



FLEXIHEAT UK LTD

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Installation, Use and Maintenance Manual for model

SFK 28

Internal condensing water heater

CE 0476

SFK28-RAD-ING-Manuale-2409.1_SKM1.3_MIAH411_firm.L225D14_II2EYM3P

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INTRODUCTION

WARNING

Before starting any operation it is mandatory to read this instruction manual, in relation to the activities to be carried out as described in each relevant section. Proper operation and optimal performance of the water heater are ensured by strict compliance with all the instructions given in this manual.

The installation, use and maintenance manual is an integral and essential part of the product and must be delivered to the user.

MANUAL USERS

The manual users are all those who install, use and maintain the water heater.

The water heater must be used and accessed only by qualified operators that fully read and understood the use and maintenance manual, paying particular attention to the warnings.

READING AND SYMBOLS OF THE MANUAL

To ease the understanding of this manual, recurrent symbols where used, in particular:

- › On the outer margin of the page is placed a thumb index indicating the type of user to which the instructions in that section address.
- › The titles are differentiated by thickness and size in accordance with their hierarchy.
- › The images contain important parts described in the text, marked with numbers or letters.
- › (See chap. "chapter name"): this entry indicates another section in the Manual that you should refer to.

- › Device: this term is used referring to the water heater.



DANGER

It identifies an information related to a general danger that if not complied with, may cause serious personal damage or even death.



ATTENTION

It identifies an information that if not complied with may cause small or medium level lesions to the person or serious deterioration to the water heater.



WARNING

It identifies a precaution information that must be observed in order to avoid damaging the machine or parts of it.

MANUAL STORAGE

The manual must be carefully stored and replaced in case of deterioration and/or low legibility.

If you misplace the use and maintenance manual, you can request it from the Service Centre giving the serial number and model of the water heater indicated on the data plate placed on the right side of its casing.

MANUFACTURER WARRANTY AND RESPONSIBILITY

equipped with all accessories necessary to render it a veritable independent heating unit. All water heaters are tested and delivered with a quality certificate signed by the tester.

The technical and functional features of the device are ensured by its use in compliance:

1. with the use and maintenance instructions contained in the manuals accompanying the product, the content of which the customer certifies that he is aware;
2. with the conditions and purposes to which devices of the same type are intended.

For more information on the warranty validity, its duration, the obligations and the exemptions, please consult the First start-up certificate attached to this manual.

The manufacturer reserves:

- › the right to modify the tools and relative technical documentation without any obligation to third parties; neither will the company be held responsible for any inaccuracies in this handbook deriving from printing or translation errors;
- › the material and intellectual ownership of this manual and forbids its distribution and duplication, even partial, without prior written authorization.

PRODUCT CONFORMITY

The materials used such as copper, brass, stainless steel create a homogeneous, compact and functional assembly, easy to install and manage. In its simplicity, the water heater is

1. INSTALLER SECTION

The installation operations described in this section, must be performed only by qualified personnel, having the appropriate technical training in the field for the installation and maintenance of components of civil and industrial domestic hot water production and heating plants.

1.1. INSTALLATION

1.1.1. GENERAL INSTALLATION WARNINGS



ATTENTION

This water heater may be used only for the purpose for which it has been designed: heat water to a temperature below boiling point at atmospheric pressure. Any other use is considered wrong and dangerous. The manufacturer is excluded from any contractual or extra-contractual responsibility for damages caused to people, animals or property due to errors during installation.



ATTENTION

This water heater must be installed only by qualified personnel, having the appropriate technical training in the field for the installation and maintenance of components of civil and industrial domestic hot water production and heating plants.



ATTENTION

After having removed the packing, make sure the device is intact. In case of doubt, do not use the device and contact the supplier.

BEFORE INSTALLING THE WATER HEATER, THE INSTALLER MUST MAKE SURE THAT THE FOLLOWING CONDITIONS ARE MET:

- › The device is connected to a heating system and a water supply network appropriate for its power and performance.
- › The location must be properly vented through an air vent.
- › The air vent must be placed at floor level to prevent it from being obstructed, protected by a grid that does not hamper the useful passage section.

- › The device is suitable for use with the type of gas available by checking the water heater data plate (placed on the inner side of the front casing).
- › Make sure that the pipes and joints are perfectly sealed, without any gas leaks.
- › Make sure that the grounding system works properly.
- › Make sure that the electrical system is suitable for the maximum power absorbed by the device, value indicated on the data plate.

1.1.2. WATER HEATER LOCATION ENVIRONMENTAL REQUIREMENTS

The device installation location should be vented due to the presence of threaded joints on the gas supply line. The location should be therefore provided with vents as to ensure air exchange, with output grid in the natural accumulation area of potential gas losses.



WARNING

DO NOT install the water heater in a technical compartment near a swimming pool or a laundry, to avoid that the combustion air is exposed to chlorine, ammonia or alkaline agents that may worsen the corrosion phenomenon of the heat exchanger. Failure to observe this caution will void the warranty of the heat exchanger.

**WARNING**

If the temperature in the appliance installation location goes below -10 centigrades, please fill the plant with anti-freeze liquid and insert and a frost protection kit (see chapter 'ANTI-FREEZE PROTECTION').

**WARNING**

The manufacturer will not be held responsible for damages caused by incorrect installation not in conformity with the above mentioned instructions and not duly protected from freeze.

1.1.3. REFERENCE LEGISLATION

The installation must be done according to the requirements of current legislation and in compliance with local technical regulations, according to the indications of the good technique.

PLEASE NOTE

Because the minimum power of the SFK28 Water heater is 3.7 kW, at low waterflows (i.e. 5 Litres/ minute or less) the temperature may exceed the set temperature programmed on the unit. This is to avoid continuous shutdowns, it initially heats the water up to 60°C, within the heat exchanger (as a by-product this is good for anti-legionella purposes, as although this is a little volume of water within the heat exchanger , if the unit hasn't been used for some time – it's good to heat it up to this level), then a downward output adjustment is performed by the burner, to adjust to the required power to achieve your desired temperature. This can be avoided / overcome by installing a **mixing valve on the hot water outlet** – which can limit the hot water temperature to 43C to prevent any scalding issues.



A TMV (Thermostatic mixing valve) are also good for applications, whereby you might want lower hot water temperatures than the unit can produce which is 35°C on the control panel. For example, we supply these units to the equine sector, for **warm washing down of horses etc** – in the summer months, they may only require a temperature °of 30C – by using one of the above valves fitted to the hot water outlet – you can reduce the temperature down to 30C , as most of these TMV mixing valves can control the water temperature between 30°C to 50°C.

1. INSTALLATION

1.1.4. UNPACKING



WARNING

Please unpack the water heater just before installing it. The Company is not responsible for the damages caused to the device due to incorrect storage.

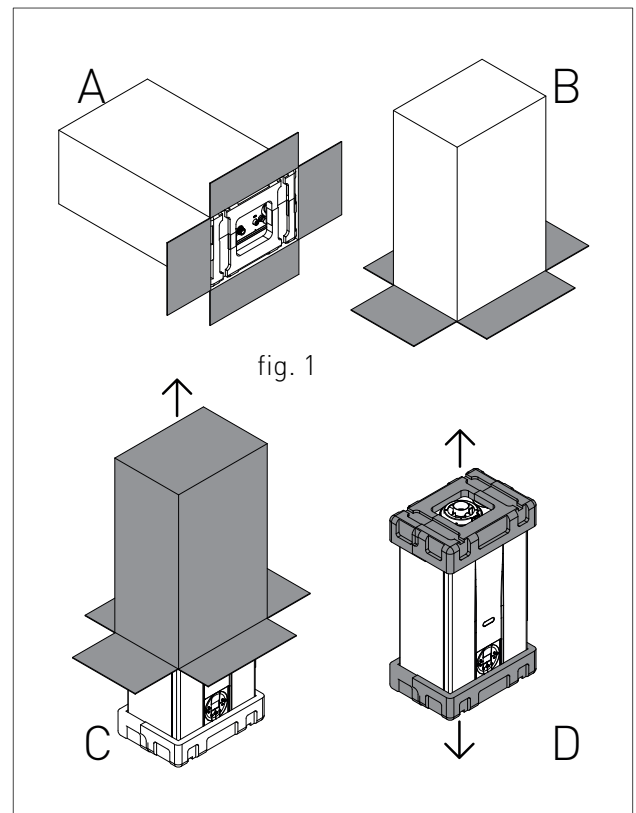


WARNING

The packing elements (cardboard box, wooden crate, nails, fasteners, plastic bags, expanded polystyrene, etc.) must be kept out of the reach of children as they may be dangerous. Therefore they should be dismantled suitably differentiating them in accordance with the standards in force.

To unpack the water heater, proceed as follows:

- › Place the packed water heater on the floor (fig. 1-A) and remove the fasteners opening the four flaps of the box outwards.
- › Turn the water heater at 90° holding it with your hand (fig. 1-B).
- › Lift the box (fig. 1-C) and remove the guards (fig. 1-D).



1.1.5. POSITIONING AND MINIMAL TECHNICAL SPACES

The water heater must be installed only on a vertical solid wall, able to sustain its weight.

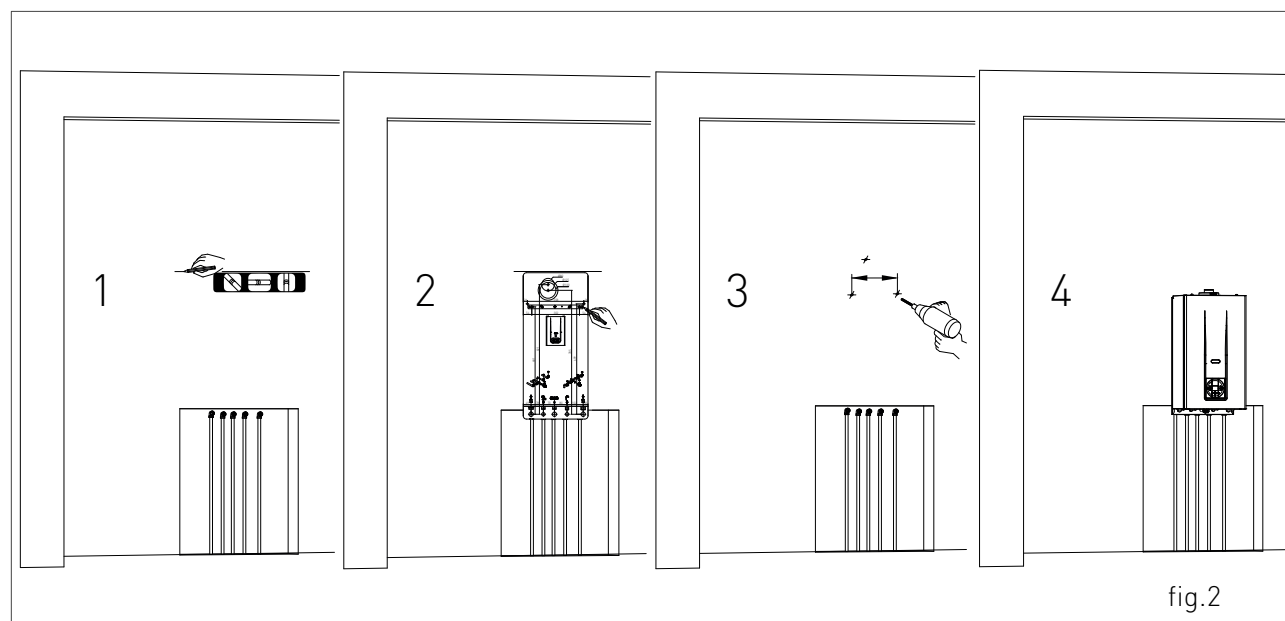
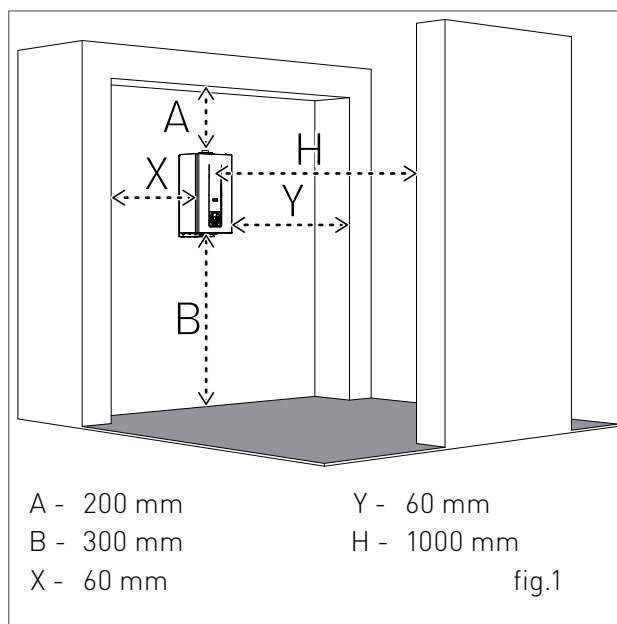
In order to allow the access inside the water heater for maintenance operations, the minimum technical spaces indicated in figure 1 have to be respected.

Keep the same distances from flammable materials and wooden walls as well.

To facilitate the installation, the water heater is provided with wall template that allows setting in advance the connections to the pipes, offering the possibility to connect the boiler once masonry works are completed.

For water heater positioning, proceed as follows (see fig. 2):

1. Trace a line using a spirit level (min. length 25 cm) on the installation wall;
2. place the top of the template along the traced line respecting the distances of the water connections; then mark the two points to insert the two wall fastening screws, then trace the points for the flue system;
3. remove the template and drill the wall;
4. hang the water heater onto the wall fastening screws or onto the wall hanging bracket and perform the connections.



1. INSTALLATION



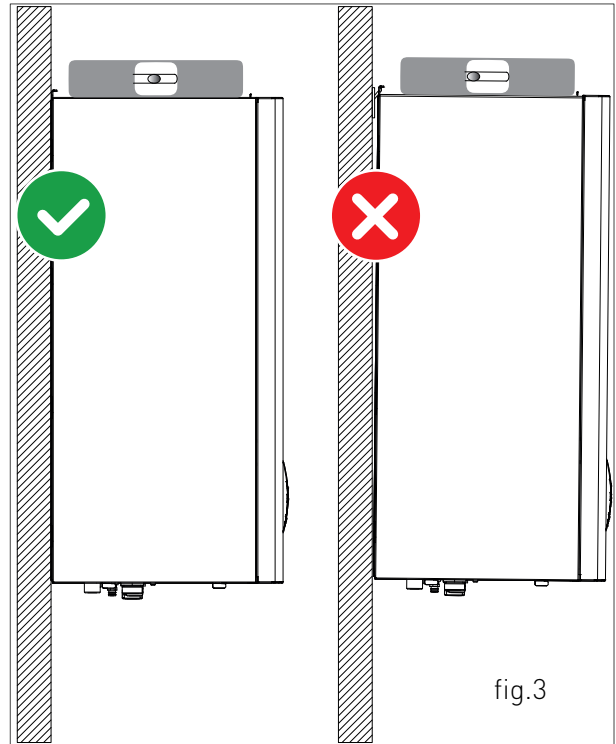
WARNING

Make sure, using a spirit level, that the water heater is properly inclined being levelled (see fig.3) so as to allow the condensate to drain.

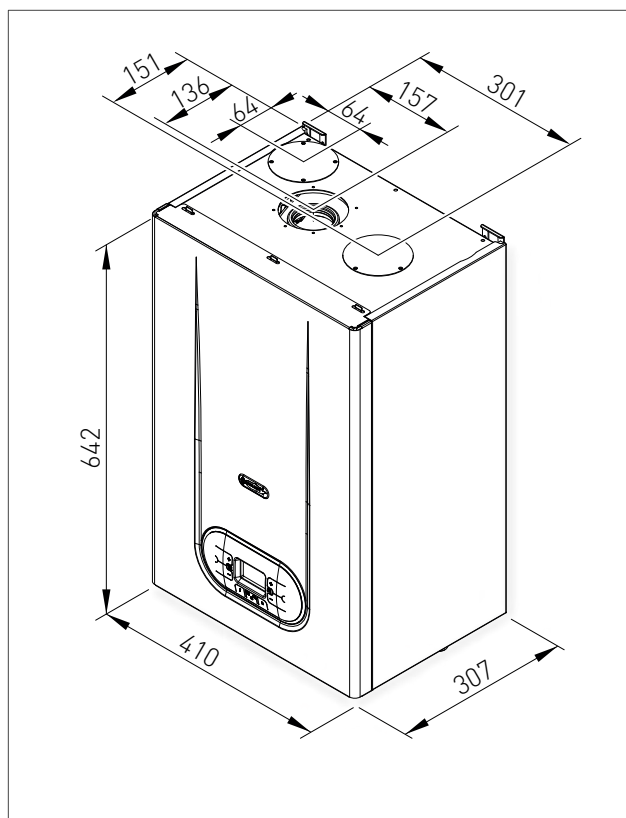


WARNING

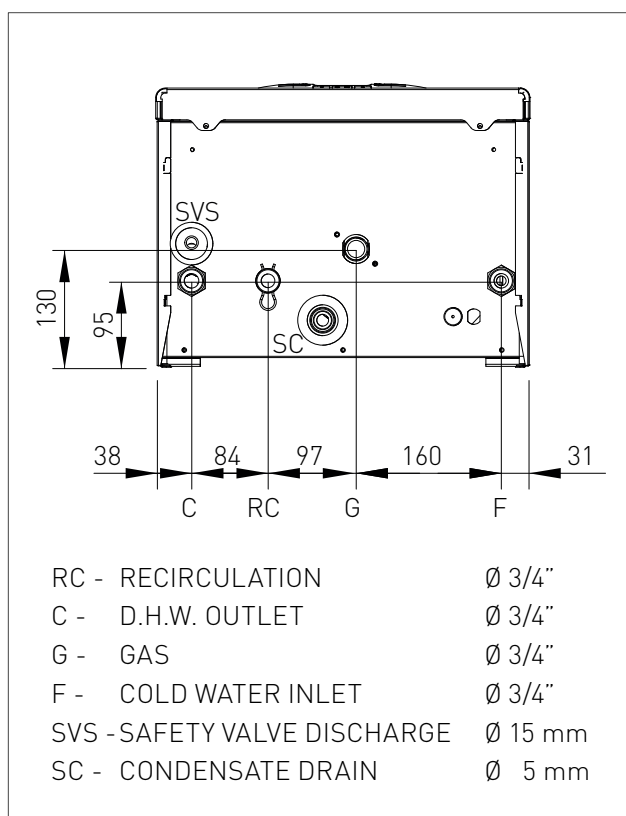
The incorrect slopes of the device can cause the incorrect discharge of condensate by means of the discharge duct with consequent condensate stagnation inside the condensate module.



