

ZEUS SUPERIOR

Instruction and
recommendation booklet



ZEUS SUPERIOR

24 - 28 - 32 kW



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

General recommendations

All Immergas products are protected with packaging suitable for transport.

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

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

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

This instruction booklet contains technical information on how installing Immergas boilers. For other issues related to installation of boilers (i.e.: safety in work sites, environment protection, injury prevention), comply with the laws in force and technical standards.

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

Improper installation or assembly of Immergas appliance and/or components, accessories, kit and devices can cause unexpected problems to persons, animals and objects. Read the provided product instructions carefully in order to install the product correctly.

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

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

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

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

Product not intended for EU countries

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

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1 BOILER INSTALLATION

1.1 INSTALLATION RECOMMENDATIONS.

The Zeus Superior kW boiler has been designed for wall mounted installation only; they must be used to heat, to produce domestic hot water and similar purposes. The installation site and relative Immergas accessories must have suitable characteristics (both technical and structural), in order to allow (always in safe, efficiency and easiness conditions):

- installation (according to the legislation and technical standards in force);
- maintenance operations (including those scheduled, periodical, ordinary and special);
- removal (to the outdoors in a place suitable for loading and transporting appliances and components) as well as any replacement with equivalent appliances and/or components. The wall surface must be smooth, without any protrusions or recesses enabling access to the rear part. They are NOT designed to be installed on plinths or floors (Fig. 1-1).

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

- **B22 type boiler** if installed using the relevant terminal for air intake directly from the room in which the boiler has been installed.
- **C type boiler** if installed using concentric pipes or other types of pipes envisioned for the sealed chamber boiler for intake of air and expulsion of fumes.

Only professionally enabled companies are authorised to install Immergas gas appliances. Installation must be carried out according to the standards, current legislation and in compliance with local technical regulations and the required technical procedures.

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

Before installing the appliance, ensure that it is delivered in perfect condition; if in doubt, contact the supplier immediately. Packing materials (staples, nails, plastic bags, polystyrene foam, etc.) constitute a hazard and must be kept out of the reach of children. If the appliance is installed inside or between cabinets, ensure sufficient space for normal servicing; therefore it is advisable to leave clearance of at least 3 cm between the boiler casing and the vertical sides of the cabinet.

Leave adequate space above the boiler for possible water and fume removal connections. At least 60 cm must be left below the boiler in order to guarantee replacement of the magnesium anode.

Keep all flammable objects away from the appliance (paper, rags, plastic, polystyrene, etc.). Leave adequate space above the boiler for possible water and fume removal connections. At least 60 cm must be left below the boiler in order to guarantee replacement of the magnesium anode.

Keep all flammable objects away from the appliance (paper, rags, plastic, polystyrene, etc.). Do not place household appliances underneath the boiler as they could be damaged if the safety valve intervenes, if the drain trap is blocked, or if there are leaks from the hydraulic connections; otherwise, the manufacturer cannot be held responsible for any damage caused to the household appliances.

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

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

Do not attempt to modify or repair the appliance alone.

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

• Installation regulations:

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

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

- Installation in places with a fire risk is prohibited (for example: garages, closed parking stalls), gas appliances and relative flue ducts, flue exhaust pipes and combustion air intake pipes.
- Installation is prohibited on the vertical projection of cooking hobs.

Attention: Wall mounting of the boiler must guarantee stable and efficient support for the generator.

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

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

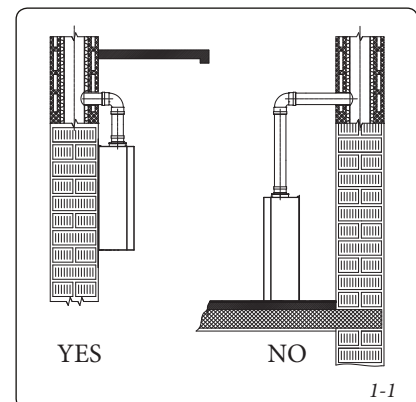
These boilers are used to heat water to below boiling temperature in atmospheric pressure. They must be connected to a heating system and hot water circuit suited to their performance and capacity.

Anti-Legionella thermal treatment of the Immergas (which can be activated through the specific function present on the set thermoregulation systems): during this phase, the water temperature inside the storage tank exceeds 60 °C resulting in burns hazards. Keep this DHW treatment under control (and inform the users), to prevent unexpected damage to persons, animals and objects. If required, a thermostatic valve must be installed at the DHW outlet to prevent burns.

INSTALLER

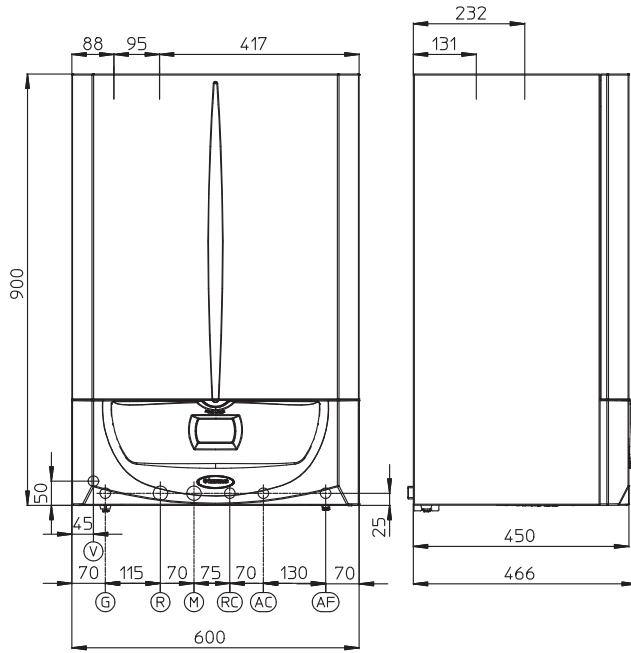
USER

MAINTENANCE TECHNICIAN



1.2 MAIN DIMENSIONS.

1-2



Height (mm)	Width (mm)	Depth (mm)		
900	600	466		
ATTACHMENTS				
GAS	PLANT		DOMESTIC HOT WATER	
G	R	M	AC	AF
1/2"	3/4"	3/4"	1/2"	1/2"

- Key:
- G - Gas supply
 - R - System return
 - M - System delivery
 - RC - Domestic hot water re-circ
 - AC - Domestic hot water outlet
 - AF - Domestic hot water inlet
 - V - Electric attachment

1.3 ANTI-FREEZE PROTECTION.

Minimum temperature -3°C. The boiler comes standard with an antifreeze function that activates the pump and burner when the water temperature inside the boiler drops below 4°C. *In these conditions the boiler is protected against freezing to an ambient temperature of -5°C.*

Minimum temperature -15°C. If the boiler is installed in a place where the temperature drops below -5° C, the appliance can freeze. *To prevent the risk of freezing follow the instructions below:*

- protect the central heating circuit from freezing by inserting a quality antifreeze liquid into this circuit, which is specifically adequate for central heating systems and which is guaranteed by the manufacturer not to cause damage to the heat exchanger or other components of the boiler. The antifreeze liquid must not be harmful to one's health. The instructions of the manufacturer of this liquid must be strictly followed regarding the necessary percentage with respect to the minimum temperature at which the system must be kept. An aqueous solution must be made with potential pollution class of water 2 (EN 1717:2002). *The materials used for the central heating circuit of Immergas boilers resist ethylene and propylene glycol based antifreeze liquids (if the mixtures are prepared perfectly).* For life and possible disposal, follow the supplier's instructions.

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

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

Boiler antifreeze protection (both -3°C and -15°C) is thus ensured only if:

- the boiler is correctly connected to the gas and electricity power supply circuits;
- the boiler is powered constantly;
- the boiler is not in stand-by (⏻);
- the boiler is not in anomaly conditions (parag. 2.6);
- the essential components of the boiler and/or antifreeze kit are not faulty.

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

N.B.: if the boiler is installed in places where the temperature falls below 0°C the domestic water and heating connecting pipes must be insulated.

1.4 GAS CONNECTION.

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-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, 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 to the boiler even in conditions of max. generator output and to guarantee appliance efficiency (technical specifications). The coupling system must conform to standards.

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

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

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

1.5 HYDRAULIC ATTACHMENT.

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

A chemical treatment for the thermal system water is prescribed according to the current technical regulations, until the system and the lime scale apparatus is preserved (for example, limescale deposits), from the slurry formation and other noxious deposits.

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

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


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.

1.6 ELECTRICAL CONNECTION.

The "Zeus Superior kW" boiler has an IPX5D protection rating for the entire appliance. Electrical safety of the unit is reached when it is correctly connected to an efficient earthing system as specified by current safety standards.

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

Also ensure that the electrical installation corresponds to maximum absorbed power specifications as shown on the boiler data plate. Boilers are supplied complete with an "X" type power cable without plug. The power supply cable must be connected to a 230V $\pm 10\%$ / 50Hz mains supply respecting L-N polarity and earth connection ; this network must also have a multi-pole circuit breaker with class III over-voltage category. When replacing the power supply cable, contact a qualified technician (e.g. the After-Sales Technical Assistance Service).

The power cable must be laid as shown. In the event of mains fuse replacement on the control card, use a 3.15A quick-blow fuse.

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

1.7 REMOTE CONTROLS AND ROOM CHRONOTHERMOSTATS (OPTIONAL).

The boiler is prepared for application of room chronothermostats and external probe. These Immergas components are available as separate kits to the boiler and are supplied on request.

All Immergas chronothermostats are connected with 2 wires only.

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

• Immergas On/Off digital chrono-thermostat (Fig. 1-3). The chrono-thermostat allows:

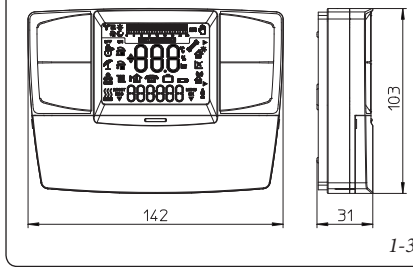
- to set two room temperature values: one for day (comfort temperature) and one for night (lower temperature);
- set a weekly program with four daily switch-on/off;
- selecting the required function mode from the various possible alternatives:
 - manual operation (with adjustable temperature).
 - automatic operation (with set program).
 - forced automatic operation (temporarily modifying the temperature of the automatic program).

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

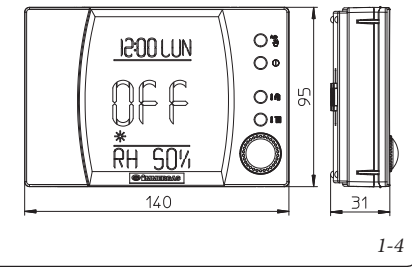
• There are two types of Digital Remote Control^{V2} (CAR^{V2}) (Fig. 1-3) and Super Remote Friend Control (Super CAR) (Fig. 1-4) both with room chronothermostat functioning. In addition to the functions described in the previous point, the Remote Friend Control^{V2} enables the user to control all the important information regarding operation of the appliance and the heating system with the opportunity of easily intervening on the previously set parameters without having to go to the place where the appliance is installed. The Remote Friend Control^{V2} panel is provided with self-diagnosis to display any boiler functioning anomalies. The climate chronothermostat incorporated in the remote panel enables the system delivery temperature to be adjusted to the actual needs of the room being heated, in order to obtain the desired room temperature with extreme precision and therefore with evident saving in running costs. The CAR^{V2} is fed directly by the boiler by means of the same 2 wires used for the transmission of data between boiler and device.

Important: If the system is subdivided into zones 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.

Comando Amico Remoto remote control^{V2} (CAR^{V2}) On/Off digital timer thermostat.



Super Comando Amico Remoto remote control (Super CAR)



CAR^{V2}, Super CAR or On/Off chronothermostat electric connection (Optional). *The operations described below must be performed after having removed the voltage from the appliance.* The eventual thermostat or On/Off room chronothermostat must be connected to terminals 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 supply; otherwise the electronic adjustment circuit board would be damaged. The eventual CAR^{V2} or Super CAR must be connected by means of terminals IN+ and IN- to terminals 42 and 43, eliminating jumper X40 on the terminal board (in the boiler) respecting polarity (Fig. 3-2). Connection with the wrong polarity prevents functioning, but without damaging the CAR^{V2}. The boiler works with the parameters set on the Remote Friend Control^{V2} only if the boiler main selector is turned to Domestic/Remote Friend Control^{V2}. The boiler can only be connected to one remote control.

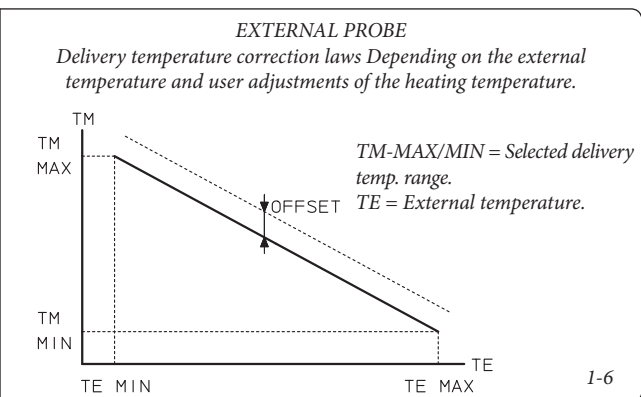
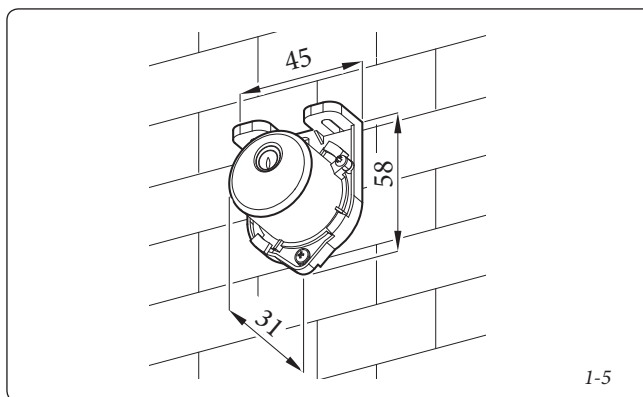
Important: If the Remote Friend Control^{V2} is used arrange two separate lines in compliance with current regulations regarding electrical systems.

Boiler pipes must never be used to earth the electric or telephone lines. Ensure elimination of this risk before making the boiler electrical connections.

1.8 EXTERNAL TEMPERATURE PROBE (OPTIONAL).

The boiler is designed for the application of the external temperature probe (Fig. 1-5), which is available as an optional kit. Refer to the relative instruction sheet for positioning of the external probe.

This probe (Fig. 1-5) can be connected directly to the boiler electrical system and allows the max. system delivery temperature to be automatically decreased when the outside 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 chronothermostat used and can work in combination with Immergas chronothermostats). The correlation between system delivery temperature and outside temperature is determined by the parameters set in the “M5” menu under “P66” according to the curves represented in the diagram (Fig. 1-6). The external probe electrical connection must be made on clamps 38 and 39 on the boiler circuit board (Fig. 3-2).



1.9 IMMERGAS FLUE SYSTEMS.

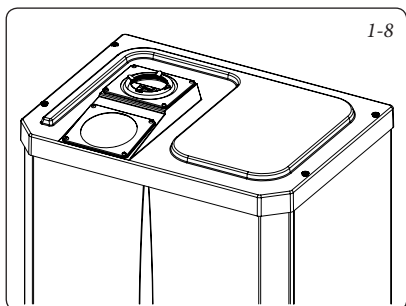
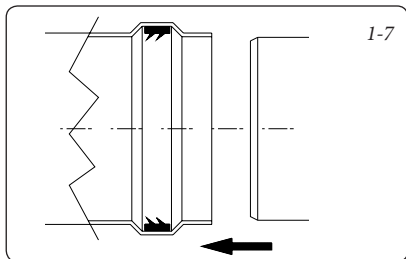
Immergas supplies various solutions separately from the boiler regarding the installation of air intake terminals and flue extraction; fundamental for boiler operation.

Important: the boiler must only be installed together with an original Immergas air intake and fume extraction system. This system can be identified by a special distinctive marking bearing the note: “not for condensing boilers”.

The fume exhaust pipes must not be in contact with or near flammable materials and must not cross building structures or walls made of flammable materials.

- Resistance factors and equivalent lengths. . Each flue extraction system component is designed with a Resistance Factor based on preliminary tests and specified in the table below. The resistance factor for individual components does not depend either on the type of boiler on which it is installed or the actual dimensions. It is based on the temperature of fluids conveyed through the ducts 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, 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 enables calculations to verify the possibility of various configurations of flue extraction systems.

