FLEXIHEAT UK LTD
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Installation, Use and Maintenance Manual for model

SFKA

SFKA 28 /150 - SFKA 34 /150
SFKA 28 /150 Solar - SFKA 34 /150 Solar
SFKA 28 /150 Plus - SFKA 34 /150 Plus

Condensing water heater

combined with storage tank

(also solar option)

CE 0476

SFKA /150_Solar_Plus - RAD - ING - Manual - 2303.1_SKM1.3_MIAH411

SUMMARY

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 boiler indicated on the data plate placed on the right side of its casing.

MANUFACTURER WARRANTY AND RESPONSIBILITY

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

Flexiheat declares that its gas water heater are professionally manufactured.

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 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.

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 prtotection 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.

1.1.4. UNPACKING

WARNING

Please unpack the boiler 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:

› cut the fixing strip (see A-fig.1);

› remove the cardboard box lifting it upwards (see B-fig.1);

› push the water heater on one side and remove the pallet underneath (see C-fig.1).

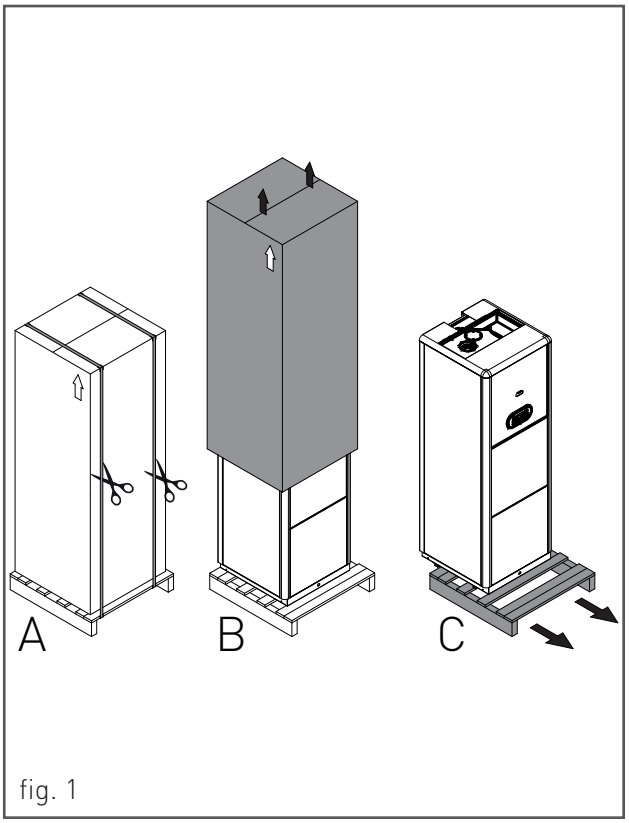
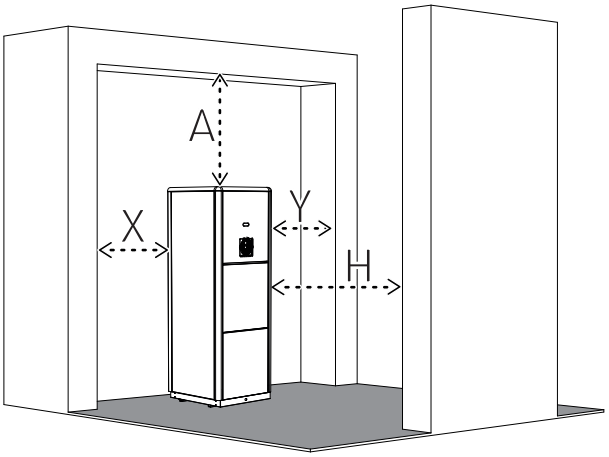


fig. 1

1.1.5. MINIMAL TECHNICAL SPACES

The appliance must be installed exclusively on a flat horizontal solid floor capable of supporting its weight.

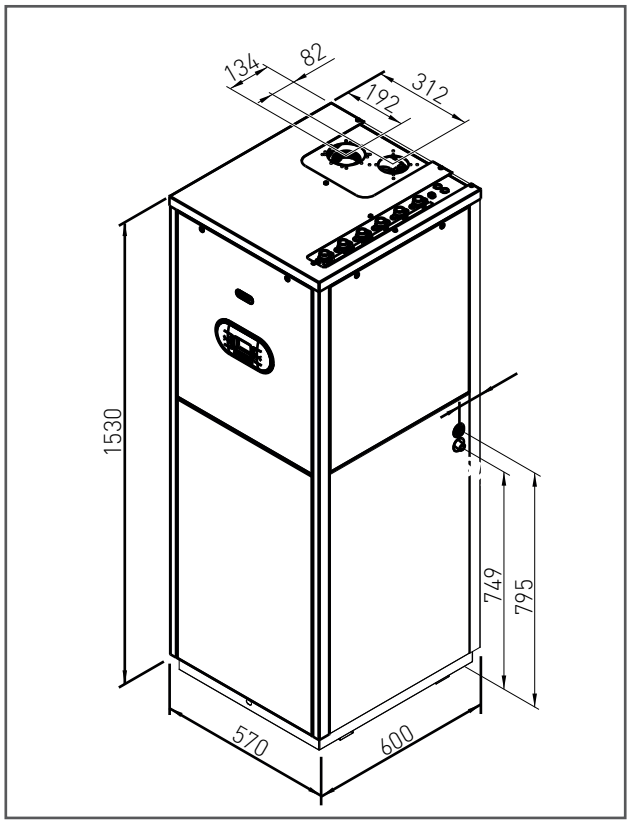
In order to allow the access inside the water heater for maintenance operations, you have to respect the minimum technical spaces indicated in figure 1.



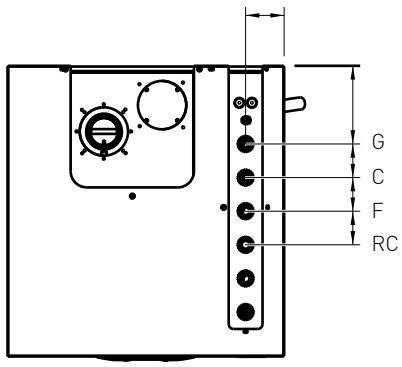
A - 500 mm
X - 250 mm
Y - 500 mm
H - 800 mm

fig.1

1.1.6. OVERALL DIMENSIONS

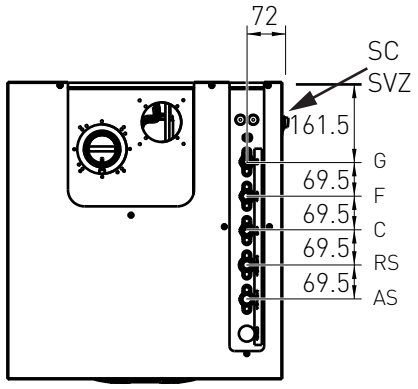


1.1.7. HYDRAULIC CONNECTIONS SFKA /150 SOLAR PLUS



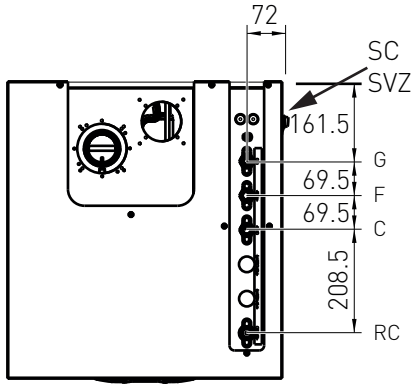
SC-	CONDENSATE DRAIN	Ø 25 mm
SVZ-	SAFETY DRAIN VALVE	
G-	GAS	Ø 3/4
F-	COLD WATER INLET	Ø 3/4
C -	D.H.W. OUTLET	Ø 3/4
RS-	RETURN FROM SOLAR	Ø 3/4
AS-	FLOW TO SOLAR	Ø 3/4
RC-	RECIRCULATION	Ø 3/4

1.1.8. HYDRAULIC CONNECTIONS SFKA /150 SOLAR



SC-	CONDENSATE DRAIN	Ø 25 mm
SVZ-	SAFETY DRAIN VALVE	
G-	GAS	Ø 3/4
F-	COLD WATER INLET	Ø 3/4
C -	D.H.W. OUTLET	Ø 3/4
RS-	RETURN FROM SOLAR	Ø 3/4
AS-	FLOW TO SOLAR	Ø 3/4

1.1.9. HYDRAULIC CONNECTIONS SFKA /150

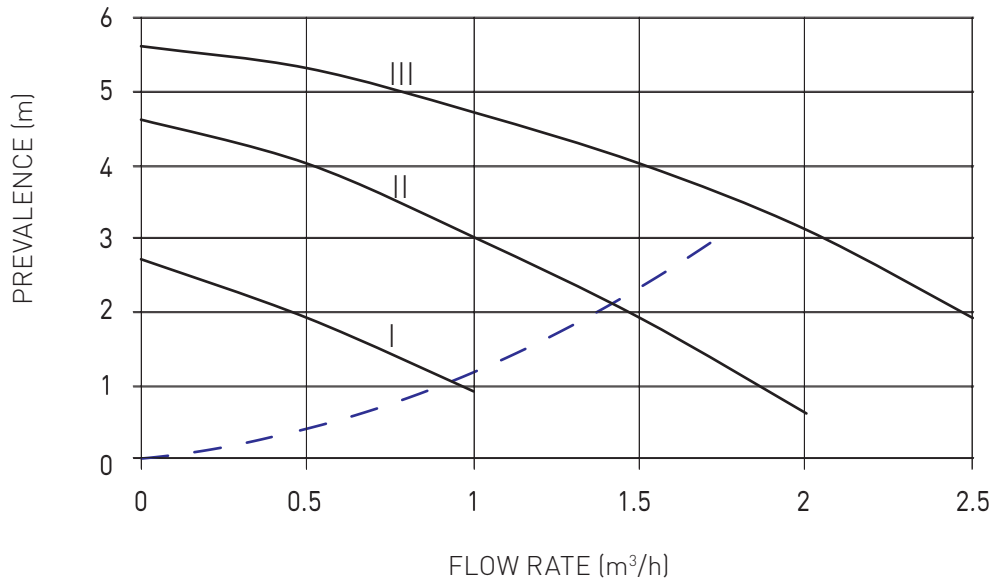


SC-	CONDENSATE DRAIN	Ø 25 mm
SVZ-	SAFETY DRAIN VALVE	
G-	GAS	Ø 3/4
F-	COLD WATER INLET	Ø 3/4
C -	D.H.W. OUTLET	Ø 3/4
RC-	RECIRCULATION	Ø 3/4

1.1.10. PUMP HEAD / FLOW DIAGRAM

THE PUMP IS ONLY FITTED IN VERSIONS WITH RECIRCULATION

ZRS 12/6



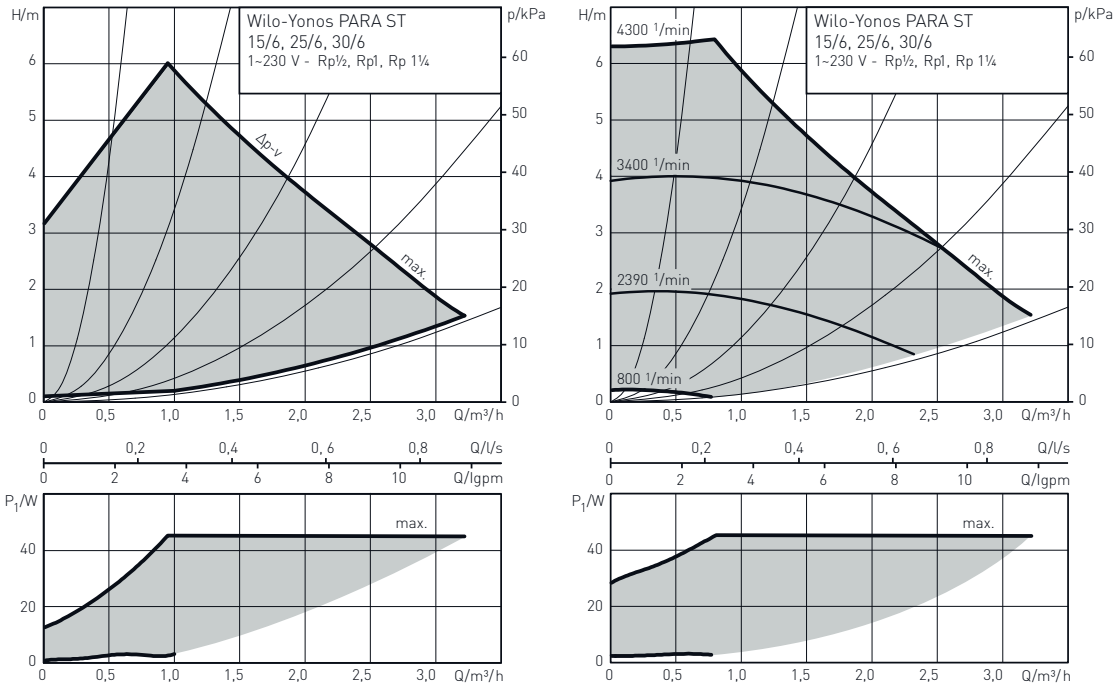
Appliance head losses

THE PUMP IS ONLY FITTED IN VERSIONS WITH SOLAR

Wilo-Yonos PARA ST 15/6

Δp-v (variable)

Constant speed I, II, III



1.1.11. 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.

1.1.12. RECIRCULATION MODE (FOR SFKA 150 AND SFKA 150 SOLAR PLUS MODELS ONLY)

The water heater can manage a recirculation system 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:

› activate the recirculation mode by pressing simultaneously the 'R' and '⊖' buttons of the control panel (fig. 1). 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. 2). 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.

