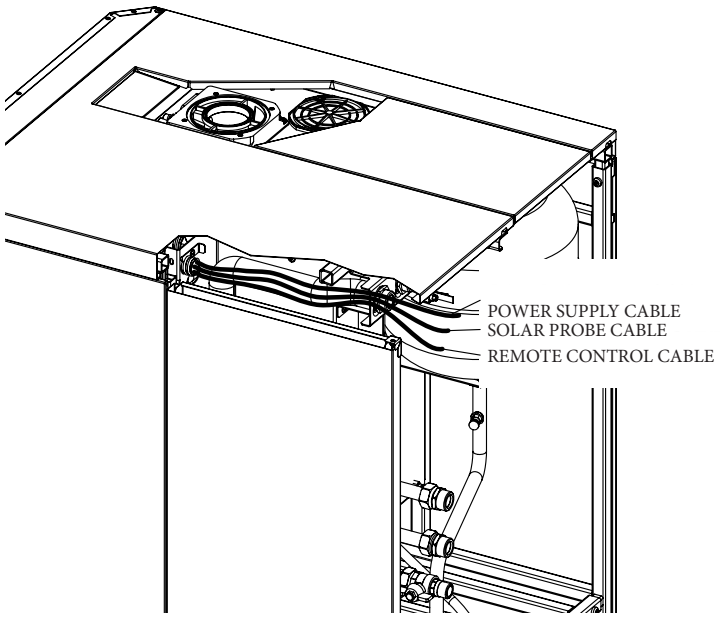
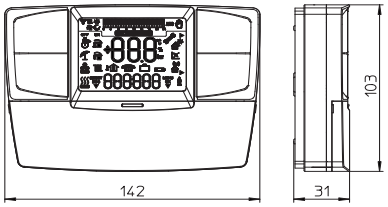


1.8 EXTERNAL TEMPERATURE PROBE (OPTIONAL).

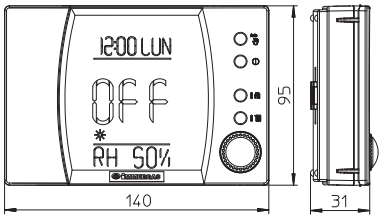
The boiler is designed for the application of the external temperature probe (Fig. 1-6), which is available as an optional kit. Refer to the relative instruction sheet to position the external probe. The probe can be connected directly to the boiler electrical system and allows the max. system flow temperature to be automatically decreased when the external temperature increases, in order to adjust the heat supplied to the system according to the change in external temperature. The external probe always operates when connected, regardless of the presence or type of room chrono-thermostat used and can work in combination with Immergas timer thermostats. The correlation between system flow temperature and external temperature is determined by the parameters set in menu "M5" under item "P66" according to the curves represented in the diagram (Fig. 1-7). The electric connection of the external probe must be made on clamps 38 and 39 on the boiler P.C.B. (Fig. 3-2).

Comando Amico Remoto remote control V2 (CAR V2)
On/Off digital chrono-thermostat.

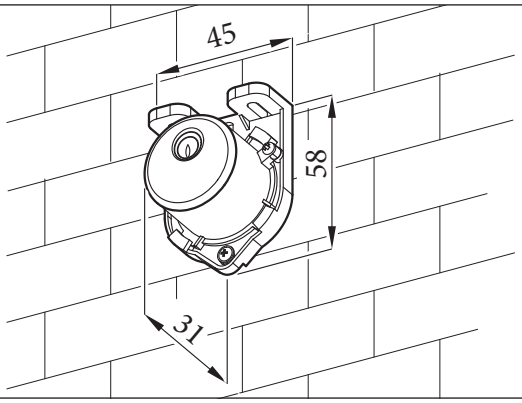


1-4

Super Comando Amico Remoto remote control
(Super CAR)

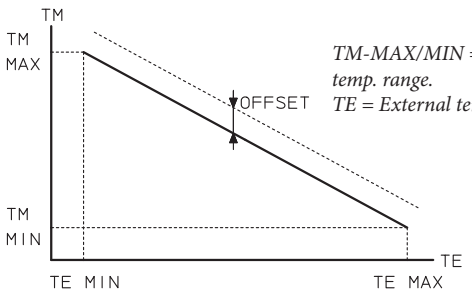


1-5



1-6

EXTERNAL PROBE
Correction law of the flow temperature depending on the external temperature and user adjustment of the central heating temperature.



TM-MAX/MIN = Selected flow temp. range.
TE = External temperature.

1-7

1.9 IMMERGAS FLUE SYSTEMS.

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

Attention: the boiler must be installed exclusively with an original Immergas "Green Range" inspectionable air intake device and fumes extraction system made of plastic, as required by the regulations in force.

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

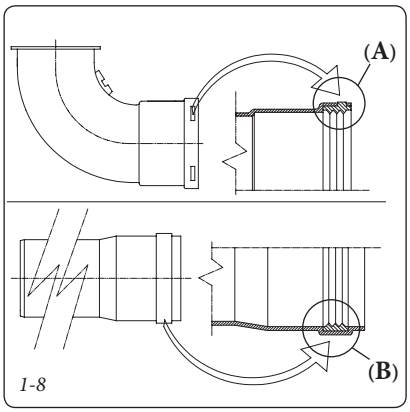
This system can be identified by an identification mark and special distinctive marking bearing the note: "only for condensing boilers".

- Resistance factors and equivalent lengths. Each flue component has a *Resistance Factor* based on experimental tests and specified in the table below. The Resistance Factor for individual components is independent from the type of boiler on which it is installed and has a dimensionless size. It is however, conditioned by the temperature of the fluids that pass through the pipe and therefore, varies according to applications for air intake or flue exhaust. Each single component has a resistance corresponding to a certain length in metres of pipe of the same diameter; the so-called *equivalent length*, can be obtained from the ratio between the relative Resistance Factors. *All boilers have an experimentally obtainable maximum Resistance Factor equal to 100.* The maximum Resistance Factor allowed corresponds to the resistance encountered with the maximum allowed pipe length for each type of Terminal Kit. This information allows calculations to be made to verify the possibility of setting up various flue configurations.
- **Positioning the gaskets (black) for "green range" flue systems.** Position the gasket correctly (for bends and extensions) (Fig. 1-8):
  - gasket (A) with notches, to use for bends;
  - gasket (B) without notches, to use for extensions;

  N.B.: if component lubrication (already carried out by the manufacturer) is not sufficient, remove the residual lubricant using a dry cloth, then to ease fitting coat the parts with talc, supplied in the kit.
- Coupling extension pipes and concentric elbows. To install push-fitting extensions with other elements of the flue, proceed as follows: Install the concentric pipe or elbow with the male side (smooth) on the female side (with lip seal) to the end stop on the previously installed element in order to ensure sealing efficiency of the coupling.

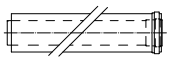
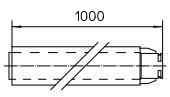
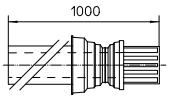
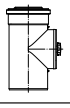
Attention: if the exhaust terminal and/or concentric extension pipe needs shortening, consider that the internal duct must always protrude by 5 mm with respect to the external duct.

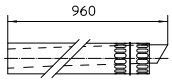
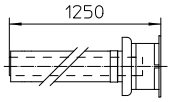
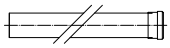
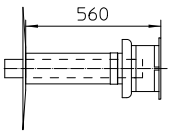
- **N.B.:** for safety purposes, do not obstruct the boiler intake/exhaust terminal, even temporarily.
- **N.B.:** when installing horizontal pipes, a minimum inclination of 3% must be maintained and a section clip with pin must be installed every 3 metres.



1-8

1.10 TABLES OF RESISTANCE FACTORS AND EQUIVALENT LENGTHS.

TYPE OF DUCT		Resistance Factor (R)	Equivalent length in m of concentric pipe Ø 80/125
Concentric pipe Ø 80/125 m 1		2.1	1
Concentric bend 90° Ø 80/125		3.0	1.4
Concentric bend 45° Ø 80/125		2.1	1
Terminal complete with concentric horizontal intake-exhaust Ø 80/125		2.8	1.3
Terminal complete with concentric vertical intake-exhaust Ø 80/125		3.6	1.7
Concentric bend 90° Ø 80/125 with inspection		3.4	1.6
Stub pipe with inspection Ø 80/125		3.4	1.6

TYPE OF DUCT		Resistance Factor (R)	Equivalent length in m of concentric pipe Ø 60/100	Equivalent length in metres of pipe Ø 80	Equivalent length in metres of pipe Ø 60	Equivalent length in m of concentric pipe Ø 80/125
Concentric pipe Ø 60/100 m 1		Intake and Exhaust 6.4	**m 1**	Intake m 7.3 Exhaust m 5.3	Exhaust m 1.9	m 3.0
Concentric bend 90° Ø 60/100		Intake and Exhaust 8.2	**m 1.3**	Intake m 9.4 Exhaust m 6.8	Exhaust m 2.5	m 3.9
Concentric bend 45° Ø 60/100		Intake and Exhaust 6.4	**m 1**	Intake m 7.3 Exhaust m 5.3	Exhaust m 1.9	m 3.0
Terminal complete with concentric horizontal intake-exhaust Ø 60/100		Intake and Exhaust 15	**m 2.3**	Intake m 17.2 Exhaust m 12.5	Exhaust m 4.5	m 7.1
Concentric horizontal intake- exhaust terminal Ø 60/100		Intake and Exhaust 10	**m 1.5**	Intake m 11.5 Exhaust m 8.3	Exhaust m 3.0	m 4.7
Terminal complete with concentric vertical intake-exhaust Ø 60/100		Intake and Exhaust 16.3	**m 2.5**	Intake m 18.7 Exhaust m 13.6	Exhaust m 4.9	m 7.7
Concentric vertical intake-exhaust terminal Ø 60/100		Intake and Exhaust 9	**m 1.4**	Intake m 10.3 Exhaust m 7.5	Exhaust m 2.7	m 4.3
Pipe Ø 80 m 1		Intake 0.87 Exhaust 1.2	m 0.1 m 0.2	**Intake m 1.0** **Exhaust m 1.0**	Exhaust m 0.4	m 0.4 m 0.5
Complete intake terminal Ø 80 m 1		Intake 3	m 0.5	**Intake m 3.4**	Exhaust m 0.9	m 1.4
Intake terminal Ø 80 Exhaust terminal Ø 80		Intake 2.2 Exhaust 1.9	m 0.35 m 0.3	**Intake m 2.5** **Exhaust m 1.6**	Exhaust m 0.6	m 1 m 0.9
Bend 90° Ø 80		Intake 1.9 Exhaust 2.6	m 0.3 m 0.4	**Intake m 2.2** **Exhaust m 2.1**	Exhaust m 0.8	m 0.9 m 1.2
Bend 45° Ø 80		Intake 1.2 Exhaust 1.6	m 0.2 m 0.25	**Intake m 1.4** **Exhaust m 1.3**	Exhaust m 0.5	m 0.5 0.7
Pipe Ø 60 m 1 for ducting		Exhaust 3.3	m 0.5	Intake 3.8 Exhaust 2.7	**Exhaust m 1.0**	m 1.5
Bend 90° Ø 60 for ducting		Exhaust 3.5	m 0.55	Intake 4.0 Exhaust 2.9	**Exhaust m 1.1**	m 1.6
Reduction Ø 80/60		Intake and Exhaust 2.6	m 0.4	Intake m 3.0 Exhaust m 2.1	**Exhaust m 0.8**	m 1.2
Terminal complete with exhaust vertical Ø 60 for ducting		Exhaust 12.2	m 1.9	Intake m 14 Exhaust m 10.1	**Exhaust m 3.7**	m 5.8

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

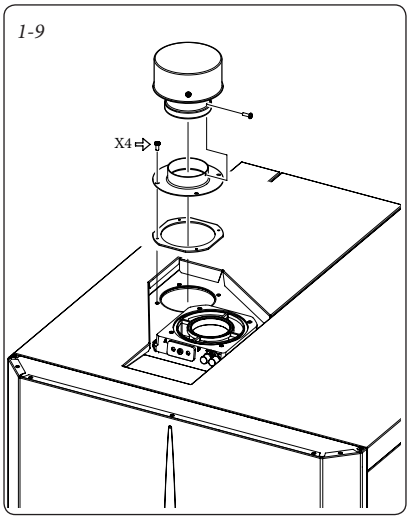
In this configuration the relevant terminal must be used (present in the intake kit for the installation in question) to be placed on the intake hole above the sealed chamber (Fig. 1-8). Air intake takes place directly from the environment and flue exhaust in individual chimney or to the outside. The boiler in this configuration, following the assembly instructions stated on the relative instruction sheet, is classified as type B_{23} or B_{53} (according to the applicable regulations).
With this configuration:
air intake takes place directly from the environment in which the boiler is installed and only functions in permanently ventilated rooms

- the flue gas exhaust must be connected to its own individual flue or ducted 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 processing of wood, coal dust, cement, etc.), which may be harmful for the components of the appliance and jeopardise operation;
- in B_{23} and B_{53} configuration, the boilers must not be installed in bedrooms, bathrooms or in studio flats;
- installation of appliances in B_{23} or B_{53} configuration is recommended in non-residential premises and which are permanently ventilated.

The technical regulations in force must be respected.

Max. length of exhaust duct. The flue pipe (both vertical or horizontal) can be *extended to a max. length of 30 linear metres*.

1-9



1.12 CONCENTRIC HORIZONTAL KIT INSTALLATION.

Type C configuration, sealed chamber and fan assisted.

The installation of this terminal is governed by the applicable technical standards and subsequent amendments, that enables wall flue exhaust for condensing boilers with low NOx in the cases provided. The position of the terminal (in terms of distances from openings, overlooking buildings, floor, etc.) must be in compliance with the regulations in force.

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

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

  N.B.: for proper system operation the terminal with grid must be installed correctly ensuring that, the "high" indication on the terminal is observed during installation.

Horizontal intake-exhaust kit Ø 60/100 Kit assembly (Fig. 1-10): install the bend with flange (2) on the central hole of the boiler, positioning gasket (1) with the circular projections downwards in contact with the boiler flange, and tighten using the screws supplied with the kit. Fit the Ø 60/100 (3) concentric terminal pipe with the male side (smooth) to the female side of the bend (2) up to the end stop; making sure that the internal and external wall sealing plate have been fitted, this will ensure sealing and joining of the elements making up the kit.

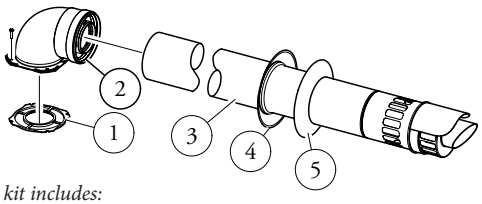
- Extensions for Ø 60/100 horizontal kit (Fig. 1-11). The kit with this configuration can be extended up to a *max. 12.9 horizontal m* including the terminal with grid and excluding the concentric bend leaving the boiler. This configuration corresponds to a resistance factor of 100. In this case the special extensions must be requested.

Immergas also provides a Ø 60/100 simplified terminal, which in combination with its extension kits allows you to reach a maximum extension of 11.9 metres.

Horizontal intake-exhaust kit Ø 80/125 Kit assembly (Fig. 1-12): to install the kit Ø 80/125 one must use the flanged adapter kit in order to install the flue system Ø 80/125. Install the flanged adaptor (2) on the central hole of the boiler, positioning gasket (1) with the circular projections downwards in contact with the boiler flange and tighten using the screws supplied with the kit. Engage the bend (3) with the male side (smooth) to the end stop on the adapter (1). Fit the Ø 80/125 (5) concentric terminal pipe with the male side (smooth) to the female side of the bend (4) (with lip seals) up to the end top; making sure that the internal (6) and external wall sealing plate (7) have been fitted, this will ensure sealing and joining of the elements making up the kit.

- Extensions for horizontal kit Ø 80/125 (Fig. 1-13). The kit with this configuration can be extended up to a *max. length of 32 m*, including the terminal with grid and excluding the concentric bend leaving the boiler. If additional components are assembled, the length equivalent to the maximum allowed must be subtracted. In this case the special extensions must be requested.

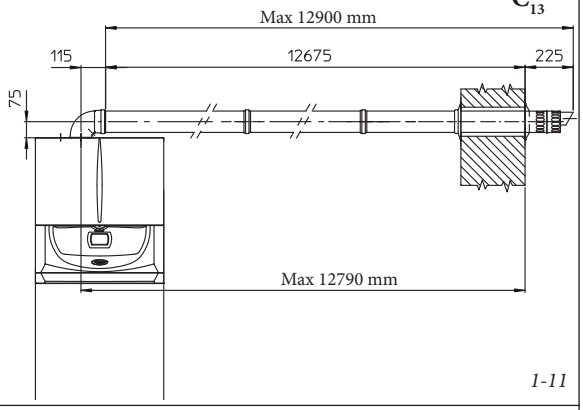
C_{13}



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

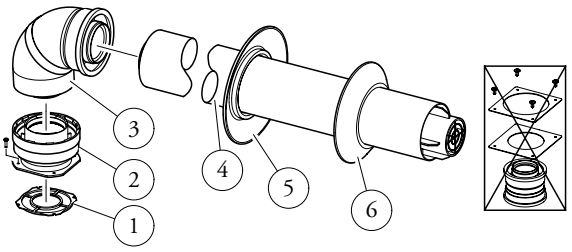
1-10

C_{13}



1-11

C_{13}

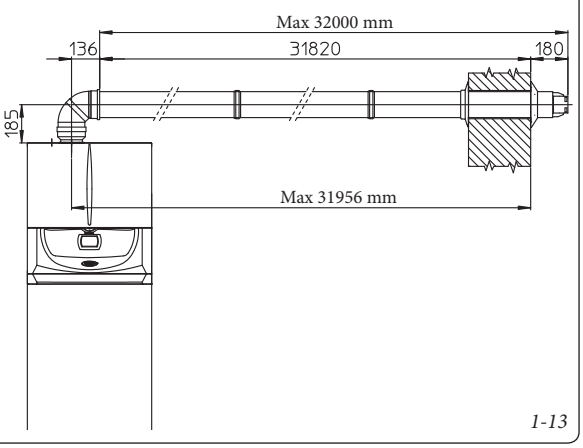


The adaptor kit includes:
N° 1 - Gasket (1)
N° 1 - Adaptor Ø 80/125 (2)

The Kit Ø 80/125 includes:
N° 1 - Concentric bend Ø 80/125 a 87° (3)
N° 1 - Int./exhaust concentric terminal Ø 80/125 (4)
N° 1 - Internal wall sealing plate (5)
N° 1 - External wall sealing plate (6)
The remaining kit components must not be used

1-12

C_{13}



1-13

1.13 CONCENTRIC VERTICAL KIT INSTALLATION.

Type C configuration, sealed chamber and fan assisted.

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

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

Vertical kit with aluminium tile Ø 60/100.
Kit assembly (Fig. 1-14): install the concentric flange (2) on the central hole of the boiler, positioning gasket (1) with the circular projections downwards in contact with the boiler flange, and tighten using the screws supplied with the kit.
Installation of the fake aluminium tile: replace the tiles with the aluminium sheet (4), shaping it to ensure that rainwater runs off. Position the fixed half-shell (6) on the aluminium tile and insert the intake-exhaust pipe (5). Fit the Ø 60/100 (3) concentric terminal pipe with the male end (5) (smooth) into the flange (2) up to the stop; making sure that the wall sealing plate has been fitted (3), this will ensure sealing and joining of the elements making up the kit.

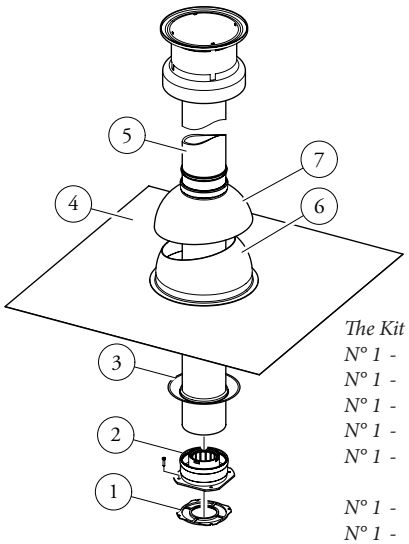
Note: *when the boiler is installed in areas where very rigid temperatures can be reached, a special anti-freeze kit is available that can be installed as an alternative to the standard kit.*

- Extensions for vertical kit Ø 60/100 (Fig. 1-15). The kit with this configuration can be extended to *a max. straight vertical length of 14.4 m*, including the terminal. This configuration corresponds to a resistance factor of 100. In this case specific extensions must be requested.

Vertical kit with aluminium tile Ø 80/125.
Kit assembly (Fig. 1-16): to install the kit Ø 80/125 one must use the flanged adapter kit in order to install the flue system Ø 80/125. Install the flanged adaptor (2) on the central hole of the boiler, positioning gasket (1) with the circular projections downwards in contact with the boiler flange and tighten using the screws supplied with the kit. Installation of the fake aluminium tile: replace the tiles with the aluminium sheet (4), shaping it to ensure that rainwater runs off. Position the fixed half-shell (5) on the aluminium tile and insert the intake-exhaust pipe (7). Fit the Ø 80/125 concentric terminal pipe with the male side (smooth) to the female side of the adapter (1) (with lip gaskets) up to the end stop; making sure that the wall sealing plate (3) has been fitted, this will ensure sealing and joining of the elements making up the kit.

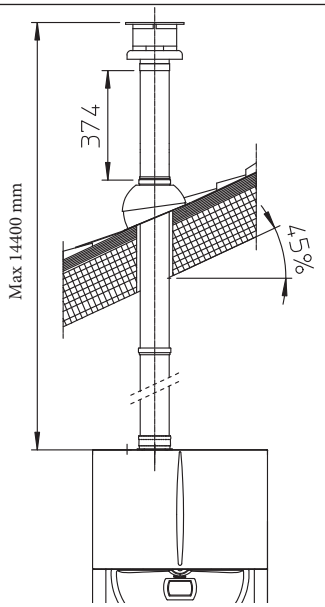
- Extensions for vertical kit Ø 80/125 (Fig. 1-17). The kit with this configuration can be extended up to a *max. length of 32 m* including the terminal. If additional components are assembled, the length equivalent to the maximum allowed must be subtracted. In this case specific extensions must be requested.