1.1.6. OVERALL DIMENSIONS

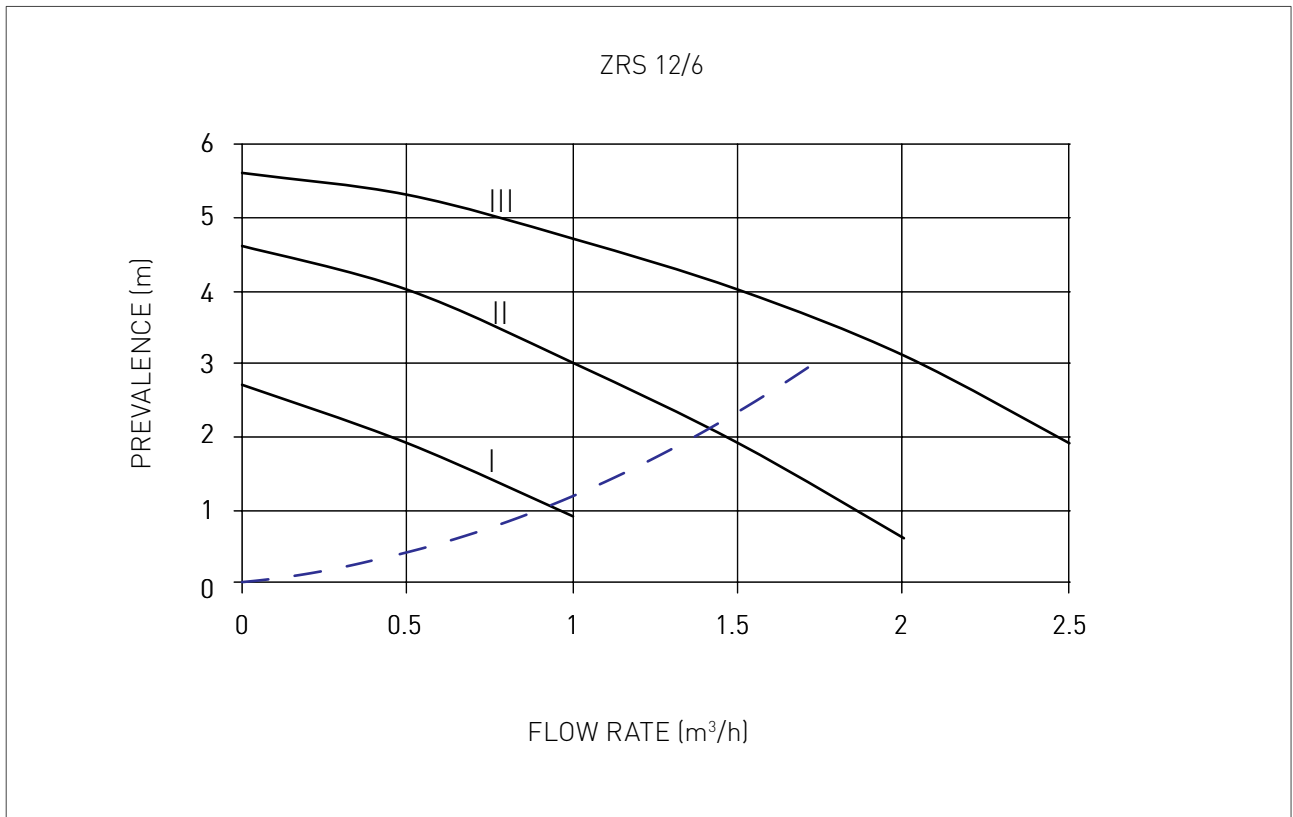


1.1.7. HYDRAULIC CONNECTIONS



1. INSTALLATION

1.1.8. RECIRCULATION MODE PUMP HEAD / FLOW DIAGRAM



- III — Pump priority maximum speed
- II — Pump head at second speed
- I — Pump head at minimum speed
- Appliance head losses

1. INSTALLATION

1.1.9. HYDRAULIC CONNECTION

**DANGER**

Make sure that the water and heating pipes are not used as grounding system for the electrical plant. They are not suitable for such use.

**WARNING**

To prevent voiding the warranty and ensure proper operation of the water heater, please wash the system (if possible when hot) with suitable pickling or descaling solutions in order to remove the impurities coming from pipes and radiators.

**WARNING**

If the water heater is installed in a hydrostatic position lower than those of the connected devices (radiators, fan coils, etc.), install the shut-off valves on the D.H.W. and heating circuits to ease the performance of the maintenance operations if it is necessary only to empty the water heater.

**WARNING**

When connecting the water heater to water supply, avoid excessive bending and recovery operations from any off axis positioning that may damage the pipes causing leaks, malfunction or early wear.

**WARNING**

In order to avoid any vibrations and noises, do not use pipes with small diameters or elbows with small radius and significant cut-off of the passage sections.

**WARNING**

Connect the water heater safety drains to a discharge funnel. The manufacturer is not responsible for any floods due to safety valve opening in case of plant overpressure.

In order to prevent limestone build-up and damages to the D.H.W. heat exchanger, the hardness of the domestic supply water should not exceed 15 °f. However, please check the characteristics of the water used and install suitable treating devices.

The heat exchanger coil cleaning frequency depends on the hardness of the supply water and on the presence of solid residues or impurities inside the water that are often present in case of recently installed plants. Based on the characteristics of the inlet water, the installation of suitable water treating devices is recommended, for residues presence please install a line filter.


The pressure of the cold inlet water should be between 0.5 and 6 bar. In case of higher pressure values, please install a pressure reducer upstream from the water heater.

1. INSTALLATION

1.1.10. RECIRCULATION MODE

The tankless water heater has within, as standard, a recirculation system c/w circulating pump which is aimed to provide a better well-being for the domestic hot water needs, thus delivering immediately a large amount of hot water.

To activate the recirculation mode, please proceed as follows:

- > turn the diverter valve onto the position "recirculation", as shown 'RC' in figure 1.
- > activate the recirculation mode by pressing simultaneously the **R** and **-** buttons of the control panel (fig. 2). The activation of the recirculation mode is displayed onto the control panel by means of the 'rc'.
- > adjust the setting of the return temperature by pressing **+** and **-** (fig. 3). The activation of the pump is displayed onto the control panel by means of the pump  symbol.

To detect the return temperature, the system activates the pump for 20 seconds every 10 minutes.

If the temperature detected therein, by the recirculation sensor, is lower than the required one, the pump activates and the appliance operates at the minimum fire rating.

When the required temperature is achieved, the appliance shuts-off and the pump runs for 40 seconds (this latter value can be adjusted by means of parameter P04). The highest possible temperature of the hot water, during the recirculation mode, is of 53 °C.

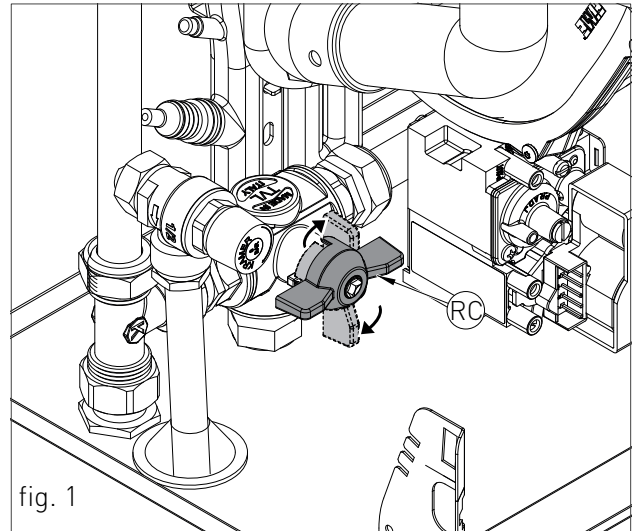


fig. 1

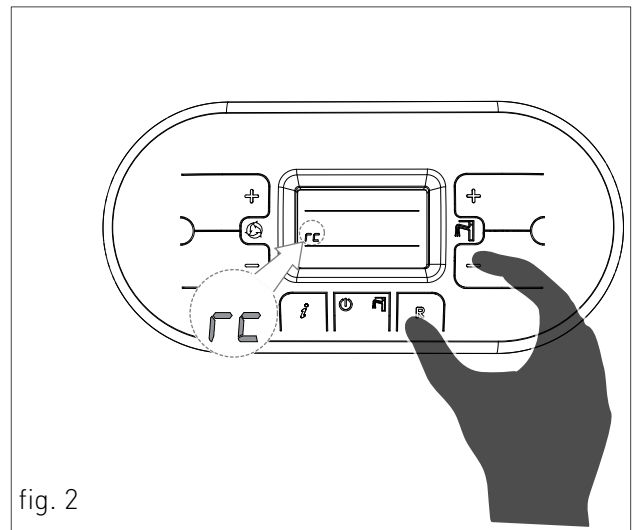


fig. 2

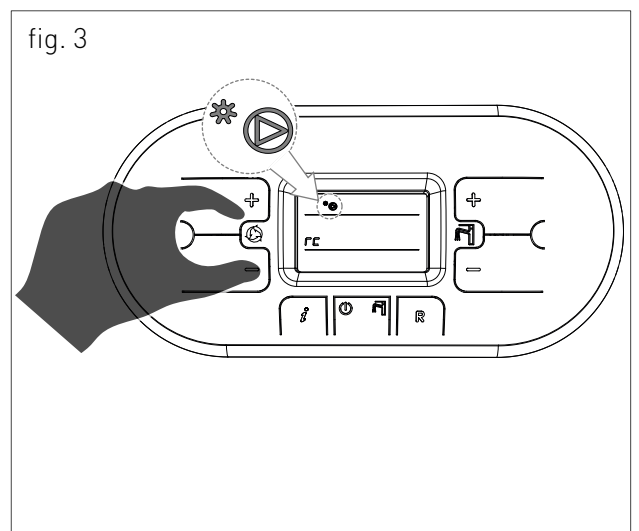



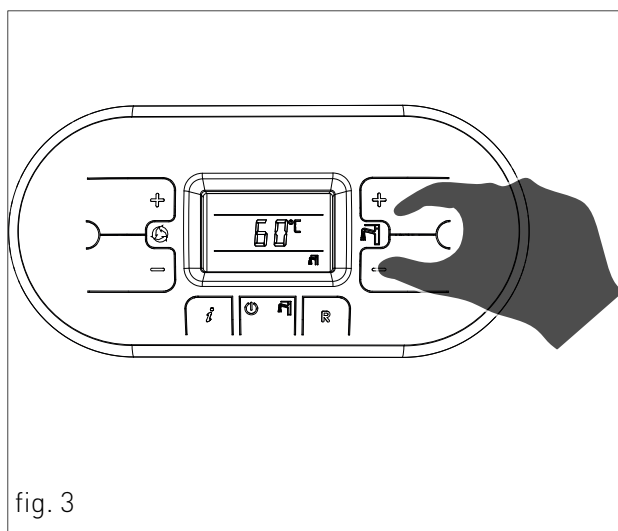
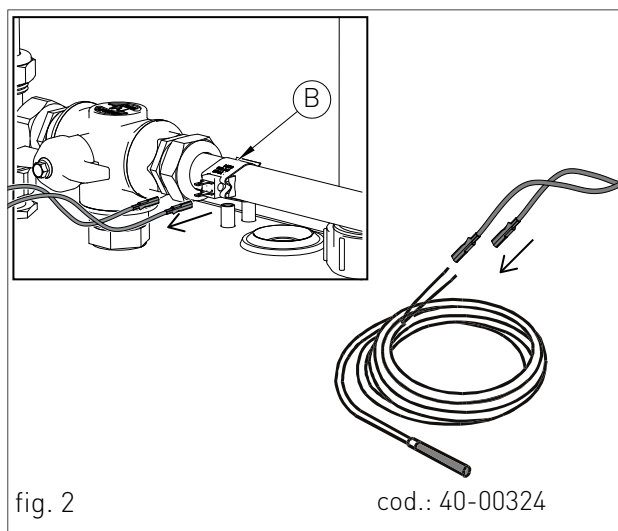
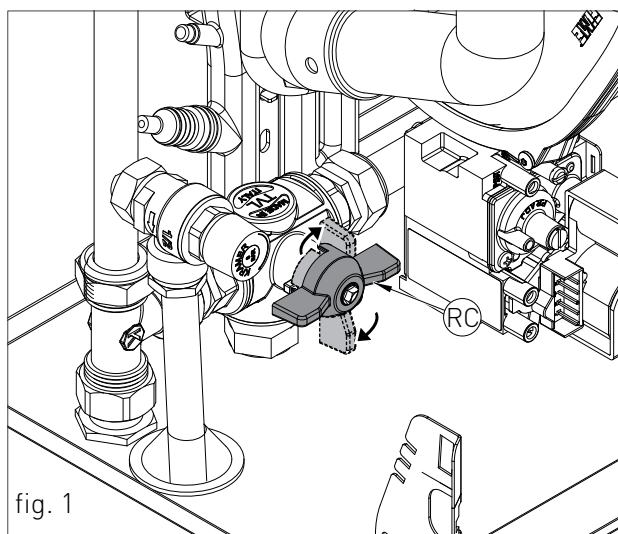
fig. 3

1.1.11. D.H.W. PRODUCTION THRU A REMOTE TANK

The water heater can also actually feed a remote tank meant for the D.H.W. (domestic hot water) storage. The pump integrated within the water heater, designed ex-factory for the recirculation loop, can load the external tank. This leads to a larger D.H.W. production to satisfy multiple draws from the taps.

To activate this function, please proceed as follows:

- › Turn the three-way valve to the “recirculation” position, as shown in Figure 1 as ‘RC’.
- › Arrange the hydraulic connections as per the scheme ‘D.H.W. PRODUCTION THRU A REMOTE TANK’, as per chapter ‘HYDRAULIC BOARD’.
- › Disconnect the two faston of the recirculation probe (see B-fig. 2), and connect them onto the optional probe meant for the storage (part number: 40-00324, see fig. 2). Insert this latter probe into the sensor-holder of the storage tank.
- › Enter the menu parameters and set the value of the parameter P02 to ‘1’ = STORAGE TANKLESS (see chapters ‘DIGITECH CS PARAMETERS TABLE’ and ‘ACCESSING AND PROGRAMMING THE PARAMETERS’);
- › Set the temperature setpoint of the D.H.W. tank by pressing **+** and **-** the sanitary  (fig. 3).



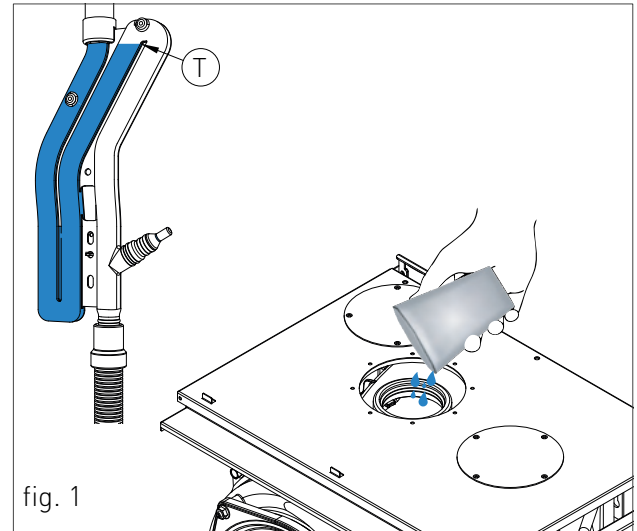
1. INSTALLATION

1.1.12. FILLING THE CONDENSATE COLLECTION SIPHON

Before starting the water heater you have to fill the condensate collection siphon in order to avoid flue reflux through the siphon.

Fill the condensate collection siphon as follows (see fig. 1):

- > With a glass pour the water in the heat exchanger's flue exhaust duct outlet (see fig. 1), up to fill the condensate trap to the highest point "T" (fig. 1);
- > Connect the dedicated flexible condensate draining tube to a waste disposal system. The condensate can be drained directly in the sewerage system by inserting an easily serviceable siphon.



1.1.13. FROST PROTECTION

The water heater is protected against freezing thanks to the P.C.B. configuration with functions that start the burner and heat the concerned parts when their temperature goes below the minimum pre-set values, protecting the water heater up to an external temperature of -10°C.

The water heater starts when the hot water temperature goes below 5 °C, automatically starting the burner until the water reaches the temperature of 15 °C.

The system starts even if on the display appears "OFF", as long as the water heater is connected to the power (230 V) and gas supply.

For long periods of standby, please empty the water heater.

If the temperature goes below -10 °C please insert a frost protection kit (cod. 82259LP).

1. INSTALLATION

1.1.14. GAS CONNECTION



DANGER

In order to connect the water heater gas connector to the supply pipe, use a stop seal of an appropriate size and material. The use of hemp, teflon tape or similar materials is strictly forbidden.



WARNING

That the water heater is intended exclusively to be installed on a gas supply with a meter with gas pressure regulator, where applicable.

BEFORE PERFORMING THE GAS CONNECTION, MAKE SURE THAT:

- › the gas supply line complies with the standards and regulations in force;
- › the piping section suits the requested capacity and its length;
- › the piping is equipped with all safety and control devices required by the standards in force;
- › the internal and external seals of the gas inlet system are checked;
- › the water heater is suitable for use with the available type of gas by checking the water heater data plate (placed on the inner side of the front casing. If they do not match, please take the necessary measures to adapt the water heater to another type of gas (see chapter GAS CONVERSION);
- › the gas supply pressure falls within the values indicated on the data plate.

1.1.15. ELECTRICAL CONNECTION



DANGER

The water heater is electrically safe only if it is properly connected to an efficient earthing system, performed in compliance with the safety standards in force. Check this essential safety requirement is strictly recommended. If in doubt, request an accurate check of the electrical system performed by qualified staff, as the manufacturer is not responsible for any damages caused by lack of earthing system.

- › Make sure that the electrical systems is suitable for the maximum power absorbed by the water heater, value indicated on the data plate.
- › make sure that the cables section is appropriate for the maximum power absorbed by the water heater and that it is however not lower than 1 mm².
- › The equipment works with alternating current of 230 V and 50 Hz. The electrical connection must be performed using an all-pole switch with an opening of at least 3 millimetres between contacts placed upstream from the device.



WARNING

Make sure that the live and neutral cables connection is performed in compliance with the wiring diagram (see chapter POWER SUPPLY).



WARNING

It is strictly forbidden the use of adaptors, multiple plugs and/or extensions for the general power supply of the water heater from the electrical network.

1.1.16. POWER SUPPLY

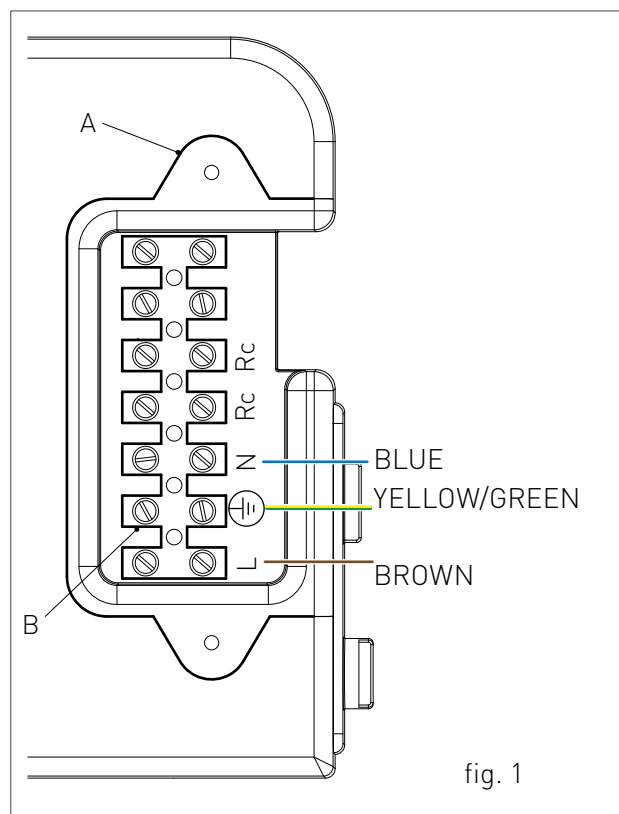
To power the water heater, connect the electrical cables to the terminal block inside the control panel as follows:

**DANGER**

Cut off the voltage from the main switch.

- > remove the water heater front casing (refer to chapter ACCESSING THE WATER HEATER).
- > loosen the two screws and remove the plate "A" (see fig. 1).
- > after removing the plate, connect the electrical cables to terminal block "B" (see fig. 1):
 - the yellow/green cable to the terminal marked with grounding symbol \oplus .
 - the blue cable to the terminal marked with "N".
 - the brown cable to the terminal marked with "L".

After performing these operations, remount plate "A" and the front casing.



1. INSTALLATION

1.1.17. OPTIONAL ELECTRICAL CONNECTIONS

The cables should be inserted inside the boiler using the fairleads 'P1' and 'P2' placed on the hydraulic connections bottom plate (see fig. 1). Make a hole on the fairlead, smaller than the cable diameter, to make sure that the air cannot pass through.

To wire the optional items below:

(TP) DOMESTIC HOT WATER PRE-HEATING DEACTIVATION TIMER

operate on the terminal block placed inside the control panel as follows:



DANGER

Cut off the voltage from the main switch.

- > remove the water heater front casing (see chapter ACCESSING THE WATER HEATER); unscrew the screws and remove plate "A" (see fig. 2).
- > After removing the plate, connect the electrical cables to terminal block "B" (see fig. 2);
- > After performing these operations, remount plate "A" and the front casing.