Positioning of double lip seals. For correct positioning of lip seals on elbows and extensions, follow the assembly direction given in the figure (Fig. 1-7).



1.10 INSTALLATION OUTSIDE IN A PARTIALLY PROTECTED PLACE.

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

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

• Configuration type B, open chamber and forced draught.

In this configuration the relevant terminal must be used (present in the suction kit for the installation in question) to be placed on the most internal hole of the boiler (Fig. 1-9). Suction of the air is direct from the environment in which the boiler is installed and the discharge of fumes in single flue or directly to the outside.

The boiler in this configuration is classified as type B₂.

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 fumes pipe must be connected to its own individual flue or channelled directly into the external atmosphere.

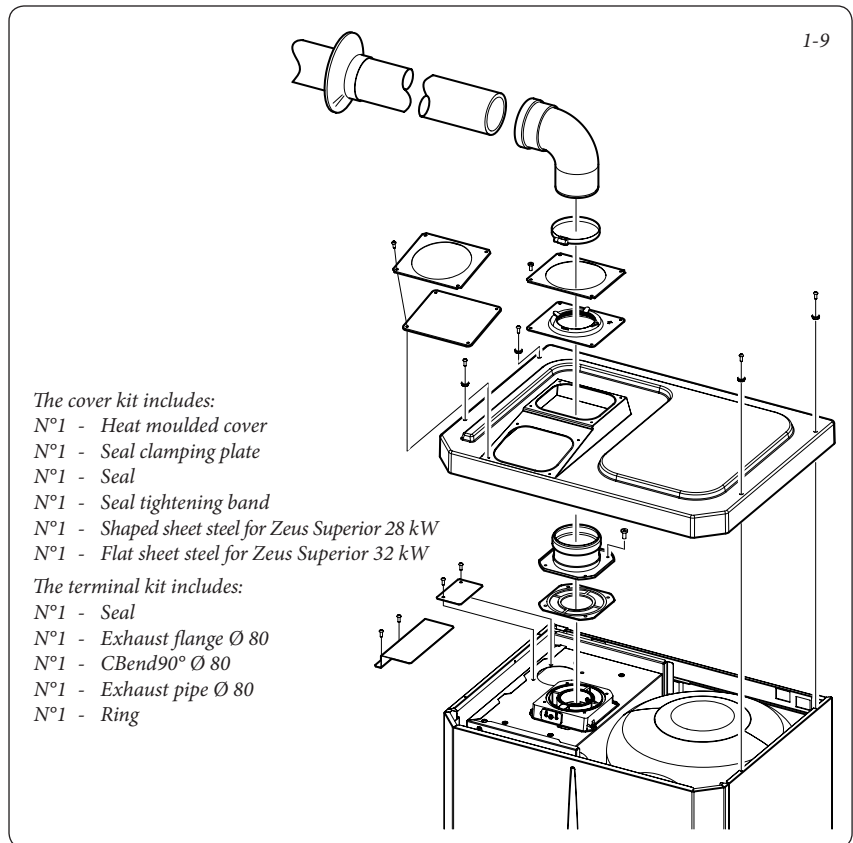
Therefore the technical regulations in force must be respected.

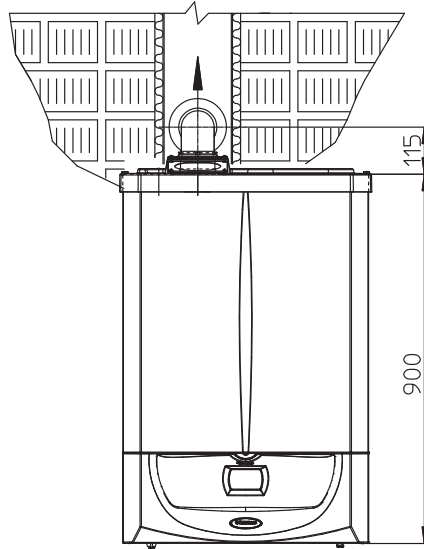
- Fitting the cover kit (Fig. 1-9) Remove the plug and the seal present from the hole.
 - Zeus Superior 24 kW: leave the suction hole free.
 - Zeus Superior 28 kW: mount the shaped sheet steel onto the inlet hole to divide the air entering.

- Zeus Superior 32 kW: mount the flat sheet steel onto the inlet hole to divide the air entering.

Install the Ø 80 outlet flange on the central hole of the boiler, taking care to insert the seal supplied with the kit and tighten by means of the screws provided. Install the top cover, fixing it with the screws previously removed from the lateral plugs. Engage the 90°, Ø 80 bend with the male end (smooth) in the female end (with lip seal) of the Ø 80 flange until it stops. Cut the seal in the relative groove at the desired diameter (Ø 80), run it along the bend and fix it using the sheet steel plate. Insert the exhaust pipe with the male end (smooth) into the female side of the 90° bend, Ø 80, making sure that the relative washer has already been introduced. This will ensure tightness and coupling of the elements making up the kit.

Max. length of exhaust flue. The flue pipe (vertical or horizontal) can be extended to a max. length of 12 m straight route, using insulated pipes (Fig. 1-26). To prevent problems of fume condensate in the exhaust pipe Ø 80, due to fume cooling through the wall, the length of the pipe must be limited to just 5 m. (Fig. 1-23).

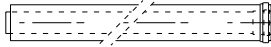


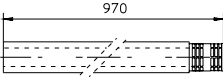

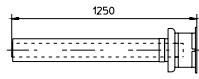
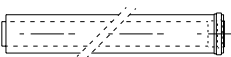


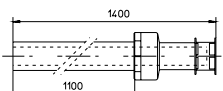
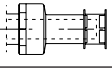
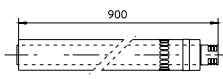



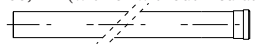
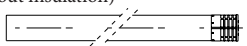








- Coupling of extension pipes and elbows. To install possible coupling extensions on other fume extraction elements, proceed as follows: Fit the male end (smooth) of the pipe or elbow up to the stop on the female end (with lip seals) of the previously installed element; this will ensure correct seal and joining of the elements.
- **Configuration without cover kit in a partially protected location (boiler type C).**

By leaving the side plugs fitted it is possible to install the appliance externally without the cover kit. Installation is carried out using the horizontal concentric $\text{Ø}60/100$, $\text{Ø}80/125$ and $\text{Ø}80/80$ separator kits.

Table of the resistance factors and equivalent lengths.

DUCT TYPE	Resistance Factor(R)	Equivalent length in m of concentric pipe Ø 60/100	Equivalent length in m of concentric pipe Ø 80/125	Equivalent length in metres of pipe Ø 80
Concentric pipe Ø 60/100 m 1 	Intake and Exhaust 16,5	m 1	m 2,8	Intake m 7,1 Exhaust m 5,5
90° bend concentric Ø 60/100 	Intake and Exhaust 21	m 1,3	m 3,5	Intake m 9,1 Exhaust m 7,0
45° bend concentric Ø 60/100 	Intake and Exhaust 16,5	m 1	m 2,8	Intake m 7,1 Exhaust m 5,5
Terminal complete with concentric horizontal intake-exhaust Ø 60/100 	Intake and Exhaust 46	m 2,8	m 7,6	Intake m 20 Exhaust m 15
Terminal complete with concentric horizontal intake-exhaust Ø 60/100 	Intake and Exhaust 32	m 1,9	m 5,3	Intake m 14 Scarico m 10,6
Terminal complete with concentric vertical intake-exhaust Ø 60/100 	Intake and Exhaust 41,7	m 2,5	m 7	Intake m 18 Exhaust m 14
Concentric pipe Ø 80/125 m 1 	Intake and Exhaust 6	m 0,4	m 1,0	Intake m 2,6 Exhaust m 2,0
90° bend concentric Ø 80/125 	Intake and Exhaust 7,5	m 0,5	m 1,3	Intake m 3,3 Exhaust m 2,5
45° bend concentric Ø 80/125 	Intake and Exhaust 6	m 0,4	m 1,0	Intake m 2,6 Exhaust m 2,0
Terminal complete with concentric vertical intake-exhaust Ø 80/125 	Intake and Exhaust 33	m 2,0	m 5,5	Intake m 14,3 Exhaust m 11,0
Concentric vertical intake-exhaust terminal Ø 80/125 	Intake and Exhaust 26,5	m 1,6	m 4,4	Intake m 11,5 Exhaust m 8,8
Terminal complete with concentric horizontal intake-exhaust Ø 80/125 	Intake and Exhaust 39	m 2,3	m 6,5	Intake m 16,9 Exhaust m 13
Concentric horizontal intake-exhaust terminal Ø 80/125 	Intake and Exhaust 34	m 2,0	m 5,6	Intake m 14,8 Exhaust m 11,3
Concentric adapter from Ø 60/100 to Ø 80/125 with condensate collector 	Intake and Exhaust 13	m 0,8	m 2,2	Intake m 5,6 Exhaust m 4,3
Concentric adapter from Ø 60/100 to Ø 80/125 	Intake and Exhaust 2	m 0,1	m 0,3	Intake m 0,8 Exhaust m 0,6
Pipe Ø 80, 1 m (with or without insulation) 	Intake 2,3 Exhaust 3	m 0,1 m 0,2	m 0,4 m 0,5	Intake m 1,0 Exhaust m 1,0
Complete intake terminal Ø 80, 1 m (with or without insulation) 	Intake 5	m 0,3	m 0,8	Intake m 2,2
Intake terminal Ø 80 Exhaust terminal Ø 80 	Intake 3 Exhaust 2,5	m 0,2 m 0,1	m 0,5 m 0,4	Intake m 1,3 Exhaust m 0,8
Bend 90° Ø 80 	Intake 5 Exhaust 6,5	m 0,3 m 0,4	m 0,8 m 1,1	Intake m 2,2 Exhaust m 2,1
Bend 45° Ø 80 	Intake 3 Exhaust 4	m 0,2 m 0,2	m 0,5 m 0,6	Intake m 1,3 Exhaust m 1,3
Split parallel Ø 80 from Ø 60/100 to Ø 80/80 	Intake and Exhaust 8,8	m 0,5	m 1,5	Intake m 3,8 Exhaust m 2,9

INSTALLER

USER

MAINTENANCE TECHNICIAN

1.11 INSTALLATION INSIDE.

- **Type C configuration, sealed chamber and forced draught.**

Horizontal intake kits - exhaust Ø 60/100. Kit assembly (Fig. 1-11): install the bend with flange (2) on the most internal hole of the boiler inserting the seal (1) and tighten using the screws present in the kit. Engage the terminal pipe (3) with the male side (smooth), into the female side (with lip seal) of the curve (2) until it stops, making sure the relevant internal and external rings are fitted, this will ensure hold and joining of the elements making up the kit.

N.B.: when the boilers are 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.

- Coupling extension pipes and concentric elbows Ø 60/100. To install snap-fit extensions with other elements of the fume extraction elements assembly, follows: fit the concentric pipe or elbow with the male (smooth) on the female section (with lip seal) to the end stop on the previously installed element to ensure sealing efficiency of the coupling.

The Ø 60/100 horizontal intake-exhaust kit can be installed with the rear, right side, left side and front outlet.

- Application with rear outlet (Fig. 1-12). The 970 mm pipe length enables routing through a max. thickness 673 mm. Normally the terminal must be shortened. Calculate the distance by adding the following: part thickness + internal projection + external projection. The minimum projection values are given in the figure.

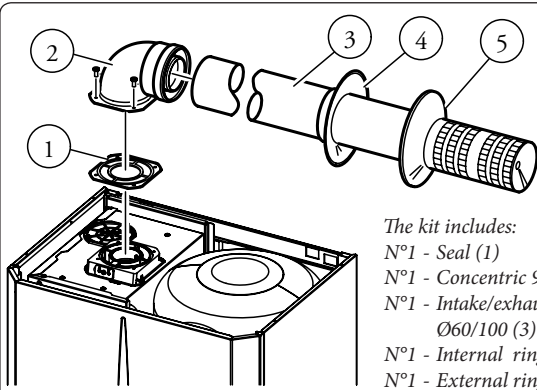
- Application with side outlet (Fig. 1-13); Using the horizontal intake/exhaust kit, without the special extensions, the maximum distance between the vertical exhaust axis and the outside wall is 905 mm.

N.B.: when the boilers are 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 horizontal kit. The horizontal intake/exhaust kit Ø 60/100 can be extended up to a max. horizontal distance of 3000 mm including the terminal with grille and excluding the concentric bend leaving the boiler. This configuration corresponds to a resistance factor of 100. In these cases the special extensions must be requested.

Connection with 1 extension (Fig. 1-14). Max. distance between vertical boiler axis and external wall: mm 1855.

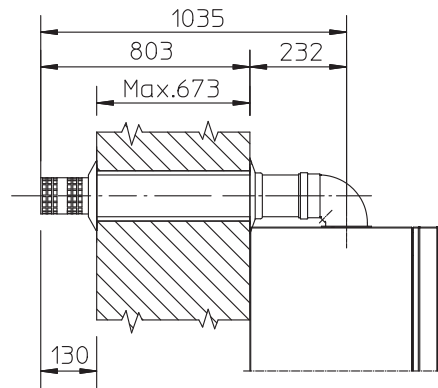
Connection with N°2 extensions (Fig. 1-15). Max. distance between the boiler vertical axis and external wall 2805.



- The kit includes:
 N°1 - Seal (1)
 N°1 - Concentric 90° curve (2)
 N°1 - Intake/exhaust concentric pipe Ø60/100 (3)
 N°1 - Internal ring (4)
 N°1 - External ring (5)

1-11

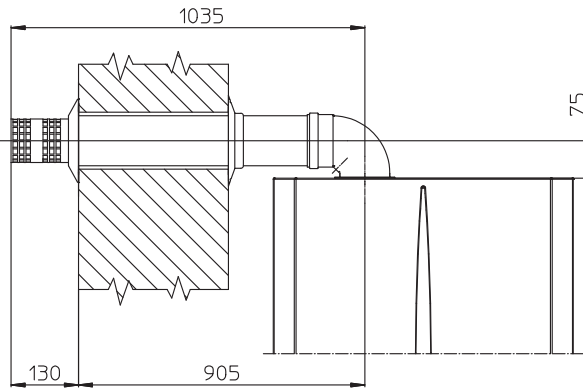
C₁₂



C₁₂

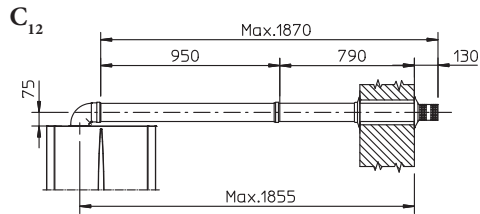
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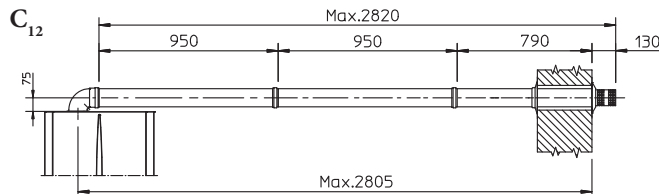
1-13

C₁₂



1-14

C₁₂



1-15

N.B.: the vertical kit Ø 80/125 with aluminium tile enables installation on terraces and roofs with maximum slope of 45% (24°). The height between the terminal cap and half-shell (374 mm) must always be respected.

The vertical kit with this configuration can be extended up to a maximum of 12200 mm vertical rectilinear, including the terminal (Fig. 1-19). This configuration corresponds to a resistance factor of 100. In this case specific extensions must be requested.