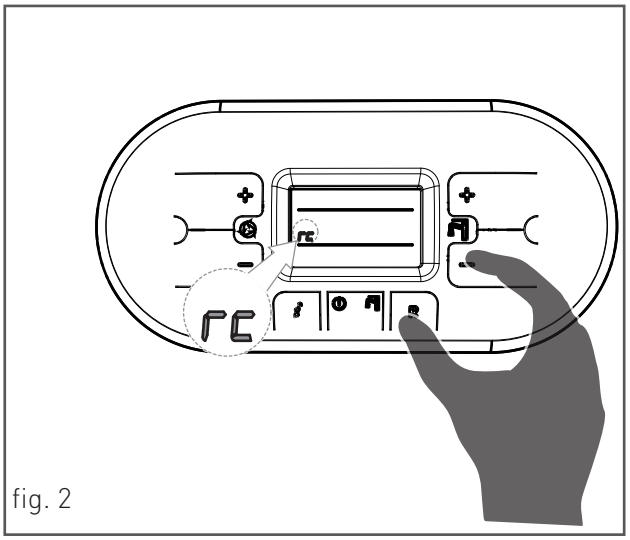


fig. 2

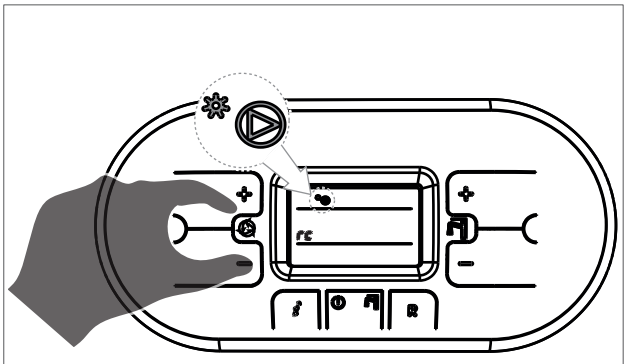


fig. 3

1.1.13. TANK PRE-HEATING FUNCTION (FOR SFKA 150 - SFKA 150 SOLAR PLUS MODELS ONLY)

By activating this function, the water in the storage tank will be heated by the burner, which will always keep the temperature set in the storage tank setpoint (bo) constant.

To activate the tank pre-heating function proceed as follows:

› Press and hold down the reset buttons 'R' and '⊕' of the symbol RECIRCULATION for 7 seconds, the display of the message 'bo ON' and the symbol indicates that the function has been activated (fig. 1).

To change the tank setpoint, proceed as follows:

› Press the '⊕' or '⊖' button of the DHW, immediately afterwards press the 'i' button, the word 'bo' will appear on the control panel display (fig. 2).

› Set the storage tank temperature setpoint by pressing the DHW '⊕' and '⊖' buttons, the adjustment range is 35- 60°C.

To deactivate the tank pre-heating function proceed as follows:

› Press and hold down the reset buttons 'R' and '⊕' of the RECIRCULATION symbol for 7 seconds, the display of 'bo OFF' indicates that the function has been deactivated.

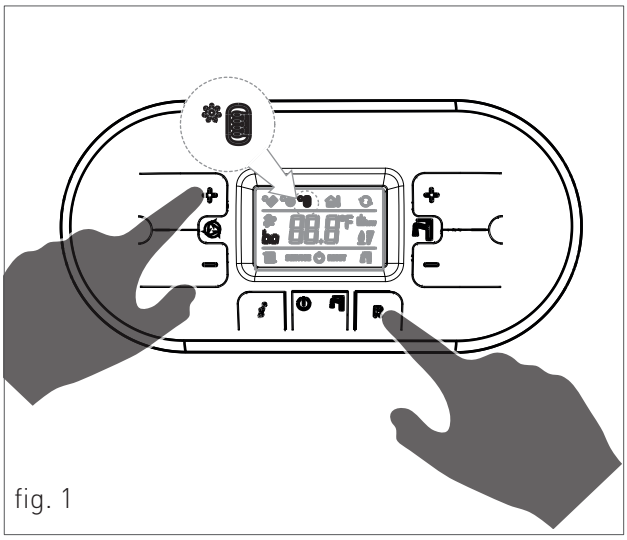


fig. 1

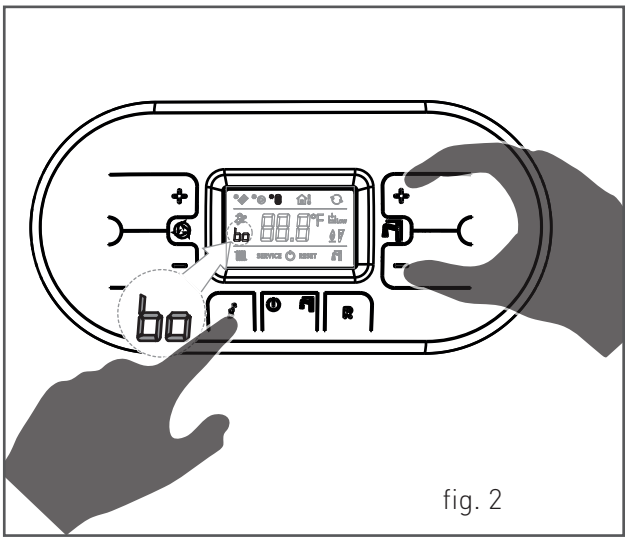


fig. 2

1.1.14. FILLING THE CONDENSATE SIPHON

Before starting the water heater, it is necessary to fill the condensate siphon in order to avoid flue reflux of combusted gases through the siphon itself.

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

› Unscrew the "T" cap from the siphon, fill three quarters of the the siphon with water and screw the "T" cap back in;

› Connect the dedicated flexible condensate draining pipe "P" to a waste disposal system. The condensate can be drained directly in the sewerage system by inserting an easily serviceable siphon.

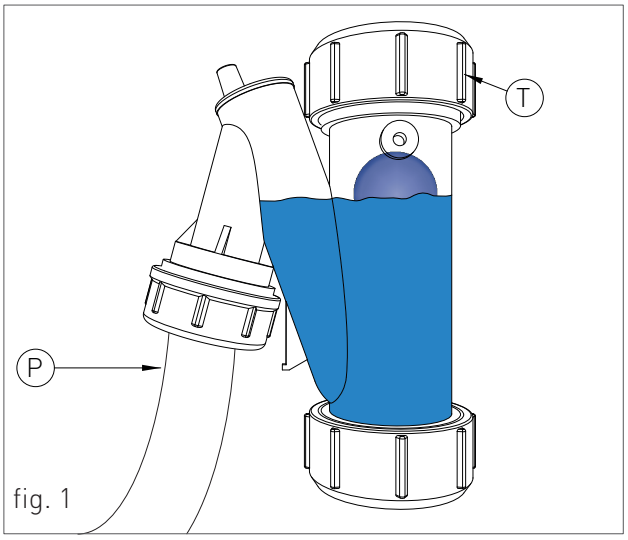


fig. 1

1.1.15. 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).

1.1.16. 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.

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.

1.1.17. 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 mm^2.

› 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.

1.1.18. 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 "⏚".
- 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.

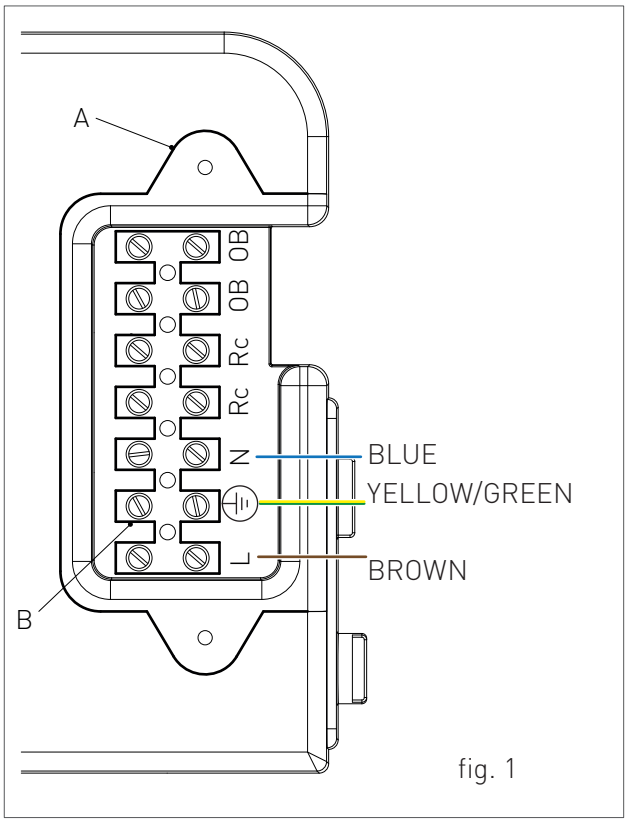


fig. 1

1.1.19. OPTIONAL ELECTRICAL CONNECTIONS

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

To wire the optional items below:

(OB) TANK PRE-HEATING DEACTIVATION TIMER

(TP) RECIRCULATION DEACTIVATION TIMER

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

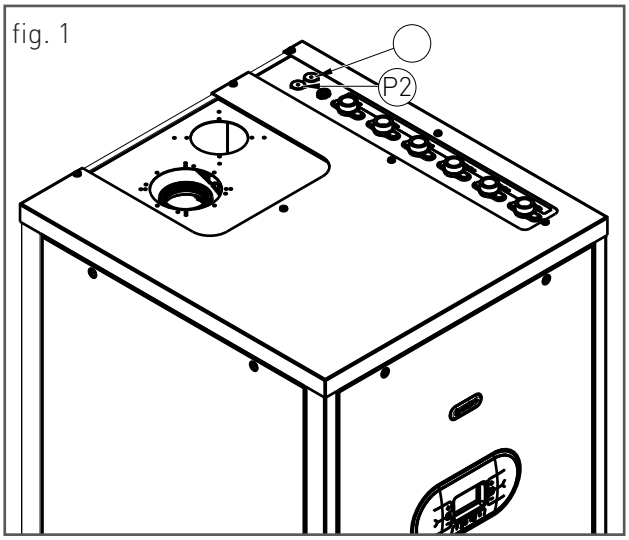
DANGER
Cut off the voltage from the main switch.

› 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



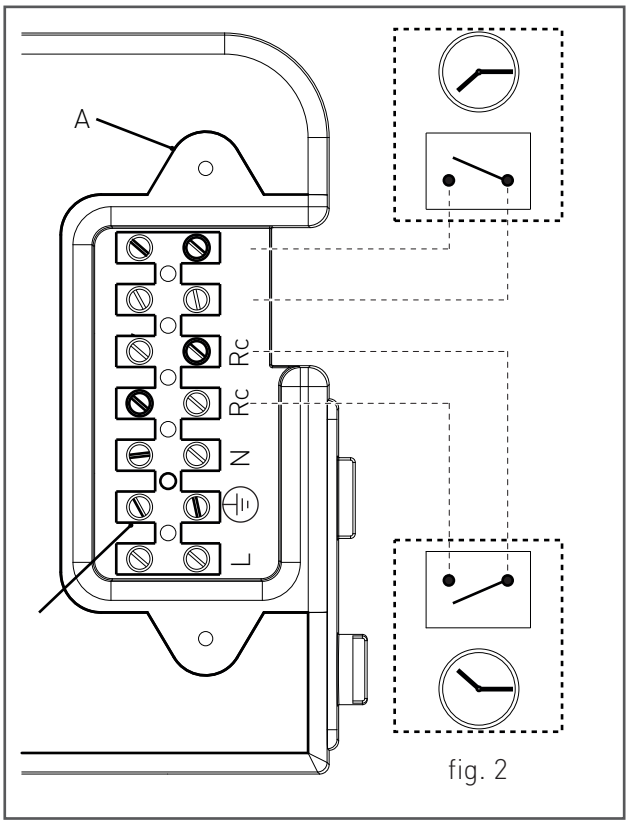


fig. 2

To wire the optional items below:

(CR) OPEN THERM REMOTE CONTROL

(CRC) RECIRCULATION PUMP

(SRC) RECIRCULATION SENSOR

(KSI) INTEGRATED SOLAR KIT CODE 65-00915

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

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

DANGER
Cut off the voltage from the main switch.

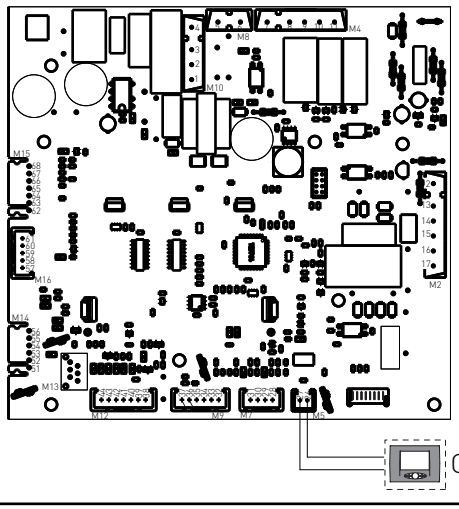
› remove the water heater front casing (refer to chapter ACCESSING THE WATER HEATER).

› 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).

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

For models:



For models: SFKA /150 SOLAR
SFKA /150 SOLAR PLUS

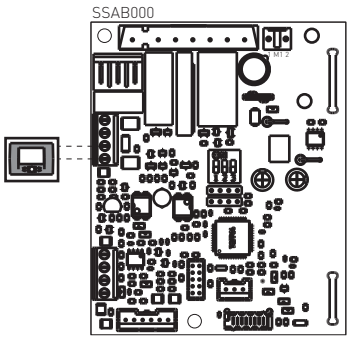


fig. 3

1.1.20. 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. It is recommended to install a discharge system

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 doe 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).

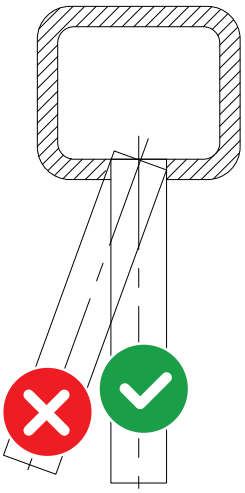


fig. 1

1.1.21. INSTALLATION MODES

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

› B23P- Indoor air intake and outdoor flue exhaust, with exhaust system operating under pressure.

› B33- Indoor air intake and flue exhaust duct.

› C13- Wall concentric flue exhaust.

› C33- Roof concentric flue exhaust.

› C43- Flue exhaust and air intake in separated common flue ducts, subjected to similar wind conditions.

› 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.

› 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.

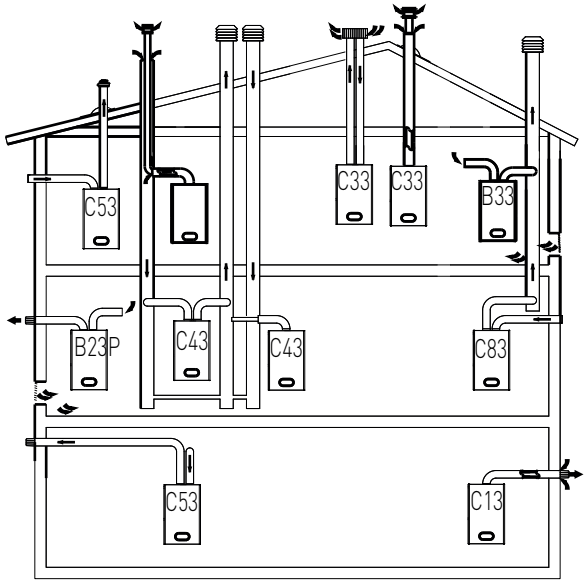


fig. 1

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 boiler 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 "TECHINCAL DATA" chapter. All this information allow to perform the necessary calculations to check the possibility of installing various flue system configurations.