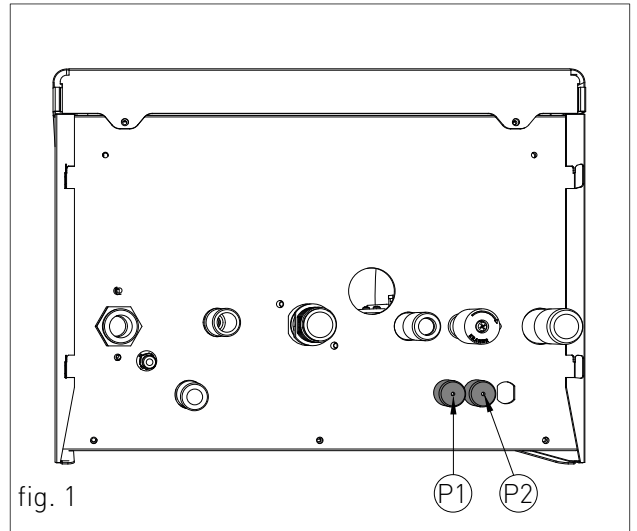


fig. 1

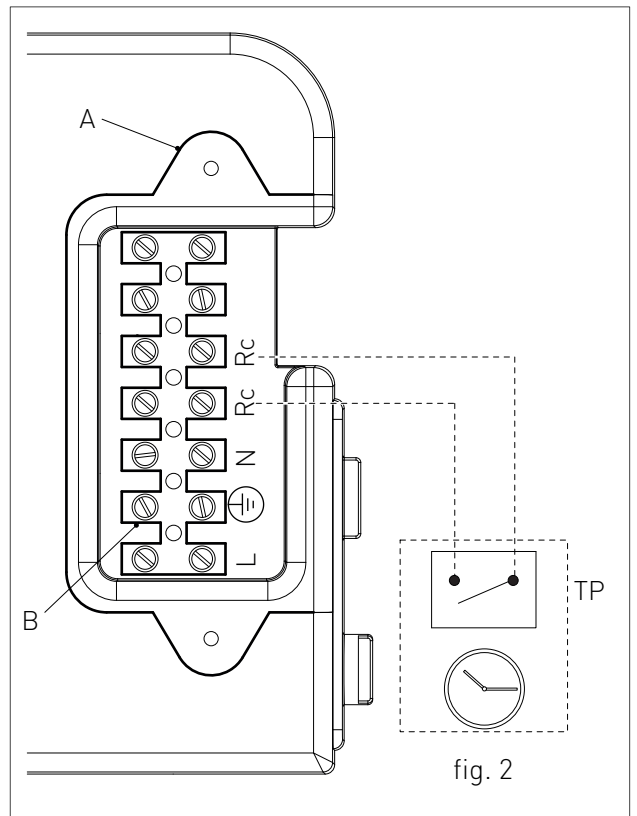


fig. 2

1. INSTALLATION

To wire the optional items below:



DANGER

Cut off the voltage from the main switch.

(CR) REMOTE CONTROL OPEN THERM

(KSI) INTEGRATED SOLAR KIT CODE 65-00915

(SIR) REMOTE INLET PROBE (SEE SENSOR ENABLING AT PARAMETER P29)

- › remove the water heater front casing (refer to chapter ACCESSING THE WATER HEATER).
- › remove the control panel back plate (see chapter ACCESSING THE P.C.B.).
- › after removing the back plate, connect the items below to the P.C.B. (see fig. 3).

operate on the P.C.B. placed inside the control panel as follows:

After performing these operations, remount the crankcase and the front casing.

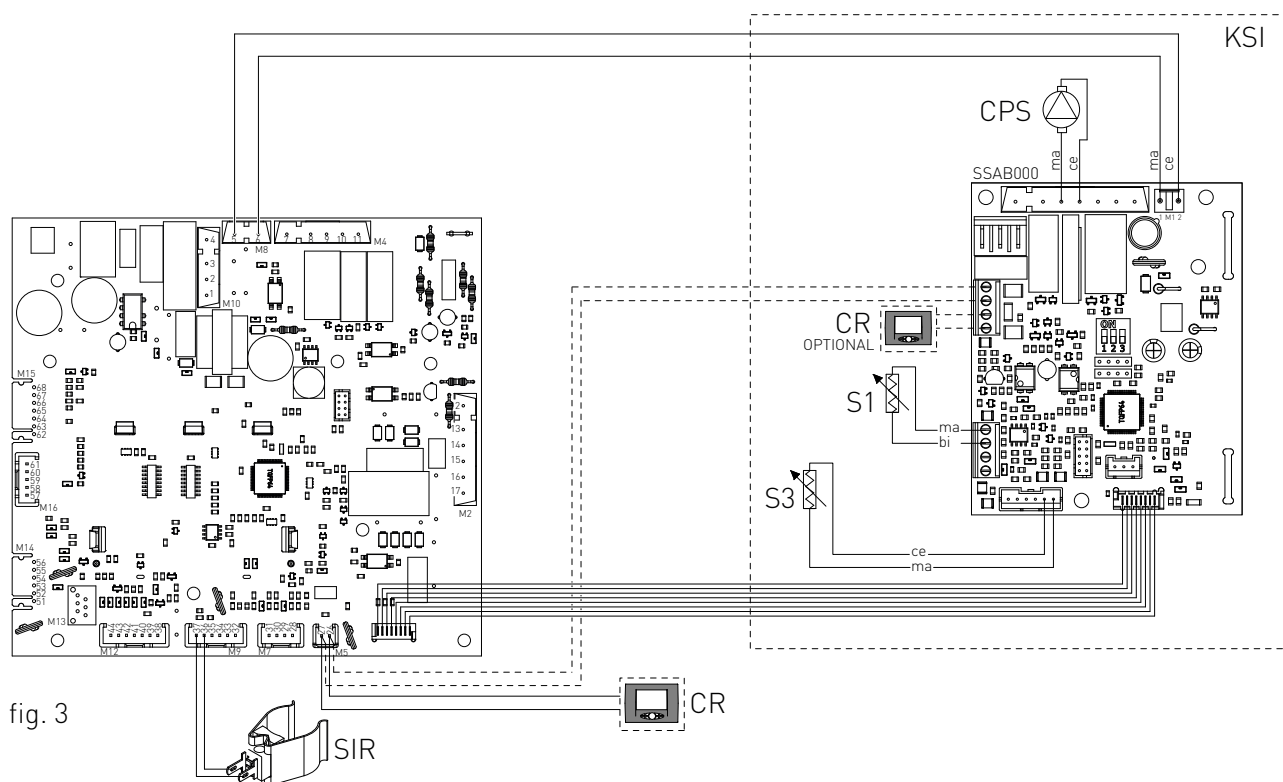


fig. 3

- CPS: SOLARE PANEL PUMP
- S1: SOLAR PANEL SENSOR
- S3: LOWER SOLAR STORAGE TANK SENSOR
- MA: BROWN
- CE: BLUE
- BI: WHITE

1. INSTALLATION

1.1.18. FUME EXHAUST FITTINGS



WARNING

In order to ensure proper operation and efficiency of the device you have to connect the water heater fume exhaust fitting to the fume exhaust duct using appropriate polypropylene flue fittings for condensing water heaters.



WARNING

You cannot use traditional flue fittings for the discharge ducts of the condensing water heaters, nor vice versa.



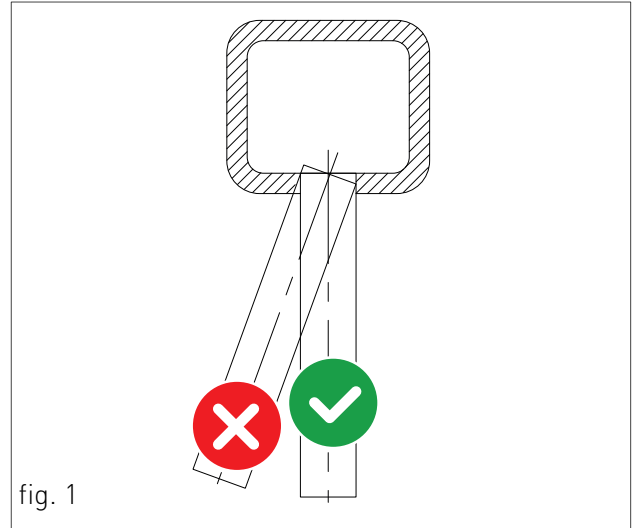
WARNING

For fumes exhaust and condensate collection, please follow the technical standards in force.

For all discharge ducts, with regard to the fumes path, you should provide an uphill slope (outwards) so as to favour the reflux of the condensate towards the combustion chamber, suitably realized to collect and drain acid condensate.

- › For all air suction ducts, with regard to the air path, you should provide an uphill slope (towards the water heater) so as to avoid the protrusion inside the duct of rain water, dust or foreign objects.
- › In case of horizontal co-axial system installation, correctly place the horizontal co-axial terminal suitably realized to respect the slopes inside the fumes duct and to protect the air suction duct from adverse weather conditions.
- › In order to discharge the fumes through a fumes exhaust duct carefully follow the technical standards in force.
- › Make sure that the discharge tube does not protrude inside the fumes exhaust duct, stop before it reaches the inner surface of the latter.

- › The discharge duct must be perpendicular with the opposite internal wall of the chimney or of the fumes exhaust duct (fig. 1).

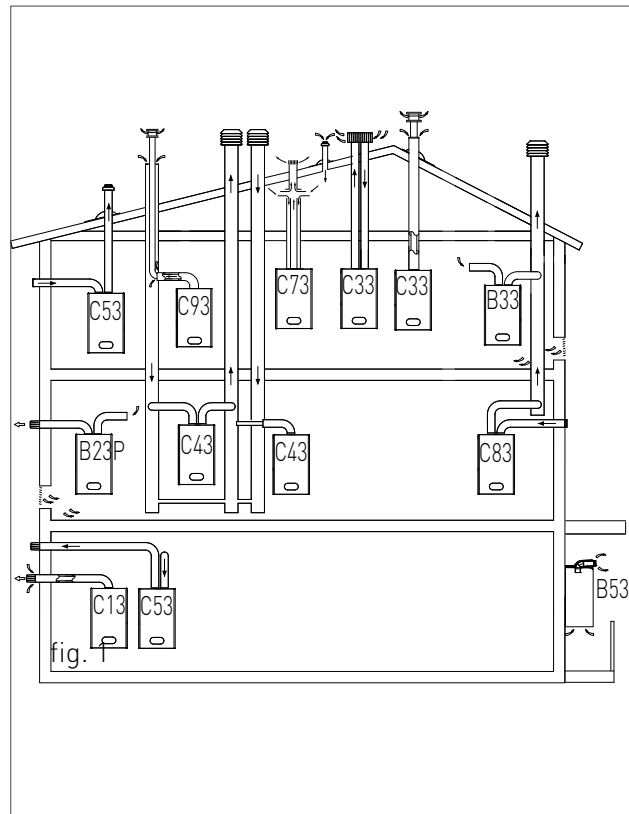


1.1.19. INSTALLATION MODES

For this type of water heater, the following flue exhaust configurations are available: B23, B23P, B33, B53, C13, C33, C43, C53, C63, C73, C83 e C93 (see Fig. 1).

- › B23- Indoor air intake and outdoor flue exhaust.
- › B23P- Indoor air intake and outdoor flue exhaust, with exhaust system operating under pressure.
- › B33- Indoor air intake and flue exhaust duct.
- › B53- Indoor air intake and flue exhaust through own fumes exhaust duct.
- › C13- Wall concentric flue exhaust. The pipes can be split but the outputs must be concentric or close enough to each other to undertake similar wind conditions (within 50 cm).
- › C33- Roof concentric flue exhaust. Outputs as for C13.
- › C43- Flue exhaust and air intake in separated common flue ducts, subjected to similar wind conditions. **The C4 water heaters with their connecting ducts are suitable for connection to a natural draught chimney only.**
- › C53- Roof or wall separated flue exhaust and air intake ducts, in areas with different pressures. Air intake and flue exhaust should not be placed on opposite walls.
- › C63- Flue exhaust and air intake ducts made with pipes commercialized and certificated separately.
- › C73- Separate flue exhaust and air intake in the respective air intake and flue outlet ducts. The flue exhaust outlet are above the roof, while the air intakes stand in the ventilated garret, where a draught diverter also stands.

- › C83- Flue exhaust in single or common flue exhaust duct and outdoor air intake.
- › C93- Flue exhaust through an intubated duct to a vertical flue terminal. The technical compartment in which the exhaust is housed, also acts, through the gap that is created, as a duct for the intake of the combustion air.



EXHAUST OF COMBUSTION PRODUCTS FOR C63-TYPE DEVICES.

Each flue system has a resistance factor that corresponds to a certain pipe length (of the same diameter) expressed in metres. These data are provided by the flue system distributor. Each water heater has a maximum allowed resistance factor, expressed in Pascal, corresponding to the maximum pipe length with any type of kit. For this water heater, the maximum allowed resistance factor of the ducts that must not be exceeded is indicated in the "TECHINICAL DATA" chapter. All this information allow to perform the necessary calculations to check the possibility of installing various flue system configurations.

1. INSTALLATION

The ducts must be certified for this specific use and for a temperature higher than 100 °C.

The maximum allowable flue gas blowback rate is 10% in windy conditions. Terminals for combustion air supply and evacuation of combustion products must not be installed on opposite walls of the building. The appliance cannot be connected to a common exhaust duct (i.e. more than 1 appliance on a common exhaust duct) operating under positive pressure conditions.

EXHAUST OF COMBUSTION PRODUCTS FOR B-TYPE DEVICES

Gas water heaters, provided with connection for flue exhaust pipe, must be directly connected to efficient chimneys or flue exhaust ducts: only if these are missing the combustion products can be exhausted outside directly through the water heater itself.

The connection to the chimney or to the fume exhaust ducts must respect the following requirements:

- Be sealed and made of materials suitable to resist normal mechanical stress, heat, the action of combustion products and any condensate forming;
- have no more than three changes in direction, including the chimney and/or fume exhaust duct inlet connection, made with internal angles greater than 90°. The changes in direction must be made only by using curved elements;
- have the axis of the inlet end perpendicular to the internal wall opposite to the chimney or fume exhaust duct;
- have, along its entire length, a section equal to or greater than that of the connection of the device discharge pipe;
- have no shut-off devices (shutters).

- for direct outdoor discharge there must be no more than two changes in direction.

LOCATIONS VENTING FOR B-TYPE DEVICES

The locations in which the gas water heater are installed gas devices must be vented so as to ensure the amount of air necessary for a regular combustion and for location ventilation. The natural air intake must take place directly through:

- permanent openings on the external walls of the location;
- single or collective, ramified ventilation ducts.

The openings on the external walls of the location must respect the following requirements:

- have a net overall free passage section of at least 6 cm² for every kW of heat capacity installed with a minimum of 100 cm²;
- they must be made so as to make sure that the opening inlets are not obstructed (neither indoor nor outdoor);
- they must be protected with grids, metal meshes, etc. so as to keep the useful section mentioned above.
- they must be placed at a height next to the floor level such as to allow proper operation of the combustion products discharge systems; if such position can not be obtained, please increase by at least 50% the section of the vents.

1.1.20. TYPE OF FLUE SYSTEM

KIT K - HORIZONTAL CONCENTRIC FLUE KIT Ø60/100 POLYPROPYLENE INNER PIPE ADJUSTABLE AT 360°.

It allows the flue exhaust and the air intake from an external wall.

Suitable for condensing water heaters only.

It allows the combustion gas exhaust and the combustion air intake through concentric pipes, the external one for air intake, the internal one for flue exhaust.

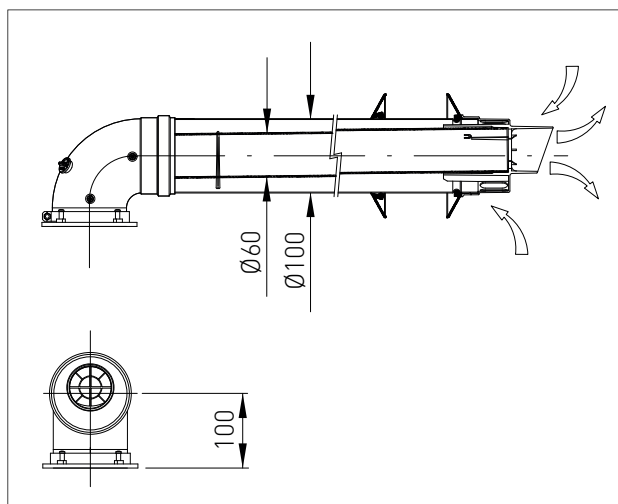
PLEASE SEE THE MAXIMUM EXHAUST LENGTH IN THE TABLE IN CHAPTER "TECHNICAL DATA".

The maximum exhaust length (or linear length) can be calculated summing the length of the linear pipe and the equivalent length of each flue bend additional to the first one.

For the further addition of a bend, the linear length must be updated according to the indications below:

concentric flue bend Ø60/100 at 90° = 1 m

concentric flue bend Ø60/100 at 45° = 0.6 m



1. INSTALLATION

KIT H - HORIZONTAL TWIN PIPE FLUE KIT Ø80, IN POLYPROPYLENE, ADJUSTABLE AT 360°.

The twin pipe system allows the flue exhaust through the flue exhaust pipe and the air intake from outside.

Suitable for condensing water heaters only.

It allows the combustion gas exhaust and the combustion air intake through two separated pipes.

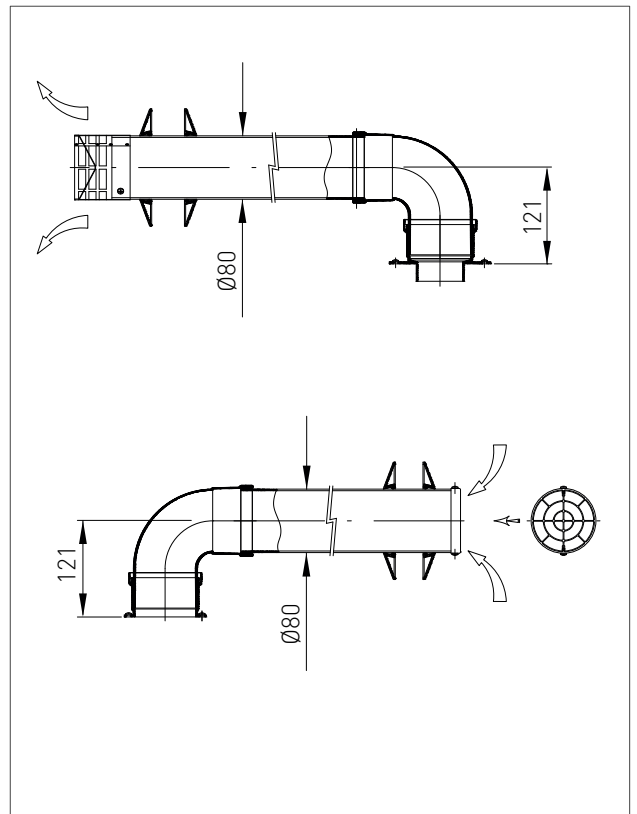
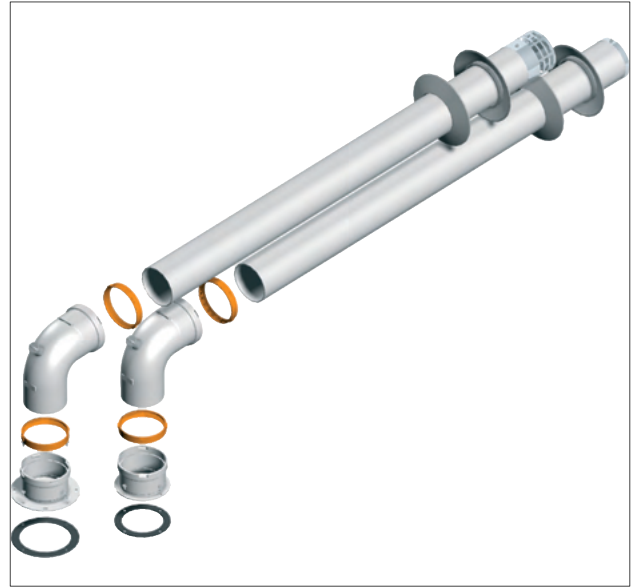
PLEASE SEE THE MAXIMUM EXHAUST AND INTAKE LENGTH IN THE TABLE IN CHAPTER "TECHNICAL DATA".

The maximum exhaust length (or linear length) can be calculated summing the length of the linear pipe and the equivalent length of each flue bend additional to the first one.

For the further addition of a bend, the linear length must be updated according to the indications below:

Flue bend Ø80 at 90°= 1.5 m

Flue bend Ø80 at 45°= 0.8 m



**KIT V - VERTICAL CONCENTRIC FLUE KIT Ø60/100
POLYPROPYLENE INNER PIPE.**

It allows the flue exhaust and the air intake directly the from roof.

Suitable for condensing water heaters only.

It allows the combustion gas exhaust and the combustion air intake through concentric pipes, the external one for air intake, the plastic internal one for flue exhaust.