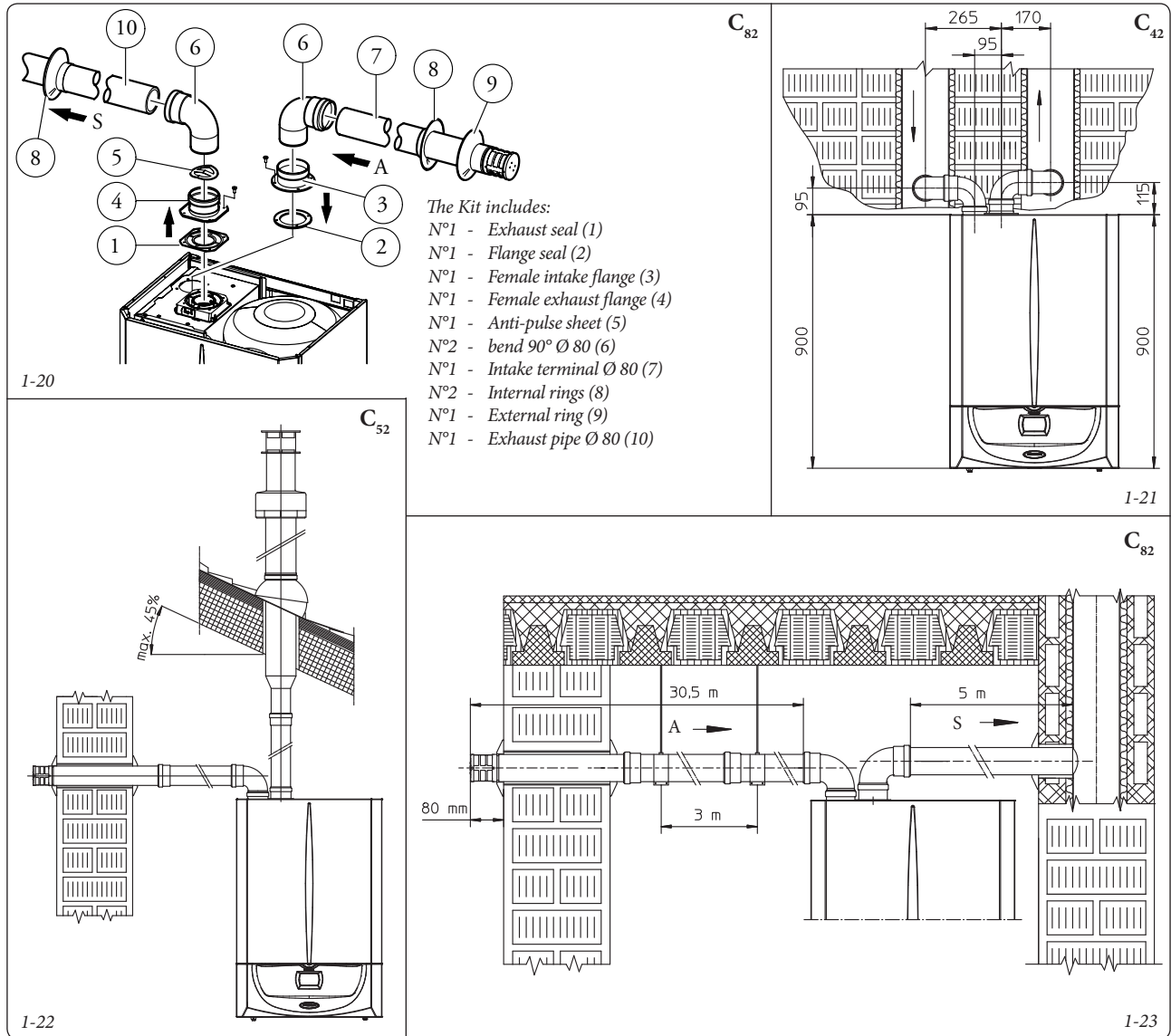
The terminal Ø 60/100 can also be used for vertical exhaust, in conjunction with concentric flange code no. 3.011141 (sold separately). The height between the terminal cap and half-shell (374 mm) must always be respected (Fig. 1-19).

The vertical kit with this configuration can be extended to a max. straight vertical length of 4700 mm, including the terminal (Fig. 1-19).

Separator kit Ø 80/80. The separator kit Ø 80/80, enables separation of the exhaust flues and air intake pipes according to the diagram shown in

the figure. (Fig. 1-21). Fumes are expelled from duct (S). Air is taken in through duct (A) for combustion. Both ducts can be routed in any direction.

- Assembly of separator kit Ø 80/80. Install the flange (4) on the most internal hole of the boiler inserting the seal (1) and tighten using the hex and flathead screws supplied with the kit, introduce the anti-pulse sheet up to stop (5). Remove the flat flange in the most external hole with respect to the central one and replace with



Max. usable lengths (including intake terminal with grill and two 90° bends)			
NON-INSULATED PIPE		INSULATED PIPE	
Exhaust (m)	Intake (m)	Exhaust (m)	Intake (m)
1	36,0*	6	29,5*
2	34,5*	7	28,0*
3	33,0*	8	26,5*
4	32,0*	9	25,5*
5	30,5*	10	24,0*
* The air intake pipe can be increased to 2.5 metres if the exhaust bend is eliminated, 2 metres if the air intake bend is eliminated, and 4.5 metres eliminating both bends.		11	22,5*
		12	21,5*

flange (3) inserting the seal (2) already fitted on the boiler and tighten using the self-tapping screws supplied. Fit the male end (smooth) to the bends (6) in the female end of the flanges (3 and 4). Fit the male end (smooth) of the intake terminal (6) up to the stop on the female end of the bend (5), making sure that the relevant internal and external rings are fitted. Join the exhaust pipe (10) with the male section (smooth) in the female section of the bend (6) to the end stop, ensuring that the internal washer is fitted; this will ensure the sealing efficiency of the kit components.

- Snap fit extension pipe fittings and elbows. To install snap-fit extensions with other elements of the fume extraction elements assembly, proceed as follows: fit the pipe or elbow with the male section (smooth) in the female section (with lip seal) to the end stop on the previously installed element; in this way sealing efficiency of the couplings is assured.
- The figure (Fig. 1-21) shows the configuration with vertical exhaust and horizontal intake.
- Installation clearances. The figure (Fig. 1-22) gives the min. installation space dimensions of the Ø 80/80 separator terminal kit at limit condition.
- Extensions for separator kit Ø 80/80. The max. vertical straight length (without bends) usable for Ø 80 intake and exhaust pipes is 41 metres of which 40 intake and 1 exhaust. This total length corresponds to a resistance factor of 100. The total usable length, obtained by adding the length of the intake and exhaust pipes Ø 80, must not exceed the maximum values given in the following table. If *mixed accessories or components are used* (e.g. changing from a separator Ø 80/80 to a concentric pipe), the maximum extension can be calculated by using a resistance factor for each component or the *equivalent length*. The sum of these resistance factors must not exceed 100.

- Temperature loss in fume ducts (Fig. 1-23). To prevent problems of fume condensate in the exhaust pipe Ø 80, due to fume cooling through the wall, the length of the pipe must be limited to just 5 m. If longer distances must be covered, use Ø 80 pipes with insulation (see insulated separator kit Ø 80/80 chapter).

Insulated separator kit. Kit assembly (Fig. 1-24): install flange (4) on the most internal hole of the boiler, fitting seal (1), and tighten with the flat-tipped hex screws included in the kit. Remove the flat flange on the lateral hole (depending on installation requirements) and replace with flange (3) inserting seal (2) already fitted on the boiler and tighten using the self-tapping screws supplied. Insert and slide cap (6) onto bend (5) from the male side (smooth), and join bends (5) with the male side (smooth) in the female side of flange (3). Fit bend (11) with the male side (smooth) in the female side of flange (4). Fit the male end (smooth) of the intake terminal (7) up to the stop on the female end of the bend (5), making sure you have already inserted the rings (8 and 9) that ensure correct installation between pipe and wall, then fix the closing cap (6) on the terminal (7). Join the exhaust pipe (10) with the male side (smooth) in the female side of the bend (11) to the end stop, ensuring that the washer (8) is already inserted for correct installation between the pipe and flue.

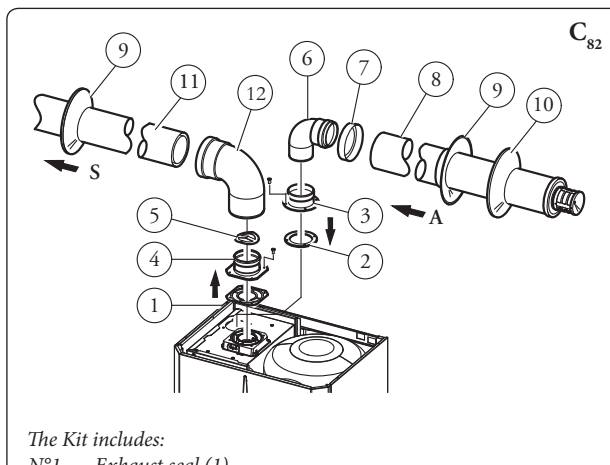
- Coupling of extension pipes and elbows. To install snap-fit extensions with other elements of the fume exhaust system, proceed as follows: fit the male end (smooth) of the concentric pipe or concentric elbow up to the stop on the female end (with lip seals) of the previously installed element; this will ensure correct hold and joining of the elements.
- Insulation of separator terminal kit. In case of problems of fume condensate in the exhaust pipes or on the outside of intake pipes, Immergas supplies insulated intake and exhaust pipes on request. Insulation may be necessary on the

exhaust pipe due to excessive temperature loss of fumes during conveyance. Insulation may be necessary on the intake pipe as the air entering (if very cold) may cause the outside of the pipe to fall below the dew point of the environmental air. The figures (Fig. 1-25 ÷ 1-26) illustrate different applications of insulated pipes.

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

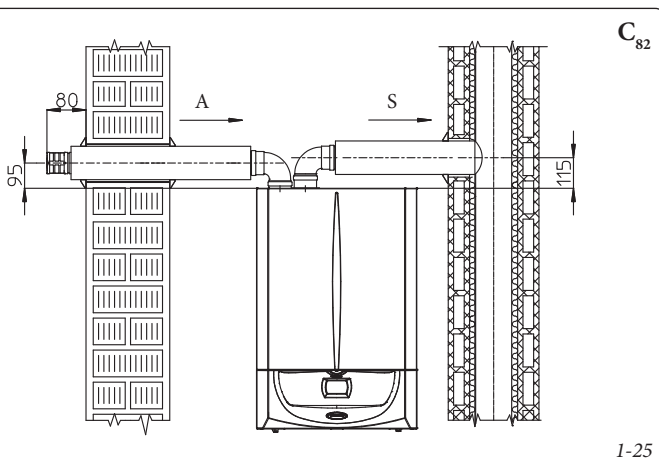
- Temperature loss in insulated fume ducting. To prevent problems of fume condensate in the insulated exhaust pipe Ø 80, due to cooling through the wall, *the exhaust pipe length must be limited to 12 metres*. The figure (Fig. 1-26) illustrates a typical insulation application in which the intake pipe is short and the exhaust pipe very long (over 5 m). The entire intake pipe is insulated to prevent moist air in the place where the boiler is installed, condensing in contact with the pipe cooled by air entering from the outside. The entire exhaust pipe, except the elbow leaving the splitter, is insulated to reduce heat loss from the pipe, thus preventing the formation of fume condensate.

N.B.: When installing the insulated pipes, a section clamp with pin must be installed every 2 metres.

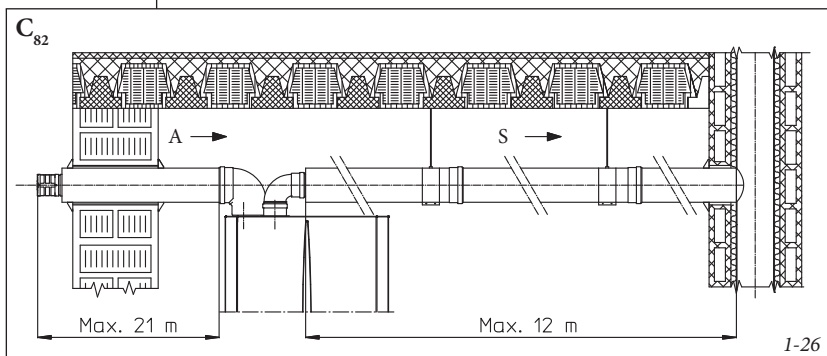


- The Kit includes:
- N°1 - Exhaust seal (1)
 - N°1 - Flange seal(2)
 - N°1 - Female intake flange (3)
 - N°1 - Female exhaust flange (4)
 - N°1 - Anti-pulse sheet (5)
 - N°1 - Bend 90° Ø 80 (6)
 - N°1 - Pipe closure cap (7)
 - N°1 - Insulated exhaust terminal Ø 80 (8)
 - N°2 - Internal rings (9)
 - N°1 - External ring (10)
 - N°1 - Insulated exhaust pipe Ø 80 (11)
 - N°1 - Concentric bend 90° Ø 80/125 (12)

1-24



1-25



1-26

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

By removing the most external cap on the sealed chamber and using the cover kit (optional) air intake takes place directly from the environment in which the boiler is installed and the fumes are expelled in an individual flue or directly to the outside. The boiler in this configuration, following the assembly instructions (Fig. 1-8÷1-9), is classified as type B.

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 fumes pipe must be connected to its own individual flue or channelled directly into the external atmosphere;
- type B open chamber boilers must not be installed in places where commercial, artisan or industrial activities take place, which use products that may develop volatile vapours or substances (e.g. acid vapours, glues, paints, solvents, combustibles, etc.), as well as dusts (e.g. dust deriving from the working of wood, coal fines, cement, etc.), which may be damaging for the components of the appliance and jeopardise functioning.

When using type B installation configuration indoors, it is compulsory to install the relative upper cover kit along with the fumes discharge kit.

The technical regulations in force must be respected.

1.12 FUME EXHAUST TO FLUE/CHIMNEY.

Flue exhaust does not necessarily have to be connected to a branched type traditional flue. Flue exhaust can be connected to a special LAS type multiple flue. Multiple and combine flues must be specially designed according to the calculation method and requirements of the standards, by professionally qualified technical personnel. Chimney or flue sections for connection of the exhaust pipe must comply with standard requisites.

1.13 DUCTING OF EXISTING FLUES.

With a specific "ducting system" it is possible to reuse existing flues, chimneys and technical openings to discharge the boiler fumes. Ducting requires the use of ducts declared to be suitable for the purpose by the manufacturer, following the installation and user instructions, provided by the manufacturer, and the requirements of the standards.

1.14 FLUES, CHIMNEYS AND CHIMNEY CAPS.

The flues, chimneys and chimney caps for the evacuation of combustion products must be in compliance with standards in force. The chimney caps and the roof exhaust terminals must respect the outlet quotas and the distance of the foreseen technical volumes from the current technical regulations.

Positioning the wall exhaust terminals. The exhaust terminals must:

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

Fume exhaust of forced draught appliances in closed open-top environments. In spaces closed on all sides with open tops (ventilation pits, courtyards etc.), direct fume exhaust is allowed for natural or forced draught gas appliances with a heating power range from 4 to 35 kW, provided the conditions as per the current technical standards are respected.

1.15 SYSTEM FILLING.

Once the boiler is connected, proceed with system filling via the filling valve (Fig. 2-8).

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

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

Close vent valves only when water is delivered. Close the filling valve when the boiler pressure gauge indicates approx. 1.2 bar.

N.B.: During these operations, turn on the circulating pump at intervals by means of the main selector switch on the control panel. *Vent the circulation pump by loosening the front cap and keeping the motor running.* Re-tighten the cap afterwards.

1.16 GAS SYSTEM START-UP.

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

In particular, for new gas systems:

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

1.17 BOILER START-UP (LIGHTING).

In order to issue the Declaration of Conformity required by the laws in force, the following requirements must be fulfilled to commission the boiler (the operations listed below must only be performed by a qualified firm and without any unauthorised persons):

- check that the internal system is properly sealed according to specifications;
- ensure that the type of gas used corresponds to boiler settings;
- switch on the boiler and ensure correct ignition
- make sure that the gas flowrate and relevant pressure values comply with those given in the manual (Par. 3.17);
- ensure that the safety device is engaged in the event of gas supply failure and check activation time;
- check activation of the main circuit-breaker selector upstream from the boiler and on the unit;
- check that the concentric intake/exhaust terminal (if fitted) is not blocked.

The boiler must not be started up in the event of failure to comply with any of the above.

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.*

1.18 CIRCULATION PUMP.

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

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

1.19 DOMESTIC HOT WATER BOILER DEVICE.

The Zeus Superior kW boiler is the accumulation type with a capacity of 60 litres. It contains a large coiled stainless steel heat exchanger pipe, which allows to notably reduce hot water production times. These boilers built with stainless steel casing and bottoms, guarantee long duration.