1-14 **C_{33}**

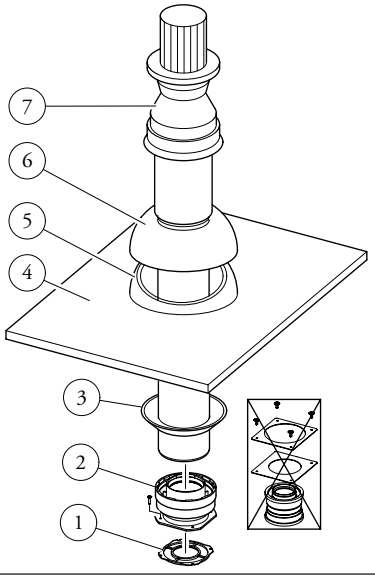


The Kit includes:
N° 1 - Gasket (1)
N° 1 - Female concentric flange (2)
N° 1 - Wall sealing plate (3)
N° 1 - Aluminium tile (4)
N° 1 - Int./exhaust concentric pipe Ø 60/100 (5)
N° 1 - Fixed half-shell (6)
N° 1 - Mobile half-shell (7)

1-15 **C_{33}**



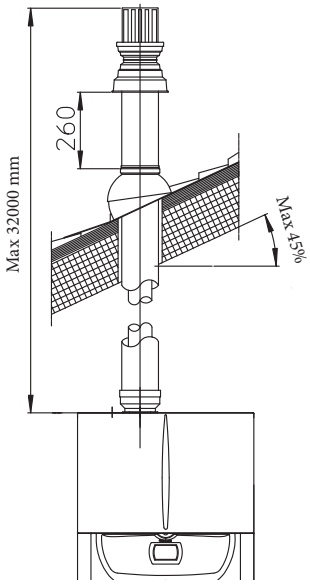
1-16 **C_{33}**



The adaptor kit includes:
N° 1 - Gasket (1)
N° 1 - Adaptor Ø 80/125 (2)

The Kit Ø 80/125 includes:
N° 1 - Wall sealing plate (3)
N° 1 - Aluminium tile (4)
N° 1 - Fixed half-shell (5)
N° 1 - Mobile half-shell (6)
N° 1 - Int./exhaust concentric pipe Ø 80/125 (7)
The remaining kit components must not be used

1-17 **C_{33}**



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

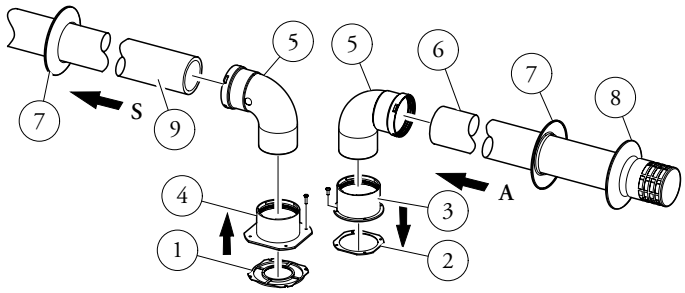
Separator kit Ø 80/80. This kit allows air to come in from outside the building and the fumes to exit from the chimney or flue through divided flue exhaust and air intake pipes. Combustion products are expelled from pipe (S) (in plastic, so as to resist acid condensate). Air is taken in through duct (A) for combustion (this is also in plastic). The intake pipe (A) can be installed either on the right or left hand side of the central exhaust pipe (S). Both ducts can be routed in any direction.

- Kit assembly (Fig. 1-18): install flange (4) on the central hole of the boiler, positioning gasket (1) with the circular projections downwards in contact with the boiler flange, and tighten using the hex screws with flat tip supplied with the kit. Remove the flat flange present in the most external hole and replace it with the flange (3), positioning the gasket (2) already present in the boiler and tighten using the supplied self-threading screws. Fit the male side (smooth) to the bends (5) in the female side of the flanges (3 and 4). Fit the intake terminal (6) with the male side (smooth) in the female side of the bend (5) up to the end stop, ensuring that the internal and external wall sealing plates are fitted. Fit the exhaust pipe (9) with the male side (smooth) to the female side of the bend (5) up to the end stop; making sure that the internal wall sealing plate has been fitted, this will ensure sealing and joining of the elements making up the kit.
- Installation clearances (Fig. 1-19). The minimum installation clearance measurements of the Ø 80/80 separator terminal kit have been stated in some limit conditions.
- Extensions for separator kit Ø 80/80. The maximum vertical straight length (without bends) that can be used for Ø 80 intake and exhaust pipes is 41 metres, regardless from whether they are used for intake or exhaust. The maximum horizontal straight length (with bend in suction and in exhaust) that can be used for Ø 80 intake and exhaust pipes is 36 metres, regardless from whether they are used for intake or exhaust.

N.B.: to favour the removal of possible condensate forming in the exhaust pipe, tilt the pipes towards the boiler with a minimum slope of 1.5% (Fig. 1-20).

1-18

C_{53}* - C_{83}

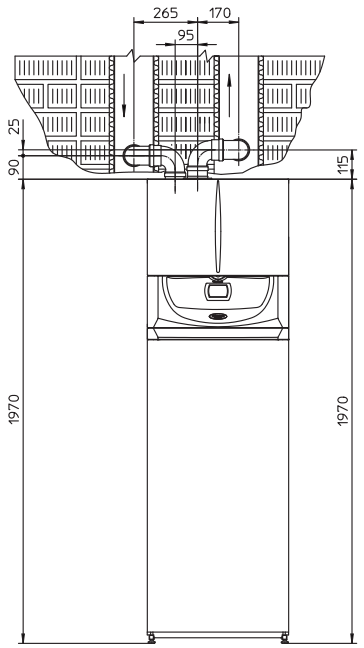


The kit includes:
N° 1 - Exhaust gasket (1)
N° 1 - Flange seal gasket (2)
N° 1 - Female intake flange (3)
N° 1 - Female drain flange (4)
N° 2 - Bend 90° Ø 80 (5)
N° 1 - Intake terminal Ø 80 (6)
N° 2 - Internal wall sealing plates (7)
N° 1 - External wall sealing plate (8)
N° 1 - Drain pipe Ø 80 (9)

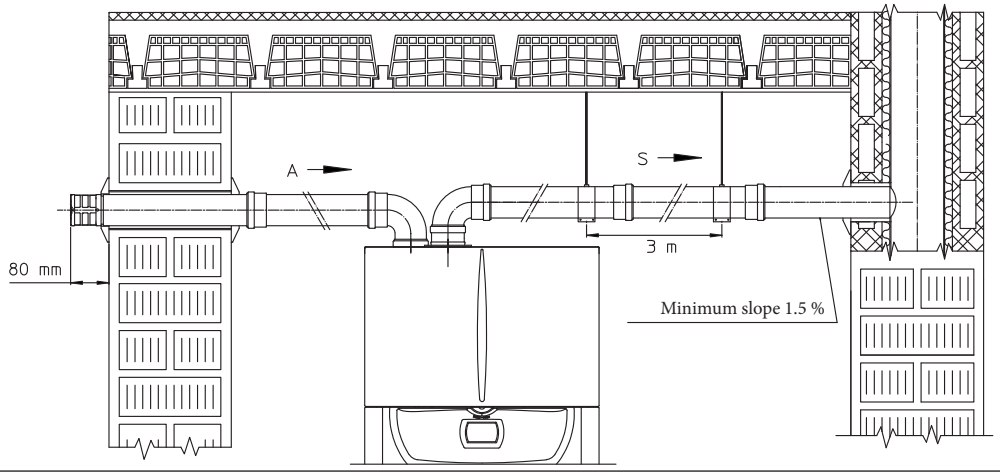
* *to er complete C_{53} configuration also provide for a roof discharge terminal.*

1-19

C_{43}



C_{83}



1-20

1.15 ADAPTOR C9 KIT INSTALLATION.
This kit allows an Immergas boiler to be installed in "C_{93}" configuration, with combustion air intake directly from the shaft where the flue gas exhaust is, obtained by means of a ducting system.

System composition.
The system must be combined with the following components (sold separately) to be functional and complete:
- kit C_{93} Ø 100 or Ø125 version
- ducting kit Ø 60 or Ø 80
- fumes exhaust kit Ø 60/100 or Ø 80/125 configured according to the installation and type of boiler.

Kit Assembly.
- Mount the components of kit "C9" on the door (A) of the ducting system (Fig. 1-22).
- (Version Ø 125 only) mount the flanged adaptor (11) interposing the concentric gasket (10) on the boiler, fitting it with the screws (12).
- Mount the ducting system as described in the relative instructions sheet.
- Calculate the distances between the boiler drain and the bend of the ducting system.
- Prepare the boiler flue system, making sure that the internal pipe of the concentric kit is fitted properly in the bend of the ducting system (quota "X" fig. 1-23), while the external pipe must be fitted on the adaptor until it stops (1).

  N.B.: to encourage the removal of possible condensate forming in the exhaust pipe, tilt the pipes towards the boiler with a minimum slope of 1.5%.
- Mount the cover (A) complete with adaptor (1) and caps (6) on the wall and assemble the flue system to the ducting system.

N.B.: (version Ø 125 only) before assembly check the gaskets are in the right position. In the event component lubrication (already carried out by the manufacturer) is not sufficient, remove the residual lubricant using a dry cloth, then to ease fitting coat the parts with common or industrial talc.

Once all components have been assembled properly, the exhaust fumes will be expelled via the ducting system; the combustion air for normal boiler operation will be aspirated directly by the shaft (Fig. 1-23).

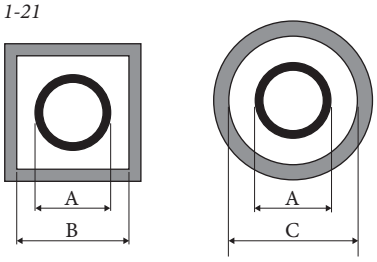
Technical data.
- The dimensions of the shafts must ensure a minimum gap between the outer wall of the smoke duct and the inner wall of the shaft: 30 mm for circular section shafts and 20 mm in the event of a square section shaft (Fig. 1-21).
- Maximum 2 changes of direction are allowed on the vertical section of the flue system with a maximum clearance angle of 30° with respect to the vertical.
- The maximum vertical extension using a Ø 60 ducting system is 13 m, the maximum extension includes 1 bend Ø 60/10 at 90°, 1 m of horizontal pipe 60/100, 1 90° ducted bend Ø 60 and the roof terminal for ducting.

  To determine the C_{93} flue system in configurations other than that described (Fig. 1-23) one must consider that 1 metre of ducted pipe according to the indications described has a resistance factor equal to 4.9.
- The maximum vertical extension using a Ø 80 ducting system is 28 m, the maximum extension includes 1 adapter 60/100 to 80/125, 1 87° bend Ø 80/125, 1 m of horizontal pipe 80/125, 1 90° ducted bend Ø 80 and the roof terminal for ducting.

  To determine the C_{93} flue system in configurations other than that described (Fig. 1-23) one must consider the following pressure drops:
  - 1 m of concentric pipe Ø 80/125 = 1 m of ducted pipe;
  - 1 87° bend = 1.4 m of ducted pipe;

  Consequently one must subtract the equivalent length of the part added to the 28 m available.

1-21



Rigid Ø 60 ducting (A) mm	SHAFT (B) mm	SHAFT (C) mm
66	106	126

Rigid Ø 80 ducting (A) mm	SHAFT (B) mm	SHAFT (C) mm
86	126	146

Flexible Ø 80 ducting (A) mm	SHAFT (B) mm	SHAFT (C) mm
90	130	150

Kit composition:

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

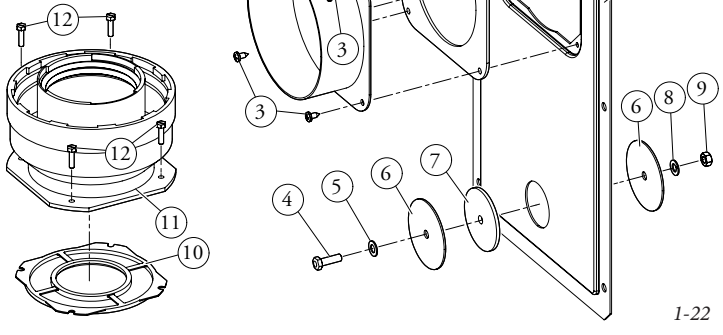
Supplied separately:

Ref.	Qty	Description
A	1	Ducting kit door

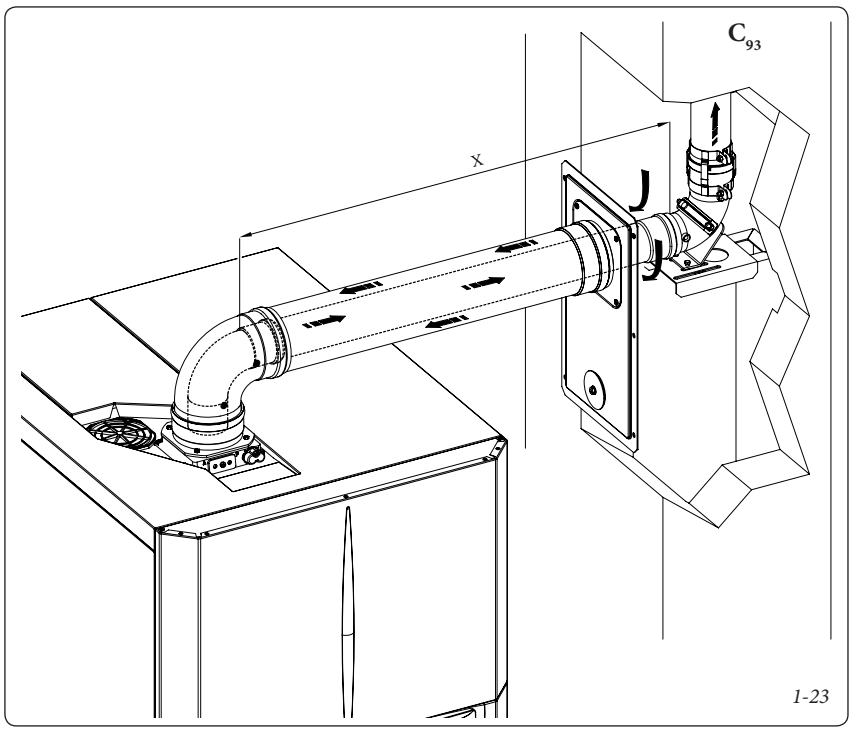
Installation drawings key:

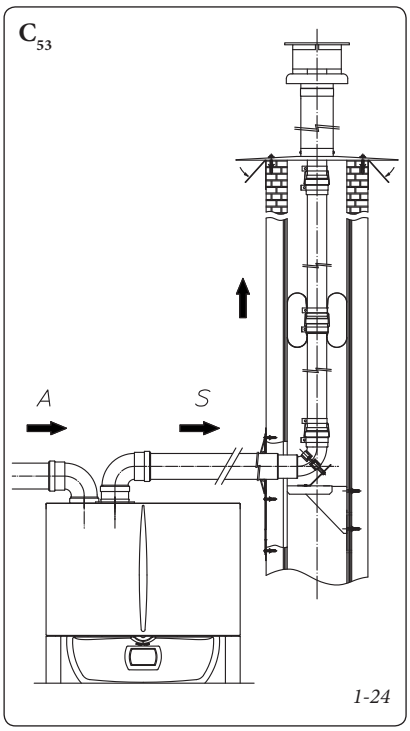
(1) Unique identification of the component in the kit

[A] Identification of the component not supplied in this kit



1-22





1.16 DUCTING OF FLUES OR TECHNICAL SLOTS.

Ducting is an operation through which, via the introduction of one or more relevant pipes, one achieves a system for the evacuation of the combustion products of a gas appliance, made up from the coupling of an existing or new ducting pipe with a chimney, flue or technical slot (also in new buildings) (Fig. 1-24). Ducting requires ducts declared to be suitable for the purpose by the manufacturer, following the installation and user instructions, provided by the manufacturer and the requirements of the standards in force.

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

In any case, ducting operations must respect the provisions contained in the standard and in current technical regulations; in particular, the declaration of conformity must be compiled at the end of work and on commissioning of the ducted system. The instructions in the project or technical report must likewise be followed, in cases provided for by the standard and current technical regulations. 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 fumes, dusts or gases that can alter the normal thermophysical or chemical conditions; existence of temperatures coming within the standard range of daily variation, etc.).
- Installation and maintenance must be performed according to the indications supplied by the manufacturer and in compliance with the provisions in force.
- The max. possible length of the Ø 60 flexible ducting vertical section is equal to 22 m. This length is obtained considering the complete Ø 80 exhaust terminal, 1m of Ø 80 pipe in exhaust, two 90° Ø 80 bends at boiler outlet.
- The max. possible length of the Ø 80 flexible ducting vertical section is equal to 30 m. This length is obtained considering the complete exhaust terminal, 1m of Ø 80 pipe in exhaust, two 90° Ø 80 bends at boiler outlet for connecting to the ducting system and two direction changes of the flexible hose inside the chimney/ technical slot.
- The maximum possible length of the Ø 80 rigid ducting vertical section is equal to 30 m. This length is obtained considering the complete Ø 80 exhaust terminal, 1m of Ø 80 pipe in exhaust, two 90° Ø 80 bends on the boiler outlet.

1.17 CONFIGURATION TYPE B, OPEN CHAMBER AND FAN ASSISTED FOR INDOORS.

The appliance can be installed inside buildings in $_{23}$ or B_{53} mode; in this case, all technical rules and national and local regulations in force, must be complied with.

For installation the suitable kit must be used, referred to in paragraph 1.11.

1.18 FLUE GAS EXHAUST TO FLUE/ CHIMNEY.

The flue exhaust does not necessarily have to be connected to a branched type traditional flue. The flue exhaust, for boiler clots installed in C configuration, can be connected to a special LAS type multiple flue. For B_{23} configurations, exhaust is only allowed into individual chimney or directly into the external atmosphere via a relevant terminal. The multiple flues and the combined flues must also only be connected to type C appliances of the same type (condensing), having nominal heat inputs that do not differ by more than 30% less with respect to the maximum that can be attached and powered by the same fuel. The thermo-fluid dynamic features (flue flow rate, % of carbon dioxide, % humidity etc....) of the appliances attached to the same multiple flues or combined flues, must not differ by more than 10% with respect to the average boiler attached. Multiple and combined flues must be specially designed according to the calculation method and requirements of the standards in force, by professionally qualified technical staff. Chimney or flue sections for connection of the flue exhaust pipe must comply with requisites of technical standards in force.

1.19 FLUES, CHIMNEYS, CHIMNEY POTS AND TERMINALS.

The flues, chimneys and chimney pots for the evacuation of combustion products must be in compliance with applicable technical standards. Chimneys and roof-installed exhaust terminals must comply with the outlet height and with the distance from technical volumes set forth by the technical standards in force.

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

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

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

1.20 CENTRAL HEATING CIRCUIT FILLING.

Once the boiler is connected, proceed with system filling via the filling cock (Fig. 2-8). Filling is performed at low speed to ensure release of air bubbles in the water via the boiler and central heating system vents.
The pump may be noisy on start-up due to the presence of air. This noise should stop after a few minutes of functioning and however after having correctly bled the air contained in the hydraulic circuit.

The boiler incorporates an automatic vent valve positioned on the boiler pump and one positioned on the hydraulic manifold. *Make sure that the hoods are loosened.* Open the radiator vent valves.
Close radiator vent valves when only water escapes from them.
Close the filling cock when the boiler pressure gauge indicates approx. 1.2 bar.

N.B.: during these operations, turn on the circulating pump at intervals using the main switch on the control panel. *Vent the circulation pump by loosening the front cap and keeping the motor running and assuring that the liquid that escapes cannot cause injury/damage to persons/objects.* Tighten the cap after the operation.

Attention: to carry out the filling procedure correctly, activate the "automatic vent" function, see paragraph 3.14.

1.21 CONDENSATE TRAP FILLING.

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

1.22 GAS SYSTEM START-UP.

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

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

1.23 SOLAR CIRCUIT START-UP.

Preliminary checks. Before filling the hydraulic circuit and starting the system, carry out the following checks:

- ensure that the declaration of conformity of installation of the solar system is supplied with the appliance;
- check the functionality of the safety devices, particularly:
  - safety valve (6 bar)
  - expansion vessel
  - thermostatic mixing valve
- make sure there are no leaks in the hydraulic circuit;
- make sure there is an air vent valve positioned in the highest point of the circuit above the manifold and that it is operational.

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

Expansion vessel factory-set pressure of the solar circuit hydraulic unit.
To compensate the high temperatures that can be reached by the liquid in the circuit and therefore its dilation, an expansion vessel has been envisioned that has sufficient capacity to perform this task.
The expansion vessels are supplied pre-loaded at 2.5 bar. It is therefore necessary to deflate them and reload them at the pressure required for the circuit.

The expansion vessel must be charged to:
1.5 bar + 0.1 bar for every metre of the water column.

"*metre of the water column*" means the vertical distance that is present between the expansion vessel and the solar manifold.
Example:
The circulation unit is found on the ground floor and the solar manifold is found on the roof at a hypothetical height of 6 m, the distance to be calculated is:
6 m x 0.1 bar = 0.6 bar
therefore the expansion vessel must be charged to:
1.5 + 0.6 = **2.1 bar**

Hydraulic unit safety valve.
There is a safety valve present on the hydraulic unit that protects the system from an excessive increase in pressure. This valve intervenes by discharging the liquid contained in the circuit when the pressure reaches 6 bar.
If the safety valve intervenes and therefore part of the liquid contained in the circuit is lost, it must be re-integrated.

1.24 SOLAR CIRCUIT FILLING.

N.B.: If errors occur during installation, operation and maintenance, due to non compliance with the technical laws in force, standards or instructions contained in this manual (or however supplied by the manufacturer), the manufacturer accepts no contractual and extra-contractual liability for any damages and the appliance warranty is invalidated.

The system can only be filled when:

- any operational residues have been eliminated that may cause obstructions and deteriorate the features of the glycol over time;
- any presence of water in the system has been eliminated, which could otherwise cause damage to the system in winter;
- the absence of leaks has been verified by checks using air;
- the storage tank unit has been filled;
- the expansion vessel has been charged according to system requirements.

The system must be filled only using the glycol supplied by Immergas via an automatic pump. The system must be filled with vent valve closed. Proceed as follows to fill the system:

1 connect the flow pipe of the automatic pump to the fitting of the filling valve (9 Fig. 1-29) located under the pump and open the valve.

2 connect the return pipe of the automatic pump to the fitting of the draining valve (8 Fig. 1-29) and open the draining valve.

3 The flow-rate regulator screw (11 Fig. 1-29) must be orientated horizontally to ensure the closure of the integrated ball valve. Open the ball valve with thermometer (2 Fig. 1-29) above the pump.

4 fill the filling pump tank with the amount of glycol necessary plus a minimum amount to be left on the bottom of the tank in order to prevent air circulating inside the circuit.

5 The filling stage must have a minimum duration of 20 ÷ 25 minutes. This time is required to completely remove all air from the circuit. Every now and again open the flow rate regulator adjustment screw in order to eliminate air from inside (vertical position).

6 Eliminate any air in the solar circuit preferably using the so-called "pressure shot" method, which consists in raising the filling pressure of the circuit followed by a quick opening of the return valve (8 Fig. 1-29). This method allows air to be expelled from the circuit.

7 Close the filling cock and switch the filling pump off, open the regulator screw of the flow rate regulator (notch in vertical position).

8 Leave the circuit pressurised. Any pressure drop indicates a leak in the system.

9 Set the functioning pressure in the circuit at 1.5 bar + 0.1 bar for every metre in the distance between the solar manifold and the expansion vessel (practically, set the same pressure between expansion vessel and system).
N.B.: Do not exceed 2.5 bar.