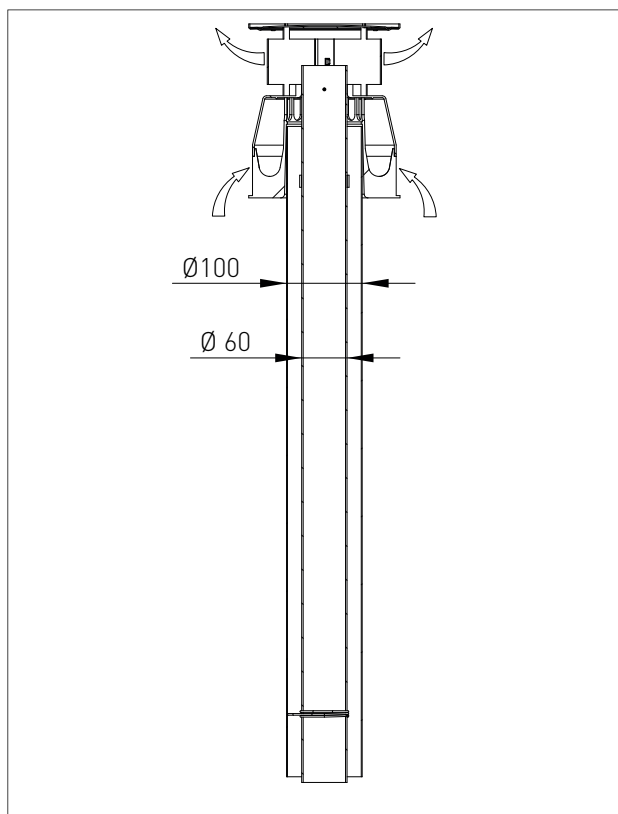
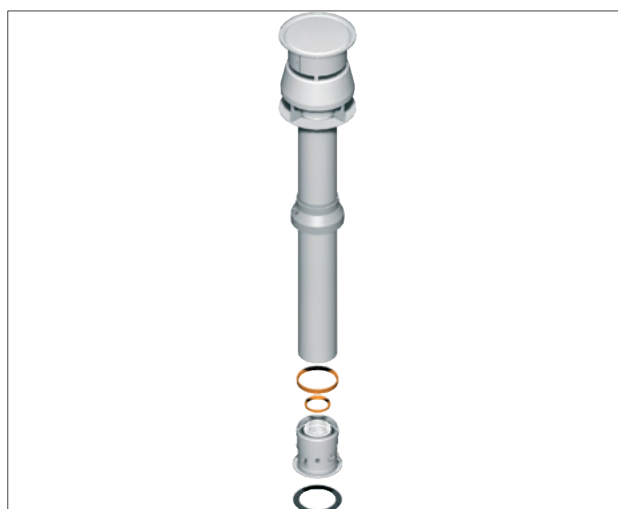
PLEASE SEE THE MAXIMUM EXHAUST LENGTH IN THE TABLE IN CHAPTER "TECHNICAL DATA".

The maximum exhaust length (or linear length) can be calculated summing the length of the linear pipe and the equivalent length of each flue bend additional to the first one.

For the further addition of a bend, the linear length must be updated according to the indications below:

concentric flue bend Ø60/100 at 90° = 1 m

concentric flue bend Ø60/100 at 45° = 0.6 m



2. SERVICE CENTER SECTION

All operations described below relative to first start-up, maintenance and replacement should be performed only by qualified personnel

2.1. COMMISSIONING


2.1.1. PRELIMINARY OPERATIONS FOR COMMISSIONING

The commissioning operations consist in checking the correct installation, setting and operation of the device. Proceed as follows:

- › check the inner system sealing in accordance with the indications provided by standard and regulations in force;
- › check if the gas used is suitable for the water heater;
- › check if the gas capacity and relative pressures comply with those on the data plate;
- › check the intervention of the safety device in case of lack of gas;
- › make sure that the device supply voltage corresponds with that on the data plate (230 V – 50 Hz) and that the wiring is correct;
- › make sure that the grounding system works properly;
- › make sure that the combustion air supply and fumes and condensate discharge take place properly in compliance with the Local and National Laws and Standards in force;
- › make sure that the flue kit and its connection to the flue exhaust duct comply with the requirements of the Local and National Laws and Standards;
- › make sure that the heating system shut-off valves are open;
- › make sure that there is no intake of gaseous products within the system;
- › make sure that there are no flammable liquids or materials near the device;
- › open the water heater gas tap and make sure that there are no gas leaks upstream from the device (the burner gas connection must be checked while the water heater is running);
- › in case of new installation of the gas supply network, the air inside the pipes may block the device at its commissioning. You might have to repeat the start-up procedure to purge all the air inside the pipe.

2.1.2. WATER HEATER COMMISSIONING

Proceed with water heater commissioning as follows:

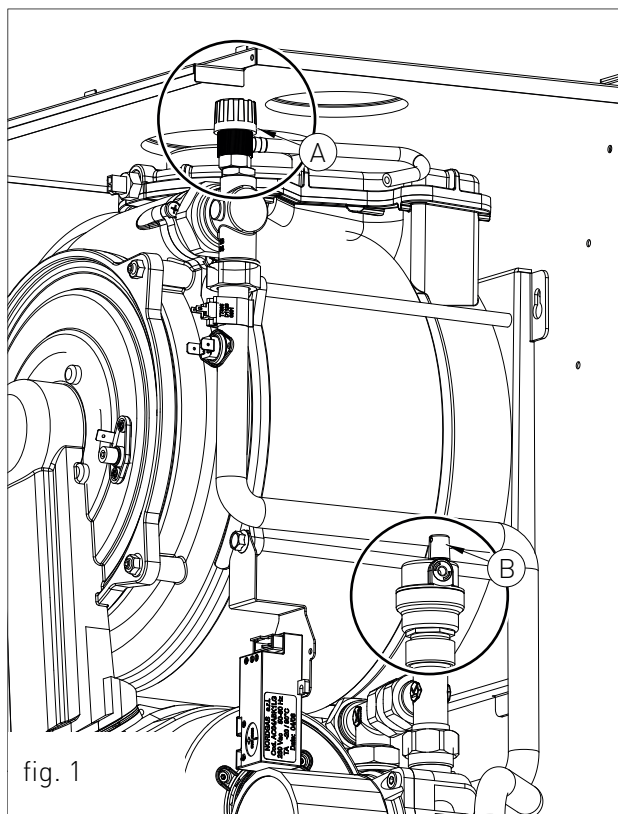
- › power the water heater;
- › open the gas tap;
- › ignite the unit by pressing the button ;
- › open the D.H.W. taps at the maximum flow rate;
- › the unit is ignited.



WARNING

Please make sure all the air is flushed-off by means of the drain valve located within the unit (A - figure 1) and thru the air separator plug (B - figure 1).

- › If the flame is missing the board will repeat the start-up operations after post-ventilation (20 seconds).
- › You might have to repeat the start-up operation several times to release all air inside the gas tube. Before repeating the operation, wait at least 5 seconds from the last start-up attempt and unlock the water heater from "E01" error code by pressing the Reset  key.



2.1.3. CO₂ VALUE CHECK AND CALIBRATION



WARNING

The CO₂ value should be checked with the casing assembled, while the gas valve should be adjusted with the casing open.

To check and calibrate the CO₂ value to minimum and maximum power proceed as follows:

FOR MINIMUM POWER

- › Access parameter 'P06' following the procedure described in chapter "ACCESSING AND PROGRAMMING THE PARAMETERS" and stay in edit mode until the calibration is completed (the maximum time before forced exiting the edit mode is 7 minutes).
- › Open several D.H.W. taps at the highest flow rate.
- › Insert the fumes analyser probe in the suitable 'PF' fumes inlet (fig. 1), then make sure that the CO₂ value complies with the requirements indicated in chapter "Technical data", otherwise unscrew the protection screw 'A' (fig. 2) and adjust using a 4 Allen wrench the screw '2' (fig. 2) of the Off-Set adjuster. To increase the CO₂ value, turn the screw clockwise and vice-versa if you want to decrease it.
- › Once completed the adjustment, tighten the protection screw 'A' (fig. 2) on the Off-Set adjuster.
- › Exit parameter 'P06' following the procedure described in chapter "ACCESSING AND PROGRAMMING THE PARAMETERS".

FOR MAXIMUM POWER

- › Open several D.H.W. taps at the highest flow rate.

- › Access parameter 'P07' following the procedure described in chapter "ACCESSING AND PROGRAMMING THE PARAMETERS" and stay in edit mode until the calibration is completed (the maximum time before forced exiting the edit mode is 7 minutes).
- › Then make sure that the CO₂ value complies with the indications in "Technical data", otherwise adjust using screw '1' (fig. 2) of the gas flow adjuster. To increase the CO₂ value, turn the screw anti-clockwise and vice-versa if you want to decrease it.
- › After each adjustment variation on screw '1' (fig. 2) of the gas flow adjuster you have to wait for the water heater to stabilize itself to the set value (about 30 seconds).
- › Enter again the parameter P06 and make sure that the CO₂ value did not change to minimum, if changed repeat the calibration described in the previous paragraph.

fig. 1

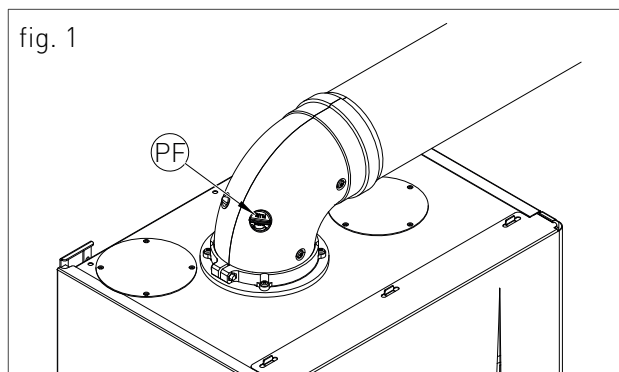
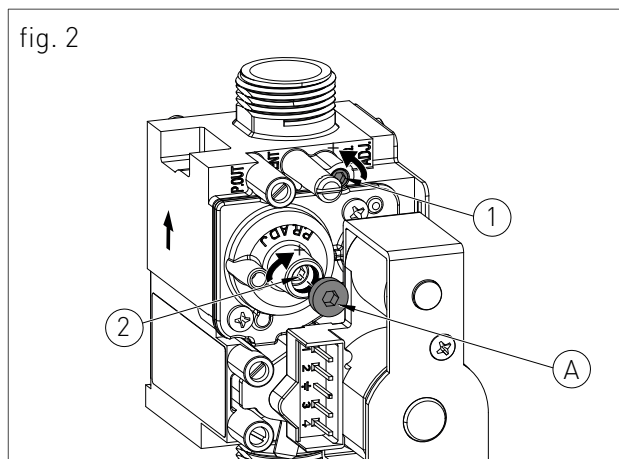



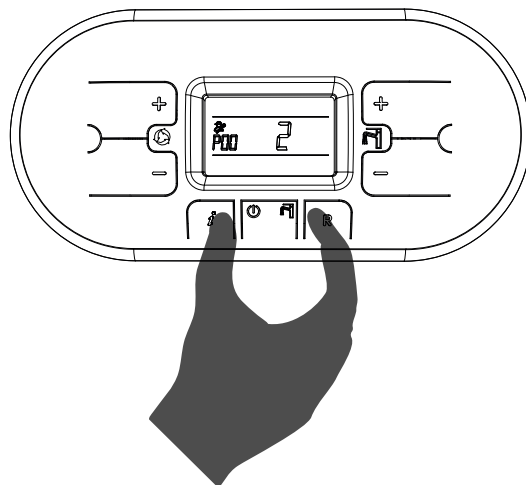
fig. 2




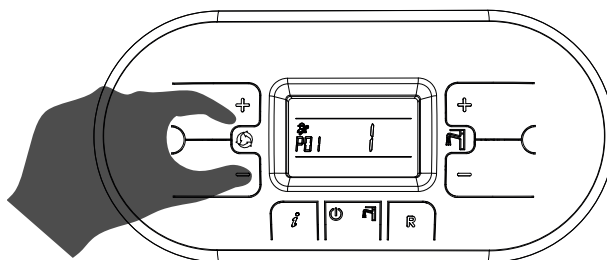
2.1.4. ACCESSING AND PROGRAMMING THE PARAMETERS

To access the parameters menu and adjust their values, follow the procedure below:

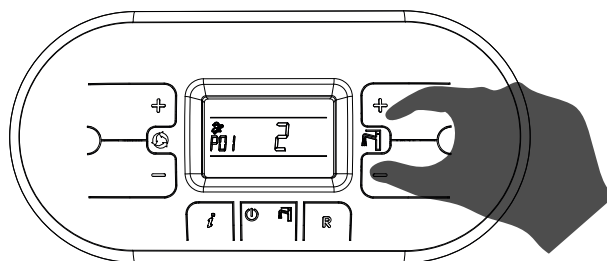
1. Hold the **i** and **R** buttons simultaneously until the symbol  appears on the display with the message 'P00', and release the **i** and **R** buttons.



2. Use the **+** and **-** buttons of the recirculation  to select the parameter to be edited.

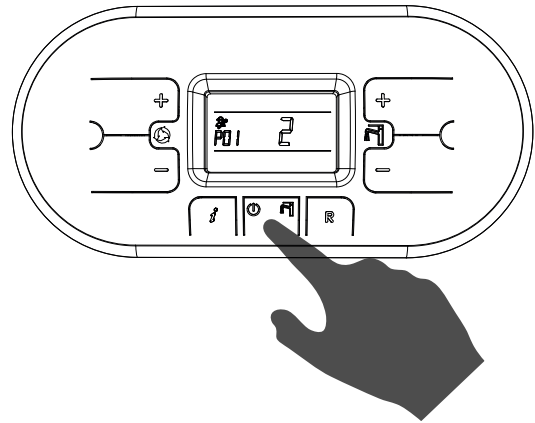





3. Use the **+** and **-** buttons of the D.H.W. circuit  to change the value of the parameter.

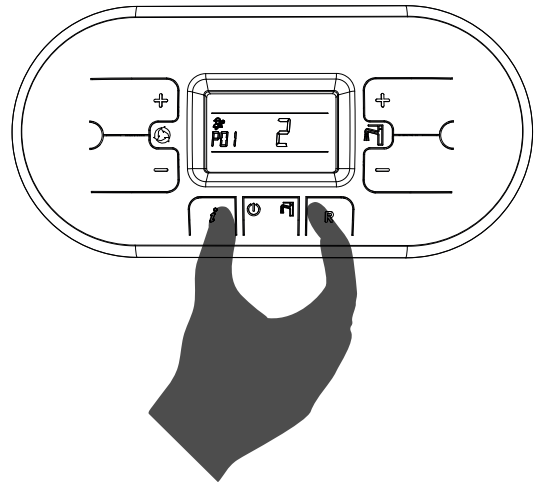


2. FIRST START-UP

4. Press the  button to confirm the action and wait for the display to stop blinking, indication of the fact that the adjustment was implemented.



5. To exit the parameters menu, hold at the same time the  and  buttons and wait for the symbol  to appear on the display.



2. FIRST START-UP

2.1.5. PCB PARAMETERS TABLE

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P00	SELECTION OF THE FIRE RATING	0 - 3	0 = 24 KW
			1 = 28 KW
			2 = 34 KW
			3 = 50 KW
P01	GAS TYPE SELECTION ATTENTION: READ THE INSTRUCTION IN CHAPTER 'GAS CONVERSION' BEFORE CHANGING THIS PARAMETER VALUE.	0 - 1	0 = NATURAL GAS
			1 = LPG
P02	WATER HEATER TYPE SELECTION	0 - 3	0 = INSTANTANEOUS
			1 = REMOTE STORAGE TANK
			2 = INTEGRATED STORAGE TANK
			3 = STORAGE SOLAR / PLUS
P03	PUMP OVERRUN TIMING (RECIRCULATION MODE NON ACTIVE) THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE PUMP OPERATION DURATION ON THE DOMESTIC CIRCUIT, AFTER THE TAP IS CLOSED.	0 - 90	VALUE EXPRESSED IN MULTIPLES OF 5 SECONDS (PRESET AT 12 X 5 = 60 SECONDS)
P04	PUMP OVERRUN TIMING (RECIRCULATION MODE ACTIVE) THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE PUMP OPERATION DURATION ON THE DOMESTIC CIRCUIT, WHEN THE RECIRCULATION MODE IS ACTIVE, AFTER THE TAP IS CLOSED.	0 - 90	VALUE EXPRESSED IN MULTIPLES OF 5 SECONDS (PRESET AT 8 X 5 = 40 SECONDS)

2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P05	RECIRCULATION DIFFERENTIAL ACTIVATION THROUGH THIS PARAMETER, IT IS POSSIBLE TO ANTICIPATE THE RECIRCULATION FUNCTION, COMPARED TO THE RECIRCULATION SET POINT PRESET BY THE END-USER, BY MODIFYING THE TEMPERATURE DIFFERENCE.	5 - 15	VALUE EXPRESSED IN °C
P06	FAN MINIMUM SPEED ADJUSTMENT THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE FAN MINIMUM SPEED CORRESPONDING TO THE MINIMUM POWER OF THE BURNER. THE VALUE IS PRE-SET BASED ON THE SET POWER (SEE PARAMETER P00) AND ON THE GAS TYPE (SEE PARAMETER P01).	43 - 255	VALUE EXPRESSED IN HERTZ (1HZ = 30 RPM)
P07	FAN MAXIMUM SPEED ADJUSTMENT THROUGH THIS PARAMETER , IT IS POSSIBLE TO SET THE MAXIMUM FAN SPEED CORRESPONDING TO THE MAXIMUM POWER OF THE BURNER. THE VALUE IS PRE-SET BASED ON THE SET POWER (SEE PARAMETER P00) AND ON THE GAS TYPE (SEE PARAMETER P01).	43 - 255	VALUE EXPRESSED IN HERTZ (1HZ = 30 RPM)
P08	STARTING STEP ADJUSTMENT THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE FAN SPEED DURING THE START-UP. THE VALUE IS PRE-SET BASED ON THE SET POWER (SEE PARAMETER P00) AND ON THE GAS TYPE (SEE PARAMETER P01).	43 - 255	VALUE EXPRESSED IN HERTZ (1HZ = 30 RPM)
P09	D.H.W RUN-DOWN THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE TIME NECESSARY FOR THE WATER HEATER TO REACH THE MINIMUM SET POWER, AFTER THE BURNER START-UP.	02 - 15	VALUE EXPRESSED IN SECONDS (PRE-SET AT 8 SECONDS)
P10	TYPE OF UNIT SELECTION	0 - 1	0 = °C - l/min 1 = °F - gpm

2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P11	EXECUTION PERIOD OF THE OVERHEATING FUNCTION THROUGH THIS PARAMETER, IT IS POSSIBLE TO ENABLE AND SET THE DURATION OF THE EXECUTION PERIOD OF THE OVERHEATING FUNCTION, DURING WHICH THE CIRCULATING PUMP ACTIVATES BY DISSIPATING THE HEAT IN EXCESS.	0 - 60	VALUE EXPRESSED IN SECONDS (PRE-SET AT 10 SECONDS)
P12	ACTIVATION PERIOD OF THE OVERHEATING FUNCTION THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE TIME INTERVAL FROM THE END OF THE POST-CIRCULATION TO THE ACTIVATION OF THE OVERHEATING FUNCTION.	0 - 20	VALUE EXPRESSED IN MINUTES (PRE-SET AT 10 MINUTES)
P13	MAXIMUM DOMESTIC SETPOINT THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE USER-ADJUSTABLE MAXIMUM DOMESTIC TEMPERATURE.	50 - 85	VALUE EXPRESSED IN °C (PRE-SET AT 60°C)
P14	MINIMUM DOMESTIC SETPOINT THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE USER-ADJUSTABLE MINIMUM DOMESTIC TEMPERATURE.	35 - 45	VALUE EXPRESSED IN °C (PRE-SET AT 40°C)
P15	LEGIONELLA-PREVENTION FUNCTION (FOR STORAGE WATER HEATER ONLY) THROUGH THIS PARAMETER, IT IS POSSIBLE TO ACTIVATE/ DEACTIVATE THE STORAGE TANK "LEGIONELLA-PREVENTION" HEAT TREATMENT. EVERY 7 DAYS THE WATER TEMPERATURE INSIDE THE TANK IS RAISED OVER 60 °C THUS GENERATING A BURNING HAZARD. KEEP UNDER CONTROL SUCH D.H.W. TREATMENT (AND INFORM ALL USERS) TO AVOID UNFORSEEABLE DAMAGES TO PERSONS, ANIMALS AND PROPERTY. A THERMOSTATIC VALVE SHOULD BE INSTALLED AT THE D.H.W. OUTLET TO AVOID ANY BURNS.	0 - 1	0 = DISABLED 1 = ENABLED (PRE-SET BY DEFAULT ON STORAGE WATER HEATERS ONLY)
P16	DIFFERENTIAL OF THE STORAGE TANK CYCLE ACTIVATION THROUGH THIS PARAMETER, IT IS POSSIBLE TO ANTICIPATE THE PRE-HEATING FUNCTION OF THE STORAGE TANK, COMPARED TO THE D.H.W SET POINT PRE-SET BY THE END-USER, BY MODIFYING THE TEMPERATURE DIFFERENCE.	1 - 20	VALUE EXPRESSED IN °C (PRE-SET AT 5°C)