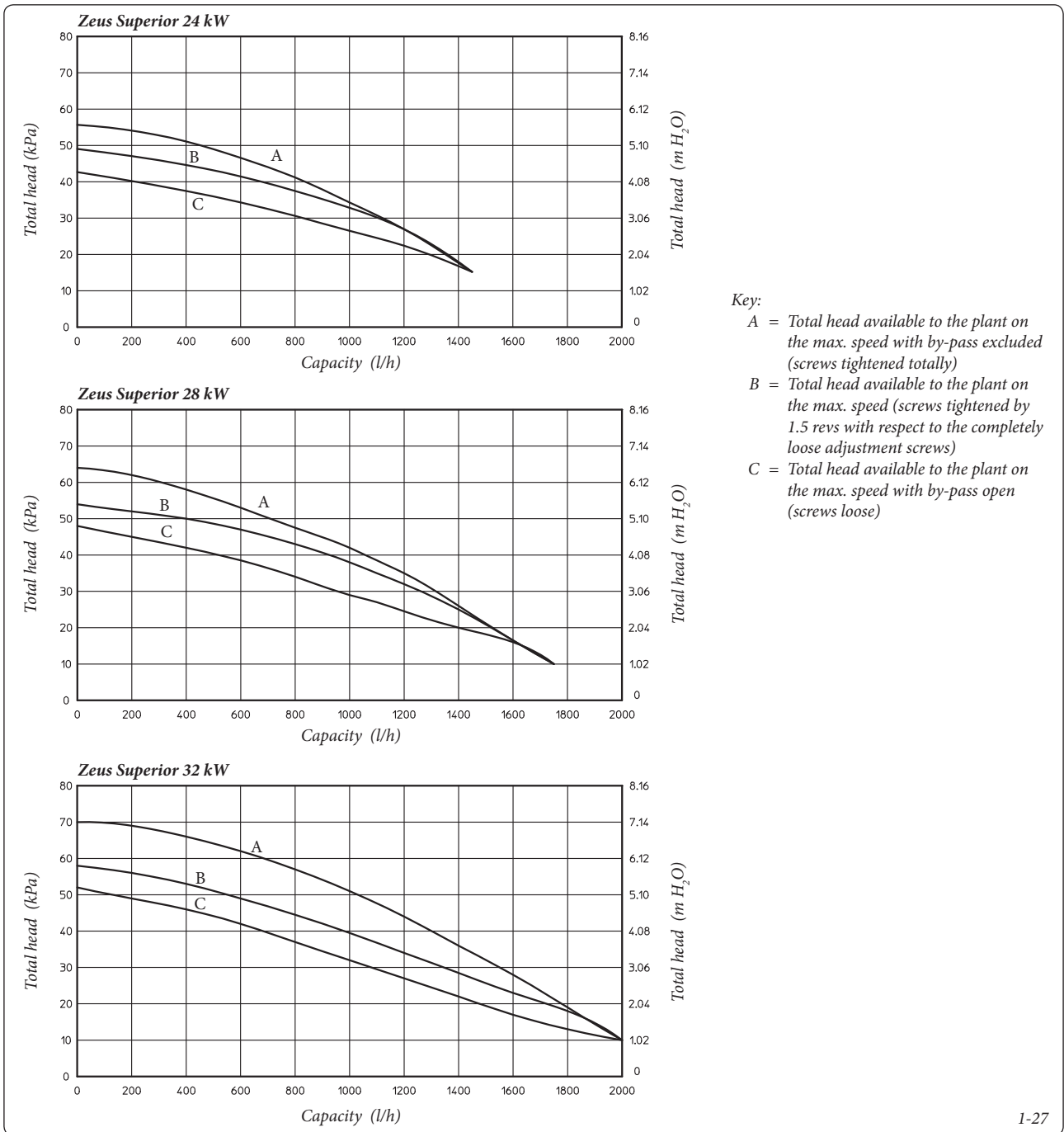
The assembly concepts and welding (T.I.G.) are implemented to the minimum detail to ensure maximum reliability.

The lower inspection flange ensures practical control of the boiler and the coiled heat exchanger and easy internal cleaning.

The domestic water attachments are found on the flange cover (cold inlet and hot outlet) and also the magnesium anode holder cap, including the latter, supplied as standard for internal protection of the boiler from possible corrosion.

N.B.: we suggest to do an annual check by a qualified company (eg the Technical Assistance Service), the efficiency of the magnesium anode of the storage tank. The boiler is prepared for introduction of the domestic water re-circulation connection.

Total head available to the plant.



1.20 KITS AVAILABLE ON REQUEST.

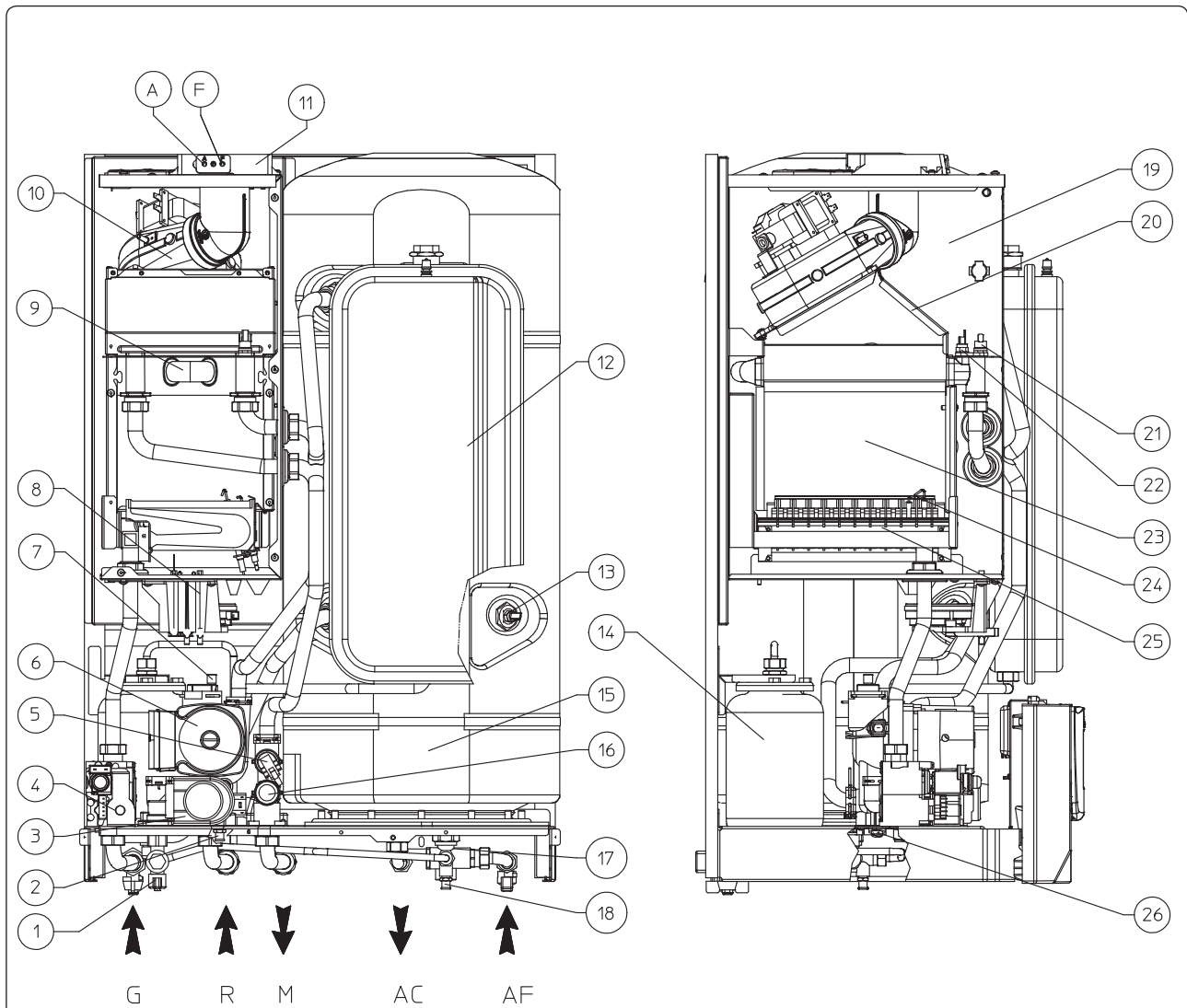
- Kit of system shutoff valves (on request). The boiler is designed for installation of system shutoff valves to be placed on delivery and return pipes of the connection assembly. This kit is particularly useful for maintenance as it allows the boiler to be drained separately without having to empty the entire system.
- System zone Kit (on request). If the 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 system kits by request.

- Polyphosphate batching kit (on request). The polyphosphate dispenser reduces the formation of lime-scale and preserves the original heat exchange and domestic hot production water conditions. The boiler is prepared for application of the polyphosphate dispenser kit.
- Relay card (on request). The boiler is prepared for installation of a relay card that allows to extend the features of the appliance and therefore functioning possibilities.

- Circulation kit (on request). The boiler cylinder is prepared for the application of the circulation kit. Immergas supplies a series of joints and attachments that allow connection between the boiler and the domestic water plant. The indication of the attachment of the circulation kit is also envisioned on the installation template.

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

1.21 BOILER COMPONENTS.



Key:

- | | | |
|---------------------------------|--------------------------------------|-----------------------------------|
| 1 - System filler tap | 10 - Fan | 19 - Sealed chamber |
| 2 - Plant emptying cock | 11 - Intake points (air A) | 20 - Fumes hood |
| 3 - V3-way valve (motorised) | 12 - System expansion vessel | 21 - Safety thermostat |
| 4 - Gas valve | 13 - Domestic water probe | 22 - Delivery probe |
| 5 - Fumes pressure switch | 14 - Domestic water expansion vessel | 23 - Combustion chamber |
| 6 - Boiler circulation pump | 15 - Stainless steel Boiler | 24 - Ignition and detection plugs |
| 7 - Air bleeding vale | 16 - Safety valve 3 bar | 25 - Burner |
| 8 - Fumes flow measuring device | 17 - Safety valve 8 bar | 26 - Adjustable By-pass |
| 9 - Primary heat exchanger | 18 - System emptying tap | |

2 USER AND MAINTENANCE INSTRUCTIONS

2.1 CLEANING AND MAINTENANCE.

Attention: to preserve the boiler's integrity and keep the safety features, performance and reliability, which distinguish it, unchanged over time, you must at least execute maintenance operations on a yearly basis in compliance with what is stated in the relative point at "annual check and maintenance of the appliance", in compliance with national, regional, or local standards in force. Annual maintenance is essential to validate the conventional warranty of Immergas. We recommend stipulating a yearly cleaning and maintenance contract with an authorised local firm.

2.2 GENERAL WARNINGS.

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

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

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

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

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

In the event of work or maintenance to structures near ducting or flue extraction devices and their accessories, switch off the appliance and on completion of the operations ensure an authorised company verifies the efficiency of the ducting or the devices.

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

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

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

- do not touch the appliance with wet or moist parts of the body; do not touch when barefoot.
- never pull electrical cables or leave the appliance exposed to atmospheric agents (rain, sunlight, etc.);
- the appliance power cable must not be replaced by the user;
- if the cable is damaged, switch off the appliance and solely contact an authorised company to replace it;
- if the appliance is not to be used for a certain period, disconnect the main power switch.

N.B.: the temperatures indicated by the display have a tolerance of +/- 3°C due to environmental conditions that cannot be attributed to the boiler.

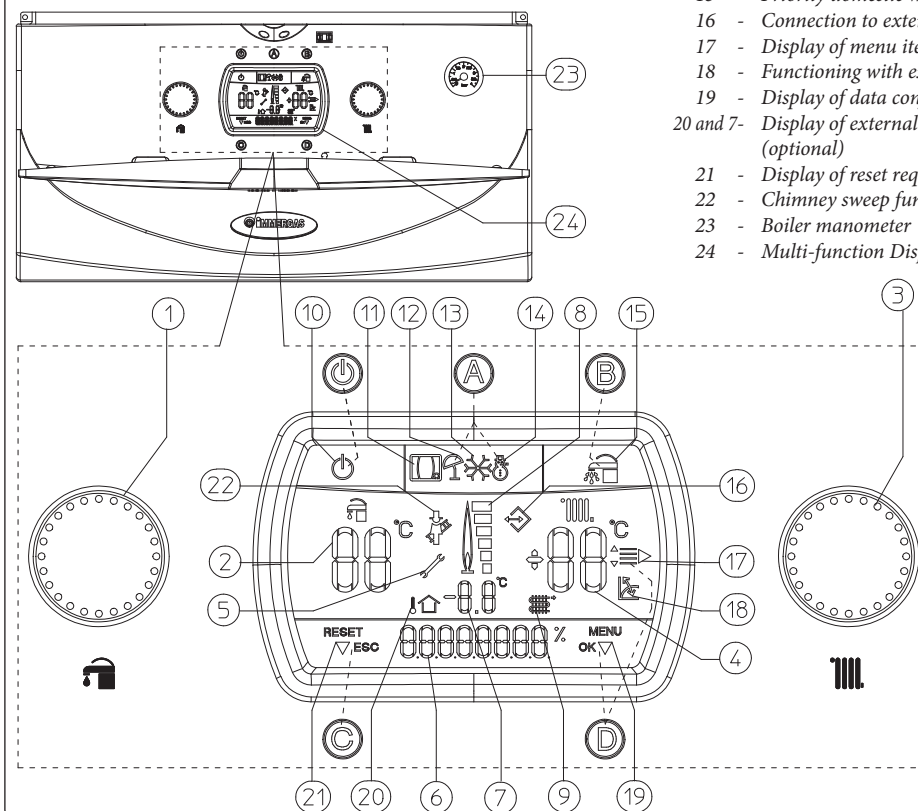
At the end of its service life the appliance must not be disposed of like normal household waste nor abandoned in the environment, but must be removed by a professionally authorised company. Contact the manufacturer for disposal instructions.

2.3 CONTROL PANEL.

Key:

- ⏻ - Stand-by - On Button
- A - Summer (☀️) and winter (❄️) functioning mode selector button
- B - Domestic water priority button (🚰)
- C - Reset (RESET) / exit menu (ESC) button
- D - Menu entry (MENU) / confirm data (OK) button
- 1 - Domestic hot water temperature selector switch
- 2 - Domestic hot water temperature set
- 3 - Heating water temperature selector switch

- 4 - Heating water temperature set
- 5 - Anomaly presence
- 6 - Display boiler functioning state
- 8 - Flame presence symbol and relative power scale
- 9 and 7- Primary heat exchanger outlet water temperature
- 10 - Boiler in stand-by
- 11 - Boiler connected to remote control (Optional)
- 12 - Functioning in summer mode
- 13 - Anti-freeze function in progress
- 14 - Functioning in winter mode
- 15 - Priority domestic water functioning
- 16 - Connection to external tools for technician
- 17 - Display of menu items
- 18 - Functioning with external temperature probe active
- 19 - Display of data confirmation or menu access
- 20 and 7- Display of external temperature with external probe connected (optional)
- 21 - Display of reset request or exit menu
- 22 - Chimney sweep function in progress
- 23 - Boiler manometer
- 24 - Multi-function Display



2-1

2.4 DESCRIPTION OF FUNCTIONING STATES.

Below is a list of the various boiler functioning states that appear on the multi-function display

Display (6)	Description of functioning state
SUMMER	Summer functioning mode Without requests in progress. Boiler in stand-by for domestic hot water request.
WINTER	Winter functioning mode Without requests in progress. Boiler in stand-by for domestic hot water or environmental heating request.
DHW ON	Domestic water mode in progress. Boiler functioning, domestic water heating is in progress.
CH ON	Heating mode in progress. Boiler functioning, environmental heating is in progress.
F3	Anti-freeze mode in progress. Boiler in function to restore the minimum safety Temperature against freezing of the boiler.
CAR OFF	Remote control (Optional) off.
DHW OFF	With domestic water priority disabled (indicator 15 off) the boiler only functions in environmental heating mode for the duration of 1 hour, maintaining the domestic hot water at a minimum temperature (20°C), after which the boiler goes back to normal functioning, which was previously set. If used with Super CAR in concomitance of the functioning period in reduced domestic water Timer mode, DHW OFF will appear on the screen and indicators 15 and 2 switch off (see Super CAR instructions book).
F4	Postventilation in progress. Fan working after a request for domestic hot water or environmental heating in order to evacuate residual fumes.
F5	Postcirculation in progress. Circulator pump in working after a request for domestic hot water or environmental heating in order to cool the primary circuit.
P33	With Remote Control (Optional) or environmental thermostat (TA) (Optional) in block, the boiler functions all the same in heating mode. (Can be activated using the "Customisation" menu Allows to activate the heating also if the Remote Control or TA are out of order).
STOP	Reset attempts ended. Wait one hour to re-acquire attempt 1. (See ignition block).
ERR xx	Anomaly present with relative error code. The boiler does not function. (see troubleshooting paragraph).
SET	During rotation of the domestic hot water temperature selector switch (1 Fig. 2-1) it displays the regulation state of the domestic water in progress.
SET	During rotation of the heating temperature selector switch (3 Fig. 2-1) it displays the regulation state of the boiler delivery for environmental heating.
SET	In presence of the external probe (optional) replaces "SET HEAT". The value that appears is the correction of the delivery temperature with respect to the functioning curve set from the external probe.