10 Switch the solar pump on at a maximum speed and make it run for at least 15 minutes.

11 Disconnect the filling pump and close the fittings using the relevant screw caps.

12 Open the ball valve above the pump completely.

Do not fill the system in conditions with strong insolation and with the manifolds at high temperatures.
Make sure that all air bubbles have been completely eliminated.

Solar circuit vent.
Any air present in the system must be bled:
- on start-up (after filling);
- if necessary, e.g. in the case of breakdown.

Attention: danger of burns from the liquid contained in the collectors.

1.25 BOILER START UP (IGNITION).
In order to issue the Declaration of Conformity required by the laws in force, one must fulfil the following requirements to commission the boiler (the operations listed below must only be performed by qualified personnel and in the presence of professionals only):
- check that the internal system is properly sealed according to the specifications set forth by technical regulations in force;
- make sure that the type of gas used corresponds to boiler settings;
- Check that there are external factors that may cause the formation of fuel pockets;
- switch the boiler on and check correct ignition;
- make sure that the gas flow rate and relevant pressure values comply with those given in the manual (Par. 3.17);
- ensure that the safety device intervenes in the event of gas supply failure and check the relative intervention time;
- check the intervention of the main switch located upstream from the boiler and in the boiler;
- check that the intake/exhaust concentric terminal (if fitted) is not blocked.

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

N.B.: *only upon completing commissioning by an installer, may an authorised firm carry out an initial inspection of the boiler, which is required to activate the Immergas warranty. The test certificate and warranty is issued to the user.*

1.26 DHW MIXING VALVE.
The thermostatic mixing valve mixes the cold water with the hot water and via an internal wax element, sensitive to the temperature, automatically controls the temperature of the mixed water set by the user.

N.B.: for excellent management of the temperatures, the mixing valve must be set by the installer at a safety temperature required by the user. The outlet temperature of the domestic hot water can also depend on the value set on the boiler, however, the upper limit temperature value of the domestic hot water is always determined by the position of the mixing valve: knob position 1 = 42°C, 2 = 48°C, 3 = 54°C, 4 = 60°C (standard) (the values indicated refer to a storage tank with water at 70°C).

Any release of the three-way mixing valve. If after a long period of inactivity the three-way mixing valve is blocked, it is necessary to act manually on the knob positioned on the top of the same in a way to release the shutter of the valve itself.

1.27 CIRCULATION PUMP.
Boilers in the "Hercules Condensing ErP" series are supplied with 2 types of circulating pumps. Set operation modes according to one's installation requirements.

- **Boiler circulator pump.** The circulating pump is not equipped with speed selector. To change operation mode, parameter "Pump sp." in the "Configurations" boiler menu must be changed.

  Pump release. If the pump should be blocked after a long period of inactivity, it must be released. Loosen the front cap, making sure that the liquid that escapes cannot cause injury/damage to persons/objects and turn the motor shaft very carefully using a screwdriver so as not to damage the latter. Once the pump is released, close the vent cap.

- **Zone 1 circulator pump.** The pump is ideal for the requirements of each central heating system in a domestic and residential environment. In fact, the pump is equipped with electronic control that allows to set advanced functions.

  Adjustments. Turn the selector and set it on the desired curve to adjust the circulator pump.

Program	LED
P 1 lower (ΔP-V) P 2 upper (ΔP-V)	green
C 3 lower (ΔP-C) - H=3 m C 4 upper (ΔP-C) - H=4 m	orange
Min - Max	blue

Program P (1 lower 2 upper) (ΔP-V) - Proportional curve (green LED). This allows the pressure level (head) to be proportionally reduced as the system heat demand decreases (flow rate reduction). Thanks to this function, the electric power consumption of the circulator pump is reduced further: the energy (power) used by the pump decreases according to the pressure level and flow rate. With this setting, the pump guarantees optimal performance in most heating systems, thereby being particularly suitable in single-pipe and two-pipe installations. Any noise of the water flow in the pipes, valves and radiators is eliminated by reducing the head. Optimal conditions for thermal comfort and acoustic well-being.

Programs C (3 lower 4 upper) (ΔP-C) - Constant curve (orange LED). The circulator pump maintains the pressure level (head) constant as the system heat demand decreases (flow rate reduction). With these settings, the circulator pump is suitable for all floor systems where all the circuits must be balanced for the same drop in head.

MIN-MAX Program (Blue LED). The pump is distinguished by adjustable operating curves by positioning the selector in any point between the Min and Max positions, thereby satisfying any installation requirement (from a simple single-pipe to more modern and sophisticated systems) and always guarantee optimum performance. The precise working point can be selected in the entire field of use by gradually adjusting the speed.

Real time diagnostics: a lit LED (in various colours) provides information regarding the pump operating status, see fig. 1-25

Possible pump release. The pump block is indicated by a fixed red LED switching on. Turn the selector up to the MAX position, disconnect and reconnect the power to restart the automatic release process. The pump will then activate the procedure that will last a maximum of 15 minutes and the LED will flash upon each restart. It then turns blue for a few seconds and goes back to red if the attempt to restart is not successful. Once the process is complete, set the selector back to the desired curve and if the problem has not bee resolved, perform the manual release procedure as described below.
- Disconnect the power to the boiler (the LED switches off).
- Close the system flow and return and let the pump cool down.
- Empty the system circuit via the relative cock.
- Remove the motor and clean the impeller.
- Once unblocked, remount the motor.
- Fill the primary circuit; restore boiler power and set the desired curve.

Attention: there is a burns hazard due to high fluid temperature and pressure. **Burns hazard from coming in contact.**

INSTALLER

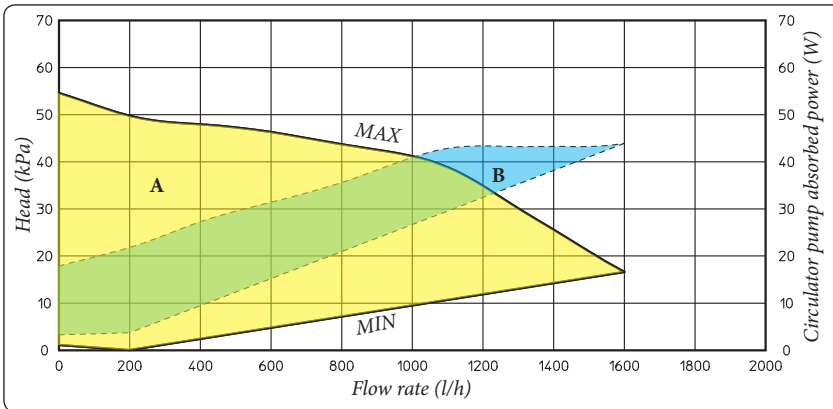
USER

MAINTENANCE TECHNICIAN

Circulating pump LED	Description	Diagnostics	Remedy
LED steady on	Pump noisy	Insufficient system pressure, circulating pump in cavitation	Restore correct thermal circuit pressure
		Presence of foreign matter in the impeller	Remove the motor and clean the impeller
Flashing white LED	Noises during circulation of the heat transfer fluid	Presence of air in the system	Vent the system
LED steady on		Flow rate too high	Reduce rotation speed
LED off	The circulator does not work	Power outage	Ensure the boiler is correctly powered, ensure the circulator is correctly powered
		Faulty circulating pump	Replace the circulating pump
Red LED		Rotor seized	Remove the motor and clean the impeller
		Insufficient power supply voltage	Check boiler power supply voltage

1-25

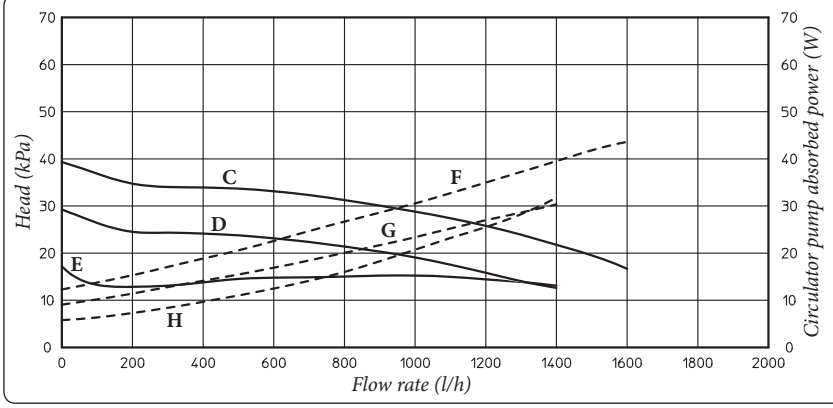
Head available to the direct zone system fixed speed.



1-26A

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

Head available to the direct zone system proportional or constant speed.



1-26B

Key:
C = Head available to the system with circulator pump selector in position C4 (standard setting)
D = Head available to the system with circulator pump selector in position C3
E = Head available to the system with circulator pump selector in position P2
F = Circulator pump power with selector in position C4 (standard setting)
G = Circulator pump power with selector in position C3
H = Circulator pump power with selector in position P2

1.28 SOLAR CIRCUIT CIRCULATION PUMP.

The units are supplied with circulating pumps fitted with speed regulator.
These settings are suitable for most systems.

In fact, the pump is equipped with electronic control to set advanced functions. For proper operation one must select the most suitable type of operation for the system and select a speed in the available range, with a focus on energy savings.

Display of operation status. During normal operation the status LED (2) is on green (flashing (FL) when it is in stand-by), the four yellow LEDs (3) indicate circulator absorption according to the following table:

Circulating pump LED	Absorption
G Y Y Y Y FL O˜ O˜ O˜ O˜	Circulator in stand-by
G Y Y Y Y On On O˜ O˜ O˜	0 ÷ 25 %
G Y Y Y Y On On On O˜ O˜	25 ÷ 50 %
G Y Y Y Y On On On On O˜	50 ÷ 75 %
G Y Y Y Y On On On On On	75 ÷ 100 %

Selection of operating mode. To see the current operation mode it is sufficient to press button (1) once.

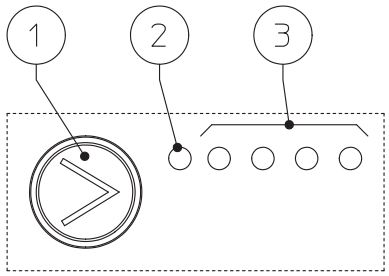
To change operation mode press the button for between 2 to 10 seconds until the current configuration flashing, each time the button is pressed all possible functions are scrolled cyclically according to the table (Fig. 1-28). After a few seconds without doing any operation the circulator memorises the selected mode and goes back to operation display.

- Constant curve: the circulator works maintaining system head constant. The circulator working point will move up or down according to the system's demand.
- PWM Profile: **do not use this operation mode.**

Selection button lock. The button has a feature that locks its operation to prevent accidental modifications, to lock the control panel it is necessary to press button (1) longer than 10 seconds (during which the current configuration flashes), the active lock is signalled by all LEDs of the control panel flashing. To unlock the button press again longer than 10 seconds.

Real time diagnostics: in the event of malfunction the LEDs provide information on the circulator operation status, see table (Fig. 1-29):

1-27



Key:
1 - Function selection button
2 - Green (G) / red (R) LED
3 - 4 yellow LEDs (Y)

Circulating pump LED	Description
G Y Y Y Y On On On O˜ O˜	Constant curve speed 1
G Y Y Y Y On On On On O˜	Constant curve speed 2
G Y Y Y Y On On On On On	Constant curve speed 3
G Y Y Y Y On On On O˜ On	Constant curve speed 4 **(default)**

DO NOT USE	
Circulating pump LED	**Description**
R Y Y Y Y On O˜ On O˜ O˜	PWM Profile speed 1
R Y Y Y Y On O˜ On On O˜	PWM Profile speed 2
R Y Y Y Y On O˜ On On On	PWM Profile speed 3
R Y Y Y Y On O˜ On O˜ On	PWM Profile speed 4

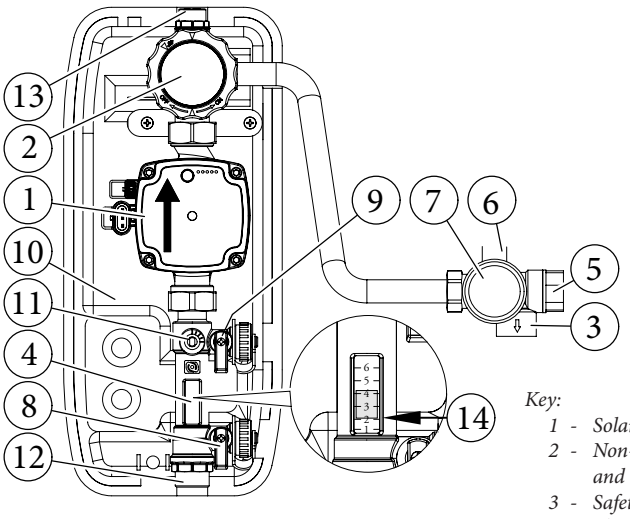
1-28

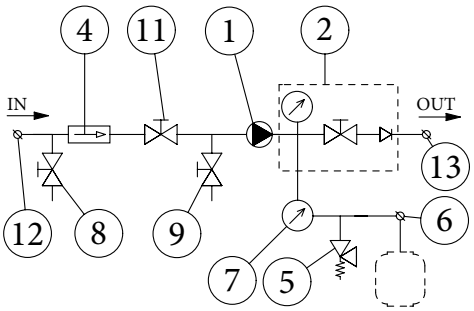
1-29

Circulating pump LED (first red LED)	Description	Diagnostics	Remedy
R Y Y Y Y On O˜ O˜ O˜ On	Circulator pump blocked	The circulator pump cannot restart automatically due to an anomaly	Wait for the circulator to make automatic release attempts or manually release the motor shaft acting on the screw in the centre of the head. If the anomaly persists replace the circulator.
R Y Y Y Y On O˜ O˜ On O˜	Abnormal situation (the circulator continues operating). low power supply voltage	Voltage off range	Check power supply
R Y Y Y Y On O˜ On O˜ O˜	Electrical fault (Circulator pump blocked)	The circulator is locked due to power supply too low or serious malfunction	Check the power supply, if the anomaly persists replace the circulator

1.29 MAIN CIRCULATION UNIT COMPONENTS.

1-30



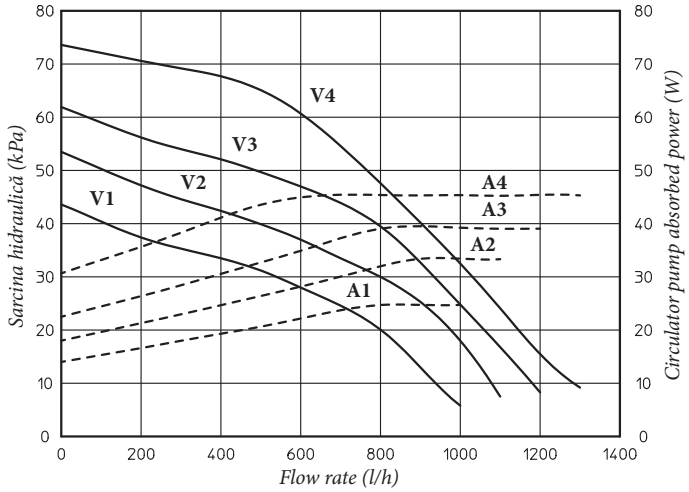


Key:

1 - Solar pump
2 - Non-return valve, thermometer and cock
3 - Safety valve drain fitting
4 - Flow meter
5 - 6 bar safety valve
6 - 3/4" connection for expansion vessel
7 - Manometer
8 - Draining valve
9 - Filling valve
10 - Insulating casing
11 - Flow rate regulator
12 - Inlet
13 - Outlet
14 - Reference for flow rate reading

Solar circulation unit available head.

1-31



Key:

Vn = Available head
An = Circulating pump absorbed power

1.30 DOMESTIC HOT WATER STORAGE TANK UNIT.

The "Hercules Solar 26 2 ErP" boiler is the storage tank type with a capacity of 200 litres. It contains large coiled stainless steel heat exchanger pipes, which allow to notably reduce hot water production times. These storage tank units constructed with stainless steel casing and bottoms, guarantee long duration through time. The assembly concepts and welding (T.I.G.) are implemented to the minimum detail to ensure maximum reliability. The upper inspection flange ensures practical control of the storage tank unit and the coiled heat exchanger and easy internal cleaning.
The DHW and the DHW pump connection couplings are positioned on the lid of the flange (cold inlet and hot outlet). The Magnesium Anode holder cap including the same, supplied as per standard for the internal protection of the storage tank from possible corrosion, is positioned on the side of the cylinder (part. 52 Fig. 1-33).

Storage tank unit disassembly. For easy maintenance or particular handling requirements, remove the cylinder as described below.

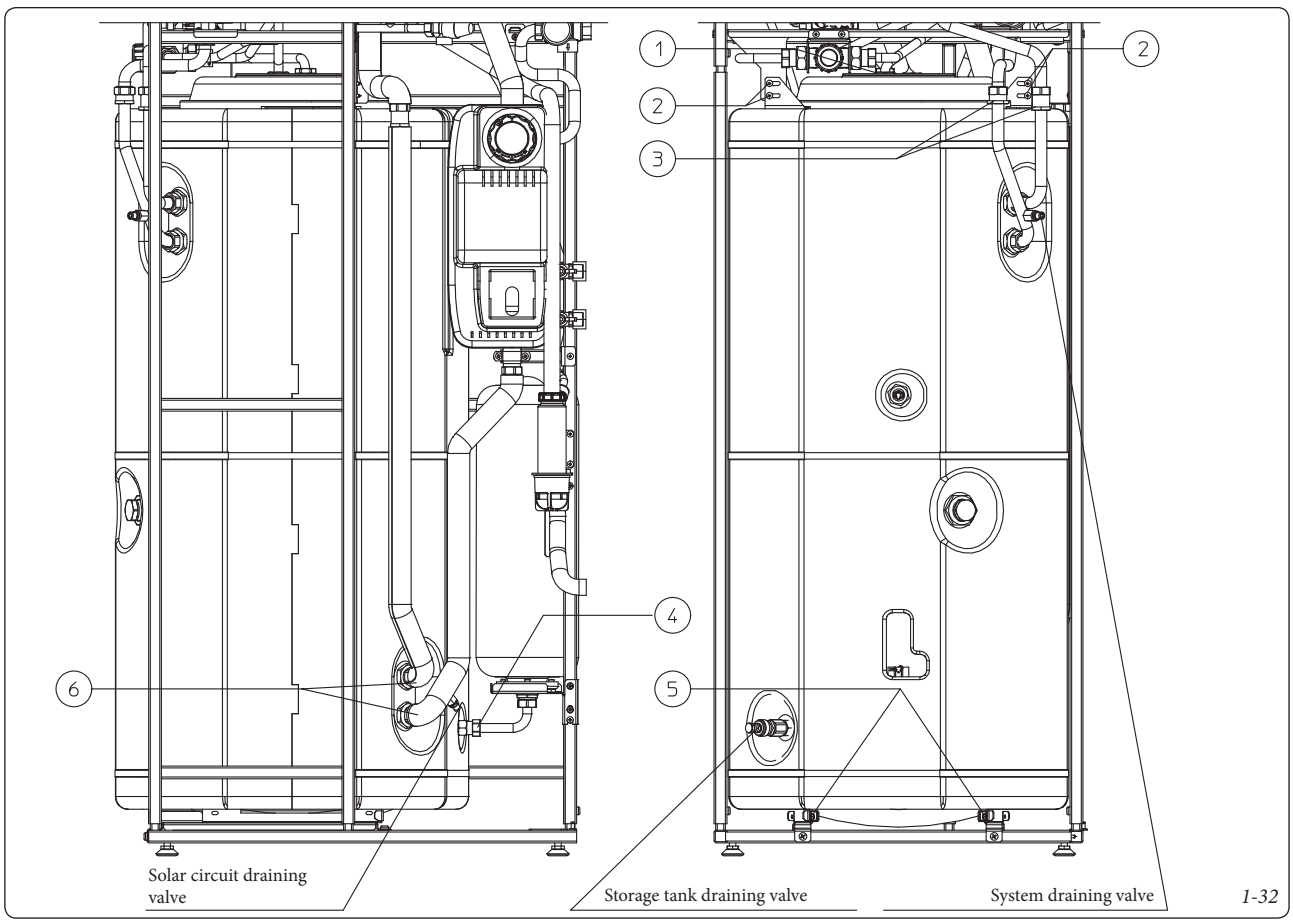
To disassemble the storage tank unit, empty the boiler system by acting on the relevant drain fitting. Before carrying out this operation, make sure that the system filling valves are closed. Close the cold water inlet valve and open any domestic hot water cock. Loosen the nuts on the system flow and return pipes (3) and the cold inlet and hot outlet nuts present on the storage tank unit (1). Empty the solar system via its drain fitting. Loosen the nuts (6) on the solar system flow and return pipes present on the cylinder. Loosen the nut (4) on the connection pipe to the DHW expansion vessel. Loosen the bracket fixing screws (2) Remove the screws (5) with the relative retainer brackets and slide the cylinder outwards on the relevant guides. Work in reverse order to assemble the storage tank unit.

N.B.: have the efficiency of the storage tank Magnesium Anode checked annually by a qualified firm. The storage tank unit is prepared for introduction of the domestic hot water pump fitting.

1.31 KITS AVAILABLE ON REQUEST.

- Recirculation kit (on request). The boiler storage tank unit is prepared for application of the pump kit. Immergas supplies a series of fittings and attachments that allow connection between the storage tank unit and domestic hot water system. The pump probe fitting is already inserted on the storage unit kit and the indication of the pump kit attachment is envisioned on the installation template.
- System cut-off valves kit (on request). The boiler is designed for installation of system interception cocks to be placed on flow and return pipes of the connection assembly. This kit is particularly useful for maintenance as it allows the boiler to be drained separately without having to empty the entire system.
- Polyphosphate dispenser kit (on request). The polyphosphate dispenser reduces the formation of lime-scale and preserves the original heat exchange and domestic hot water production conditions. The boiler is prepared for application of the polyphosphate dispenser kit.
- Zone pumps kit (on request). If the central heating system is to be divided into several zones (**max. three**) in order to interlock them with separate adjustments and to keep water flow rate high for each zone, Immergas supplies zone pump kits on request.
- Low temperature kit (on request). If the central heating system is to be divided into high temperature zones (radiators) and low temperature zones (floor plants) in order to interlock them with separate adjustments and to keep water flow rate high for each zone, Immergas supplies the low temperature kit on request.
- Low temperature safety thermostat kit. With the boiler functioning in direct low temperature (no control downstream from the boiler), to prevent problems to the low temperature system a safety thermostat must be inserted onto the flow pipe.

