Enercare
RAD-FS56 & RAD-A3FS
Installation Guide

This Guide Applies To

SFK 56 Aqua^3*

*** For SFK 56 Aqua^3 units to be retrofitted with Part #'s RAD-FS56 and/or RAD-A3FS ONLY**

WARNING

If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

FOR YOUR SAFETY

— Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

— WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

— Installation on and service must be performed by a qualified installer, service agency or the gas supplier.

TABLE OF CONTENTS

INTRODUCTION

WARNING

Before starting any operation it is mandatory to read this instruction manual, in relation to the activities performed as described in each relevant section. Proper operation and optimal performance of the water heaters 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 heaters.

The water heaters 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.

› Unit: this term is used referring to the water heaters.

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

ATTENTION
It identifies information that if not complied with may cause small or medium level burns to the person or serious damage to the water heaters.

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

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 a copy from the Technical Support Center providing. It is important to provide the model number and serial number of the unit which is found on the inside surface of the right panel

MANUFACTURER WARRANTY AND RESPONSIBILITY

The Manufacturer's warranty is provided only through authorized Technical Support Centers, listed for each Region on the site www.radianthydronics.com, and covers all manufacturing defects at the time of sale.

The technical and functional features of the unit are ensured when proper installation and maintenance is carried out. Conditions of Manufacturer's warranty includes the following.

1. The customer is aware of and follows instructions contained in the manuals that accompany the product.

2. Annual service check up is required to keep warranty valid.

3. The unit is installed and operated in the conditions in which it is designed to.

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;

› The material and intellectual ownership of this manual and forbids its distribution and duplication, even partial, without prior written authorization.

PRODUCT CONFORMITY

RADIANT BRUCIATORI spa with reference to CSA/ANSI Z21.10.3:19 GAS-FIRED Water heaters, declares that its gas water heaters are professionally manufactured.

The materials used such as copper, brass, stainless steel create a homogeneous, compact and functional assembly, easy to install and maintain. The water heaters. is equipped with all accessories necessary to provide a dependable independent heating unit. All water heaterss are tested and delivered with a quality certificate signed by the testing department.

1. INSTALLER SECTION

The installation operations described in this section should 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

This water heater must be installed in accordance with local codes, if any; if not, follow the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CAN/CSA B149.1, as applicable.

WARNING

This unit 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 out of contract responsibility for damage caused to people, animals or property due to errors during installation.

WARNING

This water heater should 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.

WARNING

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

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

- The unit is connected to a heating unit and a water supply network appropriate for its power and performance.
- When using room air for combustion, the location must be properly vented through an air vent.
- A pressure relief valve , rated for 150 psi is factory installed with the appliance. No valve is to be placed between the relief valve and the tank. The discharge from relief valves will be conducted to a suitable place for disposal when relief occurs and no reducing coupling or other restriction be installed in the discharge line. The discharge line be installed to allow complete drainage of both the valve and line.
- The unit 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 gas lines are properly 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 required by the equipment, value indicated on the data plate.

WARNING

Use only original RADIANT optional or kit accessories (including electrical).

1.1.2. WATER HEATER LOCATION ENVIRONMENTAL REQUIREMENTS

The water heater shall be installed so the gas ignition system components are protected from water (dripping, spraying, rain, etc.) during appliance operation and service (circulator replacement, condensate trap, control replacement, etc.).

The water heater installed using inside air supply must provide provisions for Combustion Air and Ventilation Air in accordance with section 5.3, Air

for Combustion and Ventilation, of the National Fuel Gas Code, ANSI Z 223,1/NFPA 54, or section 7,2, 7.3, or 7.4, of CAN/CSA B 149, Installation Codes, or local codes having jurisdiction.

Where an exhaust fan or any other air consumption appliance is installed in the same space as the water heater, sufficient air openings must be available to provide fresh air when all appliances are operating simultaneously. It is essential that in rooms where the water heater is installed to provide as much air as required by normal combustion of the gas consumed by the various appliances. Consequently, it maybe necessary to make openings in the walls to provide the air inlet into the rooms.