2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P17	MINIMUM D.H.W FLOW RATE SETTING THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE MINIMUM D.H.W. FLOW RATE NECESSARY TO ACTIVATE THE WATER HEATER. THE VALUE IS PRE-SET BASED ON THE SET POWER (SEE PARAMETER P00).	20 - 68	VALUE EXPRESSED IN HERTZ 20 Hz = 1.5 l/min 28 Hz = 2 l/min 37 Hz = 2.5 l/min 45 Hz = 3 l/min 52 Hz = 3.5 l/min 59 Hz = 4 l/min 64 Hz = 4.5 l/min 68 Hz = 5 l/min
P18	ADDITIONAL POST-VENTILATION TIMING THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET A PERIOD OF OPERATION, ADDITIONAL TO THE 20 STANDARD SECONDS OF THE FAN, AFTER THE BURNER SHUTDOWN.	20 - 120	VALUE EXPRESSED IN SECONDS (PRE-SET AT 30 SECONDS)
P19	WATER HAMMER PREVENTION FUNCTION BY ENABLING THIS FUNCTION, THE D.H.W. CONTACT IS DELAYED FOR A TIME EQUAL TO THE ENTERED VALUE.	0 - 20	0 = DISABLED 1-20 = THE VALUE EXPRESSED IN SECONDS
P20	DESTINATION COUNTRY SELECTION BY MODIFYING THIS PARAMETER THE COMBUSTION CONTROL PARAMETERS WILL BE AUTOMATICALLY CONFIGURATED, ACCORDING TO THE VALUES FIXED IN THE DESTINATION COUNTRY OF THE PRODUCT.	0 - 1	0 = U.S.A. / CANADA 1 = DIFFERENT COUNTRY
P21	PUMP OPERATION IN WATER HEATER MODE THROUGH THIS PARAMETER, IT IS POSSIBLE TO ACTIVATE/DEACTIVATE THE CIRCULATING PUMP DURING THE NORMAL OPERATION OF THE WATER HEATER.	0 - 1	0 = DISABLED 1 = ENABLED
P22	ENABLING BUS INDUSTRIAL PILOTING 0 -10V THROUGH THIS PARAMETER, IT IS POSSIBLE TO ENABLE OR DISABLE THE BUS INDUSTRIAL INPUT 0-10V TO SET THE BURNER POWER OR THE HEATING FLOW TEMPERATURE THROUGH EXTERNAL BUS..	0 - 2	0 = DISABLED (SET BY DEFAULT) 1 = TEMPERATURE CONTROL MODE 2 = POWER CONTROL MODE

2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P23	MODBUS MODE	0 - 2	0 = ENABLED <hr/> 1 = ENABLED WITH SOME SETTINGS TO BE ADJUSTED FROM THE WATER HEATER CONTROL PANEL <hr/> 2 = DISABLED (SET BY DEFAULT)
P24	CONNECTION STATUS OF THE SOLAR AUXILIARY BOARD (FOR CASCADE WATER HEATERS) BY MEANS OF THIS PARAMETER, IT IS POSSIBLE TO ENABLE THE AUXILIARY BOARD FOR THE EXPANSION OF THE RESOURCES WHEN THE SOLAR AUXILIARY BOARD IS CONNECTED TO THE WATER HEATER BOARD AUTOMATICALLY, THE VALUE OF THIS PARAMETER BECOMES '1', BUT IF THE SOLAR AUXILIARY BOARD IS SUCCESSIVELY DISCONNECTED, THE DISPLAY OF THE CONTROL PANEL OF THE WATER HEATER WILL DISPLAY THE ERROR 'E86'. IN THIS CASE, IN ORDER TO DEACTIVATE THE ERROR 'E86', IT IS NECESSARY TO MANUALLY SET THE VALUE OF THE PARAMETER TO '0'.	0 - 1	0 = NOT INSTALLED <hr/> 1 = INSTALLED
P25	MODBUS COMMUNICATION BAUD RATE THROUGH THIS PARAMETER, IT IS POSSIBLE TO SELECT THE MODBUS COMMUNICATION BAUD RATE SUPPORTED BY THE SAME INTERFACE.	0 - 5	0 = 9600 <hr/> 1 = 1200 <hr/> 2 = 2400 <hr/> 3 = 4800 <hr/> 4 = 9600 <hr/> 5 = 19200
P26	MODBUS ADDRESS THROUGH THIS PARAMETER, IT IS POSSIBLE TO SET THE MODBUS ADDRESS IN CASE OF CASCADE SYSTEM INSTALLATION.	1 - 16	WATER HEATERS NUMBERING FOR MODBUS (PRE-SET AT 1)

2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P27	<p>SAFETY CHECK ENABLING FOR INSUFFICIENT CIRCULATION DURING IGNITION</p> <p>BY ACTIVATING THIS PARAMETER, THE CORRECT FUNCTIONING OF THE PUMP IS CHECKED AT EACH BURNER IGNITION. THIS CHECK ALLOWS TO PROTECT THE HEAT EXCHANGER AND OTHER PARTS FROM EXCESSIVE NON-DISSIPATED HEAT, IN CASE THE PUMP DOES NOT WORK PROPERLY.</p>	0 - 1	<p>0 = DISABLED</p> <hr/> <p>1 = ENABLED (SET BY DEFAULT)</p>
P28	<p>CIRCUIT SELECTION FOR LEGIONELLA-PREVENTION FUNCTION OPERATION (STORAGE)</p> <p>THROUGH THIS PARAMETER IT IS POSSIBLE TO SELECT THE CIRCUIT IN WHICH THE LEGIONELLA-PREVENTION FUNCTION OPERATES, WHEN THE VALUE OF PARAMETER P15 IS ENABLED.</p>	0 - 1	<p>0= LEGIONELLA-PREVENTION FUNCTION ACTIVE IN STORAGE MODE ONLY (SET BY DEFAULT)</p> <hr/> <p>1= LEGIONELLA-PREVENTION FUNCTION ACTIVE IN STORAGE AND RECIRCULATION MODE</p>
P29	<p>INLET PROBE ENABLING (OPTIONAL FOR SFK - 'SIR' - SEE CHAPTER «OPTIONAL ELECTRICAL CONNECTIONS») (SET BY DEFAULT FOR SFKA - STORAGE TANK OUTLET WATER SENSOR)</p> <p>THROUGH THIS PARAMETER IT IS POSSIBLE TO ENABLE THE OPERATION OF THE INLET PROBE TO STOP THE BURNER IN CASE THE D.H.W. INLET TEMPERATURE IS HIGHER OR EQUAL TO THE SET-POINT.</p>	0 - 1	<p>0 = DISABLED (SET BY DEFAULT)</p> <hr/> <p>1 = ENABLED</p>
P30	<p>SOLAR AUXILIARY BOARD ENABLING (FOR SOLAR SYSTEM MANAGEMENT WITH SINGLE WATER HEATER)</p>	0 - 1	<p>0 = DISABLED (SET BY DEFAULT)</p> <hr/> <p>1 = ENABLED</p>
P31	<p>ENABLING THE MIXING VALVE - STEPPER</p>	0 - 2	<p>0 = DISABLED</p> <hr/> <p>1 = ENABLED FOR SFK</p> <hr/> <p>2 = ENABLED FOR SFKA</p>
P32	<p>ENABLING / DISABLING ANTI-FREEZE PROTECTION</p>	0 - 1	<p>0 = ENABLED (DEFAULT IN SFK)</p> <hr/> <p>1 = DISABLED (DEFAULT IN SFKG)</p>
P50	<p>SOLAR PANEL PUMP ACTIVATION SET-POINT</p>	15 - 80	<p>VALUE EXPRESSED IN °C (PRE-SET AT 25°C)</p>
P51	<p>SOLAR PANEL MAXIMUM TEMPERATURE SET-POINT</p>	80 - 180	<p>VALUE EXPRESSED IN °C (PRE-SET AT 110°C)</p>

2.2. MAINTENANCE

2.2.6. GENERAL MAINTENANCE WARNINGS



DANGER

Before each components cleaning or replacement operation, ALWAYS cut off the POWER, WATER and GAS supply of the water heater.



WARNING

To ensure longer life and proper operation of the device, use only original spare parts during maintenance operations.



ATTENTION

To ensure the efficiency and safety of the device, the maintenance operations must be made on an annual basis. The operations described below, are essential to the validity of the standard Flexiheat warranty and must be performed by professionally qualified personnel

Please perform the following operations once a year:

- › check the sealing of the water components, and replace the gaskets, if necessary;
- › check that the wiring is made in compliance with the requirements in the water heater instruction manual;
- › check the wiring inside the control panel;
- › remove and clean the burner from oxidation;
- › check the integrity and the position of the sealed chamber sealing gasket;
- › check the primary exchanger and clean it, if necessary;
- › check the operation of the ignition and gas safety systems. If necessary, remove and clean

the flame detection and ignition electrodes from deposits paying attention to respect the distances with respect to the burner, when reassembling;

- › check the sealing of the gas components, and replace the gaskets, if necessary;
- › visually check the flame and the condition of the combustion chamber;



DANGER

› Verify that the concentration of CO in the flue gas does not exceed 400 ppm, otherwise an immediate verification and repair is required. If the situation cannot be resolved immediately, the appliance must be put out of operation.

- › if necessary, make sure that the combustion is suitably adjusted and if required proceed as indicated in section "CO₂ VALUE CHECK AND CALIBRATION";
- › periodically check the integrity of the flue system for safety and proper operation;
- › make sure that the permanent ventilation outlets are present, correctly sized and functioning, based on the installed devices. Respect the requirements provided by Local and National legislation;
- › check the proper operation of the condensate draining system, including the devices outside the water heater such as condensate collection devices installed along the path of the fume exhaust duct or neutralization devices for acid condensate; check that the liquid flow is not obstructed and that there are no combustion gas refluxes inside the system;
- › check D.H.W. flow rate and temperature.

2. MAINTENANCE

2.2.7. TECHNICAL DATA

Model	SFK 28	
CE certification	no.	0476CQ0134
Gas category		II2HYM3P
Flue system type	type	B23-B23p-B33-B53-C13-C33-C43-C53-C63-C73-C83-C93
Heat Input max (D.H.W.)	kW	28
Heat Input min (D.H.W.)	kW	3,70
Heat Input min LPG	kW	3,70
Heat Input max (D.H.W.) 20%H2NG	kW	26,00
Heat Input min (D.H.W.) 20%H2NG	kW	3,50
Nominal useful output P _n	kW	27,87
Minimum useful output P _m	kW	3,69
Maximum combustion efficiency	%	97,70%
Minimum combustion efficiency	%	98,20%
Efficiency at the nominale heat input	%	99,54%
Efficiency at the minimum heat input	%	99,85%
Flue efficiency losses with burner on (Heat Input max.)	%	2,30%
Flue efficiency losses with burner on (Heat Input min.)	%	1,80%
Flue temperature - Heat Input max.	°C	55
Flue temperature - Heat Input min.	°C	32
CO ₂ - Heat Input max. - G20	%	9,30 - 9,10%
CO ₂ - Heat Input min. - G20	%	9,00 - 8,80%
CO ₂ - Heat Input max. - G20 20%H2NG	%	8,4 - 8,0%
CO ₂ - Heat Input min. - G20 20%H2NG	%	8,0 - 7,6%
O ₂ - Heat Input max. - G20 20%H2NG	%	5,1 - 5,7%
O ₂ - Heat Input min. - G20 20%H2NG	%	5,7 - 6,6%
CO ₂ - Heat Input max. - G31	%	10,40 - 10,20%
CO ₂ - Heat Input min. - G31	%	9,95 - 9,85%
CO ₂ - Heat Input max. - G230	%	10,20 - 10,00%
CO ₂ - Heat Input min. - G230	%	9,90 - 9,70%
CO - Heat Input max.	ppm	72
CO - Heat Input min.	ppm	1
Fumes mass - Heat Input max.	g/s	11,02
Fumes mass - Heat Input min.	g/s	1,78
Weighted NO _x (0% O ₂) ppm	ppm	23
Weighted NO _x (0% O ₂) on GCV mg/kWh	mg/kWh	36
Domestic Hot Water (D.H.W.) circuit		
Temperature setting - D.H.W.	°C	35-60
Max. operating pressure - D.H.W.	bar	8
Min. operating pressure - D.H.W.	bar	0,5
D.H.W. flow rate - continuous flow - Δt 25°C	litres/min	16,45
D.H.W. flow rate - continuous flow - Δt 30°C	litres/min	13,71
D.H.W. flow rate - continuous flow - Δt 35°C	litres/min	11,75

Dimensions

Width	mm	410
Depth	mm	307
Height	mm	642
Gross weight	Kg	30,6

Hydraulic Connections

Cold water inlet	Ø	3/4"
D.H.W. outlet	Ø	3/4"
Gas	Ø	3/4"
D.H.W. Recirculation loop connection	Ø	3/4"

Flue systems

Fan - Max. available pressure	Pa	76
Fan - Min. available pressure	Pa	4
Max. Flue length Ø60/100 - Horiz. Conc.	m	6
Flue bend 45° MF Ø60/100 - Pressure loss	m	0,6
Flue bend 90° MF Ø60/100 - Pressure loss	m	1
Flue extension MF Ø60/100 L=1000 - Pressure loss	m	1
Max. Flue length Ø80/125 - Horiz. Conc.	m	8
Flue bend 45° MF Ø80/125 - Pressure loss	m	0,5
Flue bend 90° MF Ø80/125 - Pressure loss	m	0,8
Flue extension MF Ø80/125 L=1000 - Pressure loss	m	1
Max. Flue length Ø50/50 - Horiz. Twin	m	12
Max. Flue length Ø60/60 - Horiz. Twin	m	20
Flue adapter Ø80/60 MF - Pressure loss	m	0,4
Flue bend 45° MF Ø60 - Pressure loss	m	0,8
Flue bend 90° MF Ø60 - Pressure loss	m	1,5
Flue extension MF Ø60 L=1000 - Pressure loss	m	1
T-connection MF Ø60 - Pressure loss	m	3,5
Max Flue length Ø80/80 - Horiz. Twin	m	60
Max. Flue length Ø50 - Horiz. Pipe	m	10
Max. Flue length Ø60 - Horiz. Pipe	m	18
Max. Flue length Ø80 - Horiz. Pipe	m	35
Flue bend 45° MF Ø80 - Pressure loss	m	0,8
Flue bend 90° MF Ø80 - Pressure loss	m	1,5
Flue extension MF Ø80 L=1000 - Pressure loss	m	1
T-connection MF Ø80 - Pressure loss	m	3,5
Max. Flue length Ø60/100 - Vert. Conc.	m	6
Max. Flue length Ø80/125 - Vert. Conc.	m	8
Max. Flue length Ø50/50 - Vert. Twin	m	12
Max. Flue length Ø60/60 - Vert. Twin	m	20
Max. Flue length Ø80/80 - Vert. Twin	m	60
Max. Flue length Ø50 - Vert. Pipe	m	10
Max. Flue length Ø60 - Vert. Pipe	m	18
Max. Flue length Ø80 - Vert. Pipe	m	35

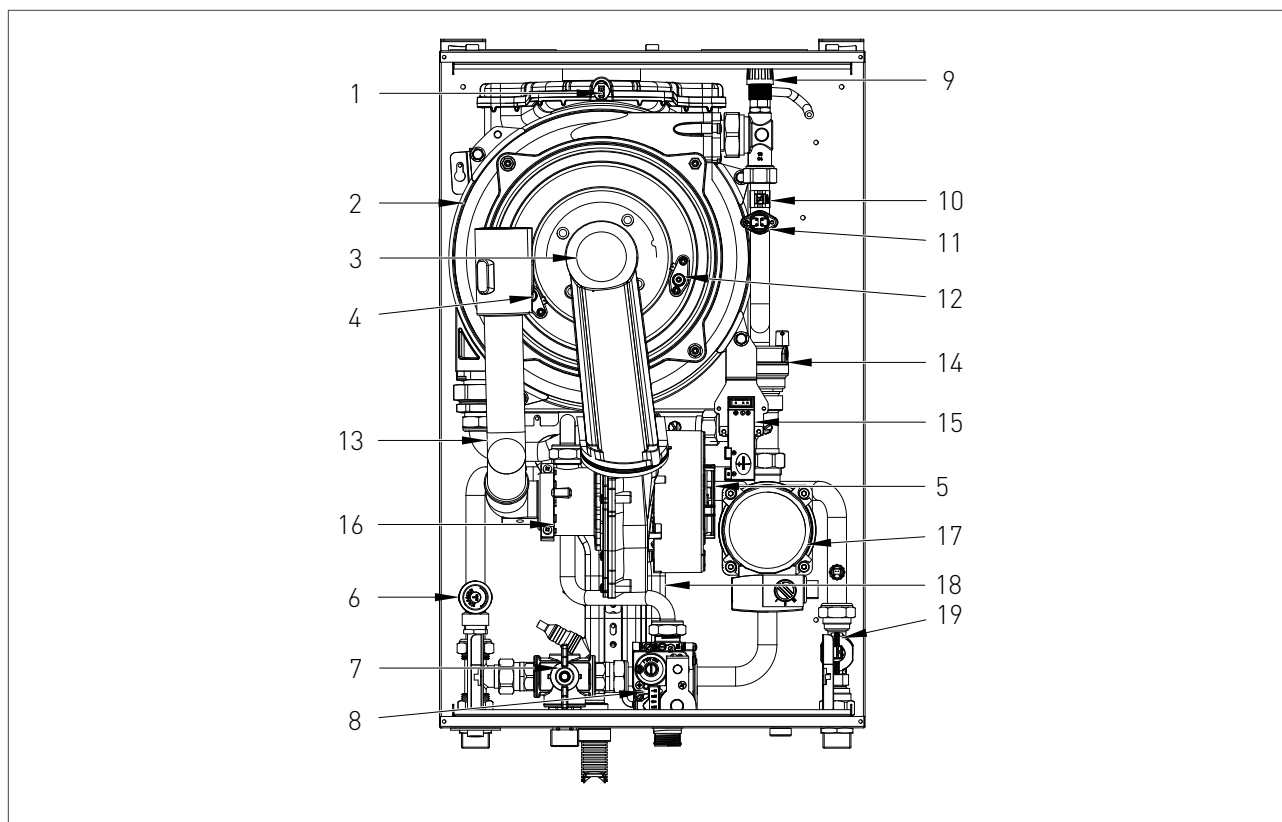
Electrical specifications

Voltage-frequency	V/Hz	220-230/50
Nominal power consumption	A	0,97

2. MAINTENANCE

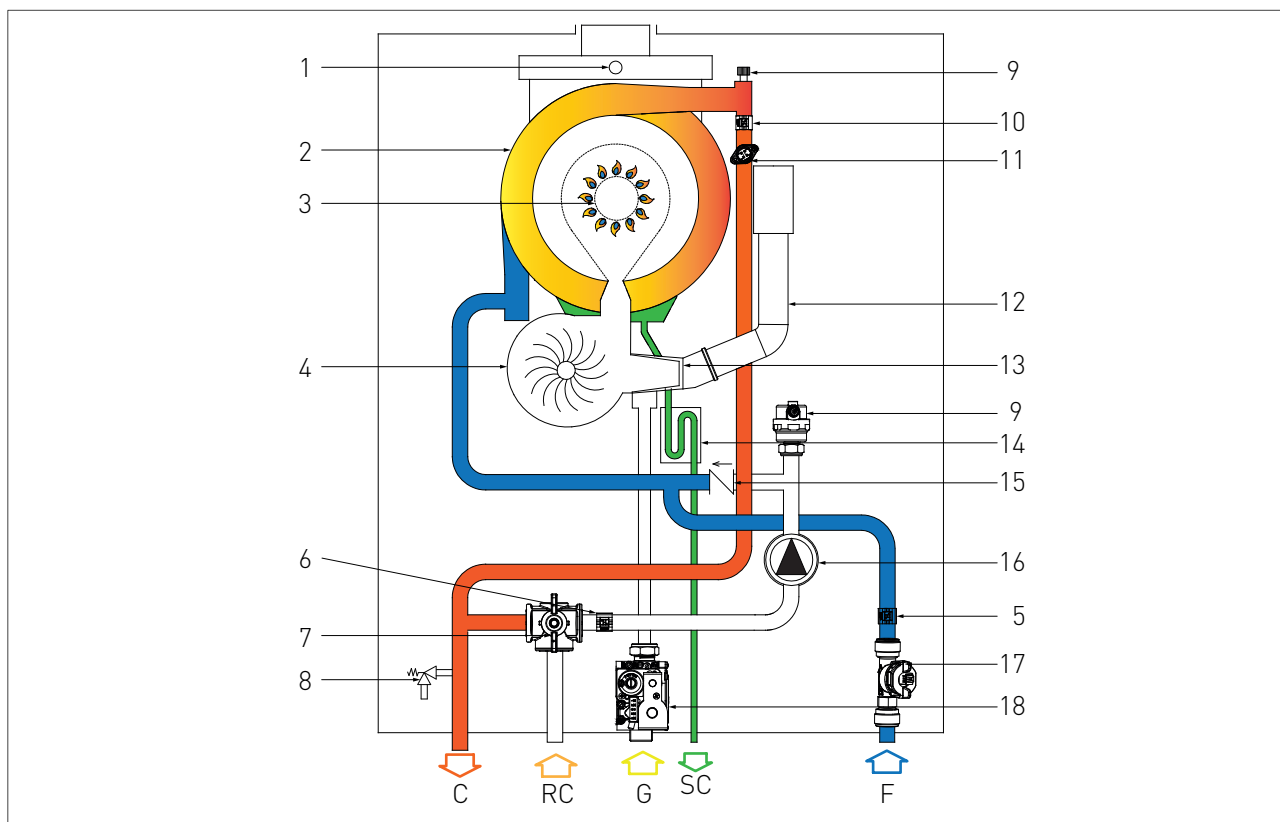
Electric power with boiler OFF	W	3.50
Max Power consumption	W	123
Max Power consumption - boiler pump (100%)	W	85
Protection rating	IP	X5D
Gas supply		
Supply pressure - G20	mbar	20
Supply pressure min. - G20	mbar	17
Supply pressure max. - G20	mbar	25
Fan speed Max. D.H.W. output - G20	Hz	192
Fan speed Min. D.H.W. output - G20	Hz	50
Gas consumption - G20	m ³ /h	2,96
Supply pressure - G20 20%H2NG	mbar	20
Supply pressure min. - G20 20%H2NG	mbar	17
Supply pressure max. - G20 20%H2NG	mbar	25
Fan speed Max. D.H.W. output - G20 20%H2NG	Hz	192
Fan speed Min. D.H.W. output - G20 20%H2NG	Hz	50
Gas consumption - G20 20%H2NG	m ³ /h	3,20
Supply pressure - G31	mbar	37
Supply pressure min. - G31	mbar	25
Supply pressure max. - G31	mbar	45
Fan speed Max. D.H.W. output - G31	Hz	190
Fan speed Min. D.H.W. output - G31	Hz	50
Gas consumption - G31	kg/h	2,17
Supply pressure - G230	mbar	20
Supply pressure min. - G230	mbar	17
Supply pressure max. - G230	mbar	25
Fan speed Max. D.H.W. output - G230	Hz	192
Fan speed Min. D.H.W. output - G230	Hz	50
Gas consumption - G230	m ³ /h	2,30