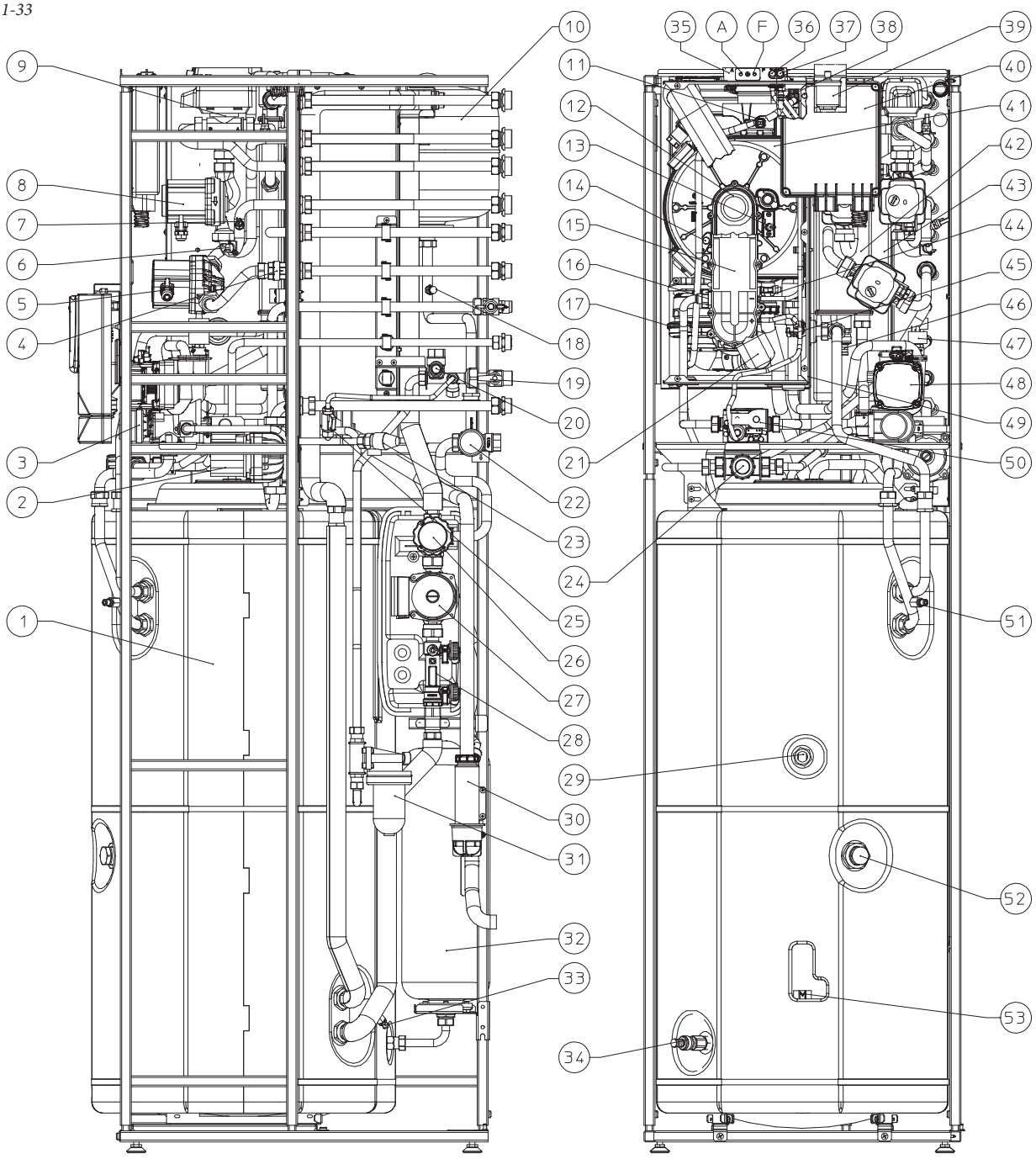
The above-mentioned kits are supplied complete with instructions for assembly and use.



1-32

1.32 BOILER COMPONENTS.

1-33



Key

1 - *Stainless steel storage tank unit*
2 - *DHW recirculation pump (optional)*
3 - *Three-way valve (motorised*
4 - *Zone 1 one-way valve*
5 - *Zone 1 pump*
6 - *Safety thermostat (Low temperature) (optional)*
7 - *Flow probe (Low temperature) (optional)*
8 - *Zone 2 pump (optional)*
9 - *Mixing valve (optional)*
10 - *Solar expansion vessel*
11 - *Flue probe*
12 - *Burner*
13 - *Ignition electrode*
14 - *Detection electrode*
15 - *Venturi*
16 - *Gas nozzle*
17 - *Fan*
18 - *Manual air vent valve*
19 - *Cold water inlet cock*
20 - *8 bar safety valve*
21 - *Air intake pipe*
22 - *Safety valve with manometer*
23 - *3 bar safety valve*
24 - *DHW mixing valve*
25 - *System filling valve*
26 - *Shut-off valve with thermometer*
27 - *Solar pump*
28 - *Flow meter*
29 - *Domestic hot water probe*
30 - *Condensate drain trap*
31 - *Polyphosphate dispenser (optional)*
32 - *D.H.W. expansion vessel*
33 - *Solar system drain fitting*
34 - *Storage tank unit draining valve*
35 - *Sample points (air A) - (flue gas F)*
36 - *Positive signal pressure point*
37 - *Negative signal pressure point*
38 - *Manual air vent valve*
39 - *Vent valve*
40 - *Zones management electrical connection box (optional)*
41 - *Condensation module*
42 - *Hydraulic manifold*
43 - *System expansion vessel*
44 - *Delivery probe*
45 - *Safety thermostat*
46 - *Manifold draining cock*
47 - *System pressure switch (absolute)*
48 - *Boiler Circulator*
49 - *Sealed Chamber*
50 - *Gas valve*
51 - *System draining valve*
52 - *Magnesium anode*
53 - *Cylinder solar probe*

2 ИНСТРУКЦІЇ ПО ЕКСПЛУАТАЦІЇ І ТЕХОБСЛУГОВУВАННЮ

2.1 ЧИСТКА І ТЕХОБСЛУГОВУВАННЯ.
Увага: З метою збереження цільності котла і щоб характеристики безпеки, виробництва і надійності не змінювались з часом, необхідно проводити техобслуговування один раз в рік, згідно вказівок, приведених в пункті "щорічна перевірка і техобслугову-вання котла". ~Щорічне технічне обслуговування має важливе значення для підтвердження гарантії Immergas. Ми рекомендуємо укладати щорічний договір на чистку і техобслуговування з уповноваженою фірмою.

2.2 ЗАГАЛЬНІ ВКАЗІВКИ З ТЕХНІКИ БЕЗПЕКИ.
Забороняється використання котла некваліфікованими особами або дітьми. З метою безпеки переконайтеся, що коаксіальний повітрозабірник / димохід (якщо встановлений) не заблокований. Якщо потрібно тимчасове відключення котла, дійте наступним чином:

a) злити воду з опалювальної системи за винятком того випадку, коли передбачено використання антифризу;
b) відключити агрегат від газової магістралі, водопроводу і мережі електроживлення.

У разі проведення будь-яких робіт поблизу повітропроводів або пристроїв димовидалення та їх комплектуючих, слід вимкнути агрегат і по завершенні робіт доручити уповноваженої компанії перевірку функціонування цих повітропроводів або пристроїв.
Не виконуйте чистку агрегату або його частин легко займистими речовинами. Не залишайте вогненебезпечні речовини або ємності з хімічними речовинами в приміщенні, в якому встановлений котел.

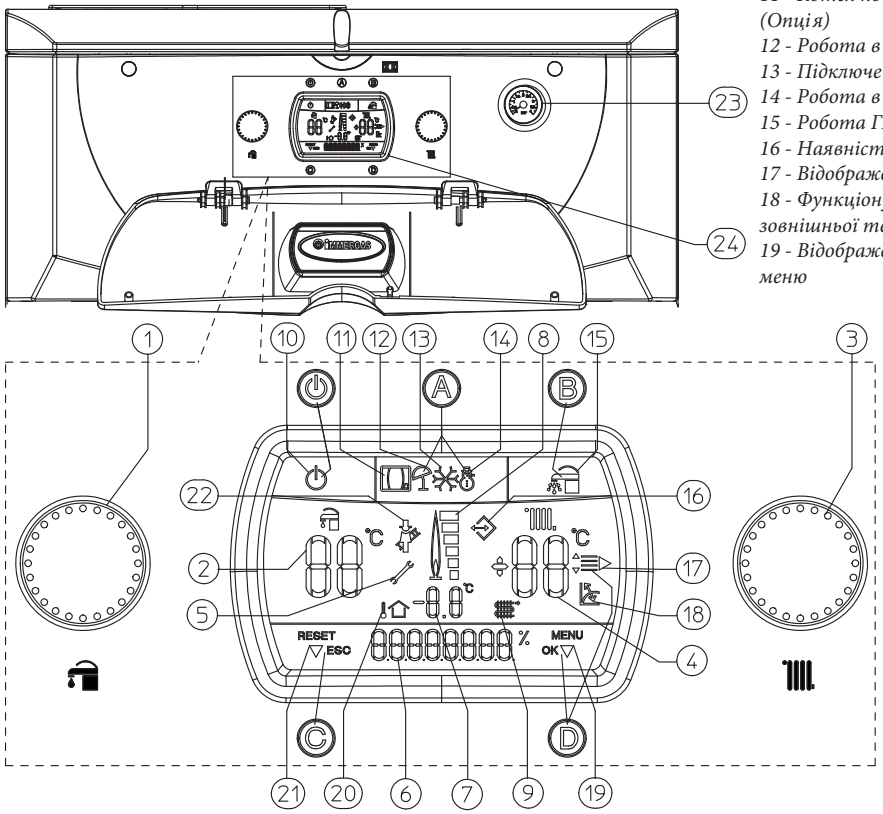
- **Увага!** Експлуатація будь-якого пристрою, яке споживає електроенергію, передбачає дотримання деяких фундаментальних норм:
  - не торкайтеся до приладу мокрими або вологими частинами тіла; також не торкайтеся до нього, якщо ви стоїте на підлозі босими ногами.
  - не можна смикати за електричні кабелі; не припускайте, щоб агрегат піддавався впливу атмосферних явищ (дощ, сонце і т.д.);
  - шнур електроживлення не повинен замінятися користувачем самостійно;
  - у разі пошкодження кабелю вимкніть пристрій і для заміни кабелю звертайтеся виключно до уповноваженої компанії;
  - в разі прийняття рішення про невикористання агрегату протягом тривалого часу, вимкніть вимикач електроживлення, встановлений на вході приладу.

Примітка. Зазначені на дисплеї температури мають похибку +/- 3 ° C, яка обумовлюється умовами навколишнього середовища і не залежить від котла. Після закінчення терміну служби, виріб не повинний утилізуватися як побутовий відхід і залишатися в навколишньому середовищі, необхідно звернутися в спеціалізовану компанію для його вивезення. З питань утилізації звертайтеся до виробника.

2.3 ПАНЕЛЬ КЕРУВАННЯ.

Умовні позначення:

- Кнопка Стенд-бай - Вкл
A *- Кнопка вибору літнього ( ) і зимового ( ) режиму роботи*
B *- Кнопка "COMFORT" ( ) і "SAVING" для горячей води*
C *- Кнопка скидання (RESET) / виходу з меню (ESC)*
D *- Кнопка входу в меню (MENU)/ підтвердження даних (OK)*
1 - Регулятор температури ГВС
2 - Встановлена температура ГВС
3 - Регулятор температури опалення



4 - Встановлена температура опалення
5 - Наявність несправностей
6 - Відображення робочого стану котла
8 - Знак наявності пламені і відповідна шкала потужності
9 і 7 - Температура води на виході первинного теплообмінника
10 - Котел в режимі очікування
11 - Котел подключений до дистанційного керування (Опція)
12 - Робота в літньому режимі
13 - Підключений захист від замерзання
14 - Робота в зимовому режимі
15 - Робота ГВП в режимі «COMFORT»
16 - Наявність зовнішніх підключених пристроїв
17 - Відображення функцій меню
18 - Функціонування з активованим датчиком зовнішньої температури
19 - Відображення підтвердження даних або входу в меню
20 і 7 - Відображення зовнішньої температури з підключеним вуличним датчиком (Опція)
21 - Відображення запиту скидання або виходу з меню
22 - Йде робота в режимі «трубочиста»
23 - Манометр котла
24 - Мультифункціональний дисплей

2-1

2.4 ОПИС РЕЖИМІВ РОБОТИ.

Нижче перераховані різні режими роботи котла, які відображаються на мультифункциональному дисплеї (24) за допомогою індикатора (6) з коротким описом, повне пояснення буде наведене в подальшому в цій інструкції.

Дисплей(6)	Опис режиму роботи
SUMMER	Літній режим роботи без запиту. Котел в режимі очікування для подачі гарячої води.
WINTER	Зимовий режим роботи без запиту. Котел в режимі очікування для подачі гарячої води або опалення.
DHW ON	Робота в режимі гарячої води. Робота котла, відбувається нагрів гарячої води.
CH ON	Робота в режимі опалення. Робота котла, відбувається опалення приміщення.
F3	Робота в режимі захисту від замерзання. Робота котла для відновлення мінімальної температури безпеки від замерзання котла.
CAR OFF	Вимкнено Дистанційне керування (Опція).
DHW OFF	При використанні Super CAR одночасно з періодом роботи в режимі зниженого ГВП, на дисплеї відображається напис DHW OFF, і вимикаються індикатори 15 і 2 (див. Брошуру з інструкціями Super CAR).
F4	Йде пост-вентиляція. Працює вентилятор після запиту ГВП або опалення приміщення для видалення залишкового диму.
F5	Йде пост-циркуляція. Працює циркуляційний насос після запиту ГВП або опалення приміщення для охолодження первинного теплообмінника.
P33	З блокованим дистанційним управлінням (Опція) або термостатом приміщення (ТП) (Опція) котел все одно працює в режимі опалення. (Запускається за допомогою меню "M3" і дозволяє працювати в режимі опалення, навіть якщо Дистанційне Управління або ТП не працюють).
STOP	Закінчено спроби скидання. Необхідно почекати 1 годину для здійснення 1 спроби. (Код помилки 08).
ERR xx	Несправності в роботі з відповідним кодом помилки. Бойлер не працює. (Див. параграф «оповіщення про поломки і несправності»).
SET	Під час обертання регулятора ГВП (1 Рис. 2-1) відображається стан поточного регулювання температури сантехнічної води.
SET	Під час обертання регулятора температури опалення (3 Рис. 2-1) відображається стан регулювання температури подачі для опалення приміщення.
SET	За наявності зовнішнього датчика (опція) замінює функцію "SET". Відображуваним значенням є зміна температури подачі в залежності від робочої кривої, встановленої зовнішнім датчиком. Див. OFFSET на графіку зовнішнього датчика (рис. 1-6).
F8	Триває деаерація системи. Під час цієї фази, яка триває 18 годин, циркуляційний насос котла запускається з заданими інтервалами, що дозволяє деаерувати систему опалення.
F9	Тільки в разі використання з Super CAR, дозволяє активувати функцію анти-легионелли, яка витримує температуру води в резервуарі до 65 ° C протягом 15 хвилин. (Див. Керівництво по експлуатації Super CAR).
SOLAR	Сонячна функція. Сонячна функція активується для управління тільки насосом ГВП. При включенні сонячного насоса на дисплеї з'явиться текст «SOLAR», який може чергуватися з іншими працюючими текстами.
SOLAR ON	Сонячний насос працює постійно.
SOLAR OFF	Сонячний насос залишається вимкненим.

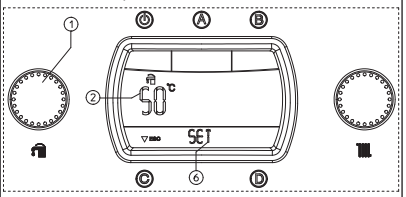
2.5 ВИКОРИСТАННЯ КОТЛА.

Перед запалюванням переконайтеся, що система центрального опалення заповнена водою, а манометр (23) показує тиск 1 - 1,2 бар; Відкрийте вентиль подачі газу на вході котла.

При вимкненому котлі на дисплеї з'являється тільки символ очікування (10). Натискаючи кнопку ( ), котел вмикається. Після ввімкнення котла, натискаючи кнопку «A», режим роботи змінюється і переключається з літнього Mode ( ) в зимовий режим роботи ( ).

- **Сонячний контур:** робота сонячного контуру повністю автоматична і не вимагає регулювання користувачем. Функція завжди активна з включеним котлом і повинна залишатися такою і влітку і взимку. У разі несправностей в котлі, сонячний контур продовжує функціонувати, подаючи тепло на воду в залежності від можливості системи і погодних умов. Включення котла в режим очікування ( ) відключає сонячну функцію і запобігає видалення накопиченого тепла. Тому важливо, щоб сонячний колектор був накритий кваліфікованим персоналом.
- **Літо ( ):** в цьому режимі котел працює тільки для нагріву гарячої води. Температура встановлюється за допомогою селекторного перемикача (1), а відносна температура відображається на дисплеї (24) за допомогою індикатора (2), і відображається індикатор «SET» (рис. 2-2). Обертаючи селекторний перемикач (1) за годинниковою стрілкою, температура збільшується, а в напрямку проти годинникової стрілки - зменшується.

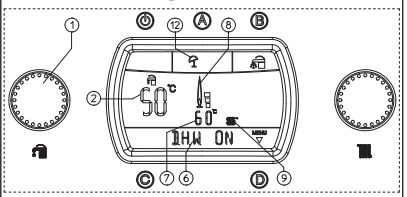
Регулювання ГВП



2-2

Під час нагрівання гарячої води на індикаторі стану (6) з'являється напис «DHW ON» (24) і одночасно запалюється пальник, вмикається індикатор наявності полум'я (8) з відносною шкалою потужності і індикатором миттєвої температури на виході первинного теплообмінника (9 і 7).

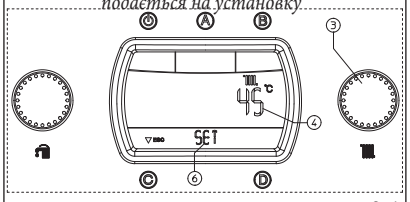
Робота в літньому режимі з виробництвом гарячої води.



2-3

- **Зима ( ):** в цьому режимі котел працює як для нагріву гарячої води, так і для опалення приміщень. Температура гарячої води регулюється за допомогою перемикача (1), температура центрального опалення регулюється за допомогою перемикача (3), а відносна температура відображається на дисплеї (24) за допомогою індикатора (4) і відображається індикація «SET» (рис. 2-4) . При повороті перемикача (3) в напрямку за годинниковою стрілкою температура збільшується, а в напрямку проти годинникової стрілки вона зменшується.

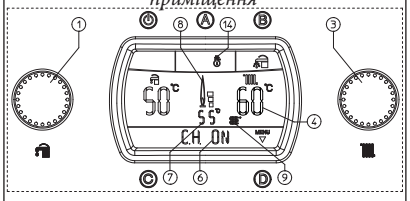
Регулювання температури води, що подається на установку



2-4

При запиті на опалення приміщення напис «CH ON» відображається на дисплеї (24), на індикаторі стану (6) і одночасно з запалюванням пальника, вмикається індикатор полум'я (8) з відносною шкалою потужності і індикатором миттєвої температури на виході з первинного теплообмінника (9 і 7). На етапі опалення, якщо температура води, що знаходиться в системі, достатня для нагрівання радіаторів, котел може працювати тільки з запуском циркуляційного насоса.

Робота в зимовому режимі з опаленням приміщення



2-5

- **Работа з пультом дистанційного керування (CAR[V2]) (Опція).** У випадку підключення до дистанційного керування CAR [V2], котел автоматично виявляє пристрій, і на дисплеї з'являється символ ( ). З цього моменту всі команди і налаштування передаються на CAR [V2]. Кнопка стенд-бай « », кнопка скидання «C», кнопка доступу до меню «D» і кнопка пріоритету ГВП «B», залишаються активними на котлі.
- **Увага:** якщо котел переведений в режим очікування (10), на пульті дистанційного керування CAR [V2] з'явиться символ помилки з'єднання «CON». На пульт CAR [V2] ппостійно подається живлення, тому збережені програми не втрачаються.
- **Робота з пультом дистанційного керування (Super CAR) (Опція).**

У разі підключення до дистанційного управління Super CAR, котел автоматично виявляє пристрій, і на дисплеї з'являється символ ( ). З цього моменту можна виконувати всі налаштування як на Super CAR так і на котлі. За винятком температури центрального опалення, яка відображається на дисплеї, але управляється на пульті Super CAR.

- **Увага:** якщо котел переведений в режим очікування (10), на Super CAR з'явиться знак помилки "ERR> CM". Але на пульт дистанційного керування Super CAR постійно подається живлення, тому збережені програми не втрачаються.

- **Функція "COMFORT" або "SAVING" ГВП.**

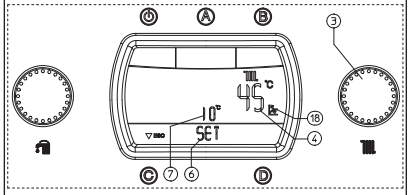
Натискання кнопки «B» на дисплеї призводить до появи символу ( ), активується функція «COMFORT», яка дозволяє встановити максимальну кількість води відповідно до вимог користувача, відрегулювавши селекторний перемикач (1). Виробництво гарячої води здійснюється сонячною системою і котлом.

Натискання кнопки «B» знову, переводить в режим «SAVING», вмикається індикатор (15). Тоді, пріоритет віддається сонячній системі для приготування гарячої води, це гарантує мінімальну температуру води в бойлері 45 ° C. У цьому режимі також можна регулювати температуру води в бойлері, перемикачем (1).

- **Робота з зовнішнім датчиком (рис. 2-6) опція.**

У разі роботи системи з додатковим зовнішнім датчиком, температура подачі котла для опалення управляється зовнішнім датчиком в залежності від зовнішньої температури (п. 1.8 та п. 3.8 під пунктом «P66»). Справжню температуру можна змінювати в діапазоні від -15 ° C до + 15 ° C відносно кривої регулювання (рис. 1-7 значення зсуву). Ця корекція, яка може бути активована за допомогою перемикача (3), активна при будь-якій виміряній зовнішній температурі. Зміна температури зміщення відображається через індикатор (7). Індикатор (4) показує поточну температуру потоку і через кілька секунд після модифікації оновлюється з новою корекцією. Відображається індикація «SET» (рис. 2-6). При повороті перемикача (3) в напрямку за годинниковою стрілкою температура збільшується і в напрямку проти годинникової стрілки вона зменшується.

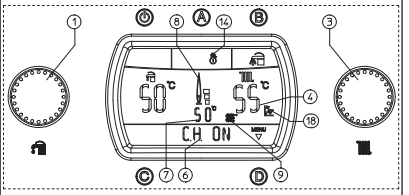
Налаштування температури подачі системи за допомогою зовнішнього датчика (опція)



2-6

Під час запиту на опалення приміщення слово «CH ON» відображається (24) на індикаторі стану (6) і одночасно з запалюванням пальника вмикається індикатор полум'я (8) з відносною шкалою потужності і індикатором миттєвої температури випуску з первинного теплообмінника (9 і 7). У режимі опалення, якщо температура води, що міститься в системі, достатня для нагрівання радіаторів, котел може працювати тільки з запуском циркуляційного насоса.