For applications where air from the structure is used to supply combustion air for the unit, the following openings are required:

1. Have a total free section of a least 25 mm^2 every kW (1 in^2 for every 1000 Btu/hr) of heat input, with a minimum of 100 cm^2 (15.5 in^2);

2. Where required by code or when required for additional opening must be provided at the highest practical elevation.

With a hermetically sealed combustion chamber and air supply circuit from outdoors, the water heater may be installed in any room in the home. Keep water heater area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

The appliance should be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the appliance. The pan must not restrict combustion air flow.

WARNING

If the temperature in the water heaters installation location goes below 35.6°F (2°C) , insert an electrical resistances kit .

1.1.3. REFERENCE LEGISLATION

This water heater must be installed in accordance with local codes, if any; if not, follow the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CAN/CSA B149.1, as applicable.

2.1. INSTRUCTIONS

2.1.1. RAD-FS56 INSTALLATION INSTRUCTIONS

Installation instructions for Enercare PCB Kit RAD-FS56 for Radiant SFK 55 Aqua² & SFK 56 Aqua³ water heaters.

WARNING

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

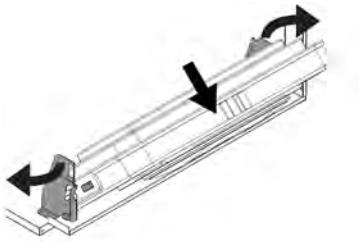
Prepare for Installation

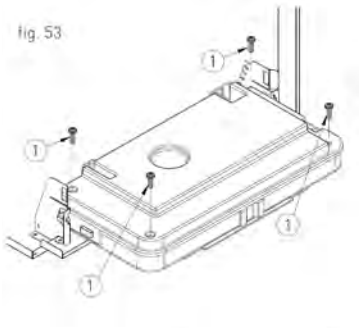
1. Record the unit setpoints.

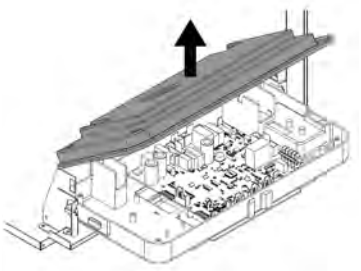
   Press the + or – on the right side, be will displayed. _____°F /°C
2. **ALL** parameters **must be recorded**.

P00		P09		P18		P27	
P01		P10		P19		P28	
P02		P11		P20		P29	
P03		P12		P21		P30	
P04		P13		P22		P31	
P05		P14		P23		P32	
P06		P15		P24		P33	
P07		P16		P25		P34	
P08		P17		P26		P35	

3. Verify that there is no call for heat or DHW and that the unit is no longer running.
4. Disconnect electrical power to water heater by unplugging the appliance's electrical cord from the 120V receptacle.
5. Remove the front panel. Remove the screws from the front panel at the bottom and then pull the bottom slightly outward while sliding the panel up.







DANGER

Risk of high voltage. Disconnect the voltage from the appliance.

Replace Main Circuit Board

8. To access the control panel, grip the support brackets at each side of the control panel (fig. 53), pull them outward from the panel and turn the panel downwards.
9. Remove the 4 screws in the corners of the control panel. (fig. 53)
10. Remove the control panel cover. (fig. 53)
11. Take a **picture** of the main circuit board and connections before continuing.
12. Remove all wires to the main board.
13. Remove the 8 screws used to mount the main circuit board.
14. Remove the existing main circuit board and set it aside. This will need to be **returned** undamaged.
15. Install the main circuit board provided in the kit. Ensure all 8 mounting screws are used. (Smaller screws on outer perimeter and longer screws on inner perimeter)
16. Reconnect the wires to the main board.

Final Steps

19. Reinstall the control panel cover, and reinstall the four mounting screws.
20. Rotate the control panel upward and re-install the front panel into the support brackets.
21. Plug in the appliance's electrical cord into the 120V receptacle.
22. Using the values recorded in Steps 1,2,&3 enter the information into the main PCB.
23. Refer to Section 2.1.5. PARAMETERS TABLE of the manual if necessary (Manual online at www.radianthydronics.com)
24. Put the unit back into operation and verify operation.