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

EXHAUST OF COMBUSTION PRODUCTS FOR B-TYPE DEVICES

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 boiler 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 cm^2 for every kW of heat capacity installed with a minimum of 100 cm^2;
- 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.

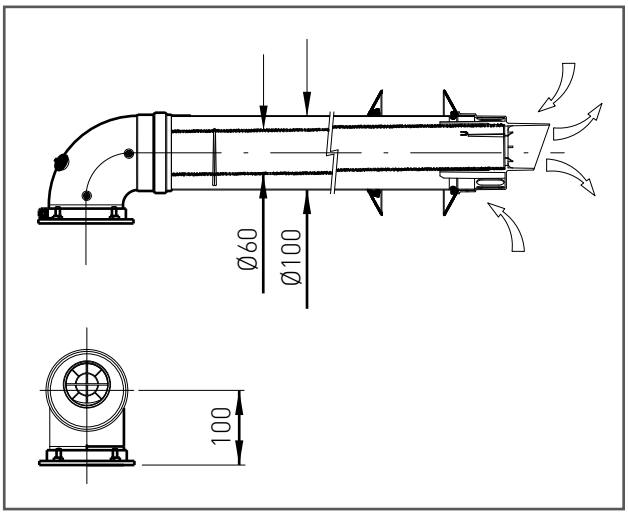
1.1.22. TYPE OF FLUE SYSTEM

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 boilers 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

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 traditional boilers only.

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

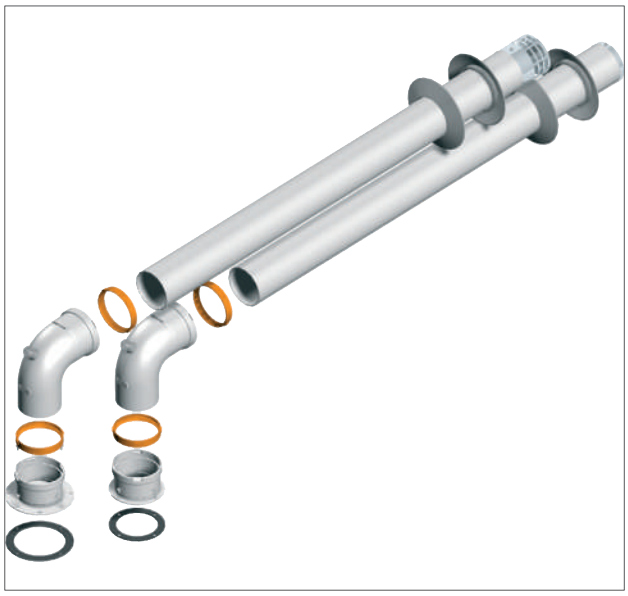
PLEASE SEE THE MAXIMUM EXHAUST AND INTAKE LENGTH IN THE TABLE IN CHAPTER "TECHNICAL DATA".

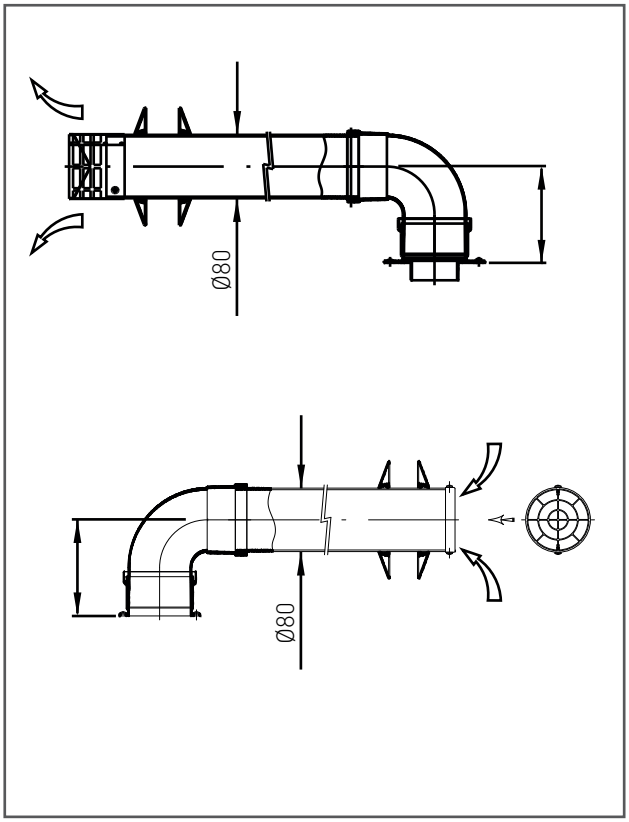
The maximum exhaust length (or linear length) can be calculated summing the length of the linear pipe and the equivalent length of each flue bend additional to the first one.

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

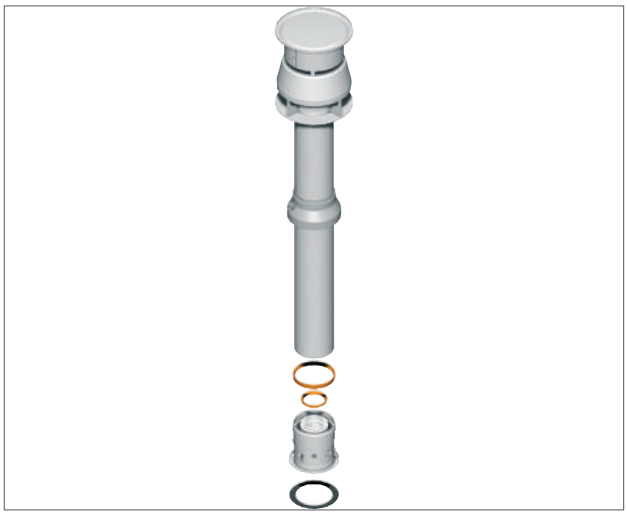
Flue bend Ø80 at 90°= 1.5 m

Flue bend Ø80 at 45°= 0.8 m





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

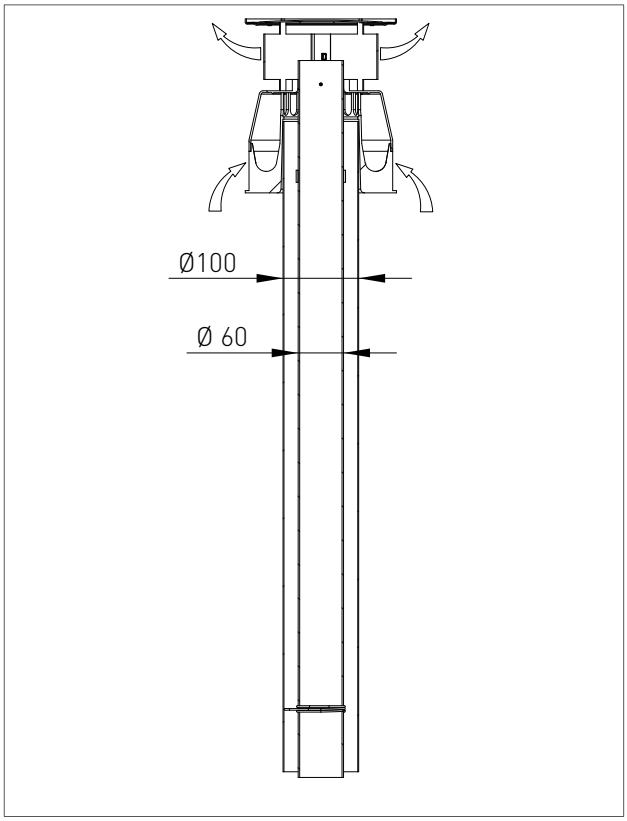


It allows the flue exhaust and the air intake directly the from roof.

Suitable for condensing boilers 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 CENTRE 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 forced;
- 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 t
or materials near
- open the water h
that there are n
the device (the b
checked while the
- in case of new i
network, the air i
device at its com
repeat the start-
air inside the pipe

SERVICE CENTRE

2.1.2. WATER HEATER IGNITION

Proceed with water heater ignition as follows:

› power the water heater;

THE START-UP SYSTEM WILL AUTOMATICALLY ACTIVATE THE VENT CYCLE FUNCTION, DISPLAYED ON SCREEN WITH CODE "F33" (ONLY AT THE FIRST START-UP IT WILL LAST FOR 5 MINUTES*). When function "F33" is active, the pump is enabled and the burner start-up request is disabled. The regular operation of the water heater is only allowed when this operation is completed.

› 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).

› It may be necessary to repeat the ignition operation several times to eliminate any air inside the gas pipe. Before repeating the operation, wait at least 5 seconds from the last ignition attempt and unlock the water heater from "E01" error code by pressing the Reset ' ® ' button.

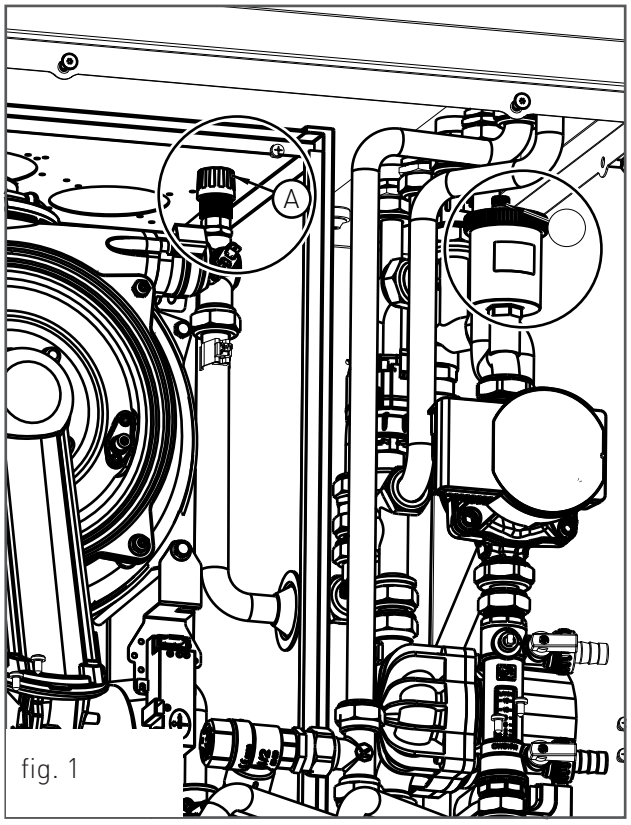


fig. 1

(*) Only at the first start-up the system vent cycle performed by the water heater lasts 5 minutes. After each water pressure reset the water heater will automatically perform a reduced vent cycle, of 2 minutes. During this function, the display will show the code "F33". The regular operation of the water heater is only allowed when this operation is completed.

2.1.3. CO2 VALUE CHECK AND CALIBRATION

WARNING

The CO_2 value should be checked with closed casing, while the gas valve should be adjusted with open casing.

To check and calibrate the CO_2 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 flue analyser sensor in the suitable 'PF' flue test point (fig. 1), then make sure that the CO_2 value complies with the requirements indicated in chapter "Technical data", otherwise unscrew the protection screw 'A' (fig. 2) and adjust the screw '2' (fig. 2) of the Off-Set adjuster using a 4 Allen key. To increase the CO_2 value, turn the screw clockwise and vice-versa if you want to decrease it.

› Once the adjustment is completed, 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 CO_2 value complies with the requirements indicated in chapter "Technical data", otherwise adjust it using screw '1' (fig. 2) of the gas flow adjuster. To increase the CO_2 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 mixiumum CO_2 value did not change. If changed, repeat the calibration described in the previous paragraph.

fig. 1

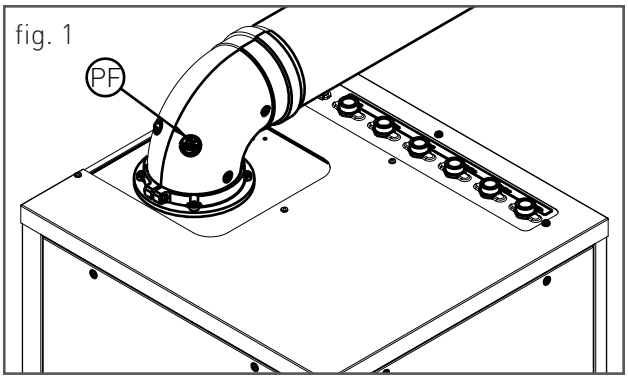
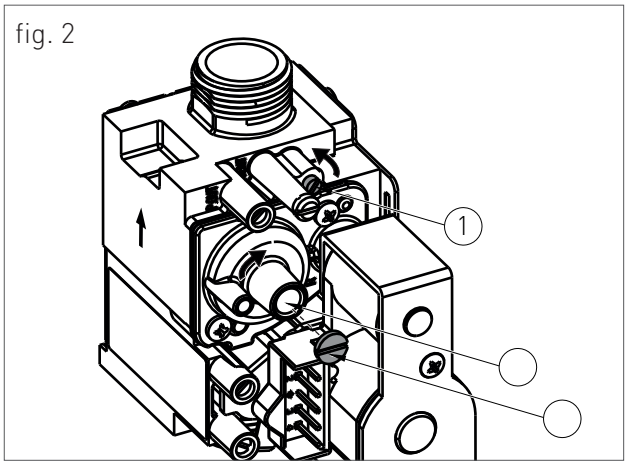
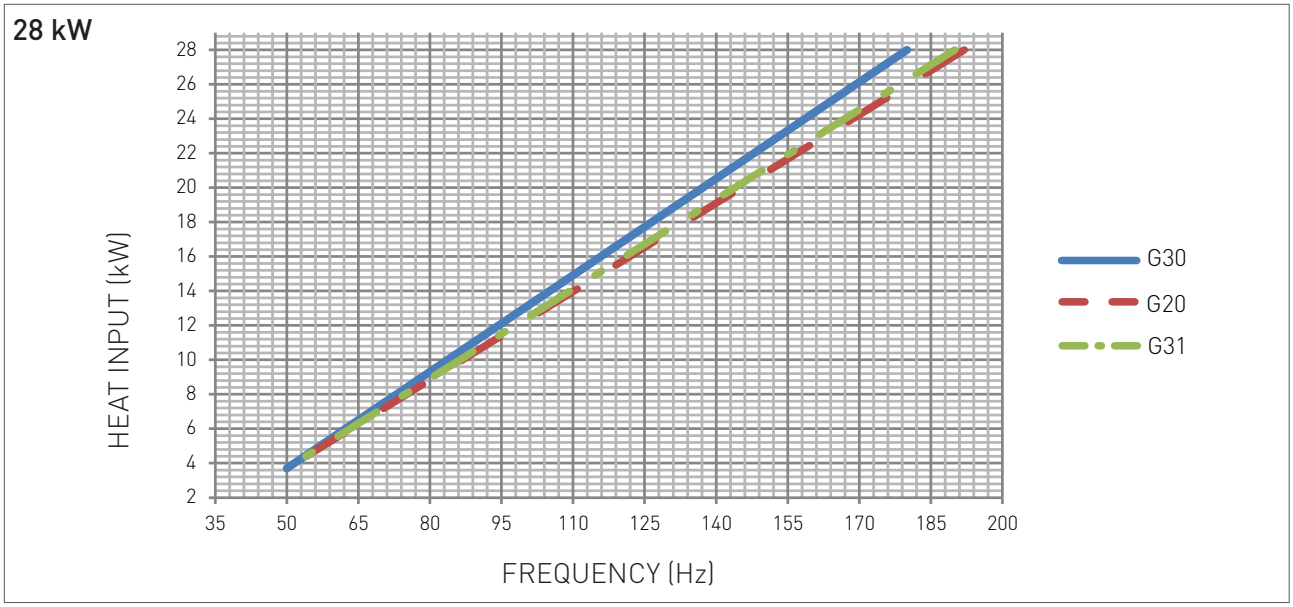