2.2.8. TECHNICAL ASSEMBLY

**KEY**

1. FUMES SAFETY THERMOFUSE
2. HEAT EXCHANGER
3. BURNER UNIT
4. DETECTION ELECTRODE
5. ELECTRIC FAN
6. SAFETY VALVE 8 bar
7. DIVERTER VALVE
8. GAS VALVE
9. MANUAL AIR RELIEF VALVE
10. DOMESTIC HOT WATER OUTLET PROBE
11. SAFETY THERMOSTAT
12. LIGHT UP ELECTRODE
13. AIR SUCTION TUBE
14. AUTOMATIC AIR RELIEF VALVE
15. START-UP TRANSFORMER
16. PROPORTIONAL VENTURI
17. CIRCULATOR
18. CONDENSATE COLLECTION SIPHON
19. FLUXMETER

2.2.9. HYDRAULIC BOARD



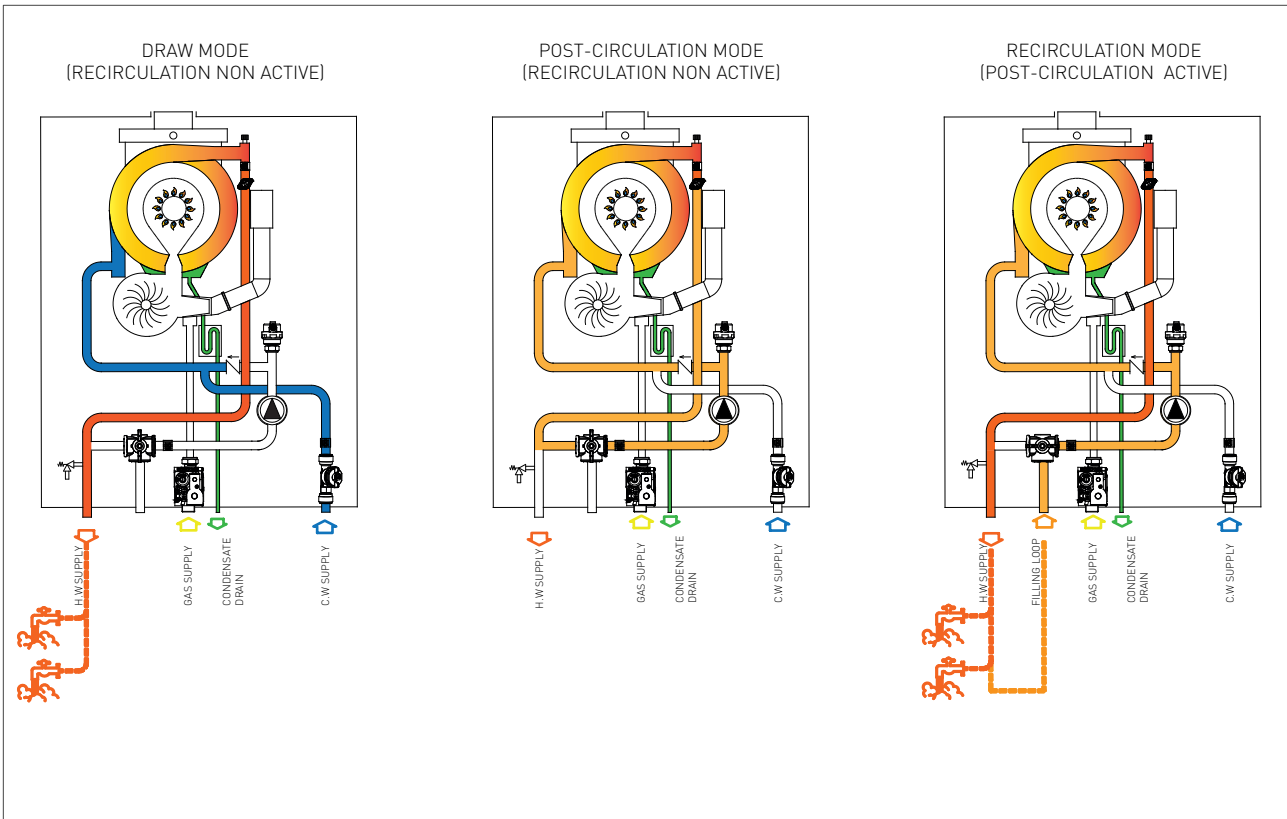
KEY

- C. DOMESTIC HOT WATER OUTLET
- RC. RECIRCULATION INLET
- G. GAS INLET
- SC. CONDENSATE DRAIN
- F. COLD WATER INLET

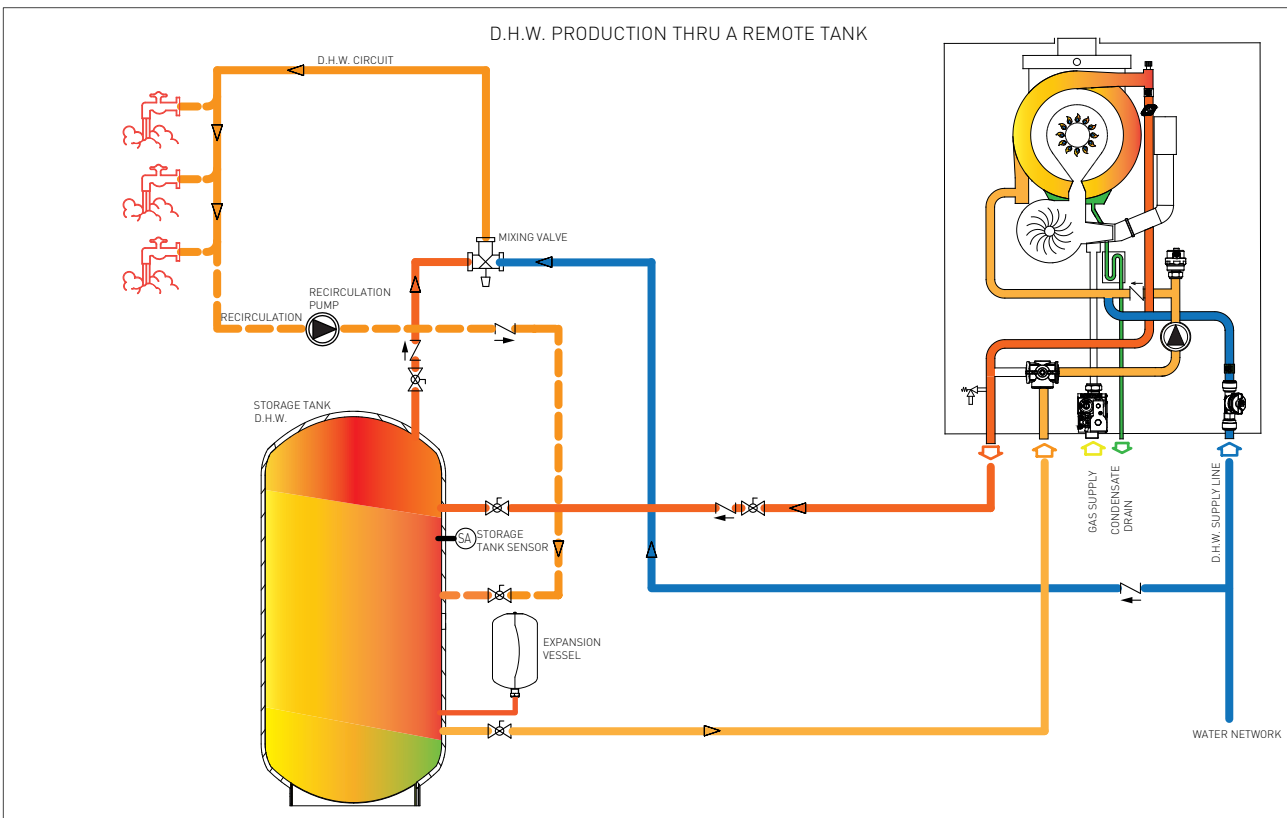
- 17. FLUXMETER
- 18. GAS VALVE

- 1. FUMES SAFETY THERMOFUSE
- 2. HEAT EXCHANGER
- 3. BURNER UNIT
- 4. ELECTRIC FAN
- 5. COLD WATER INLET PROBE
- 6. RECIRCULATION PROBE
- 7. DIVERTER VALVE
- 8. SAFETY VALVE 8 bar
- 9. AIR RELIEF VALVE
- 10. DOMESTIC HOT WATER OUTLET PROBE
- 11. SAFETY THERMOSTAT
- 12. AIR SUCTION TUBE
- 13. PROPORTIONAL VENTURI
- 14. CONDENSATE COLLECTION SIPHON
- 15. NO RETURN VALVE
- 16. CIRCULATOR

OPERATIONAL SCHEMES

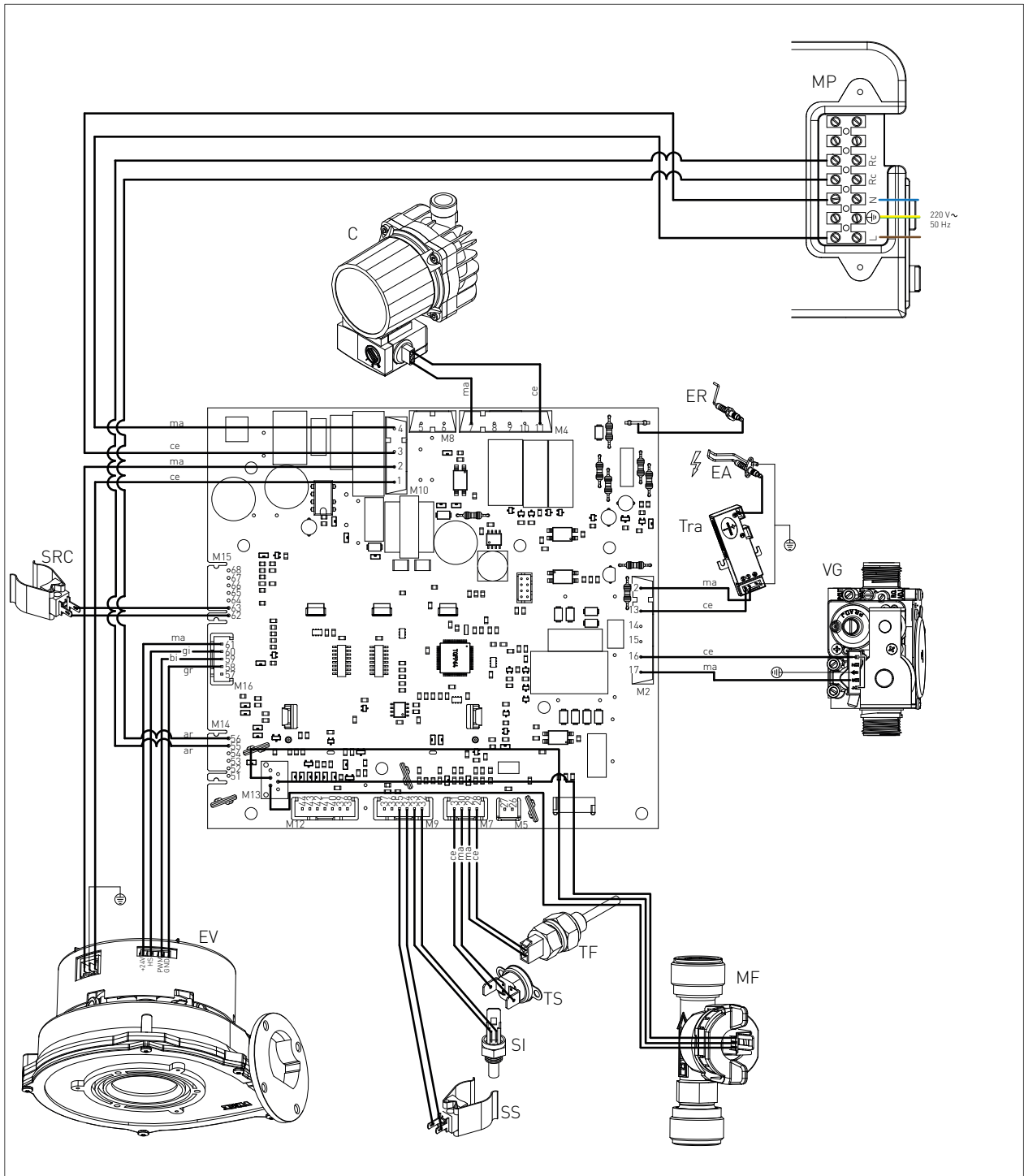


SERVICE CENTRE



2. MAINTENANCE

2.2.10. WIRING DIAGRAM



ER: DETECTION ELECTRODE	TS: SAFETY THERMOSTAT	RC: DOMESTIC HOT WATER PRE-HEATING DEACTIVATION TIMER	CE: BLUE
EA: START-UP ELECTRODE	SI: DOMESTIC CIRCUIT PROBE INLET		MA: BROWN
C: CIRCULATOR	SS: DOMESTIC CIRCUIT PROBE		AR: ORANGE
VG: GAS VALVE	SRC: RECIRCULATION PROBE	L: LINE	GI: YELLOW
TRA: START-UP TRANSFORMER	MP: PANEL TERMINAL	N: NEUTRAL	BI: WHITE
TF: FUMES THERMOFUSE (102°C)	EV: ELECTRIC FAN	NE: BLACK	GR: GREY
MF: FLUXMETER		RO: RED	

2.2.11. ACCESSING THE WATER HEATER

For the majority of the control and maintenance operations you have to remove one or more panels of the casing.

The side panels can be removed only after removing the front panel.

To intervene on the front of the water heater proceed as follows:

- › remove the fastening screws (1 - fig.1) placed on the lower edge of the front panel;
- › grab the front panel from the bottom and remove it pulling it to yourself and then upwards (see fig. 1).

To intervene on the side panels of the water heater proceed as follows:

- › remove the fastening screws (2 - fig.1) placed on the front edge of the side panel;
- › grab the bottom of the panel and remove it by moving it sideways and then pulling it upwards (see fig. 1).

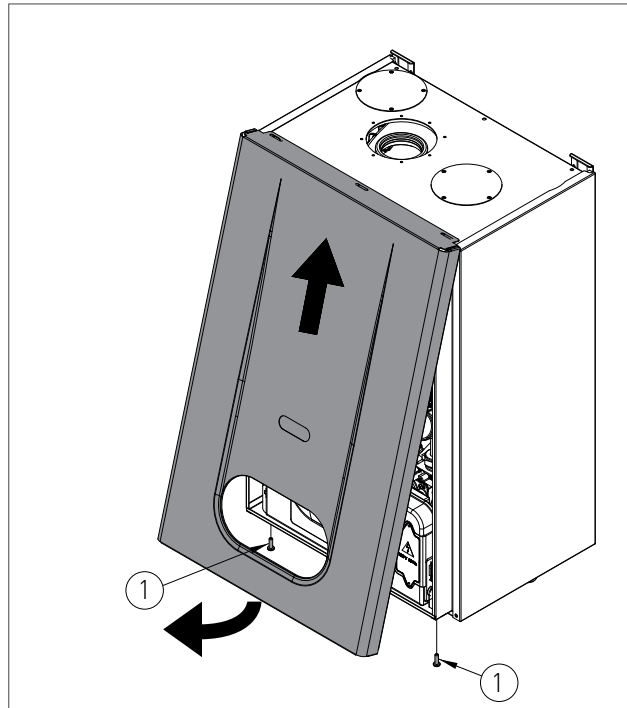
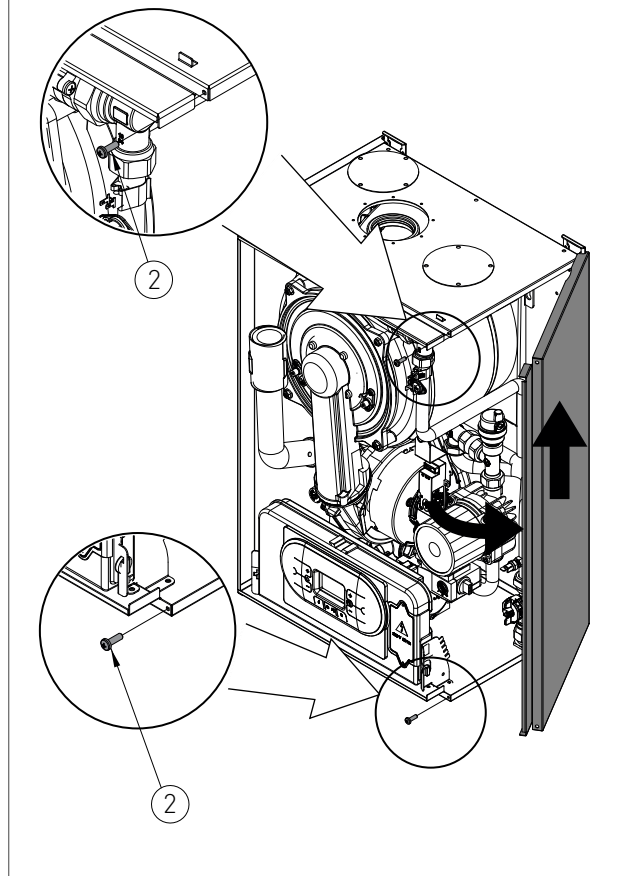


fig. 1



2.2.12. ACCESSING THE P.C.B.

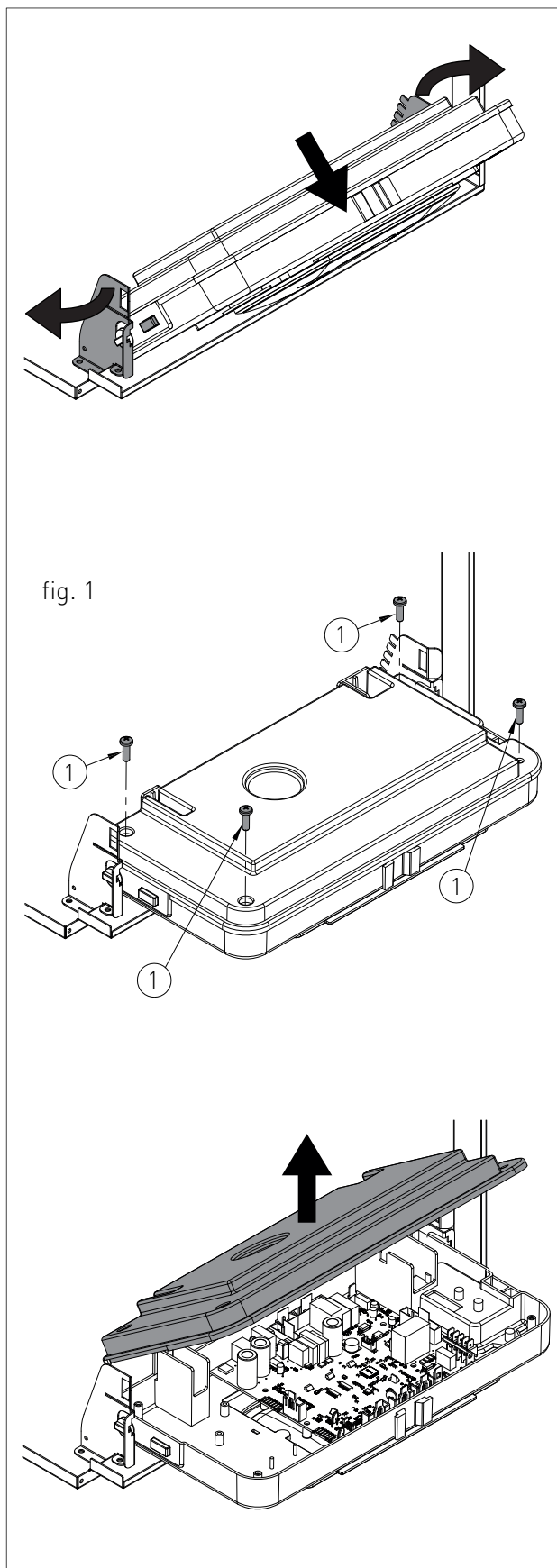
To proceed to the wirings of the control panel, please do the following:



DANGER

Cut off the voltage from the main switch.