2.1.2. RAD-A3FS INSTALLATION INSTRUCTIONS

Installation instructions for Enercare Flow Switch Kit RAD-A3FS* for Radiant SFK 55 Aqua2 & SFK 56 Aqua3 water heaters.

(For units with external Recirculation or Combi Applications)

***MUST be installed with Enercare PCB Kit RAD-FS56**

WARNING

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

Prepare for Installation

1. Prior to any alterations, record of which of the following symbols are displayed on the main screen:

   ☐ ☐ ☐

2. Record the unit setpoints.

   Press the + or – on the left side, will be displayed. _____°F / °C

   Press the + or – on the right side, will be displayed. _____°F / °C

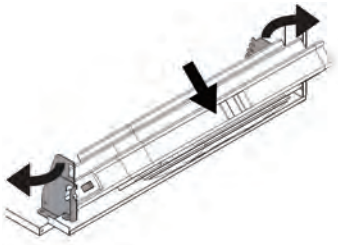
3. **ALL** parameters **must** be recorded.

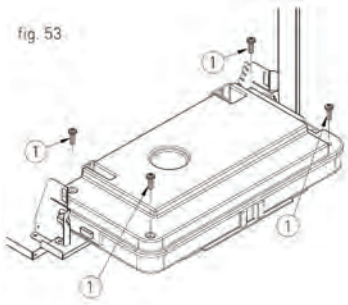
P00		P09		P18		P27	
P01		P10		P19		P28	
P02		P11		P20		P29	
P03		P12		P21		P30	
P04		P13		P22		P31	
P05		P14		P23		P32	
P06		P15		P24		P33	
P07		P16		P25		P34	
P08		P17		P26		P35	

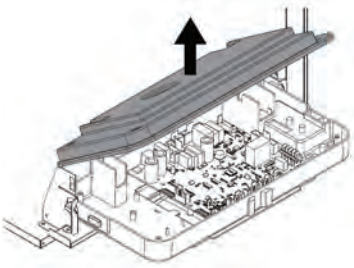
4. Verify that there is no call for heat or DHW and that the unit is no longer running.
5. Disconnect electrical power to water heater by unplugging the appliance's electrical cord from the 120V receptacle.
6. Shut-off cold water supply to the unit and drain all water from the hot water system.
7. Remove the front panel. Remove the screws from the front panel at the bottom and then pull the bottom slightly outward while sliding the panel up.

DANGER

Risk of high voltage. Disconnect the voltage from the appliance.







Replace Main Circuit Board

8. To access the control panel, grip the support brackets at each side of the control panel (fig. 53), pull them outward from the panel and turn the panel downwards.
9. Remove the 4 screws in the corners of the control panel. (fig. 53)
10. Remove the control panel cover. (fig. 53)
11. Take a **picture** of the main circuit board and connections before continuing.
12. Remove all wires to the main board.
13. Remove the 8 screws used to mount the main circuit board.
14. Remove the existing main circuit board and set it aside. This will need to be **returned** undamaged.
15. Install the main circuit board provided with the kit. Ensure all 8 mounting screws are reused. (Smaller screws on outer perimeter and longer screws on inner perimeter)
16. Reconnect the wires to the main board. Do not install the control panel cover yet.

Install the Flow Switch

17. Install the Flow Switch Kit, part no. 65-00925 on the recirculation line (fig. 1). Pay close attention to the directional arrow on the Flow Switch, **it MUST be pointing UP**. (fig. 1)
18. Route the Flow Switch wires through the rubber grommet in the bottom plate of the appliance and proceed with the Flow Switch electrical connection to the main circuit board as shown in fig.2.