Робота в зимовому режимі за допомогою зовнішнього датчика (опція)



2-7

З цього моменту котел функціонує автоматично. Без потреби в теплі (на опалення або ГВП) котел переходить в режим очікування, що еквівалентно включенню котла без наявності полум'я.

Примітка: можливо, що котел може запускатися автоматично, якщо активована функція антифризу (13). Також, котел може функціонувати протягом короткого періоду часу після забору гарячої води, щоб знову повернутися до температури гарячої води.

Увага: з котлом в режимі очікування ( ), гаряча вода не може бути виготовлена, а наступні функції безпеки не забезпечені: протиблокувальний пристрій насоса, антифриз і тристоронній антиблокувальний пристрій.

2.6 ВИПРАВЛЕННЯ ПОМИЛОК. Котел Hercules Solar 26 2 ErP сповіщає про будь-які аномалії миготливим символом (5) разом з індикацією «ERRxx» на індикаторі (6), де «xx» відповідає коду помилки, описаного в наступній таблиці. На пульті дистанційного керування код помилки буде відображатися за допомогою того ж числового коду, поданого відповідно до наступного прикладу (наприклад, CARV2 = Exx, Super CAR = ERR> xx).

Код помилки	Відображена несправність	Причина	Стан котла/ Рішення
01	**Блокування запалювання**	У разі запиту на опалення приміщення або приготування гарячої води, котел не вмикається протягом встановленого часу. При першому увімкненні або після його тривалого простою може знадобитися усунення блокування.	Натиснути на кнопку Скидання (1).
02	**Блокування запобіжного термостата (перегрів), несправність контролю полум'я**	Якщо, в нормальному режимі роботи, має місце значний внутрішній перегрів відбувається блокування котла по перегріву.	Натиснути на кнопку Скидання (1).
03	**Блокування термостата димовидалення**	Під час нормальної роботи, якщо відбувається надмірний перегрів димових газів, котел блокується	Натиснути на кнопку Скидання (1).
04	**Блокування контактів опору**	Пошкодження запобіжного термостата (перегрів) або несправність контролю полум'я.	Котел не запускається (1)
05	**Несправність термопари**	Плата виявляє проблему на датчику NTC на подачі.	Котел не запускається (1)
08	**Максимальна кількість скидань**	Кількість дозволених скидань вже виконано	**Увага:** Дану несправність можна скинути 5 разів поспіль, потім, доступ до даної функції відключається протягом години. Котел здійснює 1 спробу кожну годину, максимальне число спроб - 5. Після відключення і подальшої подачі електро- харчування на обладнання знову надається можливість здійснити 5 спроб.
10	**Недостатній тиск установки**	Не виявлено тиск води всередині контуру центрального опалення, достатній для забезпечення належного функціонування котла	Переконайтеся за допомогою манометра котла, що тиск в системі в діапазоні 1 ÷ 1,2 бар, при необхідності відновіть правильний тиск.
12	**Несправність датчика котла**	Плата виявляє проблему на датчику котла.	Котел не може виробляти ГВП, нагрівання ГВП здійснюється сонячним обладнанням і тепловим насосом (1)
15	**Помилка конфігурації**	Електронний блок фіксує несправність або незв'язність на електричному калібруванні, котел не запускається.	Якщо відновлюються нормальні умови, котел перезапускається без необхідності скидання (1)
16	**Несправність вентилятора**	Вентилятор має механічну або електричну несправність.	Натиснути на кнопку Скидання (1).
20	**Блокування при перешкодах полум'я**	Виникає в разі втрат на даному контурі або при неполадках контролю полум'я.	Натиснути на кнопку Скидання (1).
22	**Загальний сигнал тривоги**	Цей тип помилки відображається на дистанційному управлінні CAR V2 або Super CAR в разі збоїв або несправностей друкованих плат або компонентів, які не пов'язані прямо з управлінням котла: несправність на блоці управління зонами, підстанції або сонячному контурі.	(1)
23	**Несправності датчика зворотної лінії**	Плата виявляє проблему на NTC-датчику обратки	Котел не запускається (1)
24	**Несправність кнопкового пульта**	Плата виявляє проблему на кнопковій панелі	При відновленні нормальних умов котел переходить на нормальну роботу без необхідності в скиданні (1).
25	**Блокування через вплив градієнта температури димових газів**	Якщо плата виявляє швидке зростання температури димових газів, ймовірно, через заблокований циркуляційний насос або відсутність води в теплообміннику, котел відключається через вплив градієнта температури димових газів.	Натиснути на кнопку Скидання (1).
27	**Недостатня циркуляція**	Це відбувається, якщо котел перегрівається через недостатню циркуляції води в первинному ланцюзі; Причинами можуть бути: - низька циркуляція системи; Переконайтеся, що в системі опалення не закриті запірні пристрої і що в системі немає повітря; - насос заблокований; звільніть насос.	Натиснути на кнопку Скидання (1).
29	**Аномалія датчика димових газів**	Якщо плата виявляє неполадки на датчику димових газів, котел не запуститься	(1)

(1) Якщо блокування або несправність не усувається, зверніться до уповноваженої організації (наприклад, в авторизовану службу тех. підтримки).
(2) Коди помилок більше 31 не відображаються на дисплеях CAR V2 і Super CAR.

Код Помилки	Відображена несправність	Причина	Стан котла / Рішення
31	**Втрати пов'язані з дистанційним керуванням**	Це відбувається в разі з'єднання з несумісним пультом дистанційного керування або в разі збою зв'язку між котлом і пультом CAR V2 або Super CAR.	Вимкніть та увімкніть котел. Якщо пульт дистанційного керування як і раніше не виявлений, котел переключиться в місцевий режим роботи, використовуючи керуючий пристрій котла. У цьому випадку функція «CH ON» не може бути активована. Щоб котел працював в режимі «CH ON», активуйте функцію «P33» в меню «M3» (1) (2).
32	**Неполадка датчика низкотемпературной зоны 2**	Якщо плата виявляє неполадки в датчику низькотемпературної зони 2, котел не може працювати в пошкодженій зоні.	(1) (2)
33	**Неполадка датчика низкотемпературной зоны 3**	Якщо плата виявляє неполадки в датчику низькотемпературної зони 3, котел не може працювати в пошкодженій зоні.	(1) (2)
34	**Спрацювання запобіжного термостата низькотемпературної зони 2**	Під час роботи, якщо несправність викликана надмірним перегрівом всередині низькотемпературної зони 2, котел не задовольняє запити зони.	Якщо відновлені нормальні умови, котел перезапускається без необхідності його скидання (1) (2).
35	**Спрацювання запобіжного термостата низькотемпературної зони 3**	Під час роботи, якщо несправність викликана надмірним перегрівом всередині низькотемпературної зони 3, котел не задовольняє запити зони.	Якщо відновлені нормальні умови, котел перезапускається без необхідності його скидання (1) (2).
36	**Втрата зв'язку IMG Bus.**	Зв'язок між блоками управління переривається через аномалії на блоці управління котлом або на шині IMG.	Котел не задовольняє запитам на опалення приміщення (1) (2).
37	**Низька напруга живлення**	Відображається в тому випадку, якщо напруга живлення нижче встановленої межі.	Якщо відновлені нормальні умови, котел перезапускається без необхідності його скидання (1) (2).
38	**Втрата сигналу полум'я**	Якщо після того як відбулося успішне запалювання пальника бойлера, відбувається його непередбачене погашення; відбувається повторна спроба запалювання і в тому випадку якщо відновлені нормальні умови бойлера, немає необхідності в переустановленні (справжню несправність можна перевірити в списку помилок в меню "M1").	Якщо відновлені нормальні умови, котел перезапускається без необхідності його скидання (1) (2).

(1) Якщо блокування або несправність не усувається, зверніться до уповноваженої організації (наприклад, в авторизовану службу тех. підтримки).

(2) Коди помилок більше 31 не відображаються на дисплеях CAR V2 і Super CAR.

2.7 МЕНЮ ПАРАМЕТРІВ І ІНФОРМАЦІЇ.
При натисканні на кнопку "D", відбувається доступ в меню, розділеного на три основні частини:
- інформація "M1"
- індивідуалізація "M3"
- конфігурація "M5": меню призначене для технічного персоналу, для доступу до якого необхідний вхідний код (Дивитися главу "Сервісний інженер").
- налаштування "M9".
- При обертанні регулятора температури опалення (3) відбувається прокрутка різних функцій меню, при натискання на кнопку "D" відбувається доступ в різні рівні меню і підтверджується вибір параметрів.

При натискання на кнопку "C" відбувається повернення на 1 рівень.

"M1" інформаційне меню. У цьому меню міститься різна інформація, щодо різних функцій котла:

1-й рівень	Кнопка	2-й рівень	Кнопка	3-й рівень	Кнопка	Опис
M1	D ⇨ ⇦ C	P11	D ⇨ ⇦ C			Відображається версія програмного забезпечення, керуюча електронним блоком, встановленим в котлі.
		P12				Відображає загальну кількість годин роботи котла
		P13				Відображається кількість запалювання пальника
		P14 (за наявності опціонного зовнішнього датчика) – – (за відсутності опціонного зовнішнього датчика)	D ⇨ ⇦ C	P14/A		Відображає зовнішню температуру на поточний момент (якщо встановлено зовнішній датчик (опція))
				P14/B		Показує мінімальну зареєстровану зовнішню температуру (якщо встановлено зовнішній датчик (опція))
				P14/C		Відображає максимальну зареєстровану зовнішню температуру (якщо встановлено зовнішній датчик (опція))
				СИДАННЯ	D x обрати ⇦ C	При натискання на кнопку "D" обнуляються MIN і MAX заміряні температури
		P15	D ⇨ ⇦ C			На цій моделі котла ніяких відображень
		P17				Відображає швидкість в оборотах миттєвого обертання вентилятора
		P18				Перегляд миттєвої швидкості циркуляційного насоса (в%)
		P19				Показує 5 останніх причин, які викликали зупинку бойлера. На індикаторі (6) зазначений порядковий номер від 1 до 5 і на індикаторі (7) відповідний код помилки. Натискаючи багато разів на нопку "D" можна відобразити годину роботи і після якої кількості запалень сталася несправність.

Меню індивідуалізації "M3". Це меню включає всі функції, які налаштовуються. (Перша в рядку опцій та, яка встановлена за замовчуванням)

Увага: для відновлення міжнародної мови (**A1**) дійте таким чином:

- натисніть кнопку "D" для доступа в меню.
– поверніть перемикач "3" до "**PERSONAL**".
– натисніть кнопку "D" для підтвердження.
– поверніть перемикач "3" до "**DATI**".
– натисніть кнопку "D" для підтвердження.
– поверніть перемикач "3" до "**LINGUA**".
– натисніть кнопку "D" для підтвердження.
– поверніть перемикач "3" до "**A1**".
– натисніть кнопку "D" для підтвердження.

На цьому етапі інтернаціональна мова з'явиться в таблицях меню на дисплеї.

1-й рівень	Кнопка	2-й рівень	Кнопка	3-й рівень	Кнопка	4-й рівень	Кнопка	Опис
M3	D ⇨ ⇦ C	P31	D ⇨ ⇦ C	AUTO **(За змовчуванням)**	D x обрати ⇦ C			Дисплей спалахує, коли запалюється пальник і коли контролер доступний, він залишається включеним 5 секунд після виконання операцій.
				ON				Дисплей постійно ввімкнений
				OFF				Дисплей спалахує тільки коли контролер активний і залишається включеним 5 секунд після останньої операції.
		P32	D ⇨ ⇦ C	P32/B	D ⇨ ⇦ C	ITALIANO	D x обрати ⇦ C	Всі описи приведені на італійській мові
						A1 **(За змовчуванням)**		Всі описи наведені в алфавітно-цифровому форматі
		P33	D ⇨ ⇦ C	**OFF** **(За змовчуванням)**	D x обрати ⇦ C			У зимовому режимі, при активації цієї функції можна активувати режим опалення, навіть якщо пульт дистанційного керування або ТП не працюють.
				ON				
		RESET	D x обрати ⇦ C					При натисканні кнопки "D" індивідуалізація скидається, відновлюються заводські налаштування "P31" в "ILL. AUTO "і" P32 / B "в" ITALIANO "

Зонне меню (опція) “M9”.
Зонне меню "M9" активно тільки якщо плата виявляє з'єднання з додатковою зонного платою (опція). Це меню включає температурні налаштування додаткових зон.

1-й рівень	Кнопка	2-й рівень	Кнопка	Опис
M9	D ⇨ ⇦ C	P91	D ⇨ ⇦ C	Відображає поточну температуру низькотемпературної зони 2.
		P92	D ⇨ ⇦ C	Відображає поточну температуру низькотемпературної зони 3.
		P93	D ⇨ ⇦ C	Показує температуру подачі низькотемпературної зони 2. При наявності зовнішнього датчика (опція) температура подачі може бути скоригована щодо робочої кривої зовнішнього датчика. Див. OFFSET на графіку зовнішнього датчика (рис. 1-7), змінюючи температуру від -15 ° C to + 15 ° C.
		P94	D x обрати ⇦ C	Показує температуру подачі низькотемпературної зони 3. При наявності зовнішнього датчика (опція) температура подачі може бути скоригована щодо робочої кривої зовнішнього датчика. Див. OFFSET на графіку зовнішнього датчика (рис. 1-7), змінюючи температуру від -15 ° C to + 15 ° C.

2.8 ВИМКНЕННЯ КОТЛА
Вимкніть котел, натиснувши кнопку "⏻", вимкніть онлайн-перемикач поза котлом і закрийте газовий кран. Ніколи не залишайте котел увімкненим, якщо він не використовується протягом тривалого періоду.

2.9 ВІДНОВЛЕННЯ ТИСКУ В ОПАЛЮВАЛЬНОЇ СИСТЕМІ.

Періодично перевіряйте тиск води в системі. Тиск манометра котла має перебувати в межі між 1-1,2 бар.
Якщо тиск нижче 1 бар (при холодній системі), необхідно відновити тиск за допомогою крана, розташованого в нижній частині бойлера (Рис. 2-8)

Примітка: Закрийте кран після операції. Якщо тиск піднявся близько 3 бар, може спрацювати запобіжний клапан. В цьому випадку, видаліть воду з вентиляційного клапана радіатора до досягнення тиску 1 бар, або зверніться до кваліфікованого фахівця.

У разі частих перепадів тиску, зв'яжіться з кваліфікованим фахівцем, щоб усунути можливий витік системи.

2.10 ЗЛИВ ВОДИ З УСТАНОВКИ.

Для зливу води з котла, використовуйте зливний клапан (рис. 1-32 / 1-33).

Перед зливом переконайтеся, що кран підживлення закритий.

2.11 ЗЛИВ ВОДИ З БОЙЛЕРА.
Для зливу води з бойлера, використовуйте зливний клапан (Рис. 1-32 / 1.33).

Примітка: перед проведення цієї операції, закрийте впускний кран холодної води котла і відкрийте будь-який кран системи ГВП, для доступу повітря в бойлер.

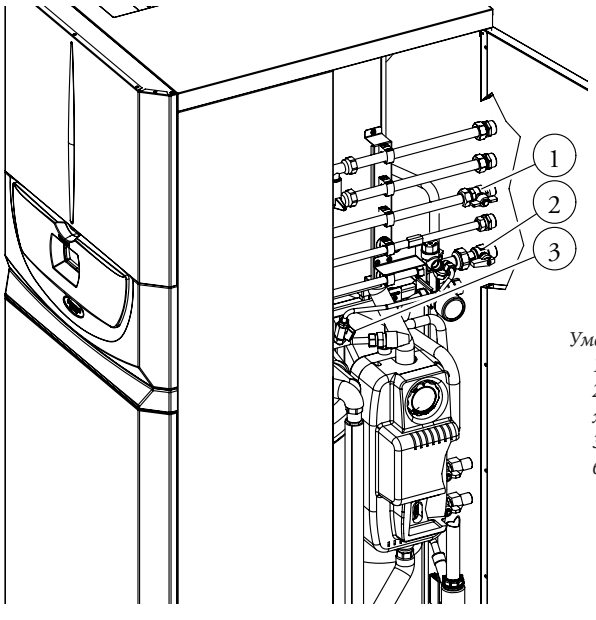
2.12 ЗАХИСТ ВІД ЗАМЕРЗАННЯ.
Котел має стандартну функцію захисту від замерзання, яка активує насос і пальник, коли температура води в системі котла нижче 4 ° C.
Функція антифриз гарантується якщо:
- котел правильно підключений до ланцюга газу і електроживлення;
- котел постійно споживає енергію;
- котел включений і не знаходиться в режимі очікування (⏻);
- запалювання котла не було заблоковано;
- основні компоненти котла справні.

У разі тривалої неактивності (другий будинок), ми рекомендуємо:
- відключити електроживлення;
- повністю злити контур опалення, бойлер ГВП та конденсаційний трап. В опалювальні системи, з яких доводиться часто зливати воду, необхідно заливати воду, що піддалася необхідній обробці з метою її пом'якшення, тому що занадто жорстка вода може привести до відкладень водяного каменю.

2.13 ОЧИЩЕННЯ ЗОВНІШНЬОЇ ОБОЛОНКИ.

Використовуйте вологу тканину і нейтральний миючий засіб для очищення корпусу котла. Ніколи не використовуйте абразивні або порошкові миючі засоби.

2.14 ОСТАТОЧНЕ ВІДКЛЮЧЕННЯ.
У разі прийняття рішення про остаточне відключення котла, зверніться до кваліфікованого персоналу, переконайтеся при цьому, що апарат відключений від газової магістралі, водопроводу і мережі електроживлення, і що сонячний колектор закритий.



Умовні позначення:
1 - Газовий кран
2 - Кран входу холодної води
3 - Кран для заливки бойлера водою

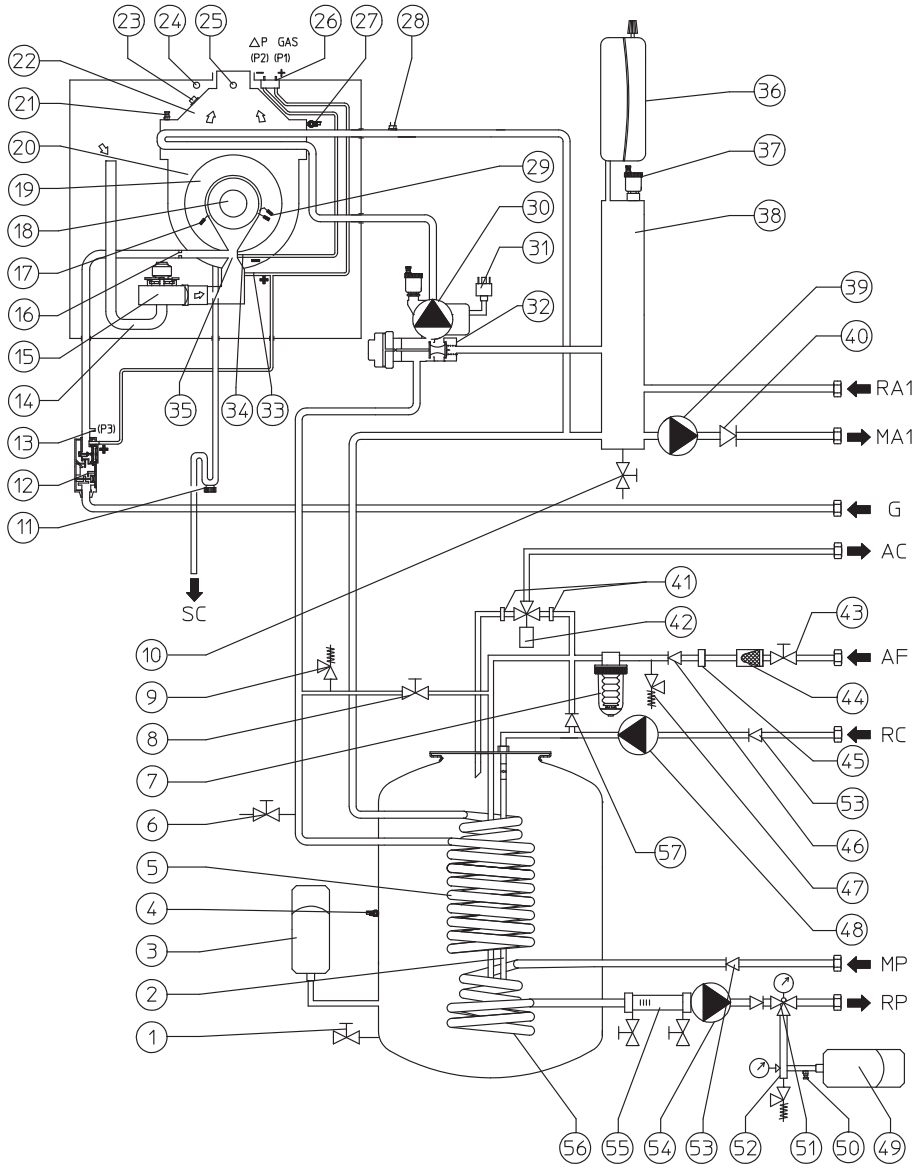
2-8

3 BOILER COMMISSIONING (INITIAL CHECK)

To commission the boiler:
- make sure that the declaration of conformity for installation is supplied with the appliance;
- make sure that the type of gas used corresponds to boiler settings;
- check connection to a 230V-50Hz power mains, correct L-N polarity and the earthing connection;
- make sure the central heating system is filled with water and that the pressure gauge indicates a pressure of 1-1.2 bar.
- check that the the air vent valve cap is open and that the system is well deaerated;
- switch the boiler on and check correct ignition;
- check the Δp gas values in domestic hot water and central heating modes;
- check the CO_2 in the fumes at maximum and minimum flow rate;
- check activation of the safety device in the event of no gas, as well as the relative activation time;
- check the intervention of the main switch located upstream of the boiler and in the boiler;
- check that the intake and/or exhaust terminals are not blocked;
- ensure activation of all adjustment devices;
- seal the gas flow rate regulation devices (if settings are modified);
- check the production of domestic hot water;
- check 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