- > Grab at the same time the support brackets of the control panel (fig. 1) loosening them and turn the panel downwards;
- > unscrew the four fastening screws 1 - fig. 1;
- > remove the back plate pulling it upwards.











2.2.13. EMPTYING THE DOMESTIC SYSTEM

If there is freezing risk, you have to empty the domestic system as follows:


- › close the main supply tap of the water supply network;
- › open all cold and hot water taps;
- › after completing all operations, close the discharge tap and all previously opened water taps.

2.2.14. ERROR SIGNALLING CODES

To view the last 5 error signalling codes chronologically, starting with the most recent one, turn the water heater in 'OFF' mode by pressing the FUNCTION  button and hold the INFO  button for 5 seconds. Use  and  buttons of the symbol recirculation  to scroll through the list of saved errors. To reset the error history press the RESET  button. To exit display mode press the INFO  button.

CODE	ERROR	POSSIBLE CAUSE	SOLUTION	RESET
E01	FLAME BLOCK	NO FLAME IGNITION		MANUAL RESET (PRESS THE RESET  BUTTON).
		LACK OF GAS;	CHECK THE GAS SUPPLY NETWORK;	
		MASS OR ERRORRY IGNITION ELECTRODE;	REPLACE IT;	
		ERRORRY GAS VALVE;	REPLACE IT;	
		TOO LOW ADJUSTED SLOW IGNITION;	ADJUST MINIMUM OR SLOW IGNITION;	
		TOO HIGH GAS VALVE INLET PRESSURE (ON LPG WATER HEATERS ONLY).	CHECK THE MAXIMUM ADJUSTMENT PRESSURE	
		WITH FLAME IGNITION		
		REVERSED LIVE AND NEUTRAL POLARITY;	CONNECT PROPERLY THE LIVE AND NEUTRAL POLARITY;	
		ERRORRY FLAME DETECTION ELECTRODE;	REPLACE IT;	
		DISCONNECTED FLAME DETECTION ELECTRODE CABLE.	CHECK THE WIRING.	
LIVE-LIVE ELECTRIC CURRENT	IF THE VOLTAGE MEASURED BETWEEN NEUTRAL AND GROUND IS ALMOST EQUAL TO THE ONE MEASURED BETWEEN LIVE AND EARTH, IT IS NECESSARY TO INSTALL A LIVE-LIVE TRANSFORMER KIT (COD. 88021LP)			

2. MAINTENANCE

CODE	ERROR	POSSIBLE CAUSE	SOLUTION	RESET
E02	SAFETY THERMOSTAT	ERRORY OR DISCONNECTED THERMOSTAT CABLE;	CHECK THE WIRING;	AUTOMATIC.
		THERMOSTAT.	REPLACE IT.	
E03	FLUE SAFETY THERMO FUSE (102°C)	ERRORY THERMO FUSE;	REPLACE IT;	MANUAL RESET (PRESS THE RESET  BUTTON).
		DISCONNECTED THERMO FUSE CABLE.	CHECK THE WIRING.	
E04	D.H.W. INSUFFICIENT PRESSURE	D.H.W. INSUFFICIENT PRESSURE (LOWER THAN 0,3 BAR);	CHECK THE SYSTEM.	AUTOMATIC.
		DISCONNECTED WATER PRESSURE SWITCH CABLE;	CHECK THE WIRING;	
		ERRORY WATER PRESSURE SWITCH.	REPLACE IT.	
E05	STORAGE TANK OUTLET WATER SENSOR	ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	
E06	HOT WATER SENSOR AT THE OUTLET	ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	
E12	STORAGE TANK SENSOR	ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	


2. MAINTENANCE

CODE	ERROR	POSSIBLE CAUSE	SOLUTION	RESET
E15	RECIRCULATION MODE SENSOR	ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	
E16	FAN	ERRORY FAN P.C.B.;	REPLACE IT;	AUTOMATIC.
		ERRORY FAN;	REPLACE IT;	
		ERRORY POWER SUPPLY CABLE.	REPLACE IT.	
E18	INSUFFICIENT CIRCULATION	OBSTRUCTED EXCHANGER;	CLEAN OR REPLACE THE EXCHANGER;	AUTOMATIC.
		ERRORY PUMP OR DIRTY IMPELLER.	CLEAN THE IMPELLER OR REPLACE THE PUMP.	

2. MAINTENANCE

CODE	ERROR	POSSIBLE CAUSE	SOLUTION	RESET
E21	ELECTRIC LEAKAGE ON THE HIGH CIRCUIT VOLTAGE	DEFECTIVE GAS VALVE	TRY TO DISCONNECT THE GAS VALVE CABLE AND START THE WATER HEATER AGAIN. IF THE E01 ERROR OCCURS UPON RE-STARTING INSTEAD OF THE PREVIOUS E21, REPLACE THE GAS VALVE. DISASSEMBLE THE COILS OF THE OLD VALVE TO CHECK IF THEY ARE WET, ALSO CHECK THAT NO WATER ENTERS FROM THE COMBUSTION AIR INTAKE.	AUTOMATIC.
		DEFECTIVE IGNITION TRANSFORMER	TRY TO DISCONNECT THE IGNITION TRANSFORMER CABLE AND START THE WATER HEATER AGAIN. IF THE E01 ERROR OCCURS UPON RE-STARTING INSTEAD OF THE PREVIOUS E21, REPLACE THE IGNITION TRANSFORMER.	
		ELECTRICAL NOISE DUE TO SPARK DISCHARGE	IF AT THE START OF THE IGNITION CYCLE THE WATER HEATER SWITCHES OFF AND TURNS ON AGAIN, THE TRAIN OF SPARKS DISCHARGES TOWARDS THE LOW VOLTAGE CABLES OR TOWARDS THE FRAME INSTEAD OF THE ELECTRODES.	REPLACE THE SPARK ELECTRODES IF THE CABLE LEAKS SPARK OR REPLACE THE IGNITION TRANSFORMER IF SPARK GOES FROM THE TRANSFORMER TO THE SURROUNDING PLATES OR CABLES. CHECK THAT THE DISTANCE BETWEEN THE IGNITION ELECTRODES IS NOT GREATER THAN 5 MM.
		THE ARC OF THE SPARK IS TOO SHORT	CHECK THAT THE DISTANCE BETWEEN THE ELECTRODES IS BETWEEN 3 AND 5 MM, A DISTANCE LESS THAN 3 MM CAUSES A NOISE WHICH MAKES THE PCB SWITCH OFF. CHECK THAT THE 1000 OHM ANTI-INTERFERENCE RESISTOR IS PRESENT IN THE IGNITION CABLE.	
E22	PARAMETERS PROGRAMMING REQUEST	MICRO-PROCESSOR MEMORY LOSS.	PARAMETERS REPROGRAMMING.	MANUAL RESET (CUT OFF THE TENSION).


2. MAINTENANCE

CODE	ERROR	POSSIBLE CAUSE	SOLUTION	RESET
E24	SOLAR PANEL SENSOR	DISCONNECTED REMOTE INLET SENSOR;	SET MANUALLY THE VALUE OF PARAMETER P29 TO '0'.	AUTOMATIC.
		ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	
E26	SOLAR COIL SENSOR	ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	
E32	COMMUNICATION ERROR BETWEEN THE WATER HEATER P.C.B. AND THE MODBUS P.C.B.	NO ELECTRICAL CONNECTION;	CHECK THE WIRING;	AUTOMATIC.
		ERRORY MODBUS P.C.B.;	REPLACE IT;	
E35	GHOST FLAME	ERRORY DETECTION ELECTRODE;	CLEAN IT OR REPLACE IT;	MANUAL RESET (PRESS THE RESET  BUTTON).
		ERRORY DETECTION ELECTRODE CABLE;	REPLACE IT;	
		ERRORY P.C.B..	REPLACE IT.	
E40	INCORRECT SUPPLY VOLTAGE	SUPPLY VOLTAGE OFF THE OPERATION RANGE (≤ 160 VOLTS).	CHECK THE POWER SUPPLY NETWORK (THE ERROR DEACTIVATES AUTOMATICALLY AS SOON AS THE SUPPLY VOLTAGE FALLS BACK WITHIN THE REQUESTED LIMITS).	AUTOMATIC.
E52	COMMUNICATION ERROR BETWEEN MODBUS P.C.B. AND MODBUS CONTROL UNIT	NO ELECTRICAL CONNECTION;	CHECK THE WIRING;	AUTOMATIC.
		ERRORY MODBUS CONTROL UNIT.	REPLACE IT;	


2. MAINTENANCE

CODE	ERROR	POSSIBLE CAUSE	SOLUTION	RESET
E55	INPUT MONITOR SENSOR ERROR	ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	
E86	SOLAR AUXILIARY P.C.B. CONNECTION ERRORS (FOR CASCADE WATER HEATERS)	SOLAR AUXILIARY P.C.B. DISCONNECTED.	SET MANUALLY THE VALUE OF PARAMETER P24 TO '0'.	AUTOMATIC.
		DISCONNECTED SOLAR AUXILIARY P.C.B. CABLE;	CHECK THE WIRING;	
		ERRORY SOLAR AUXILIARY P.C.B.;	REPLACE IT;	
		ERRORY P.C.B.;	REPLACE IT;	
E88	SOLAR AUXILIARY P.C.B. CONNECTION ERRORS (FOR SOLAR SYSTEM MANAGEMENT WITH SINGLE WATER HEATER)	SOLAR AUXILIARY P.C.B. DISCONNECTED.	SET MANUALLY THE VALUE OF PARAMETER P30 TO '0'.	AUTOMATIC.
		DISCONNECTED SOLAR AUXILIARY P.C.B. CABLE;	CHECK THE WIRING;	
		ERRORY SOLAR AUXILIARY P.C.B.;	REPLACE IT;	
		ERRORY MODULATION P.C.B.;	REPLACE IT;	
E89	MIXING VALVE SENSOR	ERRORY OR INCORRECTLY CALIBRATED SENSOR (RESISTANCE VALUE 10 KOHM AT 25 °C NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET SENSOR CABLE.	CHECK THE WIRING.	
E91	MIXING VALVE P.C.B. EPROM DAMAGED	M I C R O - P R O C E S S O R MEMORY LOSS	SWITCH THE POWER SUPPLY OFF AND ON AGAIN. IF THE PROBLEM PERSISTS, REPLACE THE MIXING VALVE P.C.B..	AUTOMATIC.

2. MAINTENANCE

CODE	ERROR	POSSIBLE CAUSE	SOLUTION	RESET
E94	TEMPERATURE OUTLET FROM THE MIXING VALVE HIGHER OR LOWER THAN THE SETPOINT SET BY THE USER	MIXING VALVE ERROR	REPLACE IT.	AUTOMATIC.
		D.H.W. FLOW RATE TOO HIGH COMPARED TO THE POWER SUPPLIED BY THE BURNER	REDUCE THE D.H.W. FLOW RATE	
E95	TEMPERATURE OUTLET FROM THE MIXING VALVE TOO HIGH COMPARED TO THE SETPOINT SET BY THE USER	NO ELECTRIC POWER SUPPLY TO THE MIXING VALVE	CHECK THE WIRING;	MANUAL RESET (PRESS THE RESET  BUTTON).
		MIXING VALVE ERROR	REPLACE IT.	

2.2.15. ACTIVE FUNCTIONS SIGNALLING CODES

CODE	FUNCTION	DESCRIPTION
F08	STORAGE TANK ANTI-FREEZE PROTECTION	WHEN THE STORAGE TANK SENSOR DETECTS A TEMPERATURE LOWER THAN 4°C, THE SOLAR PUMP IS POWERED UNTIL A TEMPERATURE OF 6°C IS REACHED.
F09	D.H.W CIRCUIT ANTI-FREEZE PROTECTION	WHEN THE SANITARY SENSOR DETECTS A TEMPERATURE BELOW 5°C, THE PUMP RUNS AND THE BURNER LIFTS UP THE TEMPERATURE TO 20°C. WHEN THIS LATTER TEMPERATURE IS ACHIEVED, THE BURNER SHUTS OFF AND THE PUMP RUNS FOR 20 SECONDS AS POST CIRCULATION.
F11	SOLAR PANEL ANTI-FREEZE PROTECTION	WHEN THE SOLAR PANEL SENSOR (OPTIONAL) DETECTS A TEMPERATURE LOWER THAN 4°C, THE SOLAR PUMP IS POWERED, DRAWING HEAT FROM THE LOWER PART OF THE D.H.W. TANK, UNTIL A TEMPERATURE OF 6°C IS REACHED.
F12	SOLAR STORAGE TANK ANTI-FREEZE PROTECTION	WHEN THE SOLAR LOWER STORAGE TANK SENSOR DETECTS A TEMPERATURE LOWER THAN 4°C, THE SOLAR PUMP IS POWERED UNTIL A TEMPERATURE OF 6°C IS REACHED.
F28	LEGIONELLA PREVENTION (FOR STORAGE TANK WATER HEATER ONLY)	THE FUNCTION IS ACTIVATED FOR THE FIRST TIME, 60 MINUTES AFTER THAT THE WATER HEATER HAS BEEN ELECTRICALLY POWERED. STARTING FROM THAT MOMENT IT COMES AUTOMATICALLY INTO OPERATION EVERY 7 DAYS, BRINGING THE HOT WATER TEMPERATURE OF THE STORAGE TANK UP TO 60°C. THIS FUNCTION IS ENABLED INDEPENDENTLY FROM THE CONTACT TO THE STORAGE TANK CLOCK, PROVIDING THAT THE RELATIVE PARAMETER (P15) IS ENABLED.
F33	SYSTEM AIR RELEASE CYCLE	IT AUTOMATICALLY ACTIVATES AT THE FIRST WATER HEATER START-UP, PERFORMING, FOR 5 MINUTES, A SERIES OF CYCLES DURING WHICH THE PUMP IS ACTIVATED FOR 40 SECONDS AND DEACTIVATED FOR 20 SECONDS. THE REGULAR OPERATION IS ALLOWED ONLY AFTER THIS FUNCTION IS COMPLETED. THE CYCLE CAN ALSO ACTIVATE DURING THE NORMAL WATER HEATER OPERATION, IF THE WATER PRESSURE SWITCH CONFIRMATION IS MISSING. WHEN THE CONTACT CLOSES AGAIN, A 2 MINUTES RELEASE CYCLE WILL BE PERFORMED.
FH	FAST H2O (FOR INSTANTANEOUS WATER HEATER ONLY)	IT CAN BE ACTIVATED/DEACTIVATED BY HOLDING SIMULTANEOUSLY AND FOR 7 SECONDS THE RESET  AND  BUTTONS OF THE SYMBOL RECIRCULATION  . THE "FAST H2O" FUNCTION GUARANTEES IMMEDIATE D.H.W SUPPLY AT THE REQUESTED TEMPERATURE.

2.2.16. GAS TYPE TRANSFORMATION



ATTENTION

Make sure that the gas adduction tube is suitable for the new type of fuel with which the boiler is supplied.

- › loosen the two screws '1' (fig.1) from the fastening bush, and remove the air suction tube;
- › unscrew the tube coupling that connects the gas valve to venturi;
- › unscrew the three fastening screws '2' (fig.1) of the venturi 'V' (fig.1) using a 10 key, as shown in figure 2;
- › remove the two screws '3' (fig.3) and apply pressure on the rear side of venturi 'C' (fig.3);
- › replace the body venturi with the one suitable for the type of supply gas (cod. 30-00232 for Natural gas / cod. 30-00169 for Universal LPG / cod. 30-00167 for propaned air) and make sure the tooth 'D' (fig.3) is adjusted downwards on the aluminium ring nut (see fig.3);
- › remount the components following the demounting operations in reverse making sure that gasket 'G' is re-assembled as shown in fig.1;
- › set the boiler to operate with the new type of gas, changing the value of the parameter P02 'GAS TYPE SELECTION' from the control panel (see chapters 'DIGITECH CS PARAMETERS TABLE' and 'ACCESSING AND PROGRAMMING THE PARAMETERS');
- › adjust the CO₂ combustion value as indicated in chapter 'CO₂ VALUE CHECK AND CALIBRATION'.

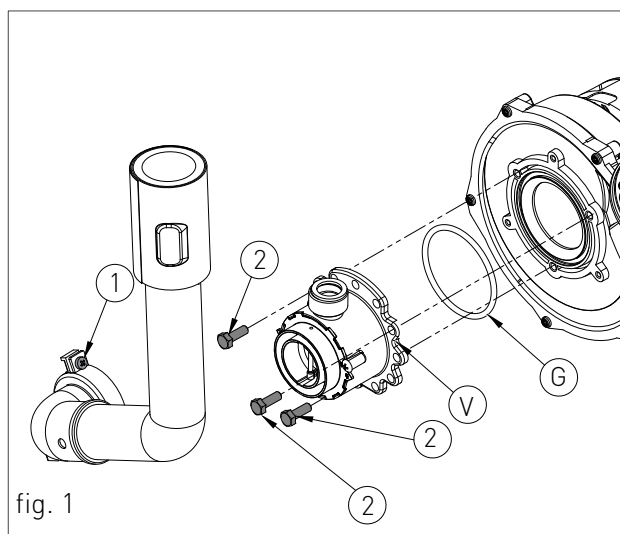


fig. 1

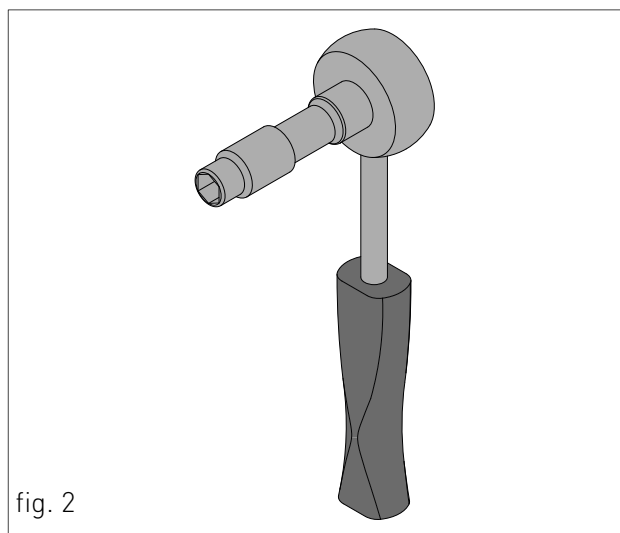


fig. 2

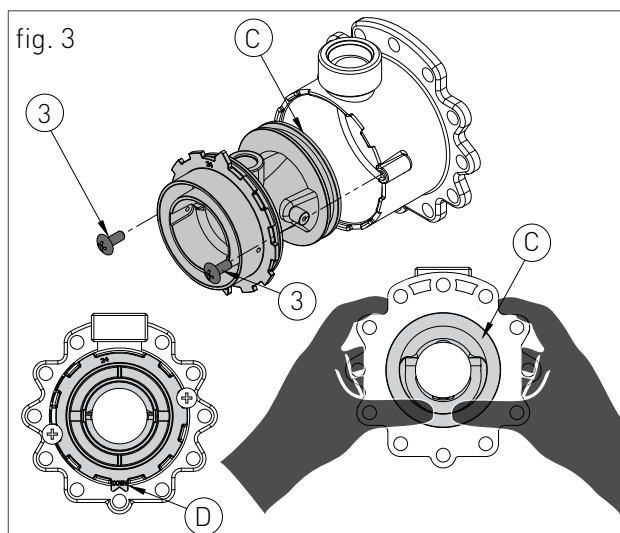


fig. 3

3. USER SECTION

The operations described in this section are addressed to all those who will use the machine. The machine must be used and accessed only by qualified operators that fully read and understood the User section, paying particular attention to the warnings.