Final Steps

19. Reinstall the control panel cover, and reinstall the four mounting screws.
20. Rotate the control panel upward and re-install the control panel into the support brackets.
21. Open the cold-water supply valve and inspect for any leaks. Correct as required.
22. Plug in the appliance's electrical cord into the 120V receptacle.
23. Using the values recorded in steps 1,2, and 3, enter the information into the main PCB. Refer to the section 2.1.5. PARAMETERS TABLE of the manual if necessary. (Manual online at www.radianthydronics.com)
24. Put the unit back into operation and verify operation.

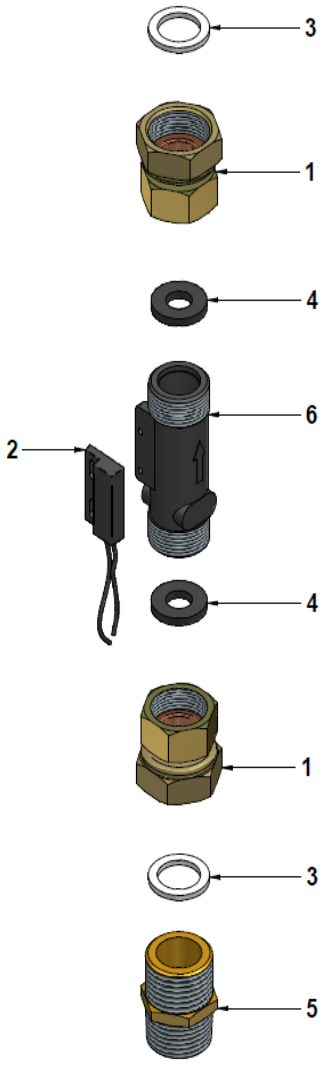
IMPORTANT:

The installation of Flow Switch Kit **RAD-A3FS** + PCB Kit **RAD-FS56** (Flow Switch & PCB) will establish two new error signaling codes:

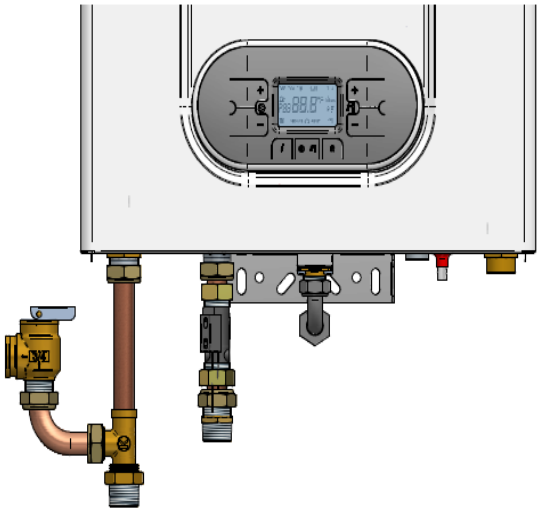
E19: Lack of water circulation: This error code indicates that, when the circulating pump was requested to activate, the contact of the Flow Switch remained open, indicating an error on the water circulation.

E56: Flow Switch contact closed or stuck: This error code indicates that the Flow Switch contact is closed before the circulating pump is activated.

2.1.3. PLUMBING SCHEMATIC DRAWING



N°	Code	Description	Qt.
1	12-02883	PIPE Ø18 TANK/FLOWSWITCH	2
2	40-00687	FLOWSWITCH MICRO LEAD	1
3	43001LA	WASHER Ø 23.5x17x2 3/4" -AFM34	2
4	43113LA	FLOWSWITCH WASHER D.22x10.5x3EPDM	2
5	55-00716	NIPPLE 3/4"-3/4"CIL./CON D.19 E.27	1
6	65-00944	ELECTRONIC FLOWSWITCH ZYTEL	1



Disegnatore	Rev.	data revisione	Autore revisione	Descrizione revisione
francesco.bonetti				
Modificato				
cristinapazzaglini				