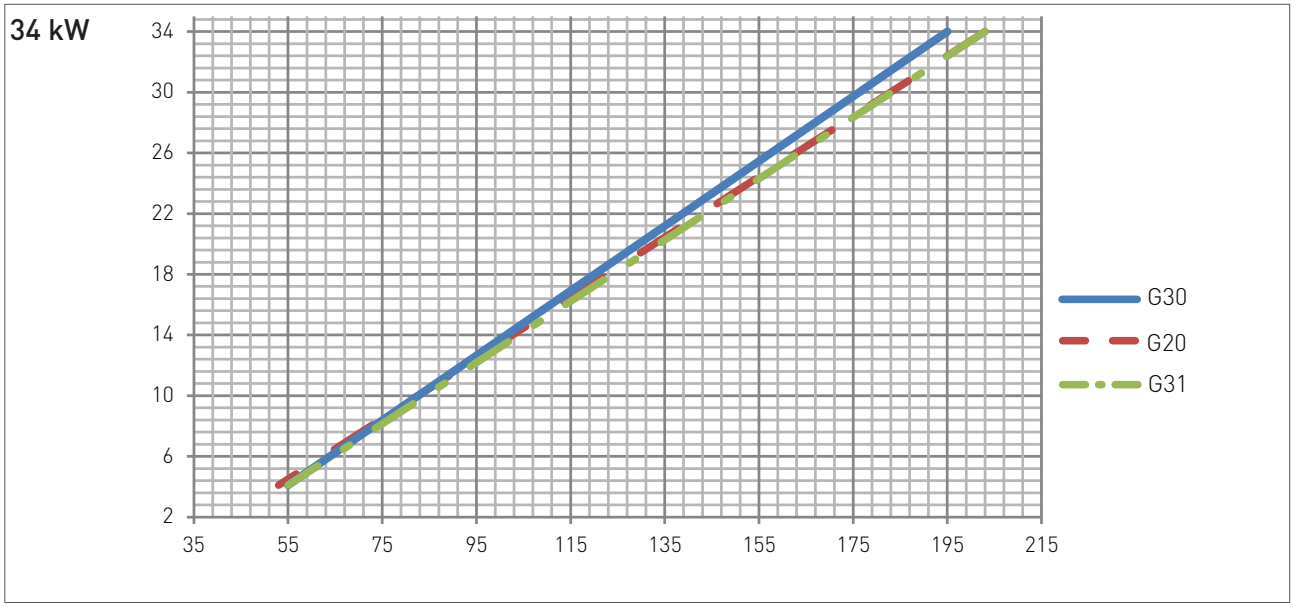
fig. 2



2.1.4. HEAT INPUT DIAGRAM / ELECTRIC FAN FREQUENCY



GAS TYPE		MINIMUM FREQUENCY	MAXIMUM FREQUENCY	STARTING STEP ADJUSTMENT
G20	Hz	50	192	110
G30	Hz	50	180	130
G31	Hz	50	190	130



GAS TYPE		MINIMUM FREQUENCY	MAXIMUM FREQUENCY	STARTING STEP ADJUSTMENT
G20	Hz	53	203	110
G30	Hz	55	195	130
G31	Hz	55	203	130

2.2. MAINTENANCE

2.2.5. 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 in accordance with current legislation

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 replacethe gaskets, if necessary;
- visually check the flame and the condition of the combustion chamber;
- 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.

2.2.6. TECHNICAL DATA

Model		SFKA 28 /150 (Solar / Plus)	SFKA 34 /150 (Solar / Plus)
CE certification	no.	0476CQ0134	
Gas category		II2H3B/P	
Flue system type	type	B23-B23p-B33-B53-C13-C33-C43-C53-C63-C73-C83-C93	
Heat Input max (D.H.W.)	kW	28	34
Heat Input min (D.H.W.)	kW	3,70	4,10
Heat Input min LPG	kW	3,70	4,10
Maximum combustion efficiency	%	97,70	99
Minimum combustion efficiency	%	98,20	99,6
Flue efficiency losses with burner on (Heat Input max.)	%	2,30	1
Flue efficiency losses with burner on (Heat Input min.)	%	1,80	0,40
Fumes temperature - Heat Input max.	°C	55	49
Fumes temperature - Heat Input min.	°C	32	35
CO2 - Heat Input max. - G20	%	9,30 - 9,10	9,45 - 9,25
CO2 - Heat Input min. - G20	%	9,00 - 8,80	9,05 - 8,85
CO2 - Heat Input max. - G30	%	11,50 - 11,30	11,40 - 11,20
CO2 - Heat Input min. - G30	%	10,75 - 10,65	10,75 - 10,55
CO2 - Heat Input max. - G31	%	10,40 - 10,20	10,55 - 10,35
CO2 - Heat Input min. - G31	%	9,95 - 9,85	9,90 - 9,70
CO2 - Heat Input max. - G25	%	9,20 - 9,40	9,15 - 9,35
CO2 - Heat Input min. - G25	%	8,90 - 9,10	8,80 - 9
CO2 - Heat Input max. - G25.3	%	9,00 - 9,20	9,10 - 9,30
CO2 - Heat Input min. - G25.3	%	8,90 - 9,10	8,80 - 9
CO - Heat Input max.	ppm	72	75
CO - Heat Input min.	ppm	1	2
Fumes mass - Heat Input max.	g/s	11,02	14,80
Fumes mass - Heat Input min.	g/s	1,78	1,85
Weighted NOx (0% O2) ppm	ppm	23	31
Weighted NOx (0% O2) on GCV mg/kWh	mg/kWh	36	49
Domestic Hot Water (D.H.W.) circuit			
Temperature setting - D.H.W.	°C	35-60	35-60
Max. operating pressure - D.H.W.	bar	8	8
Min. operating pressure - D.H.W.	bar	0,5	0,5
Storage tank capacity	litres	150	150
Continuous D.H.W. supply - ΔT 30° - mixed water - 1 hour	litres	984 (WITH INSTANT PREHEATING)	1167 (WITH INSTANT PREHEATING)
Continuous D.H.W. supply - ΔT 30° - mixed water - first 10 minutes	litres	305 (WITH INSTANT PREHEATING)	333 (WITH INSTANT PREHEATING)
Expansion vessel capacity (D.H.W.)	litres	8	8

Dimensions			
Width	mm	570	570
Depth	mm	600	600
Height	mm	1530	1530
Gross weight	Kg	104,6 kg For SFKA 150 model. 107,6 kg For SFKA /150 Solar model. 108,6 kg For SFKA /150 Solar Plus model.	105,6 kg For SFKA 150 model. 108,6 kg For SFKA /150 Solar model. 109,6 kg For SFKA /150 Solar Plus model.
Net weight	Kg	98,6 kg For SFKA 150 model. 101,6 kg For SFKA /150 Solar model. 102,6 kg For SFKA /150 Solar Plus model.	99,6 kg For SFKA 150 model. 102,6 kg For SFKA /150 Solar model. 103,6 kg For SFKA /150 Solar Plus model.
Hydraulic Connections			
Cold water inlet	Ø	3/4"	3/4"
D.H.W. outlet	Ø	3/4"	3/4"
Gas	Ø	3/4"	3/4"
D.H.W. Recirculation loop connection	Ø	3/4" (not included in the Solar model)	3/4" (not included in the Solar model)
Solar circuit flow	Ø	3/4" (not included in the SFKA /150 model)	3/4" (not included in the SFKA /150 model)
Solar circuit return	Ø	3/4" (not included in the SFKA /150 model)	3/4" (not included in the SFKA /150 model)
Flue systems			
Fan - Max. available pressure	Pa	76	91
Fan - Min. available pressure	Pa	4	5,8
Max. Flue length Ø60/100 - Horiz. Conc.	m	6	2
Flue bend 45° MF Ø60/100 - Pressure loss	m	0,6	0,6
Flue bend 90° MF Ø60/100 - Pressure loss	m	1	1
Flue extension MF Ø60/100 L=1000 - Pressure loss	m	1	1
Max. Flue length Ø80/125 - Horiz. Conc.	m	8	10
Flue bend 45° MF Ø80/125 - Pressure loss	m	0,5	0,5
Flue bend 90° MF Ø80/125 - Pressure loss	m	0,8	0,8
Flue extension MF Ø80/125 L=1000 - Pressure loss	m	1	1

Max. Flue length Ø50/50 - Horiz. Twin	m	12	3
Max. Flue length Ø60/60 - Horiz. Twin	m	20	18
Flue adapter Ø80/60 MF - Pressure loss	m	0,4	0,4
Flue bend 45° MF Ø60 - Pressure loss	m	0,8	0,8
Flue bend 90° MF Ø60 - Pressure loss	m	1,5	1,5
Flue extension MF Ø60 L=1000 - Pressure loss	m	1	1
T-connection MF Ø60 - Pressure loss	m	3,5	3,5
Max Flue length Ø80/80 - Horiz. Twin	m	60	60
Max. Flue length Ø50 - Horiz. Pipe	m	10	2
Max. Flue length Ø60 - Horiz. Pipe	m	18	14
Max. Flue length Ø80 - Horiz. Pipe	m	35	35
Flue bend 45° MF Ø80 - Pressure loss	m	0,8	0,8
Flue bend 90° MF Ø80 - Pressure loss	m	1,5	1,5
Flue extension MF Ø80 L=1000 - Pressure loss	m	1	1
T-connection MF Ø80 - Pressure loss	m	3,5	3,5
Max. Flue length Ø60/100 - Vert. Conc.	m	6	2
Max. Flue length Ø80/125 - Vert. Conc.	m	8	10
Max. Flue length Ø50/50 - Vert . Twin	m	12	3
Max. Flue length Ø60/60 - Vert . Twin	m	20	18
Max. Flue length Ø80/80 - Vert . Twin	m	60	60
Max. Flue length Ø50 - Vert. Pipe	m	10	2
Max. Flue length Ø60 - Vert. Pipe	m	18	14
Max. Flue length Ø80 - Vert. Pipe	m	35	35
Electrical specifications			
Voltage-frequency	V/Hz	220-230/50	220-230/50
Nominal power consumption	A	0,75	0,75
Electric power with boiler OFF	W	3.50	3.50
Max Power consumption	W	123 (Solar Plus series)	123 (Solar Plus series)
Max Power consumption - boiler pump (100%)	W	85 (Solar Plus series)	85 (Solar Plus series)
Protection rating	IP	X5D	X5D
Gas supply			
Supply pressure - G20	mbar	20	20
Supply pressure min. - G20	mbar	17	17
Supply pressure max. - G20	mbar	25	25
Fan speed Max. D.H.W. output - G20	Hz	192	203
Fan speed Min. D.H.W. output - G20	Hz	50	53
Gas consumption - G20	m^3/h	2,96	3,60
Supply pressure - G30	mbar	28-30	28-30
Supply pressure min. - G30	mbar	20	20
Supply pressure max. - G30	mbar	35	35
Fan speed Max. D.H.W. output - G30	Hz	180	195
Fan speed Min. D.H.W. output - G30	Hz	50	55
Gas consumption - G30	kg/h	2,21	2,68

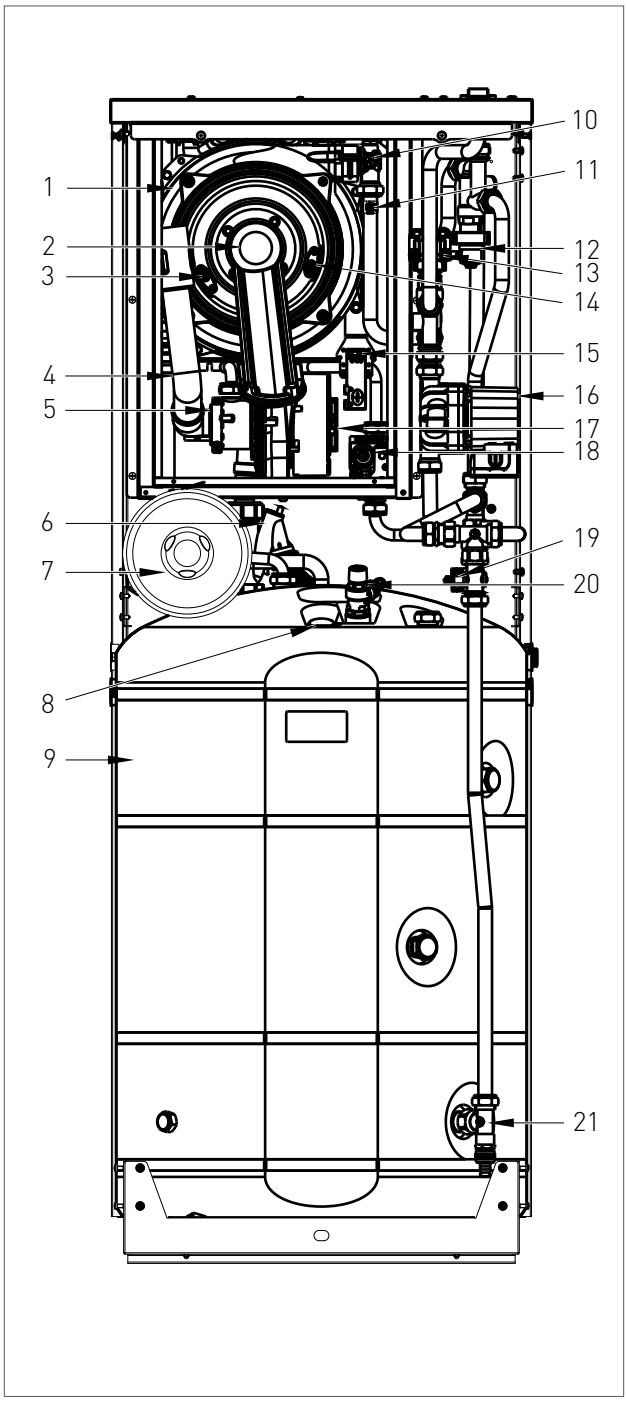
Supply pressure - G31	mbar	37	37
Supply pressure min. - G31	mbar	25	25
Supply pressure max. - G31	mbar	45	45
Fan speed Max. D.H.W. output - G31	Hz	190	203
Fan speed Min. D.H.W. output - G31	Hz	50	55
Gas consumption - G31	kg/h	2,17	2,64