3.1. USE

3.1.1. GENERAL USE WARNINGS

**WARNING**

Before starting the water heater the User must make sure that the First start-up certificate has the stamp of the technical Service Centre proving the testing and the first start-up of the water heater .

**WARNING**

In order to take advantage of the warranty provided by the manufacturer, the customer should carefully and exclusively observe the instructions given in the USER section of the manual.

**ATTENTION**

This water heater may be used only for the purpose for which it has been designed: heat water to a temperature below boiling point at atmospheric pressure. Any other use is considered wrong and dangerous. The manufacturer is excluded from any contractual or extra-contractual responsibility for damages caused to persons, animals or property due to incorrect use.

**DANGER**

The water heater should not be used by people (including children) with reduced physical, sensory or mental capacities or without suitable knowledge or experience unless they are instructed on the device use or monitored by a person responsible for their safety.

**DANGER**

DO NOT obstruct the air vents of the location in which the gas device is installed to prevent the formation of toxic explosive mixes.

**DANGER**

If you sense a gas odour in the location in which the water heater is installed, proceed as follows:

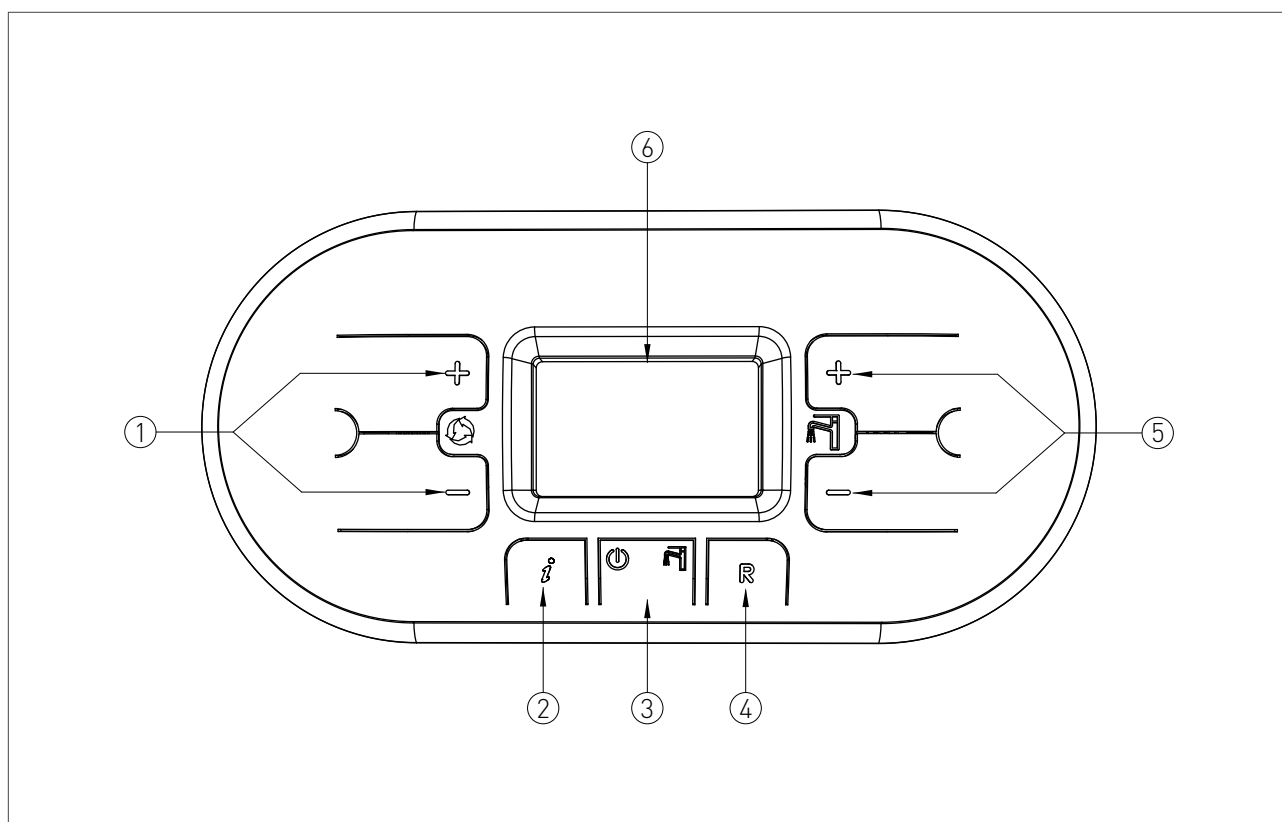
- › DO NOT use electrical switches, the telephone or any other device that might generate electrical discharges or sparks;
- › Immediately open all doors and windows to create an air exchange that can quickly clean the location;
- › Close the gas taps;
- › Request immediate intervention of qualified staff.

**DANGER**

The use of electricity by the water heater implies respecting some fundamental rules such as:

- › DO NOT touch the device with wet and/or humid parts and/or with bare feet;
- › DO NOT pull the electrical cables;
- › DO NOT leave the device exposed to atmospheric agents (rain, sun, etc.) unless specifically intended;
- › in case of cable damage, turn off the device and contact qualified professional staff to replace it.

3.1.2. CONTROL PANEL



KEY

1. RECIRCULATION MODE TEMPERATURE ADJUSTMENT BUTTONS
2. INFO BUTTON: PRESS ONCE TO VIEW THE TEMPERATURES AND OTHER INFORMATION (see chapter 'INFO MENU DISPLAY') - HOLD FOR 5 SECONDS, IN OFF OPERATING MODE, TO VIEW THE LAST 5 ERRORS
3. OPERATING MODE SELECTION BUTTON: ON/OFF
4. RESET BUTTON: ERRORS RESET
5. DOMESTIC HOT WATER TEMPERATURE ADJUSTMENT BUTTON/HOLD THE BUTTONS AT THE SAME TIME FOR 5 SECONDS TO ACTIVATE DISPLAY BACK LIGHT FOR 10 MINUTES
6. DISPLAY UNIT

3.1.3. DISPLAY ICONS

KEY

1. INDICATION OF PARAMETER NUMBER / DISPLAYED INFO CODE / RECIRCULATION MODE ACTIVE (fig.1)
2. PARAMETERS PROGRAMMING FUNCTION ACTIVE
3. RECIRCULATION PUMP ACTIVE
4. TEMPERATURE DISPLAY / SET POINT / PARAMETER VALUE
5. FLAME PRESENT SIGNALLING / IT ALSO INDICATES, ON 3 PERCENTAGE LEVELS, THE MODULATING POWER LEVEL OF THE WATER HEATER (fig.2)
6. OPERATION IN DOMESTIC MODE ENABLED
7. ERROR DISPLAY THAT CAN BE RESET
8. OFF OPERATING MODE
9. ERROR DISPLAY THAT CAN NOT BE RESET

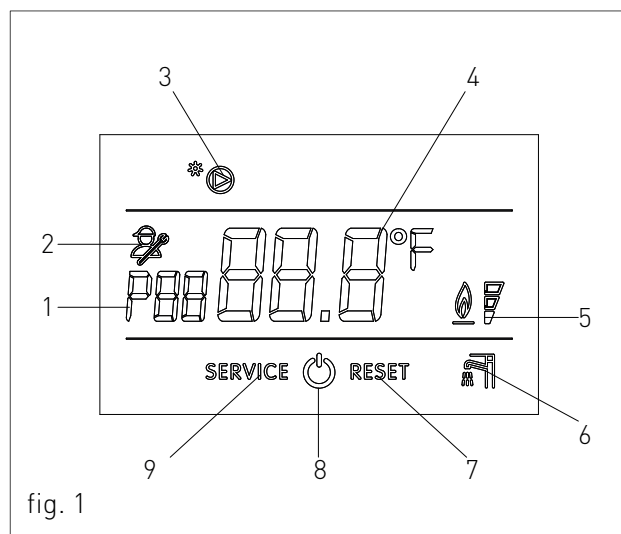


fig. 1

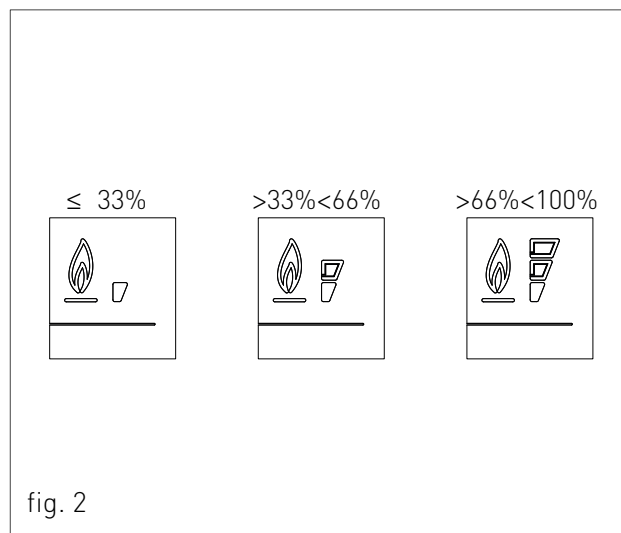







fig. 2

3.1.4. VISUALIZZAZIONI DEL MENÙ INFO


Per visualizzare i dati dello scaldabagno dal menù info è necessario premere il tasto INFO . Verrà visualizzato il codice dell'info, sulla sinistra del display, ed il valore associato al centro del display. Per scorrere la lista dei dati visualizzabili utilizzare i tasti  e  del simbolo ricircolo . Per abbandonare l'ambiente di visualizzazione premere il tasto INFO .



LISTA DEI DATI VISUALIZZABILI

CODICE INFO	DESCRIZIONE
d0	TEMPERATURA SONDA ACQUA FREDDA IN INGRESSO (PER MODELLO SFKA: TEMPERATURA SONDA ACQUA IN USCITA DALL'ACCUMULO) - SI
d1	PORTATA DI ACQUA CALDA PRODOTTA
d2	VELOCITÀ VENTILATORE
d3	TEMPERATURA SONDA RICIRCOLO - SRC
d4	TEMPERATURA SONDA ACCUMULO - SA
d5	TEMPERATURA SONDA CIRCUITO PRIMARIO - SS
d6	TEMPERATURA SONDA COLLETTORE SOLARE - S1
d7	TEMPERATURA SONDA ACCUMULO SOLARE INFERIORE - S3
d8	STATO VALVOLA MISCELATRICE - VM

3.1.5. START-UP

Before starting the water heater make sure that it is powered and that the gas tap placed under the water heater is open.




To start the water heater press the function  button.



To switch the water heater to OFF operating mode, press the function  button, the symbol  will appear fixed on the display, indicating that the function is activated.

If the water heater was previously running, it will be turned off and the post-ventilation and post-circulation functions will be enabled.

3.1.6. OPERATING MODES



D.H.W. TEMPERATURE ADJUSTMENT



To adjust the temperature using  and  buttons of the D.H.W. circuit :

- press  button to decrease the temperature.
- press  button to increase the temperature.

The D.H.W. temperature adjustment field ranges from 40 °C to 60 °C.

RECIRCULATION MODE TEMPERATURE ADJUSTMENT

You can adjust the temperature using  and  buttons of the symbol recirculation :

- press  button to decrease the temperature.
- press  button to increase the temperature.

The return temperature adjustment field ranges from 30 °C to 45 °C.

OFF MODE

In this mode the water heater no longer meets the D.H.W. requests, the frost protection and pump stop prevention systems remain still active.

3.1.7. FROST PROTECTION FUNCTION INFORMATION

The water heater is protected against freezing thanks to the P.C.B. configuration with functions that start the burner and heat the concerned parts when their temperature goes below the minimum pre-set values.




WARNING

This function is available only if:


- > the water heater is powered;
- > the gas supply is open;
- > the water heater is not blocked.

3.1.8. ERROR SIGNALLING CODES

The water heater might signal some errors by displaying a code. Below you have a list of the codes and of the operations to be performed in order to unlock the water heater.




CODE	ICON	ERROR	INTERVENTION
E01	RESET	FLAME BLOCK	<p>MAKE SURE THAT THE GAS METER'S TAP AND THE WATER HEATER'S GAS TAP ARE OPEN.</p> <hr/> <p>PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE ERROR, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE WATER HEATER WILL RESTART AUTOMATICALLY.</p> <hr/> <p>SHOULD THE BLOCK PERSIST, CONTACT THE TECHNICAL SERVICE CENTRE.</p>
E02	RESET	SAFETY THERMOSTAT	CONTACT THE TECHNICAL SERVICE CENTRE.
E03	RESET	FLUE SAFETY THERMO FUSE (102°C)	CONTACT THE TECHNICAL SERVICE CENTRE.
E04	SERVICE	D.H.W. INSUFFICIENT PRESSURE	CONTACT THE TECHNICAL SERVICE CENTRE.
E05	SERVICE	STORAGE TANK OUTLET WATER SENSOR	CONTACT THE TECHNICAL SERVICE CENTRE.
E06	SERVICE	HOT WATER SENSOR AT THE OUTLET	CONTACT THE TECHNICAL SERVICE CENTRE.
E12	SERVICE	STORAGE TANK SENSOR	CONTACT THE TECHNICAL SERVICE CENTRE.
E15	SERVICE	RECIRCULATION SENSOR	CONTACT THE TECHNICAL SERVICE CENTRE.
E16	SERVICE	FAN	CONTACT THE TECHNICAL SERVICE CENTRE.
E18	SERVICE	INSUFFICIENT CIRCULATION	CONTACT THE TECHNICAL SERVICE CENTRE.
E21	SERVICE	ELECTRIC LEAKAGE ON THE HIGH CIRCUIT VOLTAGE / ELECTRICAL NOISE DUE TO SPARK DISCHARGE	<p>CUT OFF THE POWER SUPPLY FROM THE MAIN SWITCH AND THEN RESTORE IT, AS SOON AS THE ERROR CODE DISAPPEARS, THE WATER HEATER WILL RESTART AUTOMATICALLY.</p> <hr/> <p>SHOULD THE BLOCK PERSIST, CONTACT THE TECHNICAL SERVICE CENTRE.</p>

3. USE

CODE	ICON	ERROR	INTERVENTION
E22	RESET	PARAMETERS REQUEST	PROGRAMMING CUT OFF THE POWER SUPPLY FROM THE MAIN SWITCH AND THEN RESTORE IT, AS SOON AS THE ERROR CODE DISAPPEARS, THE WATER HEATER WILL RESTART AUTOMATICALLY. SHOULD THE BLOCK PERSIST, CONTACT THE TECHNICAL SERVICE CENTRE.
E24	SERVICE	SOLAR PANEL SENSOR	CONTACT THE TECHNICAL SERVICE CENTRE.
E26	SERVICE	SOLAR COIL SENSOR	CONTACT THE TECHNICAL SERVICE CENTRE.
E32	SERVICE	COMMUNICATION ERROR BETWEEN THE WATER HEATER P.C.B. AND THE MODBUS P.C.B.	CONTACT THE TECHNICAL SERVICE CENTRE.
E35	RESET	GHOST FLAME	PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE ERROR, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE WATER HEATER WILL RESTART AUTOMATICALLY.
E40	SERVICE	INCORRECT SUPPLY VOLTAGE	CONTACT THE TECHNICAL SERVICE CENTRE.
E52	SERVICE	COMMUNICATION ERROR BETWEEN MODBUS P.C.B. AND MODBUS CONTROL UNIT	CONTACT THE TECHNICAL SERVICE CENTRE.
E55	SERVICE	INPUT MONITOR SENSOR ERROR	CONTACT THE TECHNICAL SERVICE CENTRE.
E86	SERVICE	SOLAR AUXILIARY P.C.B. CONNECTION ERRORS (FOR CASCADE WATER HEATERS)	CONTACT THE TECHNICAL SERVICE CENTRE.
E88	SERVICE	SOLAR AUXILIARY P.C.B. CONNECTION ERRORS (FOR SOLAR SYSTEM MANAGEMENT WITH SINGLE WATER HEATER)	CONTACT THE TECHNICAL SERVICE CENTRE.
E89	SERVICE	MIXING VALVE SENSOR	CONTACT THE TECHNICAL SERVICE CENTRE.
E91	RESET	MIXING VALVE P.C.B. EPROM DAMAGED	CONTACT THE TECHNICAL SERVICE CENTRE.
E94	RESET	TEMPERATURE OUTLET FROM THE MIXING VALVE HIGHER OR LOWER THAN THE SETPOINT SET BY THE USER	CONTACT THE TECHNICAL SERVICE CENTRE.

CODE	ICON	ERROR	INTERVENTION
E95	RESET	<i>TEMPERATURE OUTLET FROM THE MIXING VALVE TOO HIGH COMPARED TO THE SETPOINT SET BY THE USER</i>	CONTACT THE TECHNICAL SERVICE CENTRE.

3.1.9. FUNCTIONS CODES INDICATION

CODE	FUNCTION	INTERVENTION
F08	STORAGE TANK ANTI-FREEZE PROTECTION	WAIT UNTIL THE OPERATION IS COMPLETED
F09	D.H.W CIRCUIT ANTI-FREEZE PROTECTION	WAIT UNTIL THE OPERATION IS COMPLETED
F11	SOLAR PANEL ANTI-FREEZE PROTECTION	WAIT UNTIL THE OPERATION IS COMPLETED
F12	SOLAR STORAGE TANK ANTI-FREEZE PROTECTION	WAIT UNTIL THE OPERATION IS COMPLETED
F28	LEGIONELLA PREVENTION (FOR STORAGE TANK WATER HEATER ONLY)	WAIT UNTIL THE OPERATION IS COMPLETED
F33	SYSTEM AIR RELEASE CYCLE	WAIT UNTIL THE OPERATION IS COMPLETED
FH	FAST H2O (FOR INSTANTANEOUS WATER HEATER ONLY)	TO ACTIVATE/DEACTIVATED IT HOLD THE RESET  AND  BUTTONS OF THE SYMBOL RECIRCULATION  SIMULTANEOUSLY FOR 7 SECONDS.

3.1.10. FAST H2O FUNCTION

The Fast H2O function keeps a constant temperature in the D.H.W. circuit within the water heater, according to the temperature set by the user.

The Fast H2O function offers three advantages:

- > the hot water is immediately supplied at the requested temperature;
- > unnecessary delays are avoided by increasing the comfort for the final user;
- > water wastes, waiting for the water to reach the right temperature, are limited.

To activate/deactivate the Fast H2O function please follow the instruction indicated in the paragraph 'FUNCTIONS CODES INDICATION'.

3.1.11. MAINTENANCE

To ensure proper water heater safety and efficiency, please service the water heater every year.

An accurate maintenance should improve system management.

3.1.12. EXTERNAL CASING CLEANING

Clean the water heater casing using a wet cloth and neutral soap.



WARNING

DONOT use abrasive or powder detergents as they might damage the water heater casing and plastic control elements.

3.1.13. DISPOSAL

The water heater and all its accessories must be disposed of by differentiating them appropriately according to the recycling regulation in force.



The use of the symbol WEEE (Waste Electrical and Electronic Equipment) indicates that this product can not be dismantled as domestic waste. Proper disposal

of this product helps preventing potentially negative consequences for the environment and person's health.



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