Data di creazione	Scala	Materiale	Sp.	Peso (Kg)
04/12/2020				

Note

Descrizione completa
EXTERNAL FLOWSWITCH KIT
CANADA

RADIANT
tecnologia nel calore dal 1959

Codice	Revisione
65-00925	00

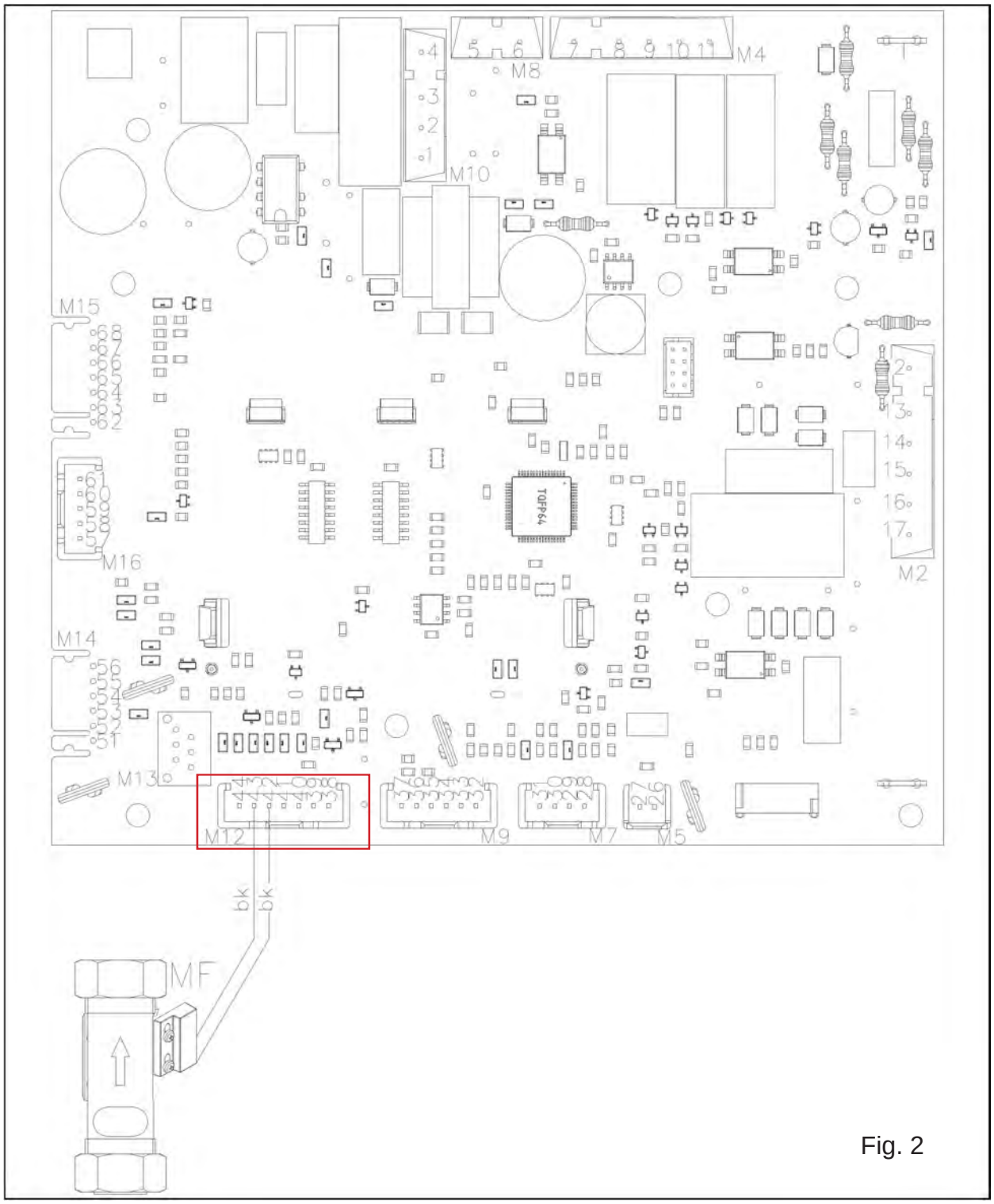


Fig. 2

3.1.1. ACCESSING AND PROGRAMMING THE PARAMETERS

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

1. Press the button '' to select the OFF mode displayed using the symbol ''.

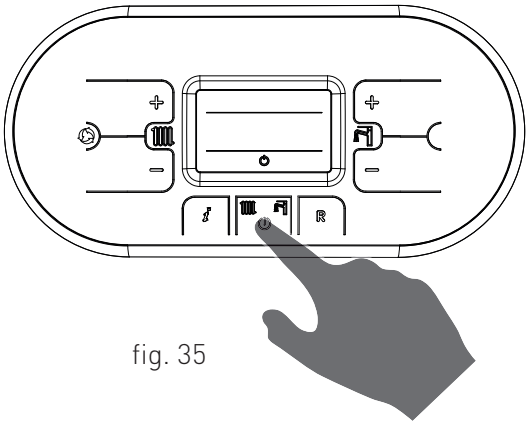


fig. 35

2. Hold at the same time the keys '' and '' until on the display appears the symbol '' with the message 'P00', and release the keys '' and ''.