2.5 USING THE BOILER.

Before ignition check that the plant is full of water, controlling that the manometer needle (23) indicates a value between 1÷1.2 bar.

Open the gas cock upstream from the boiler.

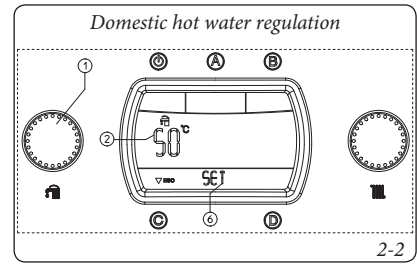
With the boiler switched-off only the Stand-by symbol (10) appears on the display. By pressing the "ON" button, the boiler switches on.

Once the boiler is on, by pressing button "A" repeatedly the functioning mode is changed and alternatively passes from the summer

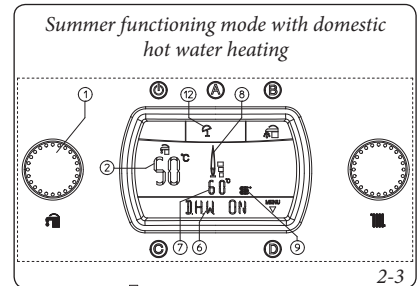
(24) by means of the indicator (6) with a brief description. Refer to the instruction book for a complete explanation.

functioning mode (10) and winter functioning mode (11).

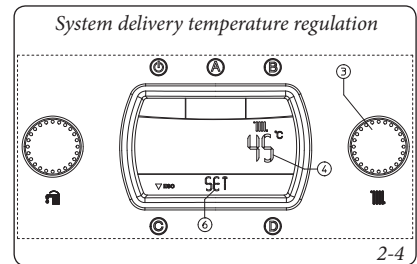
- **Summer (10):** in this functioning mode the boiler only functions to heat the domestic water, the temperature is set using a selector switch (1) and the relative temperature is shown on the display (24) by means of the indicator (2) and "SET" appears (Fig. 2-2). By turning the selector switch (1) in a clockwise direction the temperature increases and in a clockwise direction it decreases.



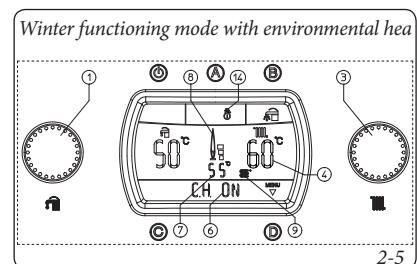
During heating of the domestic hot water (24) "DHW ON" will appear on the display (Fig. 2-3) on the status indicator (6) and at the same time on ignition of the burner The flame presence indicator (8) switches on with relative power scale and the indicator (9 and 7) with the instantaneous output temperature from the primary heat exchanger.



- **Winter (11):** in this mode the boiler functions both for heating domestic water and environmental heating. The temperature of the domestic hot water is always regulated using the selector switch (1), the heating temperature is regulated using selector switch (3) and the relative temperature is shown on the display (24) by means of the indicator (4) and the "SET" indication appears (Fig. 2-4). By turning the selector switch (3) in a clockwise direction the temperature increases and in an anti-clockwise direction it decreases.



During the request for environmental heating (24) "CH ON" will appear on the display (Fig. 2-5) on the status indicator (6) and at the same time on ignition of the burner the flame presence indicator (8) switches on with relative power scale and the indicator (9 and 7) with the instantaneous output temperature from the primary heat exchanger. In the heating phase the boiler, if the temperature of the water contained in the plant is sufficient to heat the radiators, can only function with the activation of the boiler circulation pump.



- **Functioning with Remote Friend Control^{V2} (CAR^{V2}) (Optional).** In the case of connection to the CAR^{V2}, the boiler automatically detects the device and the (🏠) appears on the display. From this moment all commands and regulations are referred to the CAR^{V2}, the Stand-by “⏻”, button, the Reset button “C”, the menu entry button “D” and the domestic water priority “B” button however remain in function on the boiler.

Attention: If the boiler is put into stand-by (10), the “CON” connection error symbol will appear on the CAR^{V2}. The CAR^{V2} is powered so as not to lose the memorised programs.

- **Functioning with Super Remote Friend Control (Super CAR) (Optional).** In the case of connection to the Super CAR, the boiler automatically detects the device and the (🏠). Appears on the display. From this moment it is possible to operate regulations indifferently from the Super CAR or the boiler, apart from the environmental heating temperature that is seen on the display but managed by the SuperCAR.

Attention: If the boiler is put in standby(10) the “ERR>CM” connection error will appear on the Super CAR. The Super CAR is however powered so as not to lose the memorised programs.

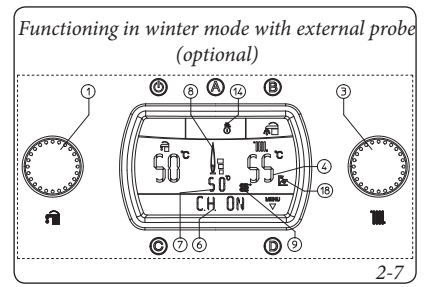
- **Priority domestic water function.** By pressing button “B” deactivate the priority domestic water function th at is signalled by the switch-off of the symbol (15) on the display (24). The disabled function keeps the water contained in the cylinder at a temperature of 20°C for 1 hour, giving functioning priority to environmental heating.
- **Functioning with external probe (Fig. 2-6) optional.** If the plant has an optional external probe, the boiler delivery temperature for environmental heating is managed by the external probe depending on the external temperature measured (Par. 1.6 and Par. 3.7 under “P66”). It is possible to modify the delivery temperature from -15°C to +15°C with respect to the regulation curve (Fig. 1-6 Offset value). This correction, which can be

activated using selector switch (3) is active for any external temperature measured. The modification of the offset temperature is displayed using the indicator (7), This (4) displays the current delivery temperature and after a few seconds from the modification is updated with the new correction. “SET” appears on the display (Fig. 2-6). By turning the selector switch (3) in a clockwise direction the temperature increases and decreases it is turned in an anti-clockwise direction.

Plant delivery temperature regulation with external probe (optional)

2-6

During the request for environmental heating “CH ON” (Fig. 2-7) appears on the display (24) on the state indicator (6) and at the same time as burner ignition the flame presence indicator switches on (8) with relative power scale and the indicator (9 and 7) with the instantaneous temperature in output from the primary heat exchanger. In the heating phase the boiler, if the temperature of the water contained in the plant is sufficient to heat the radiators, can only function with the activation of the boiler circulation pump.



From this moment the boiler functions automatically. In absence of the request for heat (heating or the production of domestic hot water), the boiler does into “stand-by” equivalent to the boiler powered without the presence of the flame.

N.B.: it is possible that the boiler starts-up automatically if the anti-freeze function is activated (13). Moreover, the boiler can keep functioning for a brief period of time after the withdrawal of domestic hot water to take the domestic water circuit back to temperature.

Attention: with the boiler in stand-by (⏻) hot water cannot be produced and safety functions are not guaranteed such as: pump anti-block, anti-freeze and 3-way anti-block.

2.6 FAULT AND ANOMALY SIGNALS.

The Zeus Superior kW boiler signals any anomaly by flashing of symbol (5) combined with the indication “ERRxx” on indicator (6) where “xx” corresponds to the error code described in the following table. On any remote controls, the error code will be displayed using a numerical code preceded or followed by the letter E (e.g. CAR^{V2} = Exx, DRC = ERR).

Signals and diagnostics – Display of remote controls (Optional).

During normal functioning of the boiler the environmental temperature value is shown on the remote control display (CAR^{V2} or Super CAR); in the case of malfunctioning or anomaly, the display of the temperature is replaced by the relative error code present in Par. 2.6.


Error Code	Anomaly signalled	Cause	Boiler status / Solution
01	No ignition block	If room central heating or domestic hot water production is requested, (when the boiler is connected to an external storage tank unit) the boiler does not switch on within the preset time. Upon appliance commissioning or after extended downtime, it may be necessary to eliminate the block.	Press the Reset button “C”. The Anomaly can be reset 5 times consecutively, after which the function is inhibited for at least one hour. One attempt is gained every hour for a maximum of 5 attempts. By switching the appliance on and off the 5 attempts are re-acquired (1).
02	Safety thermostat block (over-temperature)	During normal operation, if a fault causes excessive overheating internally, the boiler goes into overheating block.	Press the Reset button (1).
03	Fan anomaly	This occurs if the fan is blocked or if the inlet or outlet pipes are blocked.	If normal conditions are restored, the boiler starts without having to be reset (1).
04	Contacts resistance block	Faults to the safety thermostat (over-temperature) or anomaly in flame control.	The boiler does not start (1).
05	Flow probe anomaly	The board detects an anomaly on the flow NTC probe.	The boiler does not start (1).

(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Technical After-Sales Service).
 (2) this fault is not shown on the CAR^{V2} and Super CAR display.

Error Code	Anomaly signalled	Cause	Boiler status / Solution
08	Maximum N° of reset	Number of allowed resets that have already performed.	Attention: the anomaly can be reset 5 times consecutively, after which the function is inhibited for at least one hour. One attempt is gained every hour for a maximum of 5 attempts. By switching the appliance on and off again, the 5 attempts are re-acquired.
10	Insufficient system pressure	Water pressure inside the central heating circuit that is sufficient to guarantee the correct operation of the boiler is not detected.	Check on the boiler pressure gauge (1) that the system pressure is between 1÷1.2 bar and restore the correct pressure if necessary.
11	Flue pressure switch failure	It occurs when the flue gas flow meter is faulty (signal present with the fan off).	If normal conditions are restored the boiler restarts without having to be reset (1)
12	Storage tank probe anomaly	The board detects an anomaly on the storage tank probe.	The boiler cannot produce domestic hot water, domestic water heating is carried out by the solar system and Pdc (1).
13	Flue flow meter out of range	The board detects a malfunction on the flow meter fumes.	If normal conditions are restored the boiler restarts without having to be reset (1)
15	Configuration error	If the board detects an anomaly or incongruity on the electric wiring, the boiler will not start.	If normal conditions are restored the boiler restarts without having to be reset. The defect may be due to the failure of the flow meter fumes detected after a voltage of the power supply (1).
17	Fan speed incorrect	The board detects an anomaly on the fan and can not control its speed.	The boiler continues to function (1).
20	Parasite flame block	This occurs in the event of a leak on the detection circuit or anomaly in the flame control unit.	Press the Reset button (1)
24	Push button control panel anomaly	The board detects an anomaly on the pushbutton panel.	If normal conditions are restored the boiler restarts without having to be reset (1).
27	Insufficient circulation	This occurs if there is overheating in the boiler due to insufficient water circulating in the primary circuit; the causes can be: - low system circulation; check that no shut-off devices are closed on the heating circuit and that the system is free of air (deaerated); - pump blocked; free the pump.	Press the Reset button (1).
31	Loss of remote control communication	This occurs in the event of connection to a non compatible remote control or if there is a communication breakdown between boiler and CAR ^{v2} or Super CAR remote control.	Power cycle the boiler. If the Remote Control is still not detected on re-starting the boiler will switch to local operating mode, i.e. using the controls on the control panel. In this case the "CH ON" function cannot be activated. To make the boiler work in " " mode in any case, activate the "P33" function in the "M3" menu (1) (2).
37	Low power supply voltage	This occurs when the power supply voltage is lower than the allowed limits for the correct boiler operation.	If normal conditions are restored the boiler restarts without having to be reset (1) (2).
38	Loss of flame signal	This occurs when the boiler is ignited correctly and the burner flame switches off unexpectedly; a new attempt at ignition is performed and if normal conditions are restored, the boiler does not have to be reset (this fault can be checked in the list of errors in the "M1" menu only).	If normal conditions are restored the boiler restarts without having to be reset (1) (2).

(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Technical After-Sales Service).
(2) this fault is not shown on the CAR^{v2} and Super CAR display.

2.7 BOILER SHUTDOWN.

Switch the boiler off by pressing the “”, button, disconnect the external omni-polar switch to the boiler and close the gas cock upstream from the appliance. Never leave the boiler switched on if left unused for prolonged periods.

2.8 RESTORING HEATING SYSTEM PRESSURE.

Periodically check the system water pressure. The boiler pressure gauge should read a pressure between 1 and 1.2 bar. *If the pressure falls below 1 bar (with the circuit cool) restore normal pressure via the valve located at the bottom of the boiler (Fig. 2-8).*

N.B.: close the valve afterwards.

If pressure values reach around 3 bar the safety valve may be activated.

In this case, remove water from an air vent valve of a radiator until 1 bar is reached or ask for assistance from an authorised company.

If frequent pressure drops should occur, ask an authorised company for assistance to eliminate the possible system leakage.

2.9 DRAINING THE SYSTEM.

To drain the boiler, use the special drain cock (Fig. 2-8)

Before draining, ensure that the filling cock is closed.

2.10 EMPTYING THE BOILER.

In order to empty the boiler, act on the relevant boiler drain cock (Fig. 2-8).

N.B.: before carrying out this operation, close the boiler cold water entry valve and open any hot water cock on the domestic water plant in order to allow the entry of air into the boiler.

2.11 ANTI-FREEZE PROTECTION.

The boiler comes standard with an antifreeze function that activates the pump and burner when the system water temperature in the boiler falls below 4°C and stops once it exceeds 42°C. The antifreeze function is guaranteed if the boiler is fully operative and not in “block” status, and is electrically powered. To avoid keeping the system switched on in case of a prolonged absence, the system must be drained completely or antifreeze substances added to the heating system water. In both cases the boiler domestic water circuit must be drained. In systems that are drained frequently, filling must be carried out with suitably treated water to eliminate hardness that can cause lime-scale.

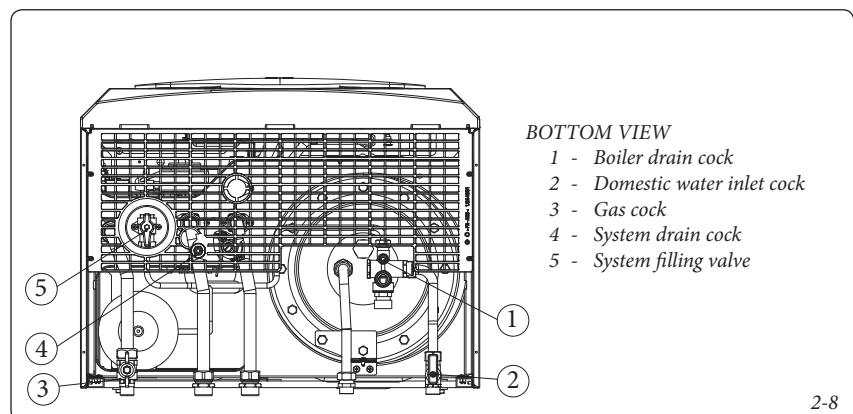
In the case of functioning in heating mode and domestic circuit empty it is recommended to set the temperature of the domestic hot water (SET) at minimum.

2.12 CASE CLEANING.

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

2.13 DECOMMISSIONING.

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



2-8

2.14 PARAMETERS AND INFORMATION MENU.

By pressing button “D” it is possible to access a menu divided into three main parts:
 - Information “M1”
 - customisation “M3”

- configurations “M5” menu reserved for the technician, who requires an access code (See “Maintenance” chapter).

By turning the heating temperature selector switch (3) scroll through the menu items. Press

button “D” to access the various levels of the menus and confirm the choice of parameters.
 Press button “C” to go back one level.