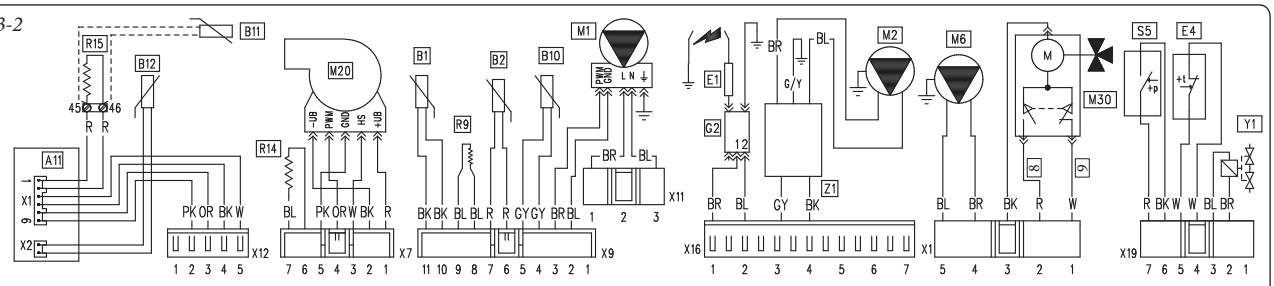
1 - Storage tank unit draining valve
2 - Magnesium anode
3 - D.H.W. expansion vessel
4 - Domestic hot water probe
5 - Stainless steel coil for storage tank
6 - System draining valve
7 - Polyphosphate dispenser (optional)
8 - System filling valve
9 - 3 bar safety valve
10 - Manifold draining valve
11 - Condensate drain trap
12 - Gas valve
13 - Gas valve outlet pressure point (P3)
14 - Air intake pipe
15 - Fan
16 - Gas nozzle
17 - Detection electrode
18 - Burner
19 - Condensation module covers
20 - Condensation module
21 - Manual air vent valve
22 - Fumes hood
23 - Flue probe
24 - Air sample point
25 - Flue sample point
26 - Gas ΔP pressure point
27 - Flow probe
28 - Safety thermostat
29 - Ignition electrode
30 - Boiler Circulator
31 - System pressure switch (absolute)
32 - Three-way valve (motorised)
33 - Venturi positive sign P1
34 - Venturi negative signal P2
35 - Air/gas Venturi manifold
36 - System expansion vessel
37 - Vent valve
38 - Hydraulic manifold
39 - Zone 1 pump
40 - Zone 1 one-way valve
41 - Mixing valve filter
42 - DHW mixing valve
43 - Cold water inlet cock
44 - Cold water filter
45 - Flow limiter
46 - Cold water inlet non-return valve
47 - 8 bar safety valve
48 - DHW recirculation pump (optional)
49 - Solar expansion vessel
50 - Manual air vent valve
51 - Shut-off valve with thermometer
52 - Safety valve with manometer
53 - One-way valve (OV 20)
54 - Solar pump
55 - Flow meter
56 - Solar stainless steel coil
57 - One-way valve (OV 15)

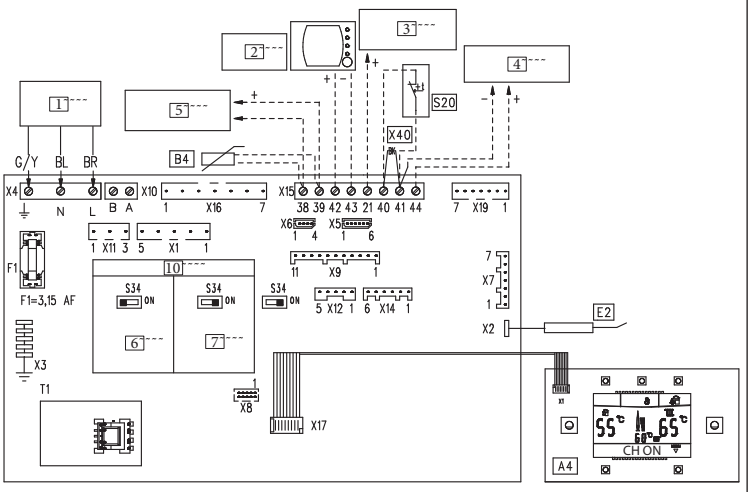
RA1 - Zone 1 system return (High temperature)
MA1 - Zone 1 system flow (High temperature)
G - Gas supply
AC - Domestic hot water outlet
AF - Domestic cold water inlet
RC - Domestic hot water recirculation
RP - Return from solar panels
MP - Flow from solar panels
SC - Condensate drain

3-1

3.2 WIRING DIAGRAM.

3-2





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

1 - 230 Vac 50 Hz power supply
2 - Super CAR (Optional)
3 - Status signal
4 - IMG BUS connection
5 - System supervisor connection
6 - Supervisor connection active
7 - External probe connection active
8 - Domestic hot water
9 - Central heating
10 - S34 setting

Key:

A4 - Display board
A10 - Pump relay board
A11 - Interface board PT1000
B1 - Flow probe
B2 - Domestic hot water probe
B4 - External probe (optional)
B10 - Flue probe
B11 - Solar collector probe (PT1000)
B12 - Storage tank solar probe
E1 - Ignition electrodes
E2 - Detection electrode
E4 - Safety thermostat
F1 - Phase fuse
G2 - Igniter
M1 - Boiler circulator pump
M2 - Central heating pump
M6 - Solar circuit circulator
M20 - Fan
M30 - Three-way valve
R9 - Return probe unabling resistance
R14 - Solar configuration resistance
R15 - Solar collector probe unabling resistance
S5 - System pressure switch
S20 - Room thermostat (optional)
T1 - Boiler PCB transformer
X40 - Room thermostat jumper
Y1 - Gas valve
Z1 - Antijamming filter

Remote controls: the boiler is designed for use with the Comando Amico Remoto remote control ^{V2} (CAR^{V2}) or alternatively the Super Comando Amico Remoto remote control, which must be connected to clamps 42 and 43 of connector X15 on the P.C.B., observing polarity and eliminating jumper X40.

Room thermostat: the boiler is designed for the application of the Room Thermostat (S20). Connect it to clamps 40 – 41 eliminating jumper X40.

The connector X5 is used for the connection to the relay board.

The connector X6 is for connection to a personal computer.

The connector X8 is used for software updating operations.

Solar collector probe: the boiler is set-up for the connection to a solar panel system; the probe must be connected to clamps 45 and 46, eliminating resistance R15.

3.3 TROUBLESHOOTING.

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

- Smell of gas. Caused by leakage from gas circuit pipelines. Check sealing efficiency of gas intake circuit.
- Repeated ignition blocks. No gas, check the presence of pressure in the network and that the gas adduction cock is open. Incorrect adjustment of the gas cock, check the correct calibration of the gas valve.
- Irregular combustion or noisiness. It may be caused by: a dirty burner, incorrect combustion parameters, intake-exhaust terminal not correctly installed. Clean the above components and ensure correct installation of the terminal, check correct setting of the gas valve (Off-Set setting) and correct percentage of CO_2 in flue gas.
- Frequent interventions of the overheating safety thermostat. It can depend on the lack of water in the boiler, little water circulation in the system or blocked pump. Check on the manometer that the system pressure is within established limits. Check that the radiator valves are not closed and also the functionality of the pump.
- Drain trap clogged. This may be caused by dirt or combustion products deposited inside. Check, by means of the condensate drain cap, that there are no residues of material blocking the flow of condensate.
- Heat exchanger clogged. This may be caused by the drain trap being blocked. Check, by means of the condensate drain cap, that there are no residues of material blocking the flow of condensate.
- Noise due to air in the system. Check opening of the special air vent valve cap (Part. 39 Fig. 1-33). Make sure the system pressure and expansion vessel pre-charge values are within the set limits; The factory-set pressure values of the expansion vessel must be 1.0 bar, the value of system pressure must be between 1 and 1.2 bar. Check that system filling and air bleeding has been performed according to the requirements.
- Noise due to air inside the condensation module. Use the manual air vent valve (Part. 38 Fig. 1-33) to eliminate any air present in the condensation module. When the operation has been performed, close the manual vent valve.
- Domestic hot water probe faulty. In order to replace the DHW probe, the storage tank does not have to be emptied as the probe is not in direct contact with the DHW inside the storage tank.

3.4 CONVERTING THE BOILER TO OTHER TYPES OF GAS.

If the boiler has to be converted to a different gas type to that specified on the data nameplate, request the relative conversion kit for quick and easy conversion.
The gas conversion operation must be carried out by an authorised company (e.g. Authorised After-Sales Technical Assistance Service).
To convert to another type of gas the following operations are required:
- disconnect the appliance;
- replace the nozzle located between the gas pipe and gas/air mixing sleeve (Part. 16 Fig. 1-33), taking care to disconnect the appliance during this operation;
- re-power the appliance;
- calibrate the number of fan revolutions (parag. 3.5):
- adjust the correct air/gas ratio (parag. 3.6);
- seal the gas flow rate regulation devices (if settings are modified);
- after completing the conversion, apply the sticker, contained in the conversion kit, near the data nameplate. Using an indelible marker pen, delete the data relative to the old type of gas.

These adjustments must be made with reference to the type of gas used, following that given in the table (Par. 3.17).

3.5 CALIBRATION OF NUMBER OF FAN REVS.

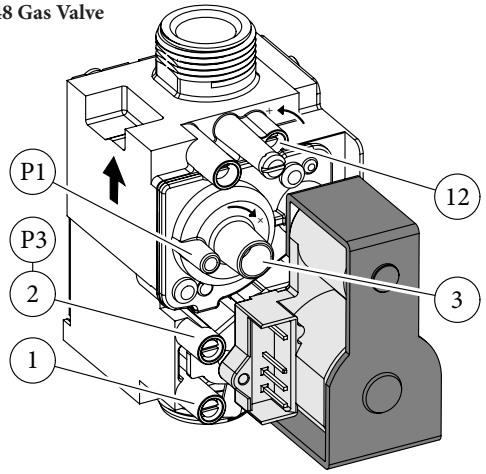
Attention: Verification and calibration is necessary, in the case of transformation to other types of gas, in the extraordinary maintenance phase with replacement of the PCB air/gas circuit components or in the case of installations with fume extraction systems, with horizontal concentric pipe measuring more than 1 metre.

The boiler heat output is correlated to the length of the air intake and flue exhaust pipes. This decreases with the increase of pipe length. The boiler leaves the factory adjusted for minimum pipe length (1m). It is therefore necessary, especially in the case of maximum pipe extension, to check the Δp gas values after at least 5 minutes of the burner operating at nominal heat output, when the temperatures of the intake air and exhaust flue gas have stabilised. Adjust the nominal and minimum heat output in the domestic hot water and central heating modes according to the values in the table (Par. 3.17) using the differential manometers connected to the Δp gas pressure points (36 and 37 Fig. 1-33).

Access the configurations menu under the "SERVICE" item and adjust the following parameters (Par. 3.8):
- boiler maximum heat output "P62";
- boiler minimum heat output "P63";
- maximum central heating output "P64";
- minimum central heating output "P65";

Below find the default settings present on the boiler:

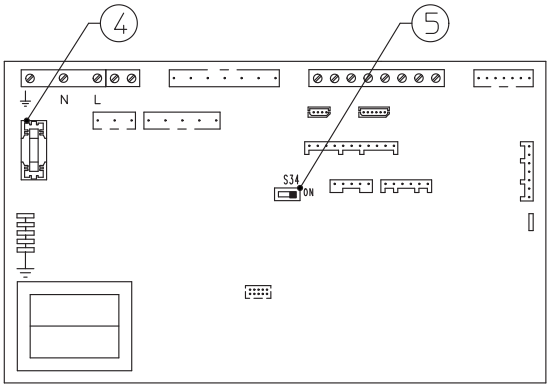
SIT 848 Gas Valve



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

3-3

P.C.B.



Key:
4 - Fuse 3.15 AF
5 - S34 Selector:
On = external probe;
Off = system supervisor

3-4

P62	G20: 5580 (rpm)	LPG: 4980 (rpm)
P63	G20: 1020 (rpm)	LPG: 1010 (rpm)
P64	G20: 5100 (rpm)	LPG: 4500 (rpm)
P65	G20: 1020 (rpm)	LPG: 1010 (rpm)

3.6 ADJUSTMENT OF THE AIR-GAS RATIO.

Calibration of the minimum CO_2 (minimum central heating power).
Enter the chimney sweep phase without withdrawing domestic hot water and take the selector switches to minimum (turn them in an anti-clockwise direction until "0" is seen on the display). To have an exact value of CO_2 in the flue gas 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, otherwise adjust the screw (3 Fig. 3-3) (Off-Set adjuster). To increase the CO_2 value, turn the adjustment screw (3) in a clockwise direction and vice versa to decrease it.

Calibration of the maximum CO_2 (nominal central heating power).
On completion of the adjustment of the minimum CO_2 keeping the chimney sweep function active, take the heating selector switch to maximum (turn it in a clockwise direction until "99" is seen on the display). To have an exact value of CO_2 in the flue gas 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, otherwise adjust the screw (12 Fig. 3-3) (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.).

	CO_2 at nominal output (central heating)	CO_2 at minimum output (central heating)
G 20	9.50% ± 0.2	9.00% ± 0.2
G 30	12.30% ± 0.2	11.80% ± 0.2
G 31	10.60% ± 0.2	10.10% ± 0.2

3.7 CHECKS FOLLOWING CONVERSION TO ANOTHER TYPE OF GAS.

After making sure that conversion was carried out with a nozzle of suitable diameter for the type of gas used and the settings are made at the correct pressure, check that the burner flame is not too high or low and is stable (does not detach from burner);

Note: all boiler adjustment operations must be carried out by a qualified company (e.g. Authorised After-Sales Assistance).

3.8 PROGRAMMING THE P.C.B.

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

Attention: If the international language is to be restored (A1) see the indications described in Par. 2.7 (Customisations menu - M3).

By pressing the button "D" it is possible to access the main menu, divided into three main parts:

- Information"M1" (See "User" Chapter)
- customisations "M3" (See "User" Chapter)
- "M5" configurations, menu reserved for the technician and for which a password is required.

To access programming, press button "D", turn the central heating temperature selector switch (3) and scroll through the menu items until reaching "M5", press button "D", enter the password and set the parameters according to your requirements.

Listed below are the items in the"M5" menu with default parameters and possible options indicated.

By turning the central heating temperature selector switch (3) scroll through the menu items. By pressing button "D" access the various levels of the menu and the choice of parameters is confirmed. Press button "C" to go back one level.

(The first item of the various options that appears inside the parameter is that selected by default).

M5 menu (password must be entered)					
1st Level	2nd Level	Options	Description	Default value	Value set by the technician
P50		25 ÷ 50	Set the boiler power in the ignition stage. The value is in percentage with respect to parameter P62	(See par. 3.5)	
P53		P53 1	Identifies the power of the boiler on which the P.C.B. is installed P53 1 = Not used P53 2 = 26 kW P53 3 = 32 kW	Equal to boiler power	Equal to boiler power
		P53 2			
		P53 3			
P54		P54. 1	Displays the temperature read on the domestic hot water probe on entry to the boiler	-	-
		P54. 2	Displays the temperature read on the domestic hot water probe on exit from the boiler	-	-
		P54.3	Displays the temperature read on the return probe	-	-
		P54.4	Not used on this boiler model	-	-
P55			Displays the central heating flow temperature at which the boiler functions, calculated by the controls active on the system heat adjustment	-	-
SERVICE	P57	AUTO	- DELTA T = 0:proportional head (see parag. 1.23) - DELTA T = 5 ÷ 25 K: constant ΔT (see par. 1.23) **Note:** after selecting DELTA T adequate to the requirements, maximum (Vmax) and minimum (Vmin) circulating pump speed may be selected (adjustable from 100% to 75%).	AUTO 0	
		FIX	Fixed circulator pump speed (adjustable between 100% and 75%)		
	P62	4000 ÷ 5900	Set the maximum output depending on the domestic hot water, setting the speed of the fan (in RPM)	(See par. 3.5)	
	P63	900 ÷ 1500	Set the minimum output depending on the domestic hot water, setting the speed of the fan (in RPM)	(See par. 3.5)	
	P64	≤ P62	Set the maximum output depending on room heating. The value must be less than or equal to P62	(See par. 3.5)	
	P65	≥ P63	Set the minimum output according to room heating. The value must be greater than or equal to P63	(See par. 3.5)	
	P66	P66/A	Without the external probe (optional) it defines the minimum flow temperature. With the external probe present it defines the minimum flow temperature corresponding to operation with maximum external temperature (see graph Fig. 1-7) (it can be set between 20°C and 50°C) **N.B.:** to continue one must confirm the parameter (press "D" or exit adjustment "P66" by pressing "C")	20°C	
		P66/B	Without the external probe (optional) it defines the maximum flow temperature. With the external probe present it defines the maximum flow temperature corresponding to operation with minimum external temperature (see graph Fig. 1-7) (it can be set between 50°C and 85°C) **N.B.:** to continue one must confirm the parameter (press "D" or exit adjustment "P66" by pressing "C")	85°C	
		P66/C	With the external probe present it defines at which minimum external temperature the boiler must operate at the maximum flow temperature (see graph Fig. 1-7) (can be set between -20°C and 0°C) **N.B.:** to continue one must confirm the parameter (press "D" or exit adjustment "P66" by pressing "C")	-5°C	
		P66/D	With the external probe present it defines at which maximum external temperature the boiler must operate at the minimum flow temperature (see graph Fig. 1-7) (can be set between 5°C and +25°C) **N.B.:** to continue one must confirm the parameter (press "D" or exit adjustment "P66" by pressing "C")	25°C	

M5 menu (password must be entered)					
1st Level	2nd Level	Options	Description	Default value	Value set by the technician
SERVICE	P67	P67.1	In winter mode the pump is always powered and so functions continuously	P67.2	
		P67.2	In winter mode the pump is managed by the room thermostat or by the remote control		
		P67.3	In winter mode the pump is managed by the room thermostat or by the remote control and by the boiler flow probe		
	P68	0s ÷ 500s	The boiler is set to ignite the burner immediately after a request for central heating. In the case of particular systems (e.g. area systems with motorised thermostatic valves etc.) it could be necessary to delay switch-on	0 seconds	
	P69	0s ÷ 255s	The boiler has an electronic timing device that prevents the burner from igniting too often in the central heating phase.	180 seconds	
	P70	0s ÷ 840s	The boiler performs an ignition ramp to arrive from minimum power to nominal heat output.	180 seconds (3 minutes)	
	P71	P71.1	OFF domestic hot water "correlated" to the switch-off of the boiler takes place on the basis of the temperature set using the domestic hot water adjustment selector switch. Solar function active, if the input domestic hot water has a sufficient temperature the boiler does not switch on	P71.1	
		P71.2	"fixed" domestic hot water OFF; the boiler switches off at 65°C. Solar function deactivated		
	P72	AUTO OFF 09 L/M 12 L/M 15 L/M	The boiler allows to set the flow rate adjuster on the various levels. Auto (automatic functioning, therefore with variable flow rate) Open (adjuster completely open therefore maximum flow rate available) 09 L/M, 12 L/M and 15 L/M (operation with defined flow)	AUTO	
	RELE1 (optional)	RELE1-0	Relay 1 not used	RELE1-1	
		RELE1-1	In a system divided into zones, relay 1 controls the main zone		
		RELE1-2	The relay signals the intervention of a boiler block (Can be coupled to an external signalling device, not supplied)		
		RELE1-3	The relay signals that the boiler is on and in the heating stage (Can be coupled with an external circulator pump, not supplied)		
		RELE1-4	Controls the opening of an external gas valve in concomitance with an ignition request of the boiler burner		
		RELE1-5	In the event the boiler circulator pump is replaced with a traditional fixed speed circulator pump one must connect the new circulator pump to the relay board.		
	RELE2 (optional)	RELE2-0	Relay 2 not used	RELE2-0	
		RELE2-1	In a system divided into zones, relay 2 controls the secondary zone		
		RELE2-2	The relay signals the intervention of a boiler block (Can be coupled to an external signalling device, not supplied)		
		RELE2-3	The relay signals that the boiler is on and in the heating stage (Can be coupled with an external circulator pump, not supplied)		
		RELE2-4	Controls the opening of an external gas valve in concomitance with an ignition request of the boiler burner		
		RELE2-5	Function not available in this boiler model		
		RELE2-6	In the event the boiler circulator pump is replaced with a traditional fixed speed circulator pump one must connect the new circulator pump to the relay board.		

M5 menu (password must be entered)					
1st Level	2nd Level	Options	Description	Default value	Value set by the technician
	RELE3 (optional)	RELE3-0	Relay 3 not used	RELE3-0	
		RELE3-1	Check the storage tank recirculation pump (not used on this model)		
		RELE3-2	The relay signals the intervention of a boiler block (Can be coupled to an external signalling device, not supplied)		
		RELE3-3	The relay signals that the boiler is on and in the heating stage (Can be coupled with an external circulator pump, not supplied)		
		RELE3-4	Controls the opening of an external gas valve in concomitance with an ignition request of the boiler burner		
		RELE3-5	Function not available in this boiler model		
		RELE3-6	In the event the boiler circulator pump is replaced with a traditional fixed speed circulator pump one must connect the new circulator pump to the relay board		
	P76	-15°C ÷ +14°C CE	With S34 = On. If the reading of the external probe is not correct it is possible to correct it in order to compensate any environmental factors With S34 = Off and system supervisor connected set the parameter to maximum until CE value is displayed	0°C	
SOLAR	PAR 1	0 ÷ 3	Solar operating mode. 0 = Disabled 1 = Solar active with automatic pump 2 = Solar active with continuous pump 3 = Solar active with automatic pump (CH integration cannot be activated on this boiler)	1	
	PAR 2	ΔT 1 ÷ 20K	Enabling differential. Collector pump.	6	
	PAR 3	ΔT 1 ÷ 20K	Disabling differential. Collector pump.	4	
	PAR 4	0 ÷ 1	Antifreeze function. 0 = Deactivated 1 = Active	0	
	PAR 5	100°C ÷ 200°C	Maximum temperature accepted by the collector	140	
	PAR 6	60°C ÷ 95°C	Maximum temperature accepted by the storage tank	80	
	PAR 7	10°C ÷ 90°C	Minimum temperature accepted by the collector	10	

3.9 "CHIMNEY SWEEP FUNCTION"

If this function is activated it takes boiler functioning to the adjustable power of the central heating selector switch. In this state all adjustments are excluded and only the safety thermostat and the limit thermostat remain active. To activate the chimney sweep function press the Reset button "C" for 8 to 15 seconds in absence of domestic hot water and heating requests. Its activation is signalled by the relative symbol (22 Fig. 2-1). This function allows the technician to check the combustion parameters. After the checks deactivate the function, switching the boiler off and then on again using the Stand-by button.

3.10 PUMP ANTI-BLOCK FUNCTION.

The boiler has a function that starts the pump at least once every 24 hours for the duration of 30 seconds in order to reduce the risk of the pump becoming blocked due to prolonged inactivity.

3.11 THREE-WAY ANTI-BLOCK FUNCTION.

Both in "domestic hot water" and in "domestic hot water-central heating" phase the boiler is equipped with a function that starts the three-way motorised group 24 hours after it was last in operation, running it for a full cycle so as to reduce the risk of the three-way group becoming blocked due to prolonged inactivity.

3.12 RADIATORS ANTIFREEZE FUNCTION.

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

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

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

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

3.14 AUTOMATIC VENT FUNCTION.

In the case of new central heating systems and in particular mode for floor systems, it is very important that dearation is performed correctly. To activate function "F8" press buttons "A and B" at the same time (Fig. 2-1) for 5 seconds with the boiler in stand-by. The function consists of the cyclic activation of the pump (100 s ON, 20 s OFF) and the 3-way valve (120 s domestic hot water, 120 s central heating). The function ends after 18 hours or by switching the boiler on using the ignition button "⏻".