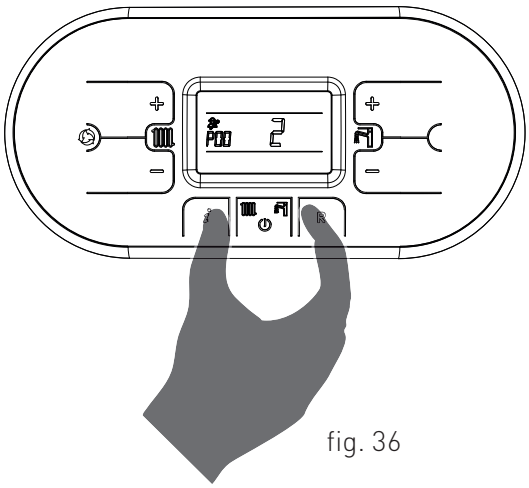


fig. 36

3. Use the keys '' and '' of the heating circuit to select the parameter to be edited.

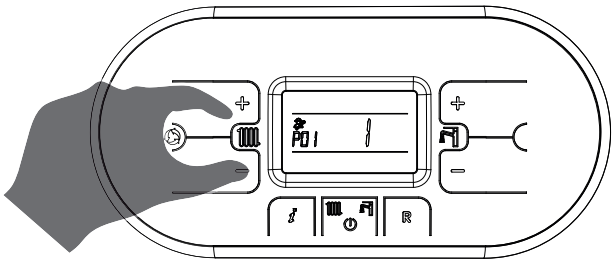


fig. 37

4. Use the keys '⊕' and '⊖' of the domestic circuit to change the value of the parameter.

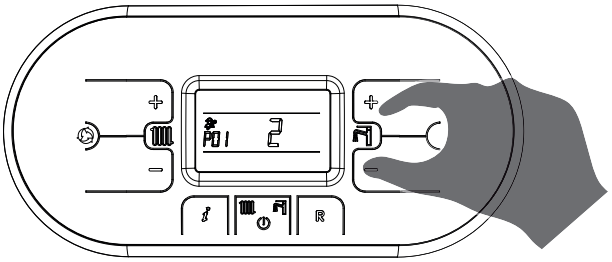


fig. 38

5. Press the key '⏻' to confirm the action and wait for the display to stop blinking, indicating the adjustment was implemented.

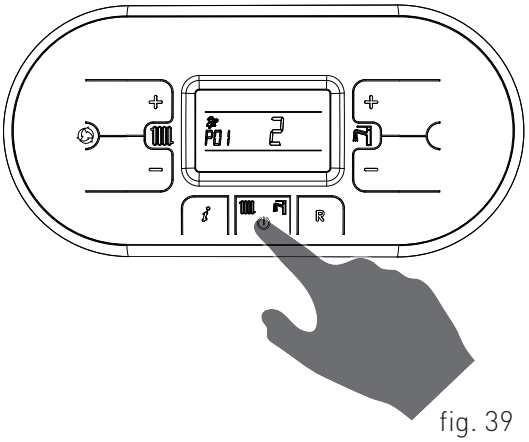


fig. 39

6. To exit the parameters menu, hold at the same time the keys 'i' and 'R' and wait for the symbol '⏻' to appear on the display.