“M1” information menu. This menu contains the various information relative to boiler functioning

1° Level	Button	2° Level	Button	3° Level	Button	Description
M1	D ⇒ ⇐ C	P11	D ⇒			Displays the version of management software of the circuit board installed in the boiler
		P12	⇐ C			Displays the total functioning hours of the boiler
		P13				Displays the number of burner ignitions
		P14 (with optional external probe present) --- (without Optional external probe)	D ⇒ ⇐ C	P14/A		Displays the current external temperature (if optional external probe present)
				P14/B		Displays the recorded external minimum temperature (if optional external probe present)
				P14/C		Displays the recorded external maximum temperature (if optional external probe present)
		RESET	D x selection ⇐ C			By pressing button “D” the MIN and MAX temperatures measured are zeroed
		P15	D ⇒ ⇐ C			No display on this boiler model
		P17				Displays the percentage speed of instantaneous rotation of the fan (from 0 to 100%)
		P19				Displays the last 5 events that have caused boiler shutdown. Indicator (6) shows the sequential number from 1 to 5 and the relative error code on the indicator (7). By pressing button “D” repeatedly it is possible to visualise the time of functioning and the number of ignitions at which the anomaly occurred

“M3” customisation menu. This menu contains all of the functioning options that can be customised. (The first item of the various options that appears inside the parameter is that selected by default).

Important:if the international language is to be restored (A1), proceed as follows:
 - press button “D” to enter the configuration menu.
 - turn selector switch “3” to **PERSONAL**.
 - press button “D” to confirm.
 - turn selector switch “3” to **DATI**.

- press button “D” to confirm.
 - turn selector switch “3” to **“LINGUA”**.
 - press button “D” to confirm.
 - turn selector switch “3” to **“A1”**.
 - press button “D” to confirm.
 At this point the international items indicated in the menu tables appear on the display.

1° Level	Button	2° Level	Button	3° Level	Button	4° Level	Button	Description		
M3	D ⇒ ⇐ C	P31	D ⇒ ⇐ C	AUTO (Default)	D x to select ⇐ C			The display lights up when the burner is on and when the commands are accessed, it remains on for 5 seconds after the last operation performed		
				ON				The display is always lit		
				OFF				The display lights up only when the command are accessed and remains on for 5 seconds after the last operation performed		
		P32	D ⇒ ⇐ C	P32/A	D ⇒ ⇐ C	P32/A.1	D x to select ⇐ C			The indicator (7) displays the output temperature from the primary heat exchanger
						P32/A.2				The indicator (7) displays the current external temperature (with optional external probe)
				P32/B	D ⇒ ⇐ C	ITALIANO				All descriptions are given in Italian
		P33	D ⇒ ⇐ C			OFF	D x to select ⇐ C			By activating this function in winter mode it is possible to activate the environmental heating function even if the Remote Control or TA are out of order
						ON				
		RESET	D x to select ⇐ C							By pressing button “D” the customisations made are zeroed, restoring the values set in the factory

3 BOILER COMMISSIONING (INITIAL CHECK)

To commission the boiler:

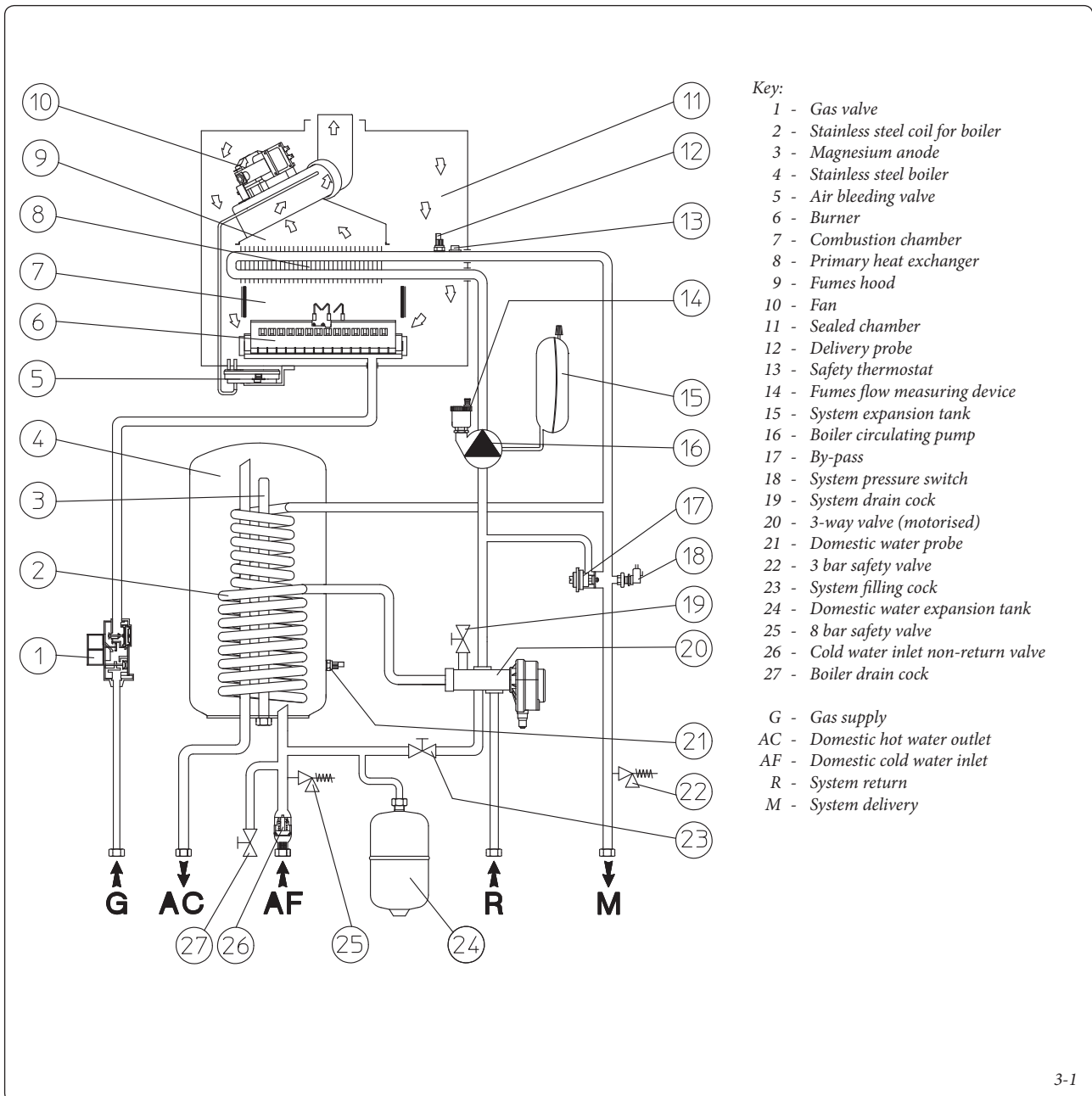
- ensure that the declaration of conformity of installation is supplied with the appliance;
- ensure that the type of gas used corresponds to boiler settings;
- check connection to a 230V-50Hz power mains, correct L-N polarity and the earthing connection;
- make sure the heating system is filled with water and that the manometer indicates a pressure of 1 - 1.2 bar;

- make sure the air valve cap is open and that the system is well deaerated;
- switch the boiler on and ensure correct ignition;
- make sure the gas maximum, medium and minimum flowrate and pressure values correspond to those given in the handbook (Par. 3.17);
- check activation of the safety device in the event of no gas, as well as the relative activation time;
- check activation of the master switch located upstream from the boiler and in the boiler;
- check that the intake and/or exhaust terminals are not blocked;

- check the air signal and the fan functioning speed (see "M5" and "M1" menu);
- ensure activation of all adjustment devices;
- seal the gas flow rate regulation devices (if settings are modified);
- ensure production of hot domestic water;
- ensure sealing efficiency of water circuits;
- check ventilation and/or aeration of the installation room where provided.

If any checks/inspection give negative results, do not start the boiler.

3.1 PLUMBING LAYOUT.



INSTALLER

USER

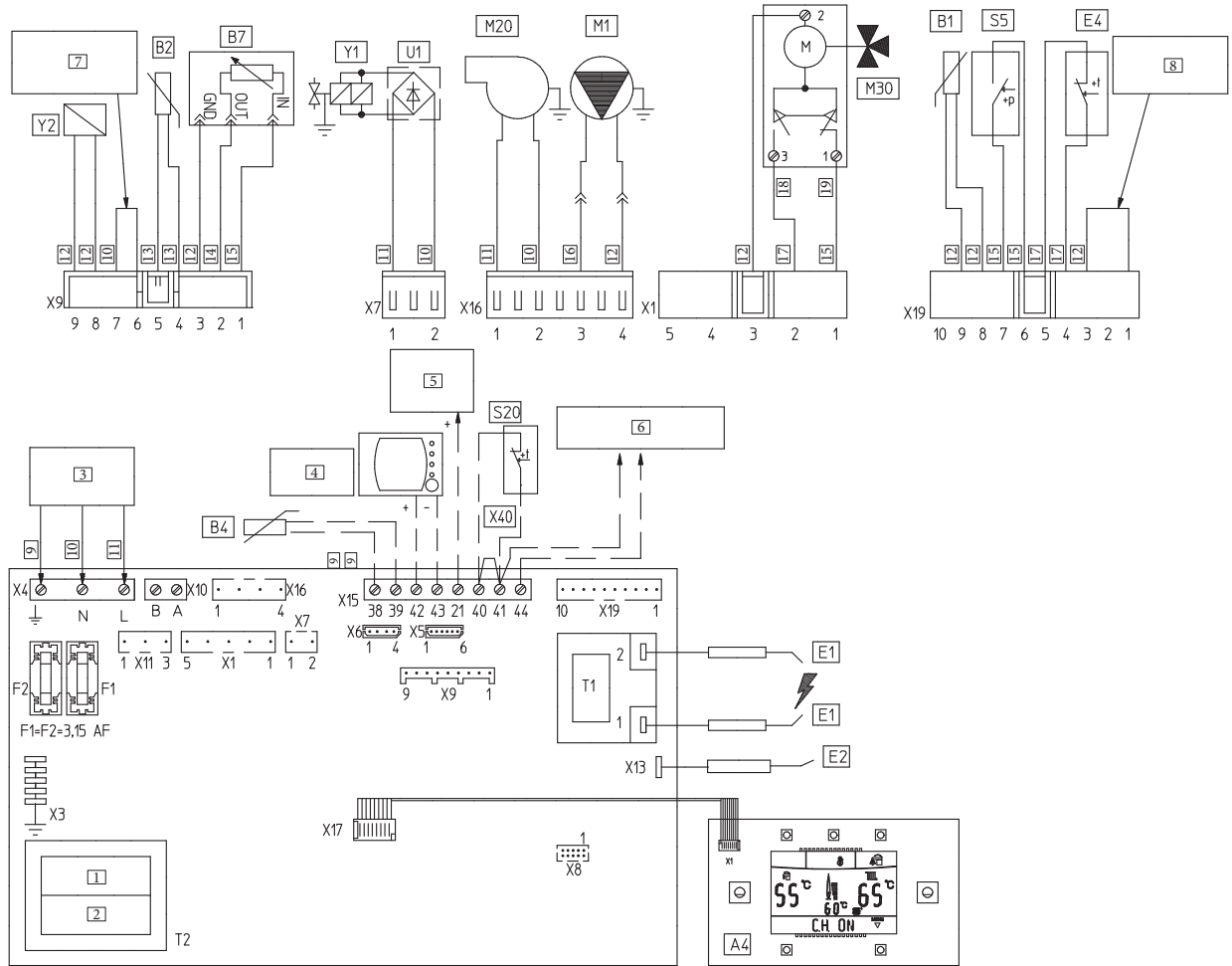
MAINTENANCE TECHNICIAN

3.2 WIRING DIAGRAM.

INSTALLER

USER

MAINTENANCE TECHNICIAN



Key:

- | | | |
|--|---|---|
| A4 - Display card | S5 - System pressure switch | 6 - IMG BUS connection |
| B1 - Delivery probe | S20 - Environment thermostat (optional) | 7 - Cylinder configuration jumper |
| B2 - Domestic water probe | T1 - Switch-on transformer | 8 - Sealed chamber configuration jumper |
| B4 - External probe (optional) | T2 - Boiler card transformer | 9 - Yellow/green |
| B7 - Fumes flow measuring device | U1 - Straightening device inside the gas valve connector (only present on Honeywell valves) | 10 - Blue |
| Super CAR - Super Remote Friend Control (Optional) | Y1 - Gas valve | 11 - Brown |
| E1 - Ignition plugs | Y2 - Gas valve modulator | 12 - Black |
| E2 - Igniter sensor | 1 - Primary | 13 - Green |
| E4 - Safety thermostat | 2 - Secondary | 14 - Orange |
| F1 - Line fuse | 3 - Power supply 230 Vac 50Hz | 15 - Red |
| F2 - Neutral fuse | 4 - Super RFC (Optional) | 16 - Grey |
| M1 - Boiler circulating pump | 5 - Card area (Optional) | 17 - White |
| M20 - Fan | | 18 - Domestic |
| M30 - 3-way valve (motorised) | | 19 - Heating |

3-2

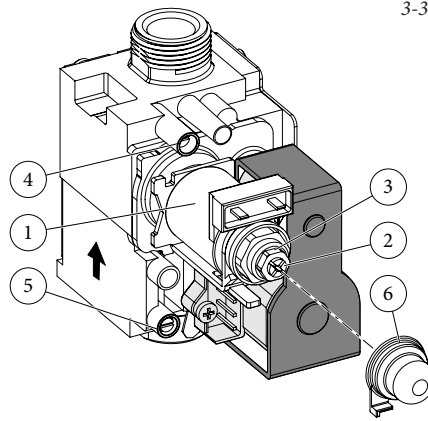
Remote controls: the boiler is designed to use the Remote Friend Control^{V2} (CAR^{V2}), or as an alternative to the Super Remote Friend Control (Super CAR) which must be connected to clamps 42 and 43 of connector X15 on the circuit board, respecting polarity and eliminating jumper X40.

Environment thermostat: the boiler is designed to use the Room Thermostat (S20). Connect it to clamps 40 – eliminating jumper X40.

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

The connector X6 is used for the connection to the personal computer.

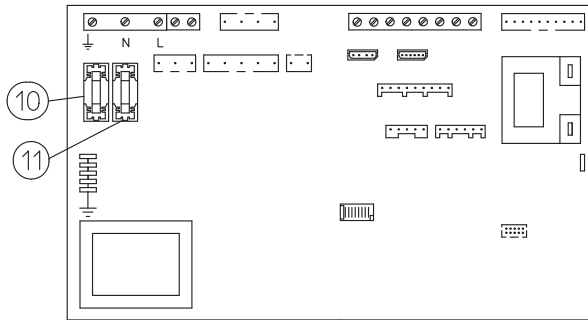
The connector X8 is used for software updating operations.



Key:

- 1 - Reel
- 2 - Minimum power adjustment screws
- 3 - Maximum power adjustment screws
- 4 - Gas valve outlet pressure point
- 5 - Gas valve inlet pressure point
- 6 - Protection hood

Zeus Superior kW circuit board



Key:

- 10 - Line fuse 3,15AF
- 11 - Neutral fuse 3,15AF

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.
- The fan works but ignition discharge does not occur on the burner train. The fan may start but the safety air pressure switch does not change the contact. Make sure:
 - 1) the intake/exhaust duct is not too long (over allowed length).
 - 2) the intake/exhaust duct is not partially blocked (on the exhaust or intake side).
 - 3) that the sealed chamber is perfectly sealed.
- Irregular combustion (red or yellow flame). This may be caused by a dirty burner, incorrect combustion parameters, intake-exhaust terminal not correctly installed. Clean the above components and ensure correct installation of the terminal.
- Frequent activation of the temperature overload thermostat. This may be caused by lack of water in the boiler, insufficient water circulation in the circuit or a blocked circulator. Check via the pressure gauge that values are within admissible limits. Check that radiator valves are not all closed.
- Presence of air in the system. Check opening of the special air bleeding cap (Fig. 1-28). Make sure the system pressure and expansion tank precharge values are within the set limits; the precharge value for the expansion tank must be 1.0 bar, and system pressure between 1 and 1.2 bar.
- Ignition block: (Par. 2.6).

- Domestic water probe broken. The boiler does not have to be emptied in order to replace the domestic water probe as the probe is not in direct contact with the domestic hot water present in the boiler.

3.4 CONVERTING THE BOILER TO OTHER TYPES OF GAS.

If the boiler has to be converted to a different gas type to that specified on the data-plate, request the relative conversion kit for quick and easy conversion.