3.15 YEARLY APPLIANCE CHECK AND MAINTENANCE.

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

- Clean the flue side of the heat exchanger.
- Clean the main burner.
- If deposits are detected in the combustion chamber one must remove them and clean the heat 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 fittings 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 drain circuit is clear and efficient.

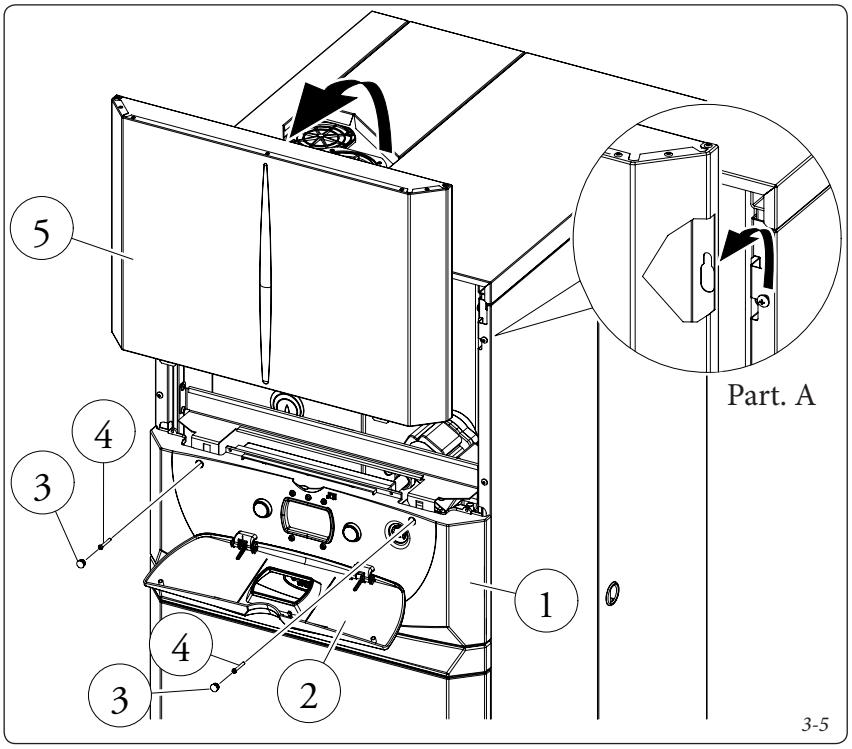
  In the event of obstructions (dirt, sediment, etc.) with consequent leakage of condensate in the combustion chamber, one must replace the insulating panels.
- Check that the burner seal gaskets and the lid are intact and perfectly efficient, otherwise replace them. In any case the gaskets must be replaced 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 valves drain is not blocked.
- Check, after discharging the system pressure and bringing it to zero (read on boiler pressure gauge), that the expansion vessel charge is at 1.0 bar.
- Check that the domestic hot water expansion vessel charge is at a pressure between 3 and 3.5 bar.
- Check the charge of the solar DHW expansion vessel according to system requirements.
- Check that the system static pressure (with system cold and after refilling the system by means of the filling cock) is between 1 and 1.2 bar.
- Visually check that the safety and control devices have not been tampered with and/or shorted, in particular:
  - temperature safety thermostat;
  - system pressure switch.
- Check integrity of the storage tank Magnesium anode.
- Check the condition and integrity of the electrical system and in particular:
  - supply voltage cables must be inside the fairleads;
  - there must be no traces of blackening or burning.
- Check the cleanliness of the solar collector glass.
- Check the status of the glycol present in the solar circuit.
- Control the heat carrying liquid every 2 years for its antifreeze capacity and pH value.
- Check ignition and operation.
- Check correct calibration of the burner in domestic hot water and central heating phases.
- Check the operation of the appliance control and adjustment devices and in particular:
  - intervention of the main electrical switch on the boiler;
  - system control thermostat intervention;
  - domestic hot water control thermostat intervention.
- Check sealing efficiency of the gas circuit and the internal system.
- Check the intervention of the device against no gas ionisation flame control. The relative intervention time must be less than 10 seconds.

IMPORTANT NOTE: in addition to yearly maintenance, you must also check the thermal system and energy efficiency, with the frequency and procedures that comply with the technical regulations in force.

3.16 CASING REMOVAL.

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

- Control panel opening (1) (Fig. 3-5 and 3-6).
  - Open the door (2) by pressing it in the centre to make it swing.
  - Remove the rubber protection caps (3) and loosen the two screws (4).
  - Disassemble the upper front (5) pushing it upwards in order to free it from the fixing slots and pulling it towards yourself (detail A).
  - Lift the control panel , gripping it at the sides to make it exit from the fixing pins (6).
  - After which, pull the control panel towards yourself and turn it as shown in the figure.
- Right side door disassembly (Fig. 3-7).
  - Open the door (7) making it turn by at least 90° outwards.
  - Remove the screw (8) in the top corner of the door (7).
  - Release the door (7) from the bracket just released from the screw (8) bending it outwards and sliding it off of the lower pin (9).
- Lower front panel disassembly (10) (Fig. 3-8).
  - undo the front screws (11), push the front slightly upwards (10) in order to free it from the lower fixing slots and pull it towards yourself (detail B);
- Disassembly of the lids (12, 14) (Fig. 3-8).
  - remove the front half-cover (12) loosening the internal screws (13), pull the cover towards yourself to release it from the 3 screws with end stop positioned in the rear (Part. C) and then lift the lid.
  - remove the rear half-cover (14) (not indispensable) by loosening the two screws (15).
- Right side disassembly (16) (Fig. 3-8).
  - remove the right side (16) loosening the three screws (17) present and then lightly push upwards in a way to release the side from its seat and pull it outwards (part. D).
- Disassembly of the left sides (17, 19) (Fig. 3-9).
  - remove the upper side (17) loosening the two screws (18) present and then lightly push the side upwards in a way to release the side from its seat and pull it outwards (part. E).
  - remove the lower side (19) loosening the two screws (18) present and then lightly push the side upwards in a way to release the side from its seat and pull it outwards (part. E).



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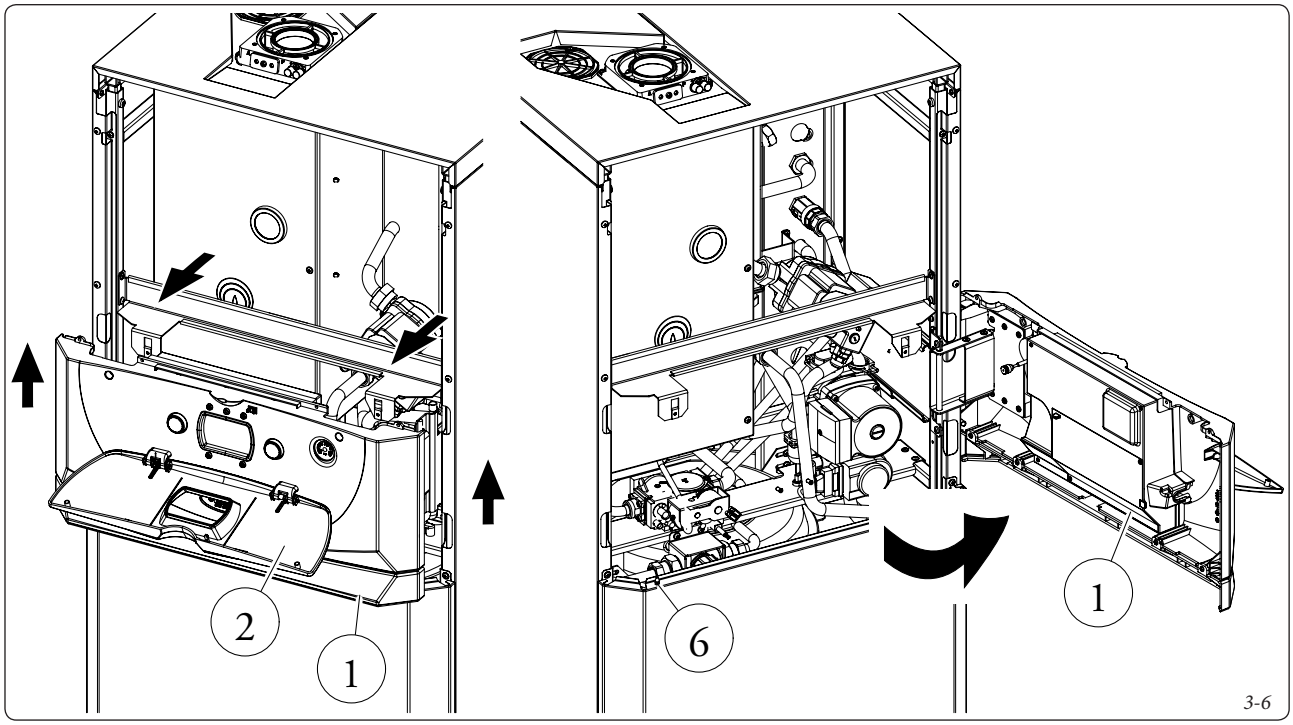

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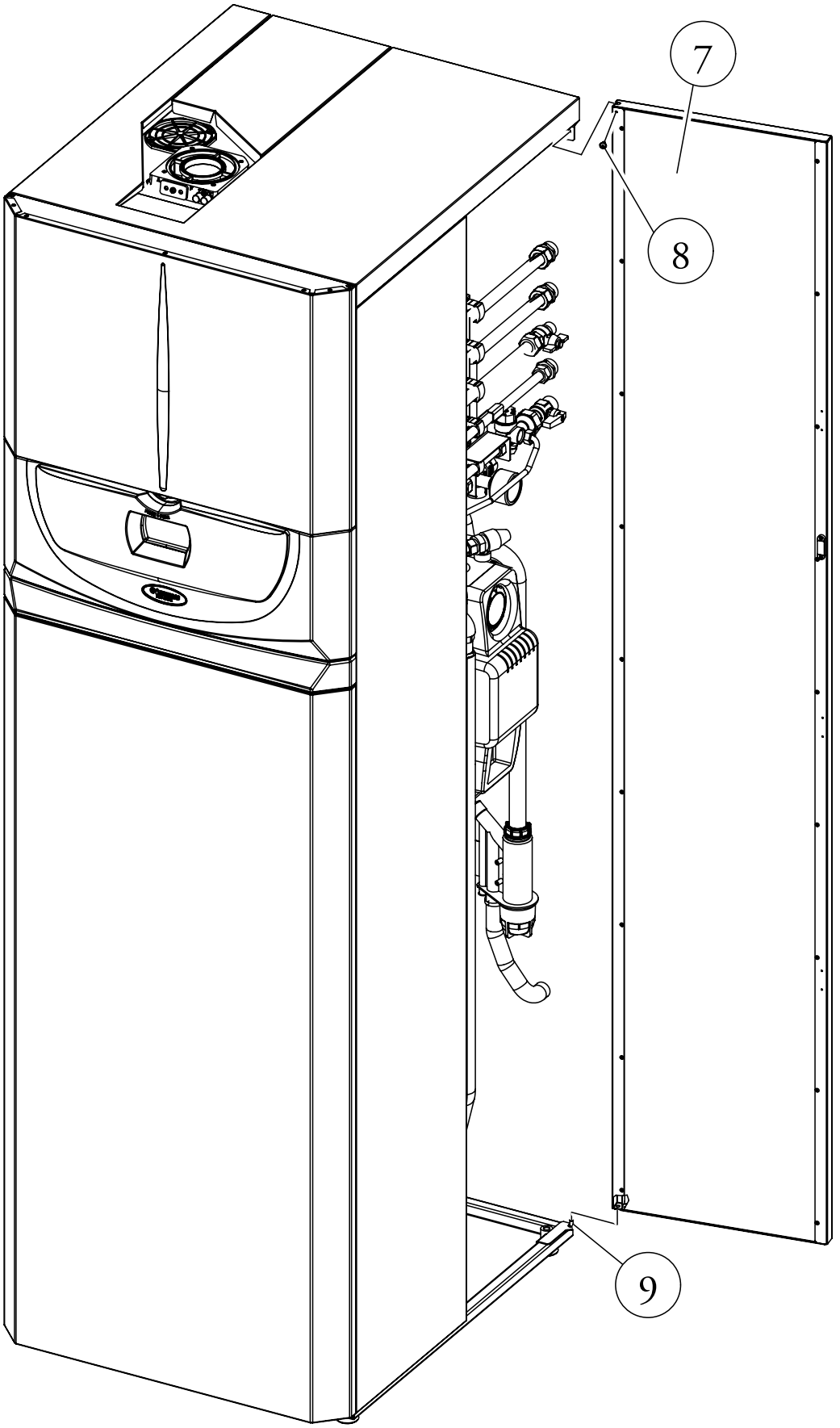

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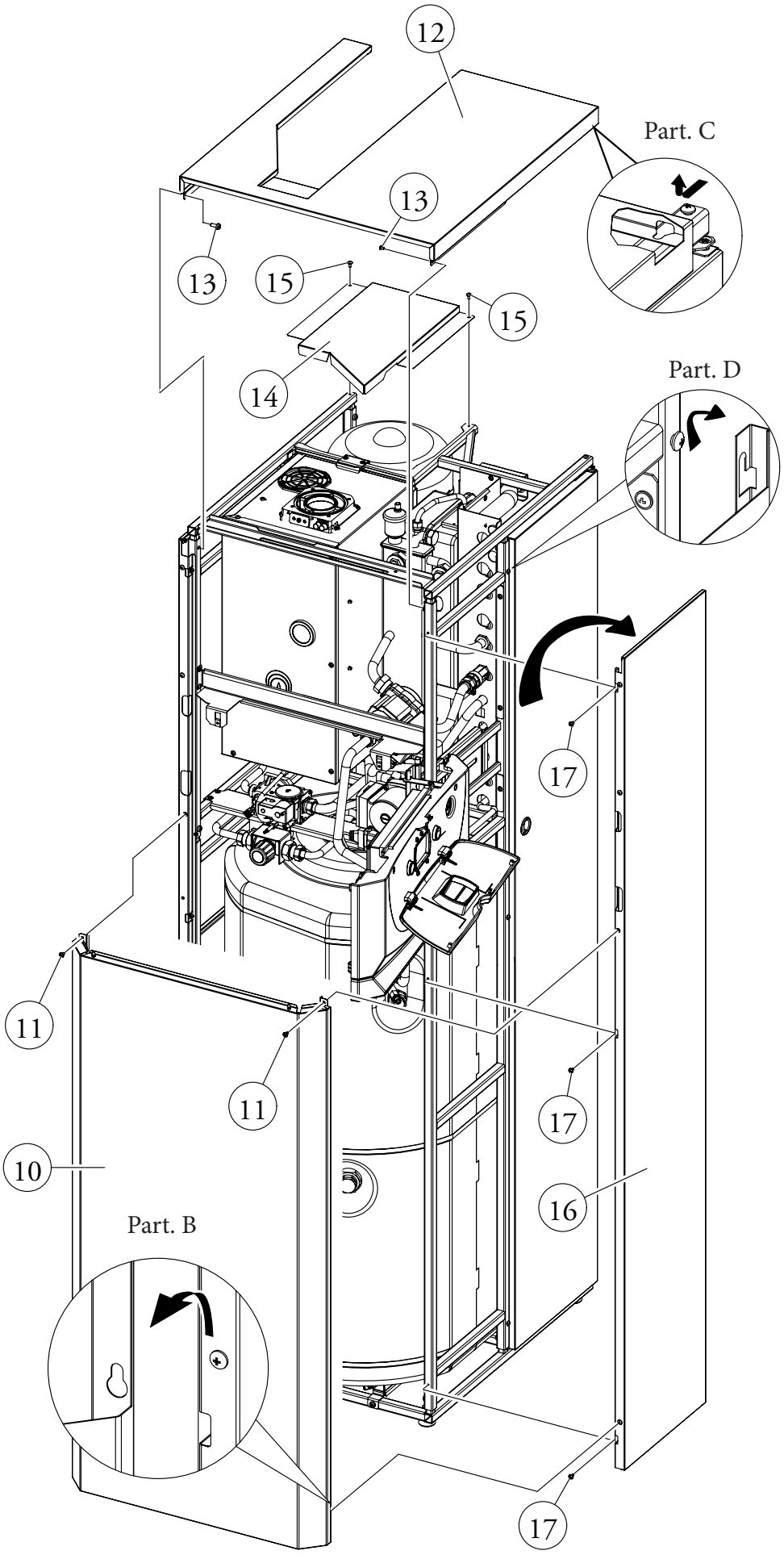

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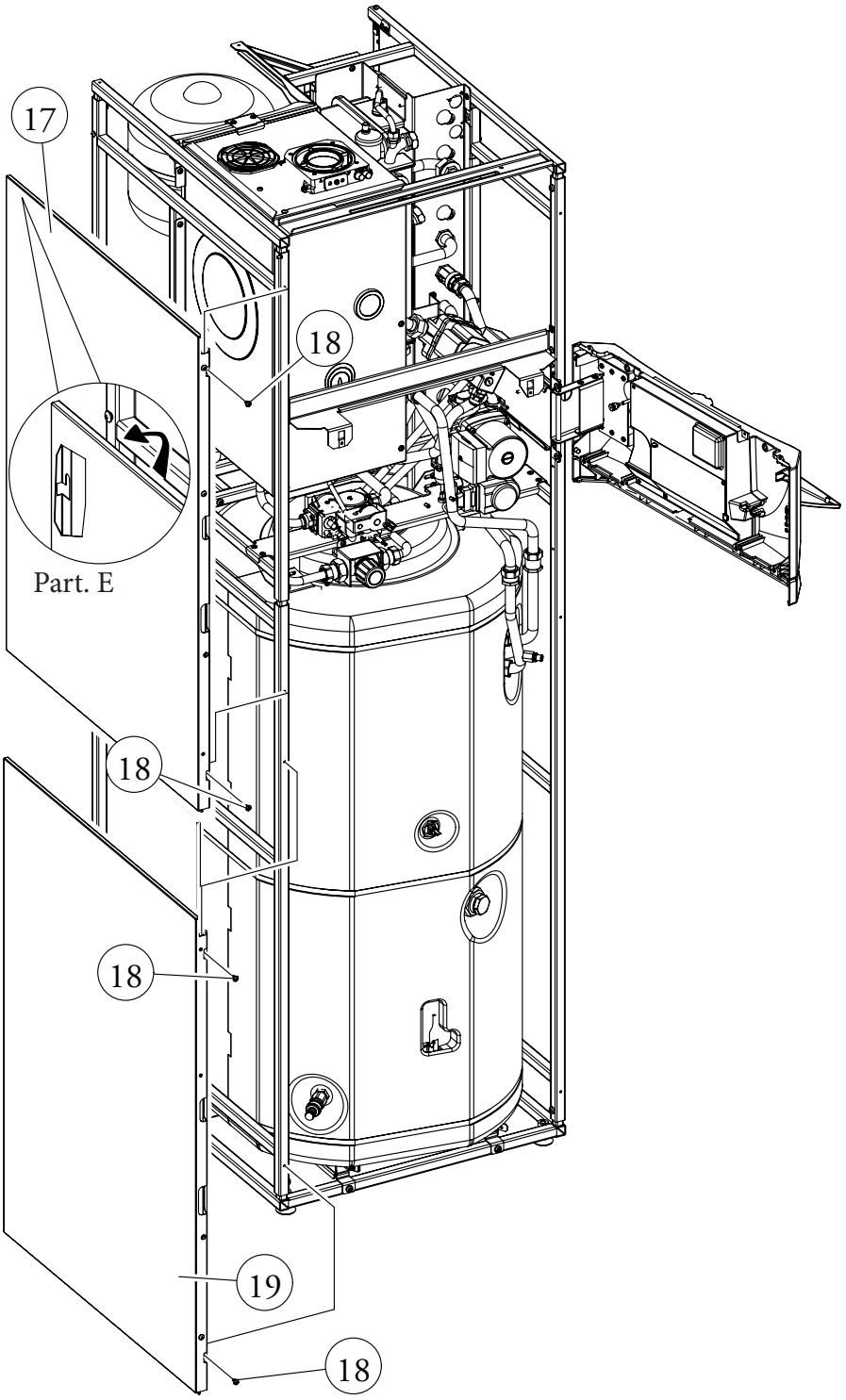


3-9

3.17 VARIABLE HEAT OUTPUT.

N.B.: the pressures indicated in the table represent the differences of pressures at the ends of the Venturi mixer and can be measured from the pressure points in the upper part of the sealed chamber (see pressure test 36 and 37 Fig. 1-33). The adjustments must be made with a digital differential pressure gauge with scale in tenths of a mm or Pascal. The power data in the table has been obtained with an intake-exhaust pipe measuring 0.5 m in length. Gas flow rates refer to the lower calorific value at a temperature of 15°C and at a pressure of 1013 mbar. The burner pressure values refer to the use of gas at a temperature of 15°C.