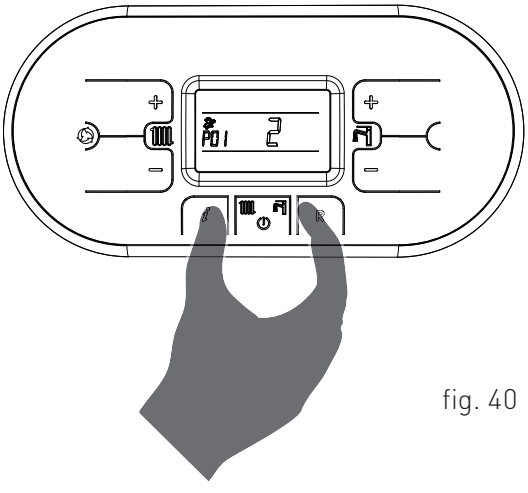


fig. 40

3.1.5. PARAMETERS TABLE

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P00	***SELECTION OF THE FIRE RATING***	0 - 3	0 = 24 KW
			1 = 28 KW (SFK 57)
			2 = 34 KW
			3= 55 KW (SFK 55 - SFK 56)
P01	***GAS TYPE SELECTION*** ***ATTENTION:*** READ THE INSTRUCTION IN CHAPTER 'GAS TRANSFORMATION' BEFORE CHANGING THIS PARAMETER.	0 - 1	0 = NATURAL GAS
			1 = LPG
P02	***OPERATION MODE SELECTION*** ***ATTENTION:*** IF THE PARAMETER VALUE IS SET TO '2' ENSURE THAT THE THREE-WAY VALVE IS TURNED IN THE RECIRCULATION POSITION AS DESCRIBED IN CHAPTER 'RECIRCULATION IN COMBINATION MODE'	0 - 4	0 = WATER HEATER
			1 = WATER HEATER WITH INDIRECT TANK
			2 = COMBINATION MODE (DHW + HEATING) - SFK 56
			3 = COMBINATION MODE (DHW + HEATING) WITH TANK - SFK 57
			4 = N.A.
P03	***POST-CIRCULATION TIMING*** ***(RECIRCULATION MODE NON ACTIVE)*** THROUGH THIS PARAMETER YOU CAN SET THE PUMP OPERATION DURATION ON THE DOMESTIC CIRCUIT AFTER THE TAP IS CLOSED	0 - 90	VALVE EXPRESSED IN MULTIPLES OF 5 SECONDS (FACTORY SET AT 12 X 5 = 60 SECONDS
P04	***POST-CIRCULATION TIMING*** ***(RECIRCULATION MODE ACTIVE)*** THROUGH THIS PARAMETER YOU CAN SET THE PUMP OPERATION DURATION ON THE DOMESTIC CIRCUIT AFTER THE TAP IS CLOSED	0 - 90	VALVE EXPRESSED IN MULTIPLES OF 5 SECONDS (FACTORY SET AT 8 X 5 = 40 SECONDS

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P05	***RECIRCULATION DIFFERENTIAL ACTIVATION*** THROUGH THIS PARAMETER YOU CAN 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 YOU CAN 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= 60 RPM)
P07	***FAN MAXIMUM SPEED ADJUSTMENT*** THROUGH THIS PARAMETER YOU CAN 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 - 270	VALUE EXPRESSED IN HERTZ (1HZ = 60 RPM)
P08	***STARTING STEP ADJUSTMENT*** THROUGH THIS PARAMETER YOU CAN 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 = 60 RPM)
P09	***D.H.W RUN-DOWN*** THROUGH THIS PARAMETER YOU CAN SET THE TIME NECESSARY FOR THE WATER HEATER TO REACH THE MINIMUM SET POWER, AFTER THE BURNER START-UP.	2 - 15	VALUE EXPRESSED IN SECONDS (FACTORY SET AT 8 SECONDS)
P10	***TYPE OF UNIT SELECTION***	0 - 1	0 = ° C - L/MIN 1 = ° F - GPM
P11	***EXECUTION PERIOD OF THE OVERHEATING FUNCTION*** THROUGH THIS PARAMETER YOU CAN 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 (FACTORY SET AT 10 SECONDS)