2.2.7. TECHNICAL ASSEMBLY

SFKA /150

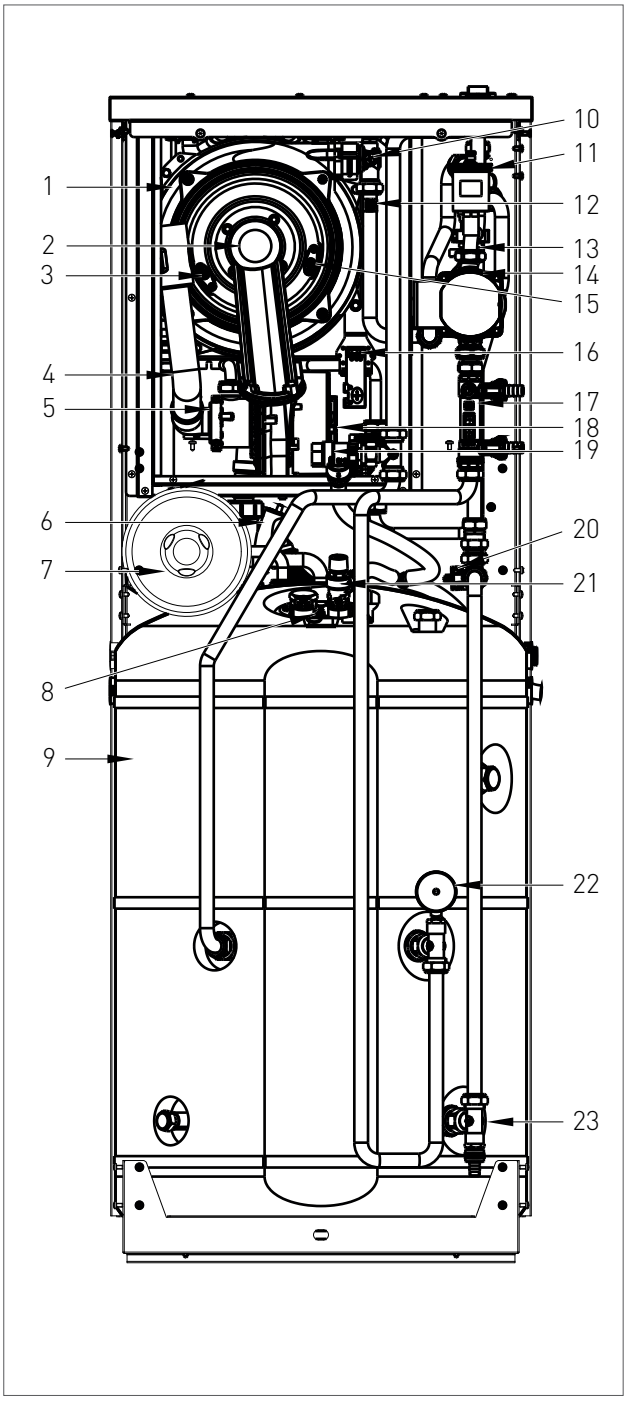
KEY

1. CONDENSING HEAT EXCHANGER
2. BURNER
3. FLAME DETECTION ELECTRODE
4. AIR INTAKE PIPE
5. VENTURI
6. CONDENSATE SIPHON
7. EXPANSION VESSEL
8. ANODE
9. STORAGE TANK
10. SAFETY THERMOSTAT
11. D.H.W. OUTLET SENSOR
12. MIXING VALVE - STEPPER
13. 3-WAY VALVE
14. IGNITION ELECTRODE
15. IGNITION TRANSFORMER
16. RECIRCULATION PUMP
17. FAN
18. GAS VALVE
19. FLOWMETER
20. 8 bar SAFETY VALVE
21. STORAGE TANK DRAIN TAP



SFKA /150 SOLAR

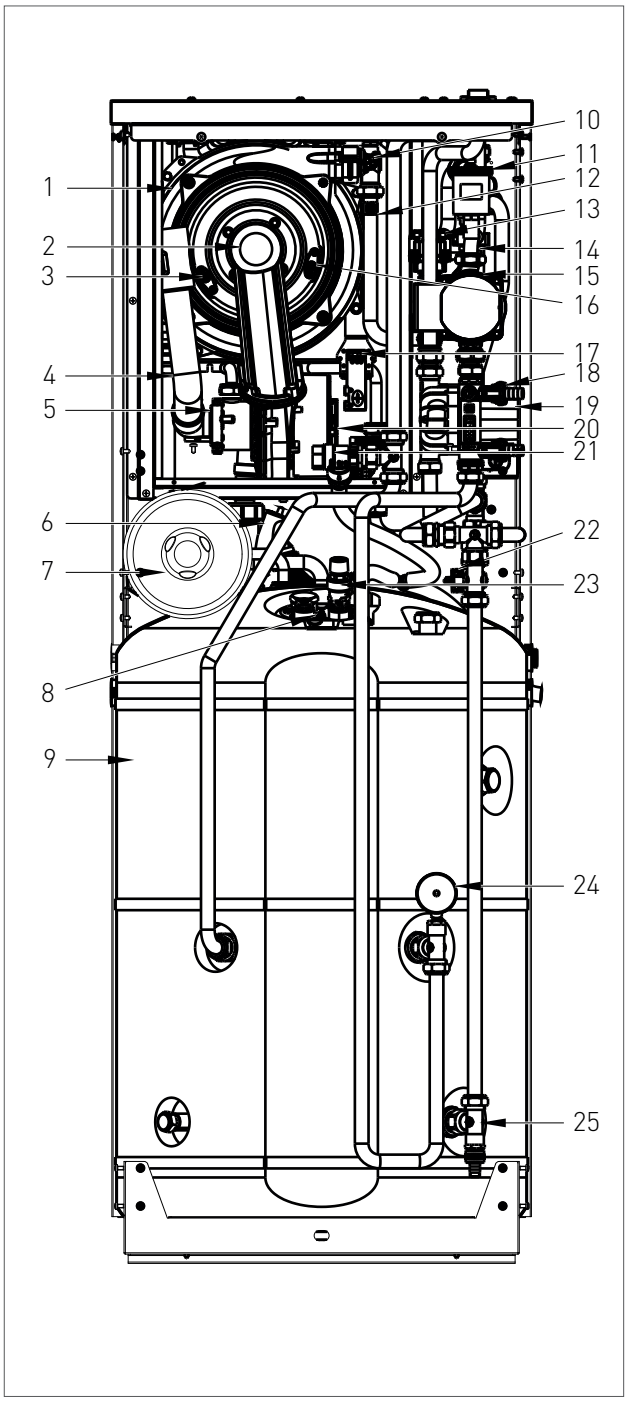
KEY
1. CONDENSING HEAT EXCHANGER
2. BURNER
3. FLAME DETECTION ELECTRODE
4. AIR INTAKE PIPE
5. VENTURI
6. CONDENSATE SIPHON
7. EXPANSION VESSEL
8. ANODE
9. STORAGE TANK
10. SAFETY THERMOSTAT
11. MANUAL AIR VENT VALVE
12. D.H.W. OUTLET SENSOR
13. MIXING VALVE - STEPPER
14. SOLAR CIRCUIT PUMP
15. IGNITION ELECTRODE
16. IGNITION TRANSFORMER
17. SOLAR CIRCUIT FLOWMETER
18. FAN
19. SAFETY VALVE 6 bar
20. FLOWMETER
21. 8 bar SAFETY VALVE
22. SOLAR CIRCUIT WATER PRESSURE GAUGE
23. STORAGE TANK DRAIN TAP



SFKA /150 SOLAR PLUS

KEY

1. CONDENSING HEAT EXCHANGER
2. BURNER
3. FLAME DETECTION ELECTRODE
4. AIR INTAKE PIPE
5. VENTURI
6. CONDENSATE SIPHON
7. EXPANSION VESSEL
8. ANODE
9. STORAGE TANK
10. SAFETY THERMOSTAT
11. MANUAL AIR VENT VALVE
12. D.H.W. OUTLET SENSOR
13. 3-WAY VALVE
14. MIXING VALVE - STEPPER
15. SOLAR CIRCUIT PUMP
16. IGNITION ELECTRODE
17. IGNITION TRANSFORMER
18. SOLAR CIRCUIT FLOWMETER
19. RECIRCULATION PUMP
20. FAN
21. SAFETY VALVE 6 bar
22. FLOWMETER
23. 8 bar SAFETY VALVE
24. SOLAR CIRCUIT WATER PRESSURE GAUGE
25. STORAGE TANK DRAIN TAP



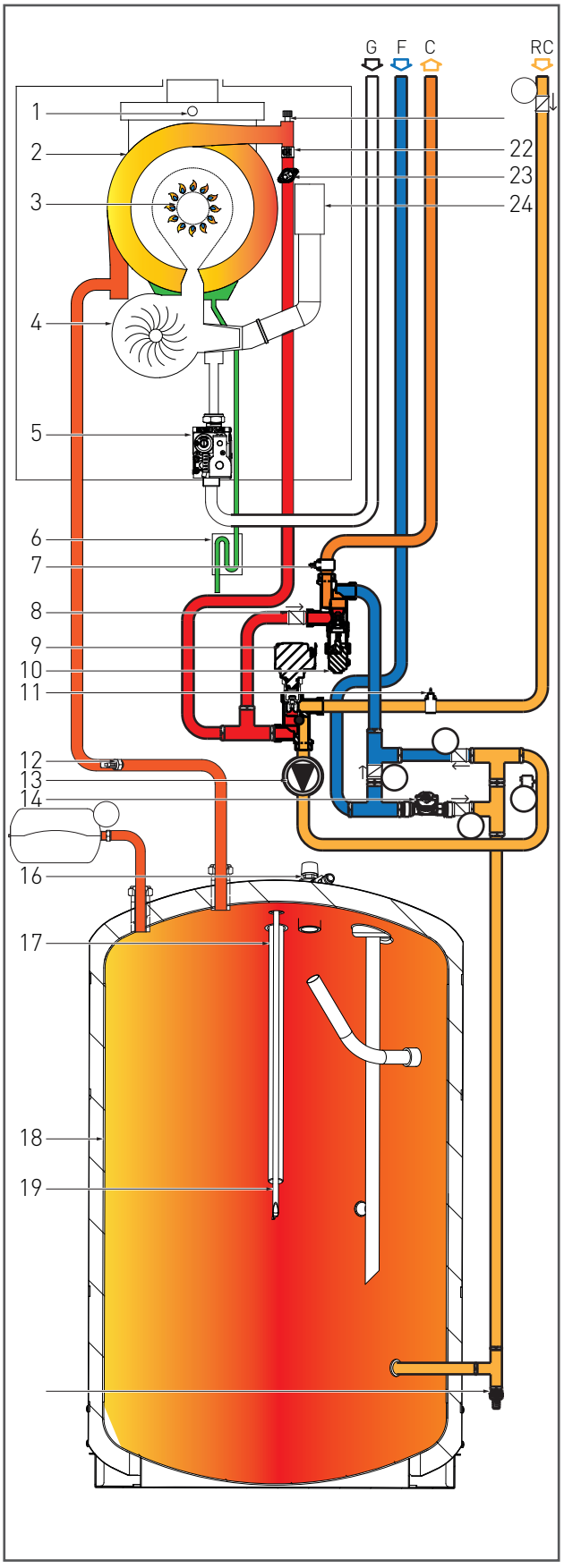
2.2.8. HYDRAULIC DIAGRAM

SFKA /150

KEY

G. GAS
F. COLD WATER INLET
C. D.H.W. OUTLET
RC. RECIRCULATION INLET

1. FLUE SAFETY THERMO FUSE
2. CONDENSING HEAT EXCHANGER
3. BURNER
4. FAN
5. GAS VALVE
6. CONDENSATE SIPHON
7. HOT WATER SENSOR AT THE OUTLET OF MIXING VALVE
8. NO RETURN VALVE
9. 3-WAY VALVE
10. MIXING VALVE - STEPPER
11. RECIRCULATION RETURN SENSOR
12. STORAGE TANK OUTLET WATER SENSOR
13. RECIRCULATION PUMP
14. FLOWMETER
15. EXPANSION VESSEL
16. 8 bar SAFETY VALVE
17. ANODE
18. STORAGE TANK
19. STORAGE TANK SENSOR
20. STORAGE TANK DRAIN TAP
21. MANUAL AIR VENT VALVE
22. EXCHANGER OUTLET HOW WATER SENSOR
23. SAFETY THERMOSTAT
24. AIR INTAKE PIPE
25. WATER PRESSURE SWITCH