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

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

- remove voltage from the appliance;
- replace the main burner injectors making sure to insert the special seal rings supplied in the kit, between the gas manifold and the injectors;
- apply voltage to the appliance;
- adjust the "P56" parameter, setting it according to the correct gas, see "programming circuit board" paragraph;
- adjust the maximum heat input of the boiler;
- adjust the minimum heat input of the boiler;
- adjust (eventually) the heating power using the "P59" Parameter, see "programming circuit board" paragraph;
- seal the gas flow rate devices (if adjusted);
- after completing conversion, apply the sticker, present in the conversion kit, near the data-plate. Using an indelible marker pen, cancel the data relative to the old type of gas.

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

3.5 CHECKS FOLLOWING CONVERSION TO ANOTHER TYPE OF GAS.

After making sure that conversion was carried out with a nozzle of suitable diameter for the type of gas used and the settings are made at the correct pressure, check that:

- there is no flame return in the combustion chamber;
- the burner flame is not too high or low and that it is stable (does not detach from burner);
- the pressure testers used for calibration are perfectly closed and there are no leaks from the gas circuit.

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

Burner adjustment must be carried out using a differential "U" or digital type pressure gauge, connected to the positive pressure inlet (Part. 5 Fig. 3-1) and the gas valve pressure outlet (part. 4 Fig. 3-3), keeping to the pressure value given in the tables (Par. 3.17) according to the type of gas for which the boiler is prepared.

3.6 POSSIBLE ADJUSTMENTS OF THE GAS VALVE.

- Adjustment of boiler nominal heat output (Fig. 3-3).
 - turn the domestic hot water selector knob (1 Fig. 2-1) to the maximum functioning position;
 - open the domestic hot water cock in order to prevent modulation intervention;
 - adjust the boiler nominal power on the brass nut (3), keeping to the maximum pressure values stated in the tables (Par. 3.17) depending on the type of gas;
 - by turning in a clockwise direction the heating potential increases and in an anti-clockwise direction it decreases.
- Adjust the boiler minimum heat input (Fig. 3-3).

N.B.: only proceed after having calibrated the nominal pressure.

Adjustment of the minimum thermal input is obtained by operating on the cross plastic screws (2) on the gas valve maintaining the brass nut blocked (3);

- disconnect the power supply at the modulating reel (just disconnect a faston); By turning the screw in a clockwise direction, the pressure increases, in an anti-clockwise direction it decreases. On completion of calibration, re-apply the power supply to the modulating reel. The pressure to which the boiler minimum power must be adjusted, must not be lower than that stated in the tables (Par. 3.17) depending on the type of gas.

N.B.: to adjust the gas valve, remove the plastic cap (6); after adjusting, refit the cap and screw.

3.7 PROGRAMMING THE CIRCUIT BOARD.

The Zeus Superior kW 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.

Important: If the international language is to be restored (A1), see the indications described in Par. 2.14 (Customisations menu).

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

- Information “M1” (See “User” chapter)
- customisation “M3”(See “User” chapter)
- configurations “M5” menu reserved for the technician who requires an access code.

To access programming press button “D”, turn the heating selector switch (3) and scroll through the menu items until reaching “M5”; press button “D”, introduce the access code and set the parameters according to requirements.

The items in the “M5” menu are stated successively with default parameters and possible options stated.

By turning the heating temperature selector switch (3) scroll through the menu items, press button “D” to access the various levels of the menu and confirm the choice of parameters.

By pressing button “C” go back one level. (The first item of the various options that appears inside the parameter is that selected by default).

M5 menu (the access code must be introduced)					
1° Level	2° Level	Options	Description	Default value	Value set by technician
P51			Displays the fan signal value read by the circuit board	-	-
P52			Sets the fan reference during its normal functioning (can be set from 60Pa to 90Pa)	Set in factory during inspection	
P53		24 KW	Identifies the power of the boiler on which the circuit board is installed	The same as boiler power	The same as boiler power
		28 KW			
		32 KW			
P54		P54.1	Displays the temperature measured by the probe positioned on the cylinder	-	-
		P54.2	Not used	-	-
P55			Displays the heating delivery temperature at which the boiler functions, calculated by the active controls on plant heat adjustment	-	-
SERVICE	P56	G20	The boiler functions with methane gas	The same as the type of gas in use	
		GPL	The boiler functions with LPG gas		
		G110	The boiler functions with G110 gas		
	P58	0% ÷ 100%	Set the maximum power in domestic water functioning (can be set from 0% to 100%)	100%	
	P59	0% ÷ 100%	Set the maximum power in environmental heating functioning	100%	
	P60	0% ÷ 60%	Set the minimum power in domestic water functioning	0%	
	P61	0% ÷ 60%	Set the minimum power in environmental heating functioning	0%	
	P66	P66/A	Without external probe (optional) it defines the minimum delivery temperature. With the external probe present it defines the minimum delivery temperature corresponding to functioning with maximum external temperature (see graphics Fig. 1-6) (adjustable from 35°C to 50°C) N.B.: to continue, the parameter must be confirmed (press “D” or exit from “P66” by pressing “C”)	35°C	
		P66/B	Without external probe (optional) it defines the maximum delivery temperature. With the external probe present it defines the maximum delivery temperature corresponding to functioning with minimum external temperature (see graphics Fig. 1-6) (adjustable from 50°C to 85°C) N.B.: to continue, the parameter must be confirmed (press “D” or exit from “P66” by pressing “C”)	85°C	
		P66/C	With the external probe present it defines at which minimum external temperature the boiler must function at maximum delivery temperature (see graphics Fig. 1-6) (adjustable from -20°C to 0°C) N.B.: to continue, the parameter must be confirmed (press “D” or exit from “P66” by pressing “C”)	-5°C	
		P66/D	With the external probe present it defines at which maximum external temperature the boiler must function at minimum delivery temperature (see graphics Fig.1-6) (adjustable from 5°C to +25°C) N.B.: to continue, the parameter must be confirmed (press “D” or exit from “P66” by pressing “C”)	25°C	

1° Level	2° Level	Optionals	Description	Default value	Value set by the technician
SERVICE	P67	P67.1	In winter mode the circulation pump is always powered and therefore always functions	P67.2	
		P67.2	In winter mode the circulation pump is managed by the environmental thermostat or the remote control		
		P67.3	In winter mode the circulation pump is managed by the environmental thermostat or the remote control and by the boiler delivery probe		
	P68	0s ÷ 500s	The boiler is set to switch on the burner immediately after a request for environmental heating. In the case of particular plants (e.g. plants with areas and motorised valves etc) it may be necessary to delay ignition	0 seconds	
	P69	0s ÷ 255s	The boiler has an electronic timing device that prevents the burner from igniting too often in the heating phase.	180 seconds	
	P70	0s ÷ 840s	The boiler performs an ignition ramp to arrive from minimum power at the nominal heating power	840 seconds (14 minutes)	
	P71	P71.1	Boiler switch-on for heating domestic water occurs when the water contained in the cylinder falls by 3°C with respect to the set temperature	P71.1	
		P71.2	Boiler switch-on for heating domestic water occurs when the water contained in the cylinder falls by 10°C with respect to the set temperature		
	P72	AUTO OFF 8l/h 10l/h 12l/h	This function has no effect on the correct functioning of this boiler model	FIXED ON AUTO	
	RELE 1 (optional)	RELE1.OFF	Relay 1 not used	RELE1.1	
		RELE1.1	In a plant divided in areas, relay 1 controls the main area		
		RELE1.2	The relay signals the intervention of a boiler block (can be combined with an external indicator, not supplied)		
		RELE1.3	The relay signals that the boiler is on (can be combined with an external indicator, not supplied)		
		RELE1.4	Controls the opening of an external gas valve in concomitance with a switch-on request of the burner in the boiler		
	RELE 2 (optional)	RELE2.OFF	Relay 2 not used	RELE2.OFF	
		RELE2.6	Relay 2 activates the remote filling electrovalve (Optional). The command is remote control.		
		RELE2.2	The relay signals the intervention of a boiler block (can be combined with an external indicator, not supplied)		
		RELE2.3	The relay signals that the boiler is on (can be combined with an external indicator, not supplied)		
		RELE2.4	Controls the opening of an external gas valve in concomitance with a switch-on request of the burner in the boiler		
		RELE2.5	In a plant divided in areas, relay 2 controls the secondary area		
	RELE 3 (optional)	RELE3.OFF	Relay 3 not used	RELE3.OFF	
		RELE3.7	Check the boiler circulation pump		
		RELE3.2	The relay signals the intervention of a boiler block (can be combined with an external indicator, not supplied)		
RELE3.3		The relay signals that the boiler is on (can be combined with an external indicator, not supplied)			
RELE3.4		Controls the opening of an external gas valve in concomitance with a switch-on request of the burner in the boiler			
P76	-10°C ÷ +10°C	If the external probe reading is not correct it is possible to correct it in order to compensate any environmental factors	0°C		

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3.8 AUTOMATIC SLOW IGNITION FUNCTION WITH TIMED RAMP DELIVERY.

In the switch-on phase the circuit board carries out an increasing gas delivery ramp (with pressure values that depend on the type of gas selected) of preset duration. This avoids every boiler lighting phase calibration or preparation operation in any conditions of use.

3.9 "CHIMNEY SWEEP FUNCTION".

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

In this mode all the adjustments are cut out and only the temperature safety thermostat and the limit thermostat remain active. To activate the "Chimney-Sweep" function, press the Reset key for 8 to 15 seconds in absence of domestic water and heating requests. Its activation is indicated 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.

3.10 PUMP ANTI-BLOCK FUNCTION.

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

3.11 THREE-WAY ANTI-BLOCK SYSTEM.

Both in "domestic" and in "domestic-heating" phase the boiler is equipped with a function that starts the three-way motorized 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 RADIATOR ANTI-FREEZE FUNCTION.

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

3.13 CIRCUIT BOARD PERIODICAL SELF-CHECK.

During operation in heating mode or with boiler in standby, the function activates every 18 hours after the last boiler check/power supply. In case of operation in domestic circuit mode the self-check starts within 10 minutes after the end of the drawing in progress, for a length of approx. 10 seconds.

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

3.14 SOLAR PANELS COUPLING FUNCTION.

The boiler is designed to receive pre-heated water from a system of solar panels up to a maximum temperature of 65°C. In each case it is always necessary to install a mixer valve on the hydraulic circuit upstream from the boiler. Set the "P71" function on "P71.2" (Par. 3.7).

When the boiler inlet water is at a temperature that is equal or greater with respect to that set by the domestic hot water selector switch "SET", the boiler does not switch on.

3.15 CASING REMOVAL.

To facilitate boiler maintenance the casing can be completely removed as follows (Fig. 3-5):

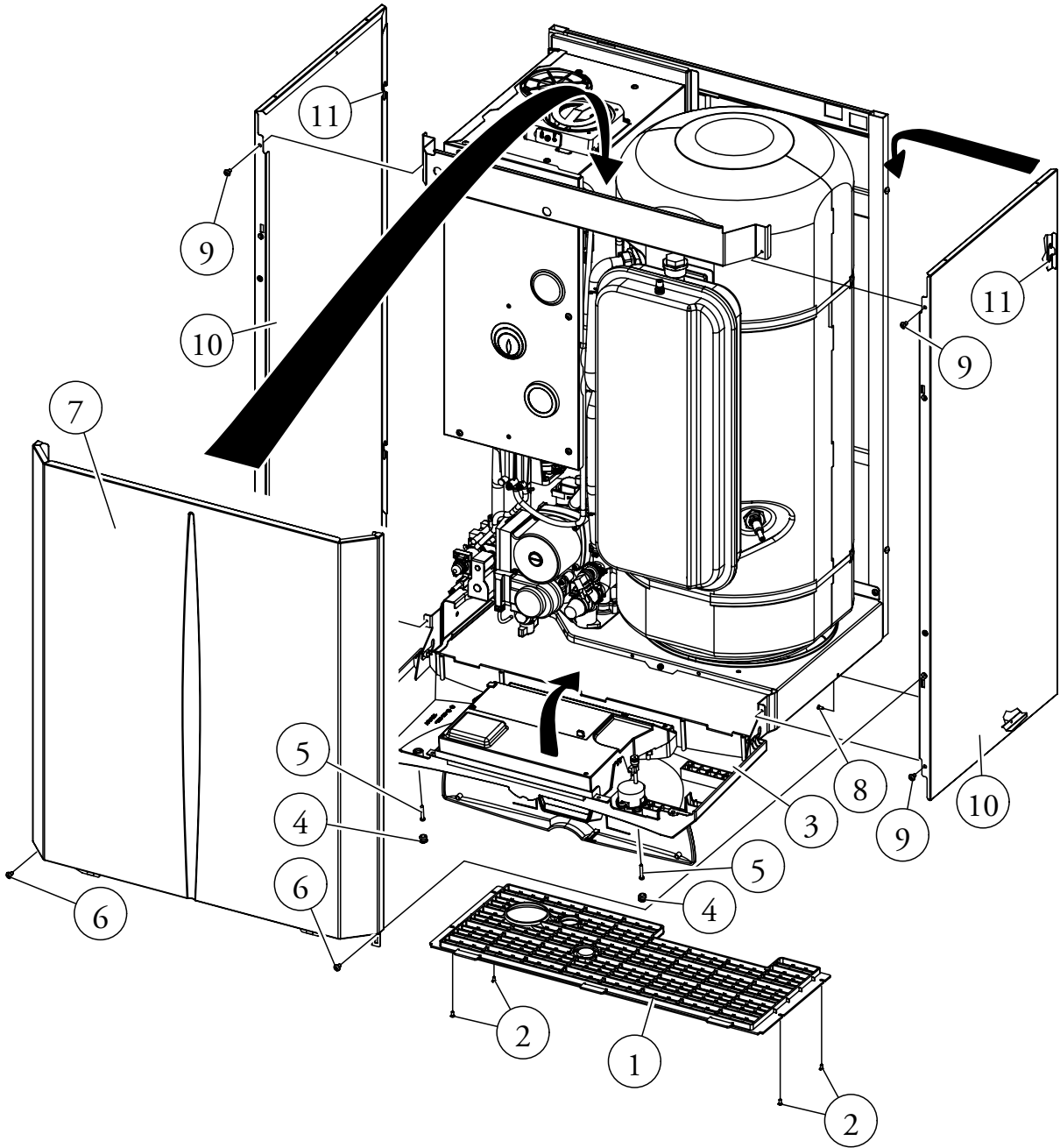
- Remove the lower grid (1) by loosening the 4 relative screw fasteners (2) (2).
- Open the dashboard hatch (3) remove the 2 White screw covers (4) and loosen the two screw fasteners (5), tilt the dashboard towards to yourselves.
- Loosen the two screw fasteners (6) from the face of the casing(7) and release it pushing it upwards.
- Loosen the screws (8) in the lower part of the casing, loosen the 2 screws (9) on the 2 sides of the casing (10) and remove them from the slots (11) present on the rear of the casing side.

3.16 YEARLY APPLIANCE CHECK AND MAINTENANCE.

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

- Clean the flue side of the heat exchanger.
- Clean the main burner.
- Visually check the fume hood for deterioration or corrosion.
- Check correct ignition and operation.
- Ensure correct calibration of the burner in domestic water and heating phases.
- Check correct operation of control and adjustment devices and in particular:
 - intervention of electrical master selector switch on boiler;
 - system control thermostat intervention;
 - domestic water control thermostat intervention.
- Check that the internal system is properly sealed according to specifications.
- Check intervention of the device against no gas ionization flame control: intervention time must be less than 10 seconds.
- Visually check for water leaks or oxidation from/on connections.
- Visually check that the water safety drain valve is not blocked.
- Check that, after discharging system pressure and bringing it to zero (read on boiler pressure gauge), the expansion tank charge is at 1.0 bar.
- Check that the domestic water expansion vessel load is between 3 and 3.5 bar.
- Check that the system static pressure (with system cold and after refilling the system by means of the filler cock) is between 1 and 1.2 bar.
- Check visually that the safety and control devices have not been tampered with and/or shorted, in particular:
 - temperature safety thermostat;
 - system pressure switch;
 - fumes pressure switch.
- Check the integrity of the boiler Magnesium anode.
- Check the condition and integrity of the electrical system and in particular:
 - electrical power cables must be inside the whipping;
 - there must be no traces of blackening or burning.