			METHANE (G20)			BUTANE (G30)			PROPANE (G31)		
THERMAL POWER	THERMAL POWER		BURNER GAS FLOW RATE	PRESS. BURNER NOZZLES		BURNER GAS FLOW RATE	PRESS. BURNER NOZZLES		BURNER GAS FLOW RATE	PRESS. BURNER NOZZLES	
(kW)	(kcal/h)		(m^3/h)	(mbar)	(mm H_2O)	(kg/h)	(mbar)	(mm H_2O)	(kg/h)	(mbar)	(mm H_2O)
26,0	22360	D.H.W.	2,85	5,80	59,1	2,13	5,85	59,7	2,09	7,61	77,6
25,0	21500		2,74	5,39	54,9	2,04	5,43	55,4	2,01	7,08	72,2
24,0	20640		2,62	4,99	50,9	1,96	5,03	51,3	1,93	6,56	66,9
23,6	20253	CEN. HEAT. + D.H.W.	2,57	4,82	49,1	1,92	4,86	49,5	1,89	6,34	64,7
22,0	18920		2,40	4,25	43,4	1,79	4,29	43,7	1,76	5,61	57,2
21,8	18733		2,38	4,18	42,6	1,77	4,21	42,9	1,74	5,51	56,2
20,0	17200		2,18	3,58	36,6	1,63	3,61	36,8	1,60	4,74	48,3
19,0	16340		2,07	3,27	33,4	1,55	3,29	33,6	1,52	4,33	44,2
18,0	15480		1,96	2,98	30,4	1,47	2,99	30,5	1,44	3,94	40,2
17,0	14620		1,86	2,70	27,5	1,39	2,71	27,6	1,36	3,58	36,5
16,0	13760		1,75	2,43	24,8	1,31	2,44	24,8	1,28	3,23	32,9
15,0	12900		1,64	2,18	22,2	1,23	2,18	22,2	1,21	2,89	29,5
14,0	12040		1,54	1,94	19,8	1,15	1,94	19,7	1,13	2,58	26,3
13,0	11180		1,43	1,71	17,5	1,07	1,71	17,4	1,05	2,28	23,2
12,0	10320		1,32	1,50	15,3	0,99	1,49	15,2	0,97	2,00	20,4
11,0	9460		1,21	1,31	13,3	0,91	1,29	13,2	0,89	1,73	17,7
10,0	8600		1,11	1,12	11,4	0,83	1,10	11,2	0,81	1,48	15,1
9,0	7740		1,00	0,95	9,7	0,75	0,93	9,4	0,73	1,25	12,7
8,0	6880		0,89	0,79	8,1	0,66	0,76	7,8	0,65	1,03	10,5
7,0	6020		0,78	0,65	6,6	0,58	0,61	6,3	0,57	0,83	8,5
6,0	5160		0,67	0,51	5,2	0,50	0,48	4,9	0,49	0,65	6,6
5,0	4300		0,56	0,40	4,0	0,42	0,35	3,6	0,41	0,48	4,9
4,0	3440		0,45	0,29	3,0	0,34	0,25	2,5	0,33	0,33	3,4
3,0	2580		0,34	0,20	2,0	0,25	0,15	1,5	0,25	0,20	2,0

3.18 COMBUSTION PARAMETERS.

		G20	**G30**	**G31**
Supply pressure	mbar (mm H_2O)	20 (204)	29 (296)	37 (377)
Gas nozzle diameter	mm	5.60	4.00	4.00
Flue flow rate at nominal heat output	kg/h	42	38	43
Flue flow rate at min heat output	kg/h	5	5	5
CO_2 at Q. Nom./Min.	%	9.50 / 9.00	12.30 / 11.80	10.60 / 10.10
CO with 0% O_2 at Nom./Min. Q. Nom./Min.	ppm	235 / 3	680 / 4	220 / 4
NO_X at 0% of O_2 at Q. Nom./Min.	mg/kWh	44 / 12	148 / 26	35 / 13
Flue temperature at nominal output	°C	62	68	62
Flue temperature at minimum output	°C	49	54	49

3.19 TECHNICAL DATA.

BOILER TECHNICAL DATA		
Domestic hot water nominal heat input	kW (kcal/h)	26.9 (23147)
Central heating nominal heat input	kW (kcal/h)	24.3 (20904)
Minimum heat input	kW (kcal/h)	3.2 (2768)
Domestic hot water nominal heat output (useful)	kW (kcal/h)	26.0 (22360)
Central heating nominal heat output (useful)	kW (kcal/h)	23.6 (20253)
Minimum heat output (useful)	kW (kcal/h)	3.0 (2580)
*Effective thermal efficiency 80/60 Nom./Min.	%	96.9 / 93.2
*Effective thermal efficiency 50/30 Nom./Min.	%	105.3 / 106.8
*Effective thermal efficiency 40/30 Nom./Min.	%	107.5 / 108.8
Casing losses with burner On/Off (80-60°C)	%	0.70 / 0.90
Heat loss at flue with burner On/Off (80-60°C)	%	0.05 / 2.50
Central heating circuit max. operating pressure	bar	3
Maximum heating temperature	°C	90
Max. adjustable central heating temperature	°C	25 - 85
Min. adjustable central heating temperature	°C	25 - 50
System expansion vessel total volume	l	10.8
Heating expansion vessel pre-charge	bar	1.0
Total volume domestic hot water expansion vessel	l	4.3
Domestic hot water expansion vessel pre-charge	bar	2.5
Appliance water content	l	7.6
High temperature zone total head available with 1000 l/h flow rate	kPa (m H_2O)	28.8 (2.94)
Low temperature zone total head available with 1000 l/h flow rate	kPa (m H_2O)	35.0 (3.57)
Hot water production useful heat output	kW (kcal/h)	26.0 (22360)
Domestic hot water adjustable temperature	°C	20 - 60
Domestic hot water circuit flow limiter at 2 bar	l/min	29.3
Domestic hot water circuit min. pressure (dynamic)	bar	0.3
Domestic hot water circuit max. operating pressure	bar	8.0
**Specific flow rate "D" according to EN 625	l/min	19.0
Flow rate capacity in continuous duty (ΔT 30°C)	l/min	13.1
Domestic hot water performance classification according to N 13203-1	★★★	
Weight of full boiler	kg	404.4
Weight of empty boiler	kg	193.8
Electrical connection	V/Hz	230 / 50
Nominal power absorption	A	1.2
Installed electric power	W	165
Boiler circulator pump absorbed power	W	30.6
Zone pump absorbed power	W	58.5
Fan power absorbed power	W	23.0
Equipment electrical system protection	-	IPX5D
Max temperature of combustion products	°C	75
NO_x class	-	5
Weighted NO_x	mg/kWh	52
Weighted CO	mg/kWh	15
Type of appliance	C13 / C13x / C23 / C33 / C33x / C43 / C43x / C53 / C63 / C83 / C93 / C93x / B23p / B23 / B53p	
Category	II2H3B/P	
SOLAR CIRCUIT TECHNICAL DATA		
Maximum continuous operating temperature	°C	130
Maximum peak temperature	°C	150
Safety valve pressure	bar	6
Total volume hot water expansion vessel	l	10.8
Expansion vessel factory-set pressure	bar	2.5
Content of glycol in the solar circuit	l	2.0
Pump absorbed power	W	33.9
Head available with 800 l/h flow rate	kPa (m H_2O)	46.7 (4.76)
Flow rate regulator control range	l/min	1 - 6

- Flue temperature values refer to an air inlet temperature of 15°C and flow temperature of 50°C.
- The data relevant to domestic hot water performance refer to a dynamic inlet pressure of 2 bar and an inlet temperature of 15°C; the values are measured directly at the boiler outlet considering that to obtain the data declared mixing with cold water is necessary.
- * Yields refer to the lower heating value.
- ** Specific flow rate "D": domestic hot water flow rate corresponding to an average temperature increase of 30K, which the boiler can supply in two subsequent withdrawals.

3.20 KEY FOR DATA NAMEPLATE.

Md			Cod. Md		
Sr N°		CHK	Cod. PIN		
Type					
Qnw/Qn min.	Qnw/Qn max.	Pn min.		Pn max.	
PMS	PMW	D		TM	
NO_x Class					
					CONDENSING

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

	IE
Md	Model
Cod. Md	Model code
Sr N°	Serial Number
CHK	Check
Cod. PIN	PIN code
Type	Type of installation (ref. CEN TR 1749)
Qnw min.	Minimum DHW heat input
Qn min.	CH minimum heat input
Qnw max.	DHW maximum heat input
Qn max.	CH maximum heat input
Pn min.	Minimum heat output
Pn max.	Maximum heat output
PMS	Maximum system pressure
PMW	Maximum domestic hot water pressure
D	Specific flow rate
TM	Maximum operating temperature
NOx Class	NOx Class
CONDENSING	Condensing boiler

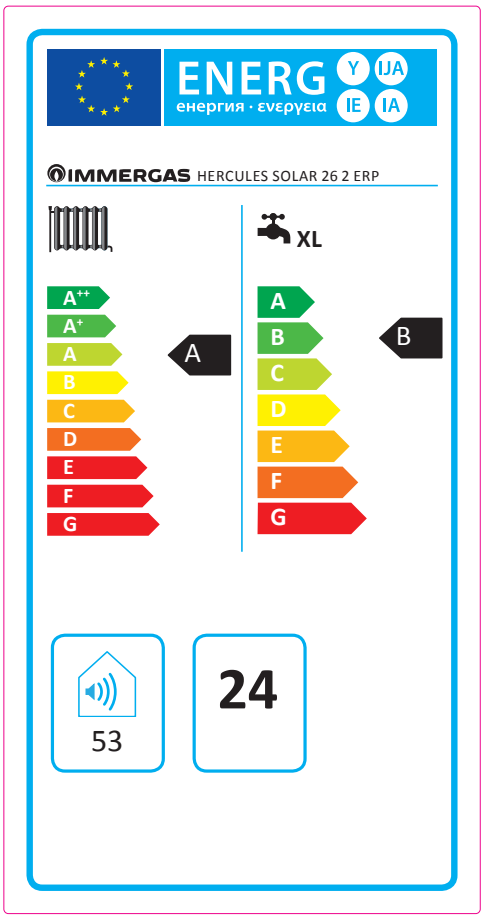
3.21 TECHNICAL PARAMETERS FOR MIXED BOILERS (IN COMPLIANCE WITH REGULATION 813/2013).

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

Model/s:			Hercules Solar 26 2 ErP				
Condensing boiler:			YES				
Low-temperature boiler:			NO				
B1 boiler:			NO				
Cogeneration space heater:			NO	Equipped with a supplementary heater:			NO
Combination heater:			YES				
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	P_n	24	kW	Seasonal space heating energy efficiency	η_s	92	%
For boiler space heaters and boiler combination heaters: useful heat output				For boiler space heaters and boiler combination heaters: Useful efficiency			
At rated heat output and high-temperature regime (*)	P_4	23,6	kW	At rated heat output and high-temperature regime (*)	η_4	87,3	%
At 30 % of rated heat output and low-temperature regime (**)	P_1	7,1	kW	At 30 % of rated heat output and low-temperature regime (**)	η_1	97,2	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0,043	kW	Standby heat loss	P_{stby}	0,132	kW
At part load	el_{min}	0,019	kW	Ignition burner power consumption	P_{ign}	0,000	kW
In standby mode	P_{SB}	0,005	kW	Emissions of nitrogen oxides	NO_X	47	mg / kWh
For combination heaters:							
Declared load profile	XL			Water heating energy efficiency	η_{WH}	76	%
Daily electricity consumption	Q_{elec}	0,669	kWh	Daily fuel consumption	Q_{fuel}	30,464	kWh
Contact details	IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY						

(*) High-temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.
(**) Low temperature means for condensing boilers 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature.

3.22 PRODUCT DATA SHEET (IN COMPLIANCE WITH REGULATION 811/203).



Parameter	value
Yearly energy consumption for the heating function (Q_{HE})	1,4 GJ
Yearly electricity consumption for the domestic hot water function (AEC)	147 kWh
Yearly fuel consumption for the domestic hot water function (AFC)	24 GJ
Seasonal room heating yield (η_s)	92 %
Domestic hot water production yield (η_{wh})	76 %

For proper installation of the appliance refer to chapter 1 of this booklet (for the installer) and current installation regulations. For proper maintenance refer to chapter 3 of this booklet (for the maintenance technician) and adhere to the frequencies and methods set out herein.

3.23 PARAMETERS FOR FILLING IN THE ASSEMBLY SHEET.

In case you should wish to install an assembly, starting from the Hercules Solar 26 2 ErP boiler, use the assembly charts in fig. 3-12 and 3-15.
For correctly filling in, enter the figures shown in tables fig. 3-11 and 3-14 (as shown in the facsimile assembly sheet fig. 3-10 and 3-13) .
The remaining values must be obtained from the technical data sheets of the products used to make up the assembly (e.g. solar devices, integration heat pumps, temperature controllers).
Use sheet fig. 3-12 for "assemblies" related to the heating function (e.g.: boiler + temperature controller).
Use sheet fig. 3-15 for "assemblies" related to the domestic hot water function (e.g.: boiler + solar thermal system).

Facsimile for filling in room heating system assembly chart.

Seasonal space heating energy efficiency of boiler — 1 — 'I' %

Temperature control
From fiche of temperature control
Class I = 1 %, Class II = 2 %, Class III = 1.5 %, Class IV = 2 %, Class V = 3 %, Class VI = 4 %, Class VII = 3.5 %, Class VIII = 5 %
+ 2 %

Supplementary boiler
From fiche of boiler
Seasonal space heating energy efficiency (in %)
(☐ - 'I') x 0.1 = ± 3 %

Solar contribution
From fiche of solar device
Collector size (in m²) — Tank volume (in m³) — Collector efficiency (in %) — Tank rating A* = 0.95, A = 0.91, B = 0.86, C = 0.83, D-G = 0.81
('III' x ☐ + 'IV' x ☐) x (0.9 x (☐ / 100) x ☐ = + 4 %

Supplementary heat pump
From fiche of heat pump
Seasonal space heating energy efficiency (in %)
(☐ - 'I') x 'II' = + 5 %

Solar contribution and Supplementary heat pump
Select smaller value
0.5 x 4 ☐ OR 0.5 x 5 ☐ = - 6 %

Seasonal space heating energy efficiency of package — 7 — %

Seasonal space heating energy efficiency class of package

G	F	E	D	C	B	A	A+	A++	A+++
< 30 %	≥ 30 %	≥ 34 %	≥ 36 %	≥ 75 %	≥ 82 %	≥ 90 %	≥ 98 %	≥ 125 %	≥ 150 %

Boiler and supplementary heat pump installed with low temperature heat emitters at 35°C?
From fiche of heat pump — 7 ☐ + (50 x 'II') = ☐ %

The energy efficiency of the package of products provided far in this fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heal loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

3-10

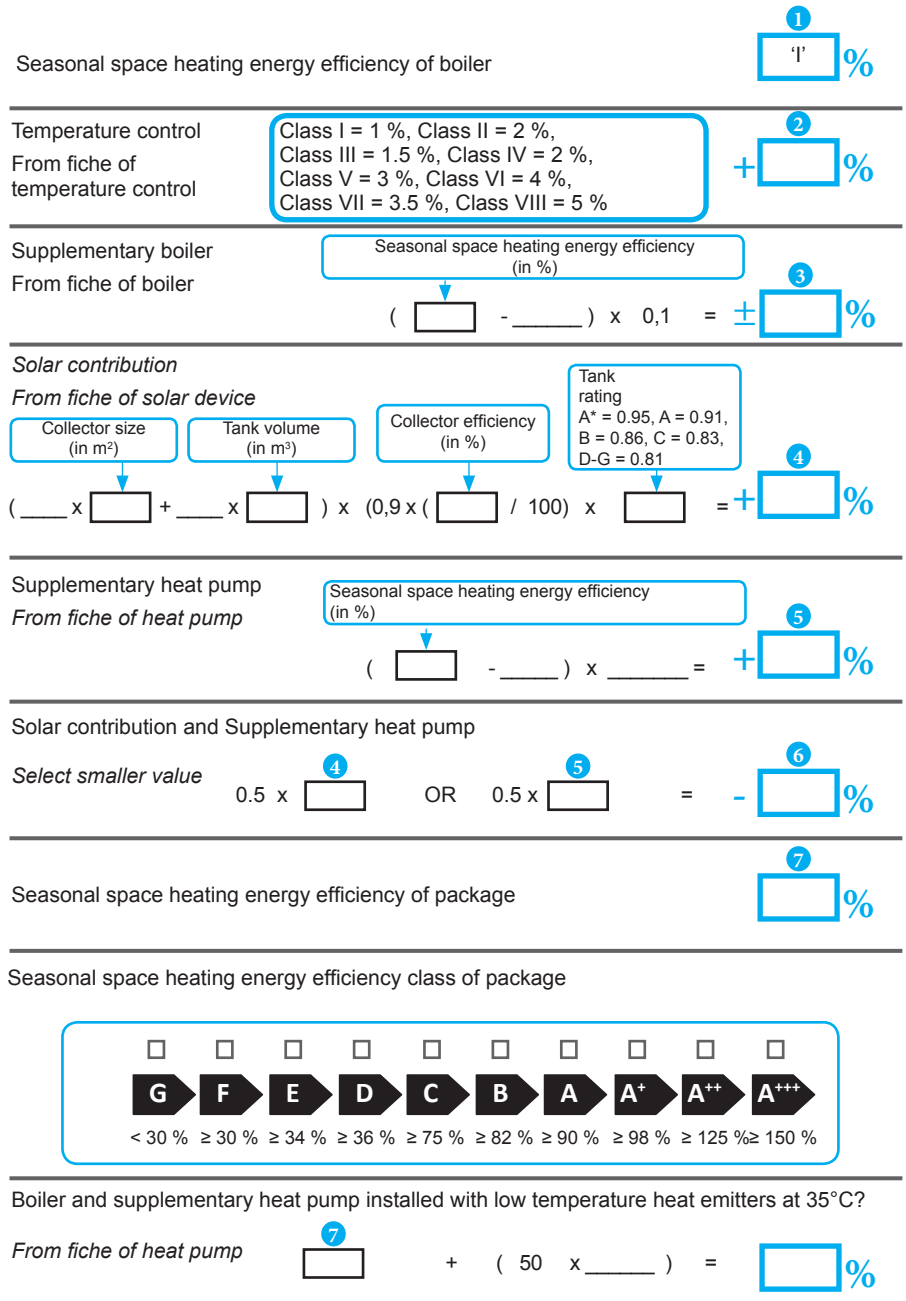
Parameters for filling in assembly chart.

Parameter	Hercules Solar 26 2 ErP
'I'	92
'II'	*
'III'	1.11
'IV'	0.44

* *to be established by means of table 5 of Regulation 811/2013 in case of "assembly" including a heat pump to integrate the boiler. In this case the boiler must be considered as the main appliance of the assembly.*

3-11

Room heating system assembly chart.



The energy efficiency of the package of products provided far in this fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heal loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

3-12

Facsimile for filling in domestic hot water production system assembly chart.

Water heating energy efficiency of combination heater

1 'I' %

Declared load profile:

Solar contribution

From fiche of solar device

Auxiliary electricity

(1,1 x 'I' - 10 %) x 'II' - 'III' - 'I' =

+ 2 %

Water heating energy efficiency of package under average climate

3 %

Water heating energy efficiency class of package under average climate

	G	F	E	D	C	B	A	A+	A++	A+++
M	< 27 %	≥ 27 %	≥ 30 %	≥ 33 %	≥ 36 %	≥ 39 %	≥ 65 %	≥ 100 %	≥ 130 %	≥ 163 %
L	< 27 %	≥ 27 %	≥ 30 %	≥ 34 %	≥ 37 %	≥ 50 %	≥ 75 %	≥ 115 %	≥ 150 %	≥ 188 %
XL	< 27 %	≥ 27 %	≥ 30 %	≥ 35 %	≥ 38 %	≥ 55 %	≥ 80 %	≥ 123 %	≥ 160 %	≥ 200 %
XXL	< 28 %	≥ 28 %	≥ 32 %	≥ 36 %	≥ 40 %	≥ 60 %	≥ 85 %	≥ 131 %	≥ 170 %	≥ 213 %

Water heating energy efficiency under colder and warmer climate conditions

Colder: 3 - 0.2 x 2 = %

Warmer: 3 + 0.4 x 2 = %

The energy efficiency of the package of products provided far in this fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heat loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

3-13

Parameters for filling in DHW package assembly chart.

Parameter	Hercules Solar 26 2 ErP
'I'	76
'II'	*
'III'	*

* *to be determined according to Regulation 811/2014 and transient calculation methods as per Notice of the European Community no. 207/2014.*

3-14

Domestic hot water production system assembly chart.

Water heating energy efficiency of combination heater ① ____ %

Declared load profile: ☐

Solar contribution

From fiche of solar device

Auxiliary electricity

(1,1 x _____ - 10 %) x _____ - ____ - _____ = + ② ____ %

Water heating energy efficiency of package under average climate ③ ____ %

Water heating energy efficiency class of package under average climate

	G	F	E	D	C	B	A	A+	A++	A+++
☐ M	< 27 %	≥ 27 %	≥ 30 %	≥ 33 %	≥ 36 %	≥ 39 %	≥ 65 %	≥ 100 %	≥ 130 %	≥ 163 %
☐ L	< 27 %	≥ 27 %	≥ 30 %	≥ 34 %	≥ 37 %	≥ 50 %	≥ 75 %	≥ 115 %	≥ 150 %	≥ 188 %
☐ XL	< 27 %	≥ 27 %	≥ 30 %	≥ 35 %	≥ 38 %	≥ 55 %	≥ 80 %	≥ 123 %	≥ 160 %	≥ 200 %
☐ XXL	< 28 %	≥ 28 %	≥ 32 %	≥ 36 %	≥ 40 %	≥ 60 %	≥ 85 %	≥ 131 %	≥ 170 %	≥ 213 %

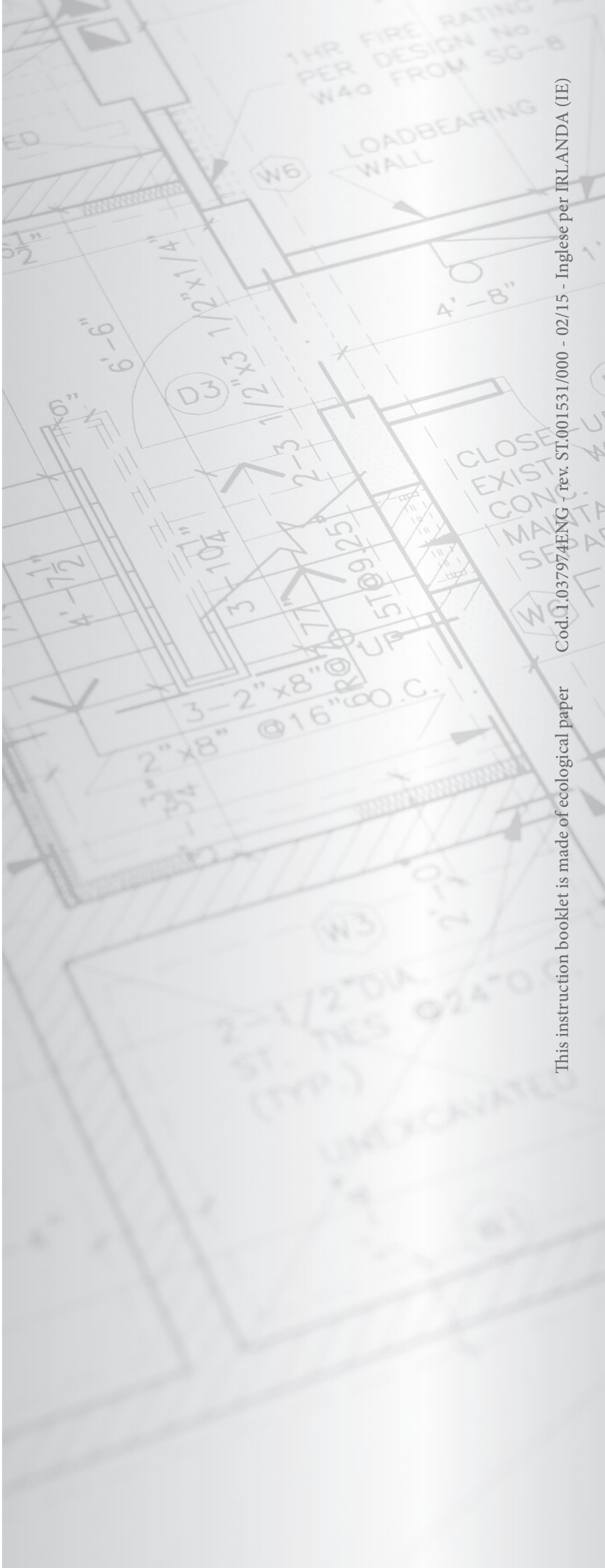
Water heating energy efficiency under colder and warmer climate conditions

Colder: ③ ____ - 0.2 x ② ____ = ____ %

Warmer: ③ ____ + 0.4 x ② ____ = ____ %

The energy efficiency of the package of products provided far in this fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heat loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

3-15



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