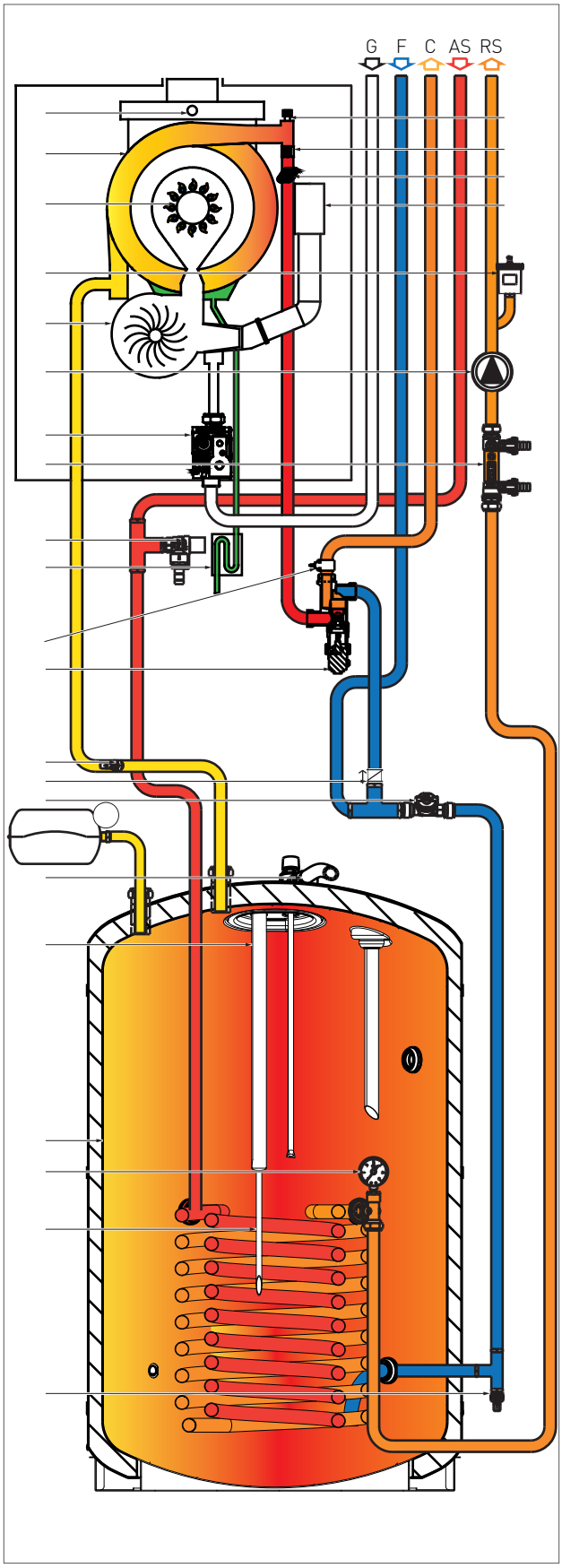


SFKA /150 SOLAR

KEY

G. GAS
F. COLD WATER INLET
C. D.H.W. OUTLET
AS. FLOW TO SOLAR
RS. RETURN FROM SOLAR

1. FLUE SAFETY THERMO FUSE
2. CONDENSING HEAT EXCHANGER
3. BURNER
4. MANUAL AIR VENT VALVE
5. FAN
6. SOLAR CIRCUIT PUMP
7. GAS VALVE
8. SOLAR CIRCUIT FLOWMETER
9. 6 bar SAFETY VALVE
10. CONDENSATE SIPHON
11. HOT WATER SENSOR AT THE OUTLET OF MIXING VALVE
12. MIXING VALVE - STEPPER
13. STORAGE TANK OUTLET WATER SENSOR
14. NO RETURN VALVE
15. FLOWMETER
16. EXPANSION VESSEL
17. 8 bar SAFETY VALVE
18. ANODE
19. SOLAR COIL SENSOR
20. SOLAR CIRCUIT WATER PRESSURE GAUGE
21. STORAGE TANK SENSOR
22. STORAGE TANK DRAIN TAP
23. EXCHANGER OUTLET HOW WATER SENSOR
24. SAFETY THERMOSTAT
25. AIR INTAKE PIPE

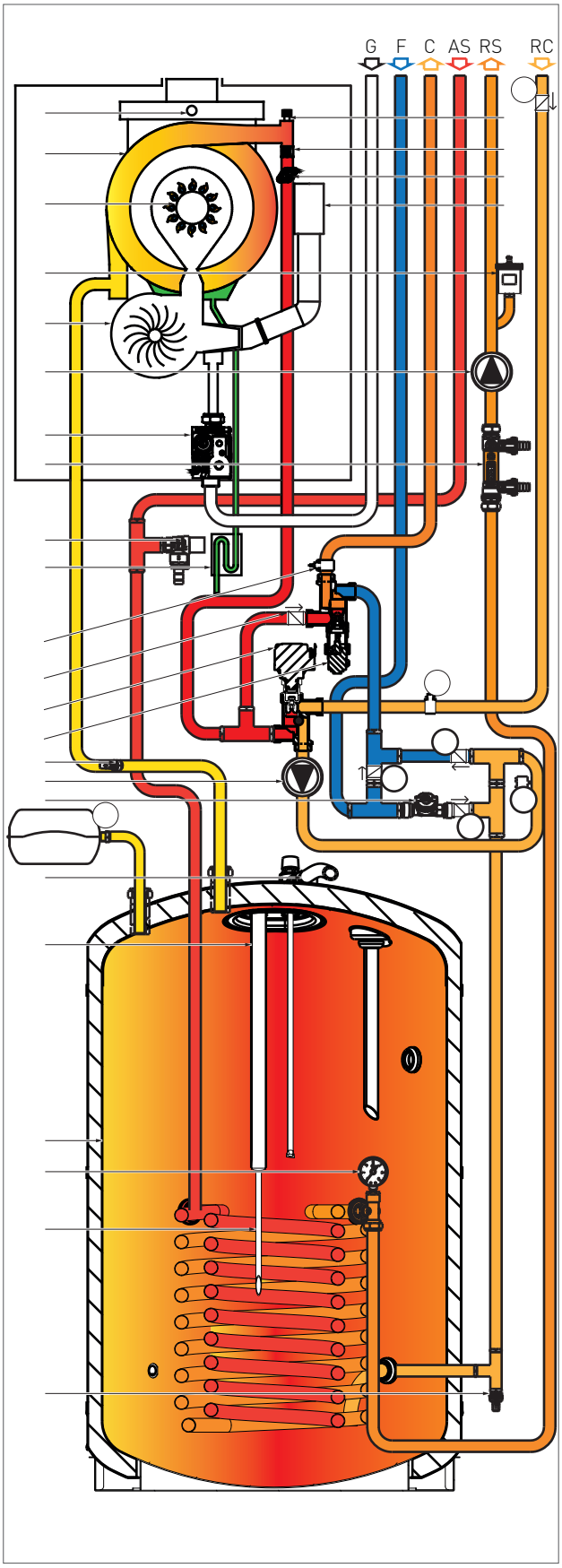


SFKA /150 SOLAR PLUS

KEY

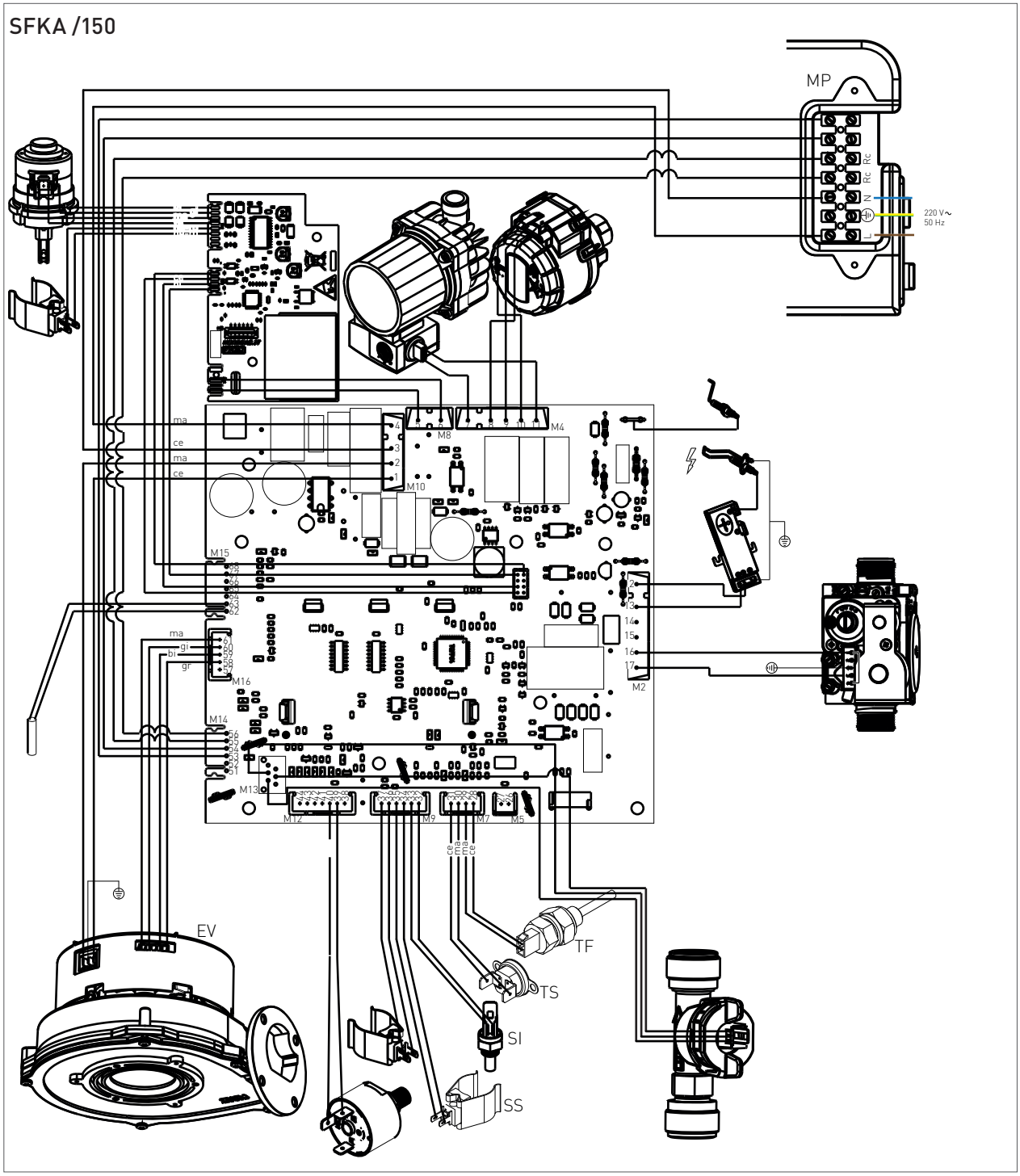
G. GAS
F. COLD WATER INLET
C. D.H.W. OUTLET
AS. FLOW TO SOLAR
RS. RETURN FROM SOLAR
RC. RECIRCULATION INLET

1. FLUE SAFETY THERMO FUSE
2. CONDENSING HEAT EXCHANGER
3. BURNER
4. MANUAL AIR VENT VALVE
5. FAN
6. SOLAR CIRCUIT PUMP
7. GAS VALVE
8. SOLAR CIRCUIT FLOWMETER
9. 6 bar SAFETY VALVE
10. CONDENSATE SIPHON
11. HOT WATER SENSOR AT THE OUTLET OF MIXING VALVE
12. NO RETURN VALVE
13. 3-WAY VALVE
14. MIXING VALVE - STEPPER
15. STORAGE TANK OUTLET WATER SENSOR
16. RECIRCULATION PUMP
17. FLOWMETER
18. EXPANSION VESSEL
19. 8 bar SAFETY VALVE
20. ANODE
21. SOLAR COIL SENSOR
22. SOLAR CIRCUIT WATER PRESSURE GAUGE
23. STORAGE TANK SENSOR
24. STORAGE TANK DRAIN TAP
25. EXCHANGER OUTLET HOW WATER SENSOR
26. SAFETY THERMOSTAT
27. AIR INTAKE PIPE
28. RECIRCULATION RETURN SENSOR
29. WATER PRESSURE SWITCH