N.B.: 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.



3.17 VARIABLE HEAT POWER.

N.B.: The pressures given in the table represent the pressure differences existing between the gas valve outlet and the combustion chamber. Adjustments must therefore be carried out with the

differential pressure gauge ("U" or digital type) with the sensors inserted in the test pressure outlet of the modulating adjustable gas valve and on the sealed chamber positive pressure test outlet. The power data given in the table is

obtained with intake/exhaust pipe of length 0.5 m. Gas flow rates refer to heating power below a temperature of 15°C and at a pressure of 1013 mbar. Burner pressure values refer to use of gas at 15°C.

Zeus Superior 24 kW.

HEATING POWER (kW)	HEATING POWER (kcal/h)	METHANE (G20)			BUTANE (G30)			PROPANE (G31)		
		NOZZLE PRESSURE BURNER	NOZZLE PRESSURE BURNER	NOZZLE PRESSURE BURNER	NOZZLE PRESSURE BURNER	NOZZLE PRESSURE BURNER	NOZZLE PRESSURE BURNER	NOZZLE PRESSURE BURNER	NOZZLE PRESSURE BURNER	
		(m³/h)	(mbar)	(mm H ₂ O)	(kg/h)	(mbar)	(mm H ₂ O)	(kg/h)	(mbar)	(mm H ₂ O)
24,0	20640	2,71	12,02	122,6	2,02	28,86	294,3	1,99	36,88	376,1
23,0	19780	2,60	11,12	113,4	1,94	26,54	270,7	1,91	33,99	346,7
22,0	18920	2,49	10,25	104,6	1,86	24,34	248,2	1,83	31,25	318,7
21,0	18060	2,39	9,43	96,1	1,78	22,26	227,0	1,75	28,64	292,0
20,0	17200	2,28	8,64	88,1	1,70	20,28	206,8	1,67	26,15	266,7
19,0	16340	2,17	7,88	80,3	1,62	18,41	187,8	1,59	23,79	242,6
18,0	15480	2,07	7,16	73,0	1,54	16,65	169,8	1,52	21,56	219,8
17,0	14620	1,96	6,47	65,9	1,46	14,98	152,8	1,44	19,44	198,2
16,0	13760	1,85	5,81	59,2	1,38	13,42	136,8	1,36	17,44	177,8
15,0	12900	1,74	5,18	52,8	1,30	11,96	121,9	1,28	15,55	158,6
14,0	12040	1,64	4,58	46,7	1,22	10,59	108,0	1,20	13,78	140,5
13,0	11180	1,53	4,02	40,9	1,14	9,32	95,0	1,12	12,12	123,6
12,0	10320	1,42	3,48	35,5	1,06	8,14	83,1	1,04	10,57	107,8
11,0	9460	1,31	2,97	30,3	0,98	7,07	72,1	0,96	9,14	93,2
10,0	8600	1,20	2,50	25,4	0,90	6,09	62,1	0,88	7,82	79,7
9,3	7998	1,12	2,18	22,2	0,84	5,47	55,8	0,82	6,96	71,0

Zeus Superior 28 kW.

28,0	24080	3,16	11,41	116,4	2,36	28,79	293,6	2,32	36,66	373,8
27,0	23220	3,05	10,68	108,9	2,27	26,82	273,5	2,24	34,23	349,1
26,0	22360	2,94	9,97	101,7	2,19	24,94	254,3	2,15	31,90	325,3
25,0	21500	2,83	9,29	94,7	2,11	23,13	235,9	2,07	29,66	302,4
24,0	20640	2,72	8,63	88,0	2,03	21,40	218,2	1,99	27,50	280,4
23,0	19780	2,61	8,00	81,6	1,95	19,74	201,3	1,92	25,43	259,3
22,0	18920	2,50	7,38	75,3	1,87	18,15	185,1	1,84	23,44	239,0
21,0	18060	2,39	6,79	69,3	1,79	16,63	169,5	1,76	21,52	219,5
20,0	17200	2,29	6,22	63,4	1,71	15,17	154,7	1,68	19,69	200,7
19,0	16340	2,18	5,67	57,8	1,63	13,77	140,4	1,60	17,92	182,7
18,0	15480	2,07	5,14	52,4	1,55	12,44	126,8	1,52	16,23	165,5
17,0	14620	1,97	4,62	47,2	1,47	11,17	113,9	1,44	14,60	148,9
16,0	13760	1,86	4,13	42,1	1,39	9,95	101,5	1,36	13,04	133,0
15,0	12900	1,75	3,65	37,2	1,31	8,80	89,7	1,29	11,55	117,8
14,0	12040	1,64	3,19	32,5	1,23	7,71	78,6	1,21	10,13	103,3
13,0	11180	1,53	2,75	28,0	1,15	6,67	68,0	1,13	8,77	89,5
12,0	10320	1,43	2,32	23,7	1,06	5,69	58,0	1,05	7,48	76,3
11,8	10148	1,40	2,24	22,8	1,05	5,50	56,1	1,03	7,23	73,7

Zeus Superior 32 kW.

31,7	27262	3,56	10,87	110,8	2,66	26,84	273,7	2,61	33,77	344,4
31,0	26660	3,48	10,43	106,3	2,60	25,77	262,8	2,56	32,93	335,8
30,0	25800	3,38	9,82	100,1	2,52	24,29	247,6	2,48	31,71	323,3
29,0	24940	3,27	9,22	94,1	2,44	22,85	233,0	2,40	30,47	310,7
28,0	24080	3,16	8,65	88,3	2,36	21,46	218,8	2,32	29,22	297,9
27,0	23220	3,06	8,10	82,6	2,28	20,11	205,1	2,24	27,94	285,0
26,0	22360	2,95	7,57	77,2	2,20	18,81	191,9	2,17	26,65	271,8
25,0	21500	2,84	7,06	72,0	2,12	17,56	179,0	2,09	25,35	258,5
24,0	20640	2,74	6,57	67,0	2,04	16,34	166,7	2,01	24,02	244,9
23,0	19780	2,63	6,09	62,2	1,96	15,17	154,7	1,93	22,67	231,1
22,0	18920	2,53	5,64	57,5	1,89	14,04	143,2	1,85	21,30	217,2
21,0	18060	2,42	5,20	53,0	1,81	12,95	132,1	1,78	19,90	202,9
20,0	17200	2,31	4,78	48,8	1,73	11,90	121,4	1,70	18,48	188,5
19,0	16340	2,21	4,38	44,6	1,65	10,89	111,1	1,62	17,04	173,8
18,0	15480	2,10	3,99	40,7	1,57	9,92	101,2	1,54	15,57	158,8
17,0	14620	1,99	3,63	37,0	1,49	8,99	91,7	1,46	14,07	143,5
16,0	13760	1,88	3,28	33,4	1,41	8,10	82,6	1,38	12,55	127,9
15,0	12900	1,78	2,94	30,0	1,32	7,24	73,9	1,30	10,99	112,1
14,0	12040	1,67	2,63	26,8	1,24	6,43	65,5	1,22	9,40	95,8
13,0	11180	1,56	2,33	23,8	1,16	5,65	57,6	1,14	7,78	79,3
12,5	10750	1,50	2,19	22,3	1,12	5,28	53,8	1,10	6,95	70,9

3.18 TECHNICAL DATA.

		Zeus Superior 24 kW	Zeus Superior 28 kW	Zeus Superior 32 kW
Nominal heat input	kW (kcal/h)	25,6 (22028)	29,8 (25644)	33,6 (28910)
Minimum heat input	kW (kcal/h)	10,6 (9120)	13,3 (11402)	14,2 (12188)
Nominal (useful) heat output	kW (kcal/h)	24,0 (20640)	28,0 (24080)	31,7 (27262)
Minimum (useful) heat output	kW (kcal/h)	9,3 (7998)	11,8 (10148)	12,5 (10750)
Efficiency at nominal heat output	%	93,7	93,9	94,3
Efficiency at 30% nominal heat output	%	90,3	91,2	90,8
Casing losses with burner On/Off	%	0,40 / 0,61	0,60 / 0,62	0,40 / 0,60
Chimney losses with burner On/Off	%	5,90 / 0,05	5,50 / 0,01	5,80 / 0,01
Maximum working pressure of C.H. circuit	bar	3	3	3
Maximum working temperature of C.H. circuit	°C	90	90	90
Central heating temperature range	°C	35 - 85	35 - 85	35 - 85
Total volume of system expansion vessel	l	7,1	7,1	7,1
Expansion vessel factory-set pressure	bar	1	1	1
Total volume of DHW expansion vessel	l	1,2	1,2	1,2
DHW expansion vessel factory-set pressure	bar	3,5	3,5	3,5
Appliance water content	l	3,5	4,0	4,5
Available head at 1000 litres/hours flow rate	kPa (m H ₂ O)	32,9 (3,36)	37,26 (3,8)	39,22 (4,0)
Hot water production useful heat output	kW (kcal/h)	24,0 (20640)	28,0 (24080)	31,7 (27262)
DHW temperature adjustable range	°C	20 - 60	20 - 60	20 - 60
2-bar DHW flow limiter	l/min	10,0	12,0	14,0
DHW circuit minimum (dynamic) pressure	bar	0,3	0,3	0,3
Maximum working pressure of DHW circuit	bar	8	8	8
*Specific capacity "D" according to EN 625	l/min	15,3	16,6	18,9
Continuous service capacity (ΔT 30°C)	l/min	11,3	13,7	15,3
Domestic water performance classification according to EN13203-1		★★★		
Loaded boiler weight	kg	126,93	128,64	131,34
Empty boiler weight	kg	66,1	68	70,2
Power supply connection	V/Hz	230/50	230/50	230/50
Nominal power input	A	0,68	0,7	0,87
Installed electric power	W	135	140	165
Pump consumption	W	85	90	99
Fan consumption	W	33	37	48
Appliance electric insulation rating	-	IPX5D	IPX5D	IPX5D
NO _x class	-	3	3	3
Weighted NO _x	mg/kWh	139	130	146
Weighted CO	mg/kWh	101	106	100
Type of appliance	C12 /C32 / C42 / C52 / C82 / B22 / B32			
Category	II2H3+			

- Fume temperature values refer to an air inlet temperature of 15°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.
- * Specific capacity "D": domestic hot water flow rate corresponding to an average increase of 30K, which the boiler can supply in two successive withdrawals.

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3.19 COMBUSTION PARAMETERS.

		G20	G30	G31
Zeus Superior 24 kW				
Gas nozzle diameter	mm	1,35	0,79	0,79
Supply pressure	mbar (mm H ₂ O)	20 (204)	29 (296)	37 (377)
Flue flow rate at nominal heat output	kg/h	50	49	51
Flue flow rate at minimum heat output	kg/h	50	48	49
CO ₂ at Q. Nom./Min.	%	7,50 / 2,90	8,70 / 3,50	8,30 / 3,40
CO at 0% of O ₂ at Q. Nom./Min.	ppm	73 / 93	88 / 116	62 / 113
NO _x at 0% of O ₂ at Q. Nom./Min.	ppm	138 / 75	186 / 83	181 / 87
Flue temperature at nominal heat output	°C	115	118	114
Flue temperature at minimum heat output	°C	98	102	100
Zeus Superior 28 kW				
Gas nozzle diameter	mm	1,35	0,79	0,79
Supply pressure	mbar (mm H ₂ O)	20 (204)	29 (296)	37 (377)
Flue flow rate at nominal heat output	kg/h	58	55	57
Flue flow rate at minimum heat output	kg/h	61	59	60
CO ₂ at Q. Nom./Min.	%	7,50 / 2,94	9,10 / 3,55	8,70 / 3,46
CO at 0% of O ₂ at Q. Nom./Min.	ppm	97 / 104	179 / 103	90 / 99
NO _x at 0% of O ₂ at Q. Nom./Min.	ppm	123 / 77	184 / 89	168 / 88
Flue temperature at nominal heat output	°C	108	115	111
Flue temperature at minimum heat output	°C	79	82	81
Zeus Superior 32 kW				
Gas nozzle diameter	mm	1,35	0,79	0,79
Supply pressure	mbar (mm H ₂ O)	20 (204)	29 (296)	37 (377)
Flue flow rate at nominal heat output	kg/h	66	66	68
Flue flow rate at minimum heat output	kg/h	66	66	69
CO ₂ at Q. Nom./Min.	%	7,40 / 2,90	8,50 / 3,40	8,20 / 3,20
CO at 0% of O ₂ at Q. Nom./Min.	ppm	58 / 89	50 / 25	30 / 20
NO _x at 0% of O ₂ at Q. Nom./Min.	ppm	119 / 65	153 / 84	167 / 137
Flue temperature at nominal heat output	°C	119	121	118
Flue temperature at minimum heat output	°C	95	96	92

3.20 KEY FOR DATA PLATE.

Md		Cod. Md	
Sr N°	CHK	Cod. PIN	
Type			
Q _{nw} /Q _n min.	Q _{nw} /Q _n max.	P _n min.	P _n max.
PMS	PMW	D	TM
NO _x Class			

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)
Q _{nw} min.	Minimum DHW heat input
Q _n min.	CH minimum heat input
Q _{nw} max.	DHW maximum heat input
Q _n max.	CH maximum heat input
P _n min.	Minimum heat output
P _n max.	Maximum heat output
PMS	Maximum system pressure
PMW	Maximum domestic hot water pressure
D	Specific flow rate
TM	Maximum operating temperature
NO _x Class	NO _x Class

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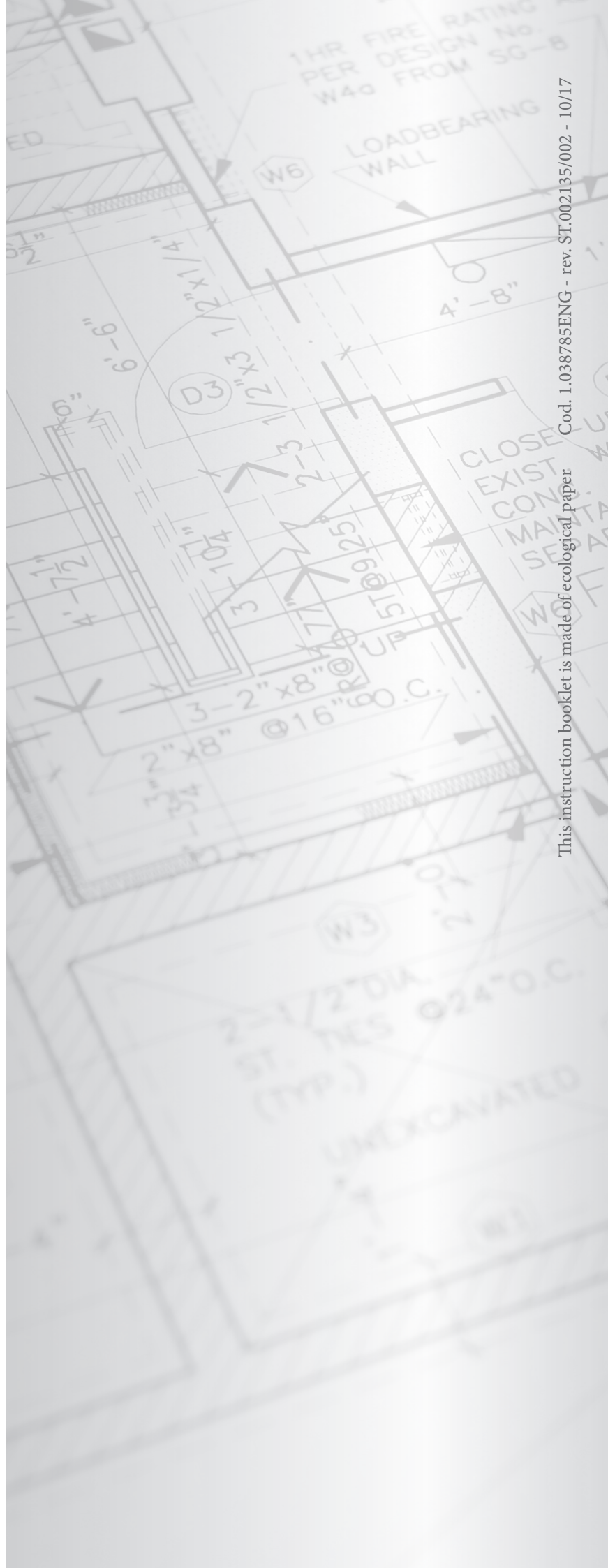
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