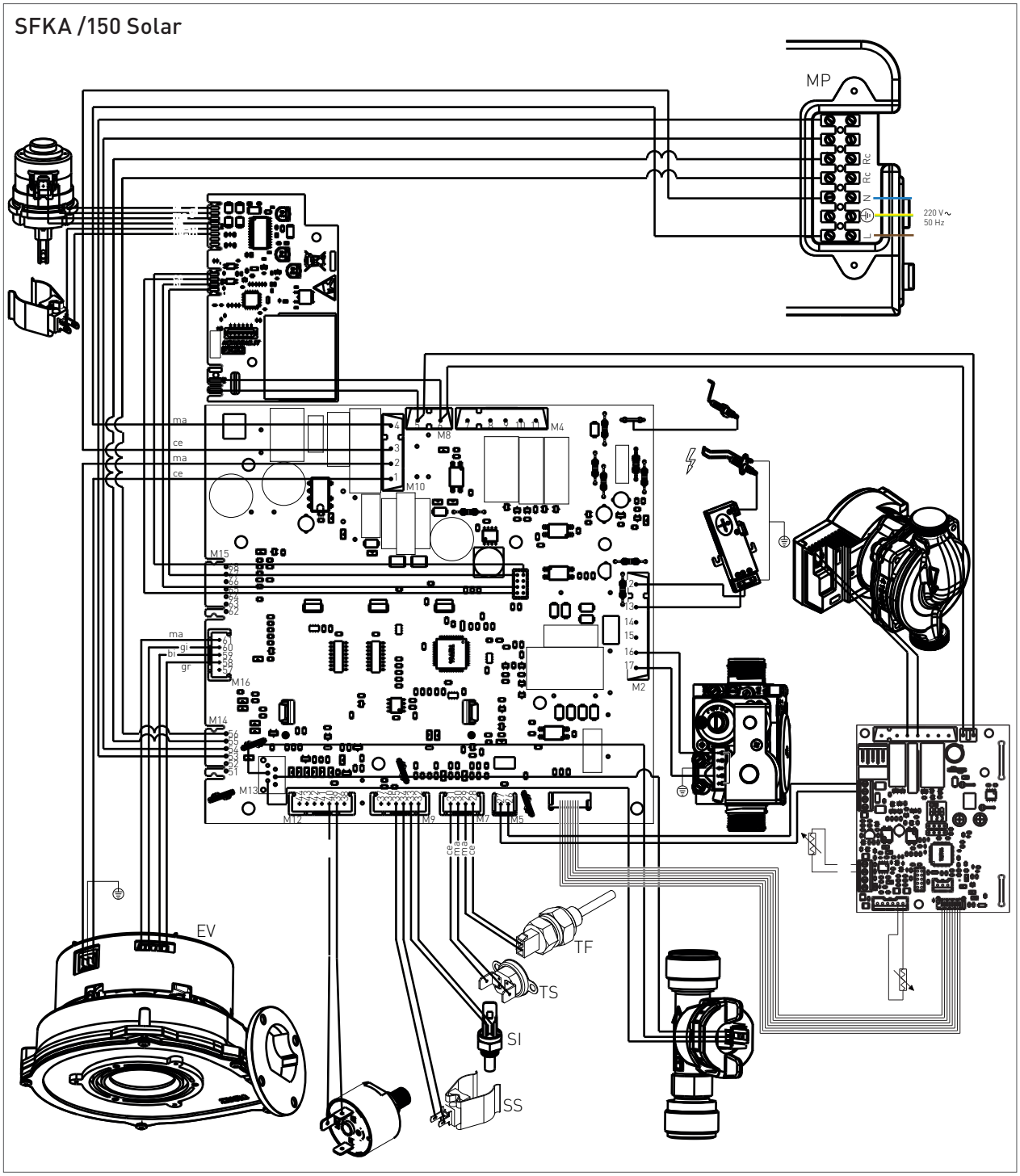
2.2.9. WIRING DIAGRAM

SFKA /150



VM: MIXING VALVE	SI: STORAGE TANK OUTLET WATER SENSOR	ER: FLAME DETECTION ELECTRODE	RO: RED
SUM: HOT WATER SENSOR AT THE OUTLET OF MIXING VALVE	TS: SAFETY THERMOSTAT	VD: 3-WAY VALVE	CE: BLUE
SA: STORAGE TANK SENSOR	TF: FLUE SAFETY THERMO FUSE (102°C)	CR: RECIRCULATION PUMP	MA: BROWN
EV: FAN	MF: FLOWMETER	MP: TERMINAL BLOCK	AR: ORANGE
PACQ:WATER PRESSURE SWITCH	VG: GAS VALVE	L: LINE / PHASE	GI: YELLOW
SRC: RECIRCULATION SENSOR	TRA:IGNITION TRANSFORMER	N: NEUTRAL	BI: WHITE
SS: HOT WATER SENSOR AT THE OUTLET	EA: START-UP ELECTRODE	NE: BLACK	GR. GREY

SFKA /150 Solar



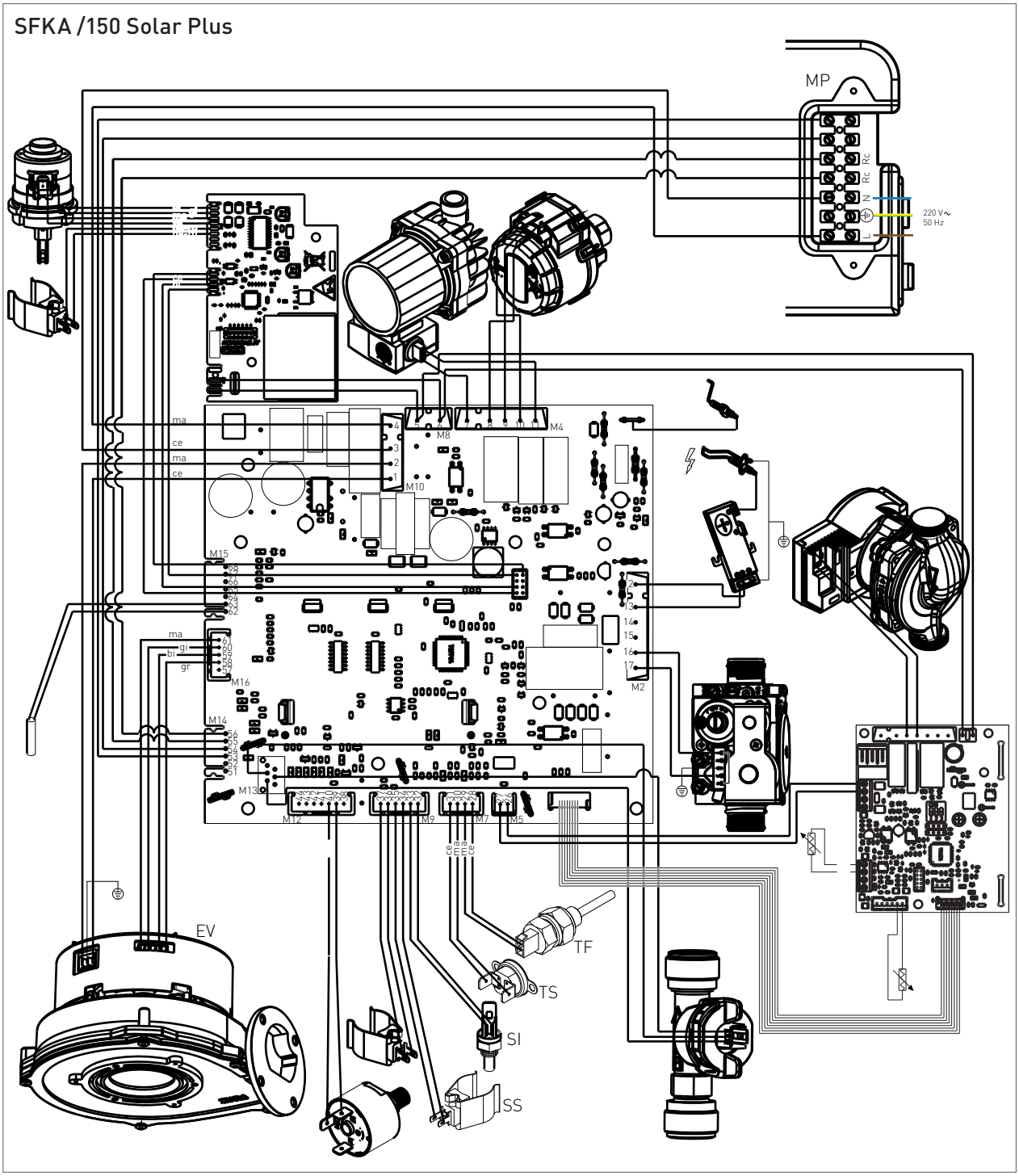
VM: MIXING VALVE
SUM: HOT WATER SENSOR AT THE OUTLET OF MIXING VALVE
EV: FAN
PACQ:WATER PRESSURE SWITCH
SS: HOT WATER SENSOR AT THE OUTLET
SI: STORAGE TANK OUTLET WATER SENSOR
TS: SAFETY THERMOSTAT
TF: FLUE SAFETY THERMO FUSE (102°C)

MF: FLOWMETER
S3: SOLAR COIL SENSOR
S1: SOLAR PANEL SENSOR
VG: GAS VALVE
TRA:IGNITION TRANSFORMER
C: SOLAR CIRCUIT PUMP
EA: START-UP ELECTRODE
ER: FLAME DETECTION ELECTRODE

MP: TERMINAL BLOCK
L: LINE / PHASE
N: NEUTRAL
NE: BLACK
RO: RED
CE: BLUE
MA: BROWN
AR: ORANGE

GI: YELLOW
BI: WHITE
GR. GREY

SFKA /150 Solar Plus



VM: MIXING VALVE	TS: SAFETY THERMOSTAT	EA: START-UP ELECTRODE	RO: RED
SUM: HOT WATER SENSOR AT THE OUTLET OF MIXING VALVE	TF: FLUE SAFETY THERMO FUSE (102°C)	ER: FLAME DETECTION ELECTRODE	CE: BLUE
SA: STORAGE TANK SENSOR	MF: FLOWMETER	VD: 3-WAY VALVE	MA: BROWN
EV: FAN	S3: SOLAR COIL SENSOR	CR: RECIRCULATION PUMP	AR: ORANGE
PACQ:WATER PRESSURE SWITCH	S1: SOLAR PANEL SENSOR	MP: TERMINAL BLOCK	GI: YELLOW
SRC: RECIRCULATION SENSOR	VG: GAS VALVE	L: LINE / PHASE	BI: WHITE
SS: HOT WATER SENSOR AT THE OUTLET	TRA:IGNITION TRANSFORMER	N: NEUTRAL	GR. GREY
SI: STORAGE TANK OUTLET WATER SENSOR	C: SOLAR CIRCUIT PUMP	NE: BLACK	

2.2.10. ACCESSING THE WATER HEATERS

All maintenance and control operations require the water heater casing panels to be removed.

To intervene on water heater casing, please proceed according to the following instructions:

› remove the fixing screws placed on the front side of the cover '1' (fig. 1) and remove the cover.

› remove the fixing screws located on the upper side of the cover "2" (fig. 1) and remove the cover by pulling it vertically.

› remove the fixing screws placed on the front side of the cover '3' (fig. 1) and remove the cover.

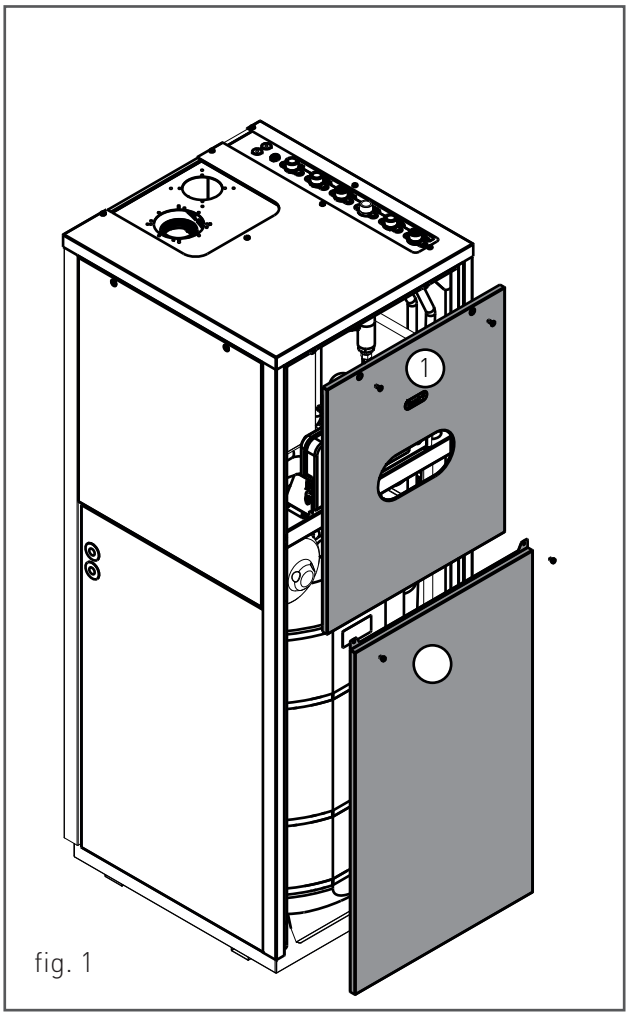


fig. 1

2.2.11. 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.

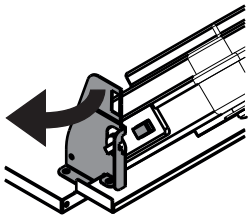
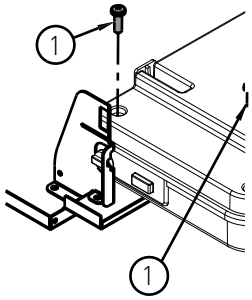
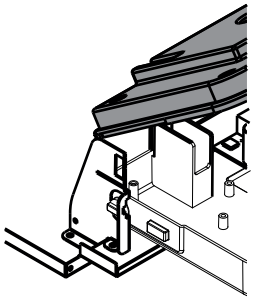


fig. 1





2.2.12. EMPTYING THE D.H.W. SYSTEM

In case of freezing risk, it is necessary to empty the D.H.W. system as follows:

› close the main supply tap of the water supply network;

› Joint the water draining pipe and open the storage tank draining tap 'RB' (fig.1)

› open all cold and hot water taps;

› after completing all operations, close the storage tank draining tap 'RB' (fig.1) and all previously opened water taps.

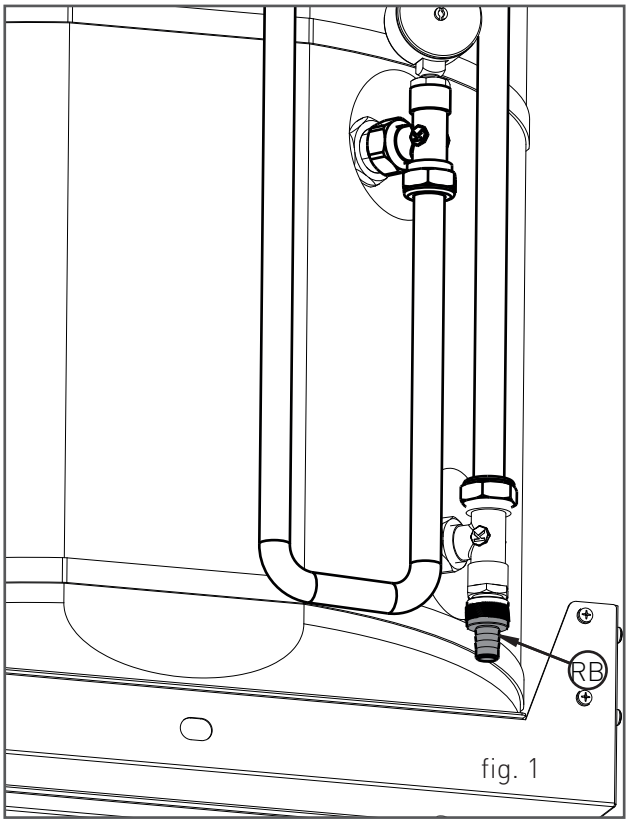


fig. 1

2.2.13. STORAGE TANK MAINTENANCE

Please have the anode checked on a regular basis.

The anode has to be checked at least once every year and, if necessary, it has to be replaced to protect the storage tank.

Should the mains water be particularly hard and aggressive, it might be necessary to have it checked two times per year.

In order to check the anode functioning it's necessary to open the cap 'B' (fig.1) situated on the top of the storage tank.

If during this operations there is a water leak, the anode has to be replaced because worn.

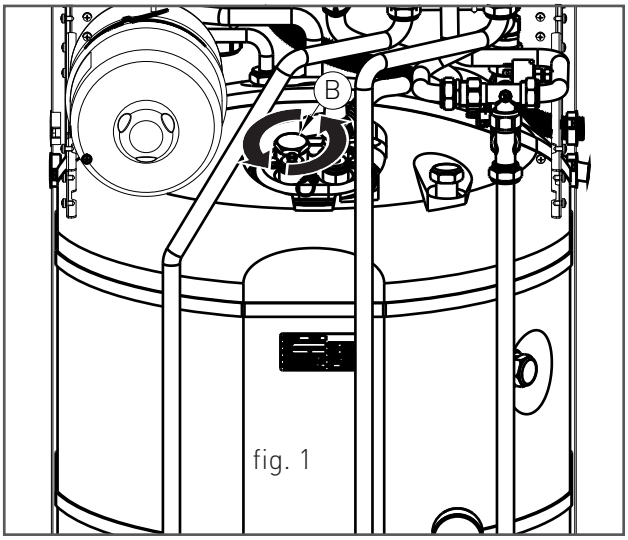


fig. 1

2.2.14. GAS CONVERSION

ATTENTION

Make sure that the gas supply pipe is suitable for the new type of fuel with which the water heater is supplied.

› loosen the two screws '1' (fig.1) from the bushing, and remove the air intake pipe;

› unscrew the pipe coupling that connects the gas valve to the venturi;

› unscrew the three fastening screws '2' (fig.1) of the venturi 'V' (fig.1) using a 10 wrench, as shown in figure 2;

› remove the two screws '3' (fig.3) and apply pressure on the rear side of the venturi 'C' (fig.3);

› replace the venturi body with the one suitable for the type of mains gas (for 28 kW cod. 30-00232 per metano / cod. 30-00169 per LPG) (for 34 kW cod. 30-00207 per metano / cod. 30-00201 per LPG) and make sure the tooth 'D' (fig.3) is adjusted downwards on the aluminium ring nut (see fig.3);

› reassemble the components by proceeding in reverse order of the disassembling operations making sure that gasket 'G' is re-assembled as shown in fig.1;

› set the water heater to operate with the new type of gas, changing the value of the parameter P01 'GAS TYPE SELECTION' from the control panel (see chapters 'PCB PARAMETERS TABLE' and 'ACCESSING AND PROGRAMMING THE PARAMETERS');

› adjust the CO_2 combustion value as indicated in chapter 'CO_2 VALUE CHECK AND CALIBRATION'.

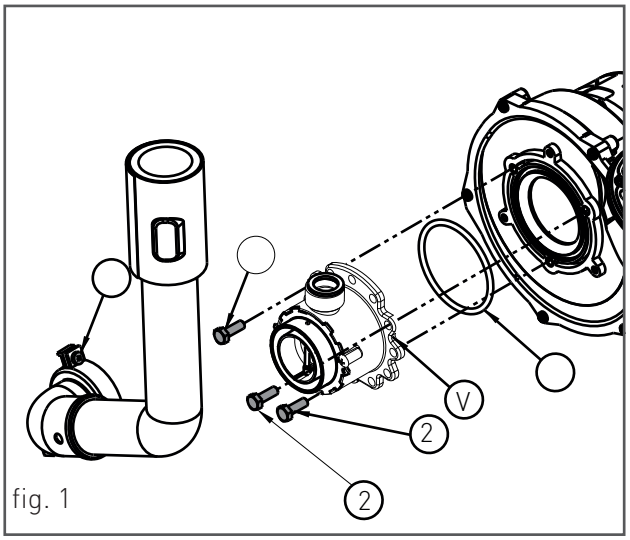


fig. 1

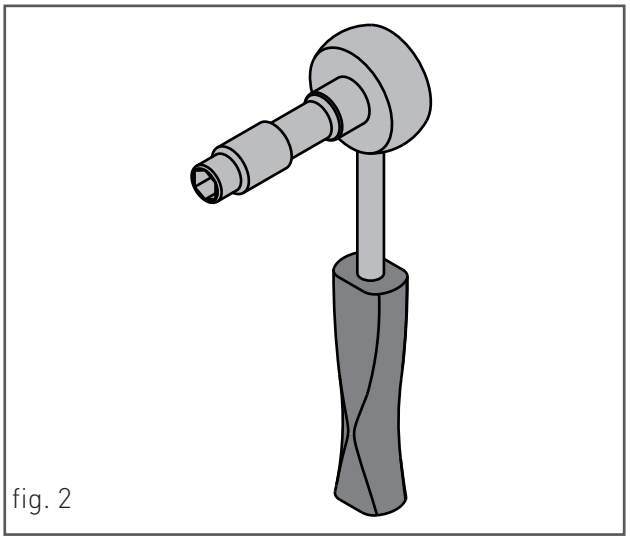


fig. 2

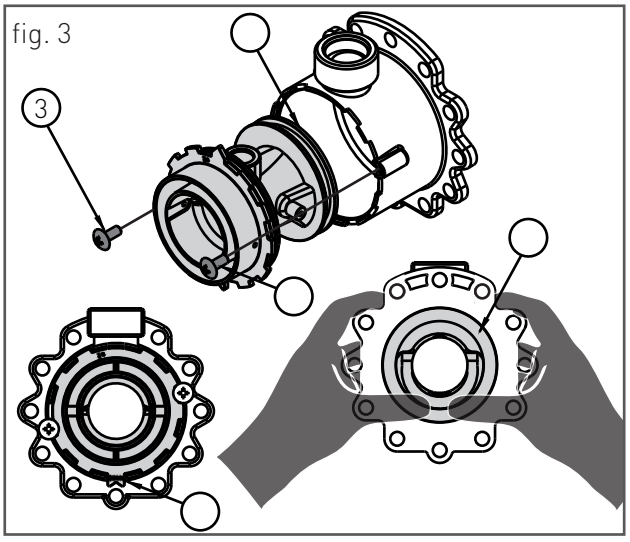


fig. 3

3. USER SECTION

The operations described in this section are addressed to all those who will use the water heater. The water heater 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:

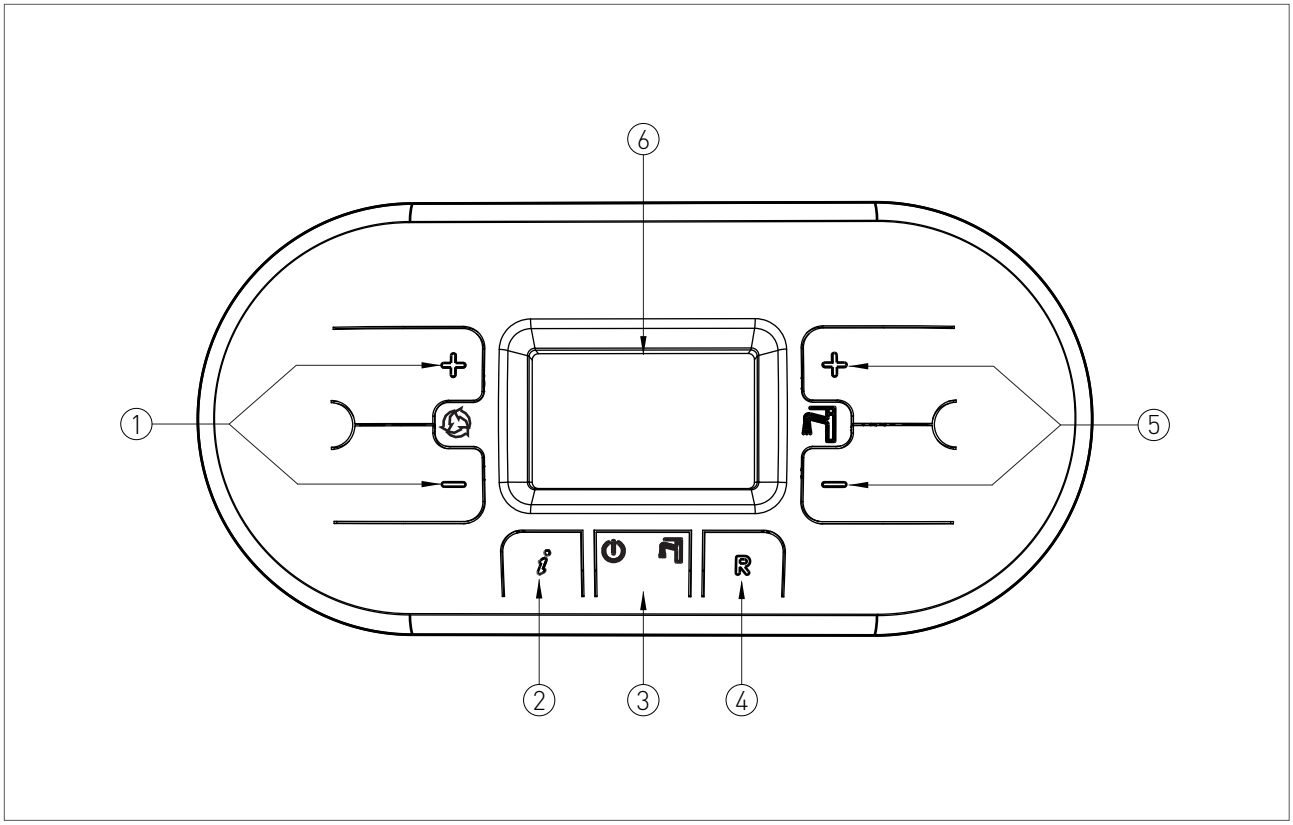
- DO NOT use electrical switches, the telephone or any other device that might generate electrical discharges or sparks;
- Immediately open all doors and windows to create an air exchange that can quickly clean the location;
- Close the gas taps;
- Request immediate intervention of qualified staff.

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

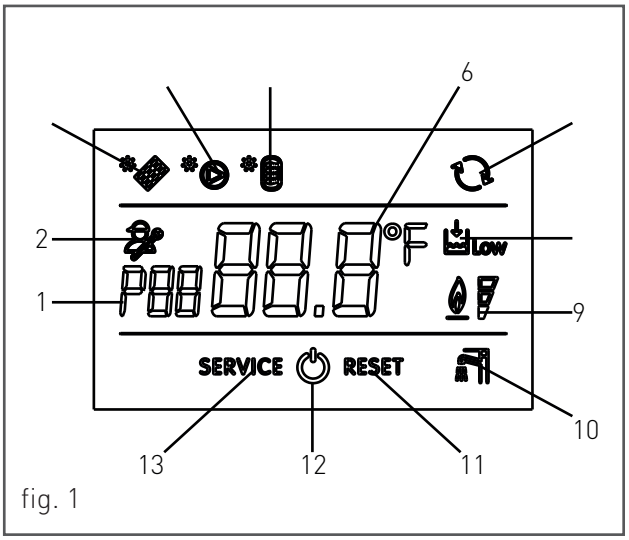


fig. 1

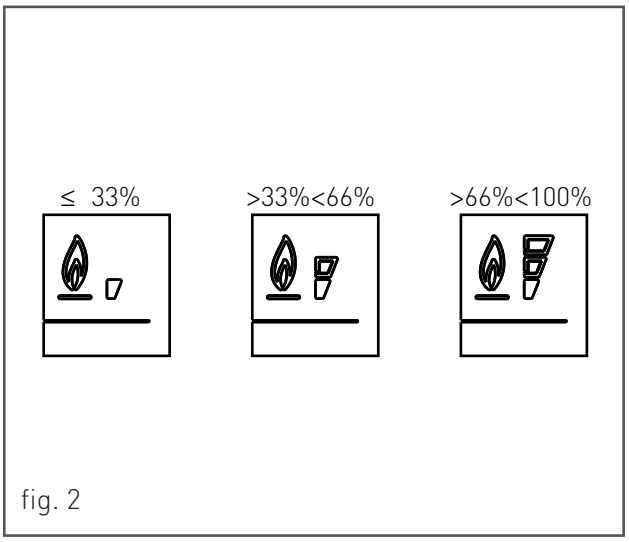


fig. 2

KEY

1. INDICATION OF PARAMETER NUMBER / DISPLAYED INFO CODE / RECIRCULATION MODE ACTIVE (fig.1)
2. PARAMETERS PROGRAMMING FUNCTION ACTIVE
3. SIGNALLING CONNECTED SOLAR P.C.B. / SOLAR PANEL TEMPERATURE DISPLAY (d5)
4. SOLAR / RECIRCULATION PUMP ACTIVE
5. TANK LOWER TEMPERATURE DISPLAY (d6) / TANK UPPER TEMPERATURE DISPLAY (d7)
6. TEMPERATURE DISPLAY / SET POINT / PARAMETER VALUE
7. OPEN THERM COMMUNICATION PRESENT (REMOTE CONTROL)
8. INSUFFICIENT SYSTEM WATER PRESSURE SIGNALLING
9. FLAME PRESENT SIGNALLING / IT ALSO INDICATES, ON 3 PERCENTAGE LEVELS, THE MODULATING POWER LEVEL OF THE WATER HEATER (fig.2)
10. OPERATION IN D.H.W. MODE ENABLED
11. RESETTABLE ERROR DISPLAY
12. OFF OPERATING MODE
13. NON-RESETTABLE ERROR DISPLAY

3.1.4. INFO MENU DISPLAY DATA

To view the water heater data from info menu you just have to press the INFO '(i)' button. The info code will be displayed on the left side of the screen and its relative value will be displayed on the centre of the screen. Use '⊕' and '⊖' buttons of the symbol recirculation to scroll through the list of displayed data. To exit display mode press the INFO '(i)' button.

LIST OF DISPLAYED DATA

INFO CODE	DESCRIPTION
d0	COLD CIRCUIT INLET SENSOR TEMPERATURE
d1	HOT WATER CAPACITY
d2	FAN SPEED
d3	RECIRCULATION SENSOR TEMPERATURE
d4	STORAGE SENSOR TEMPERATURE
d5	PRIMARY CIRCUIT SENSOR TEMPERATURE
d6	SOLAR PANEL SENSOR TEMPERATURE
d7	SOLAR STORAGE SENSOR TEMPERATURE BOTTOM
d8	MIXING VALVE STATUS

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.

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.

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.

3.1.7. 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.

USER

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***	MAKE SURE THAT THE GAS METER'S TAP AND THE BOILER'S GAS TAP ARE OPEN.
			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.
			SHOULD THE BLOCK PERSIST, CONTACT THE TECHNICAL SERVICE CENTRE.
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***	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.

CODE	ICON	ERROR	INTERVENTION
E22	RESET	***PARAMETERS PROGRAMMING REQUEST***	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	***TEMPERATURE OUTLET FROM THE MIXING VALVE TOO HIGH COMPARED TO THE SETPOINT SET BY THE USER***	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 have the water heater serviced annually

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

DO NOT 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.

FOR THE AFTER SALE SERVICE

PCB Digital instruction manual

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