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P12	***ACTIVATION PERIOD OF THE OVERHEATING FUNCTION*** THROUGH THIS PARAMETER YOU CAN SET THE TIME INTERVAL FROM THE END OF THE POST-CIRCULATION TO THE ACTIVATION OF THE OVERHEATING FUNCTION.	1 - 20	VALUE EXPRESSED IN MINUTES (FACTORY SET AT 10 MINUTES)
P13	***MAXIMUM DOMESTIC SETPOINT*** THROUGH THIS PARAMETER YOU CAN SET THE USER-ADJUSTABLE MAXIMUM DOMESTIC TEMPERATURE.	122 - 152 (50 - 67 ° C)	VALUE EXPRESSED IN ° F
P14	***MINIMUM DOMESTIC SETPOINT*** THROUGH THIS PARAMETER YOU CAN SET THE USER-ADJUSTABLE MINIMUM DOMESTIC TEMPERATURE.	100 - 113 (35 - 45 ° C)	VALUE EXPRESSED IN ° F (FACTORY SET AT 104° F [40° C)
P15	***ANTI-LEGIONELLA FUNCTION (FOR STORAGE TANK)*** THROUGH THIS PARAMETER YOU CAN ACTIVATE/DEACTIVATE THE " ANTILEGIONELLA " HEAT TREATMENT OF THE STORAGE TANK. EVERY 7 DAYS THE WATER TEMPERATURE INSIDE THE STORAGE IS HEATED BEYOND 60 ° C THUS GENERATING A BURNING HAZARD. KEEP UNDER CONTROL SUCH DOMESTICH HOT WATER TREATMENT (AND INFORM THE USERS) TO AVOID UNFORSEEABLE DAMAGES TO PERSONS, ANIMALS AND PROPERTY. A THERMOSTATIC VALVE SHOULD BE INSTALLED AT THE DOMESTIC HOT WATER OUTLET TO AVOID ANY BURNS.	0 - 1	0 = DISABLED 1 = ENABLED
P16	***DIFFERENTIAL OF THE STORAGE TANK CYCLE ACTIVATION*** THROUGH THIS PARAMETER YOU CAN 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 (FACTORY SET AT 5° C)
P17	***MINIMUM D.H.W FLOW RATE SETTING*** THROUGH THIS PARAMETER YOU CAN 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 (FACTORY SET AT 30 HZ = 0.55 GPM (2.1 L/MIN)
P18	***ADDITIONAL POST-VENTILATION TIMING*** THROUGH THIS PARAMETER YOU CAN SET A PERIOD OF OPERATION, ADDITIONAL TO THE 20 STANDARD SECONDS OF THE FAN, AFTER THE BURNER SHUTDOWN.	20 - 120	VALUE EXPRESSED IN SECONDS (FACTORY SET AT 30 SECONDS)

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P19	***ANTI-WATER HAMMER SELECTION*** ONCE THIS FUNCTION IS ENABLED, THE D.H.W CONTACT WILL BE DELAYED FOR A TIME EQUAL TO THE SET VALUE.	0 - 20	0 = DISABLED (FACTORY SET AT 0) 1-20 = VALUE EXPRESSED IN SECONDS
P20	***DESTINATION COUNTRY SELECTION*** BY MODIFYING THIS PARAMETER THE COMBUSTION CONTROL PARAMETERS WILL BE AUTOMATICALLY CONFIRGURED ACCORDING TO THE VALUES SELECTED 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 YOU CAN 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 YOU CAN ENABLE OR DISABLE THE BUS INDUSTRIAL INPUT 0-10 V TO SET THROUGH EXTERNAL BUS THE BURNER POWER OR THE DELIVERY TEMPERATURE.	0 - 2	0 = DISABLED (SET BY DEFAULT) 1 = TEMPERATURE CONTROL MODE 2 = POWER CONTROL MODE
P23	***HEATING FAN MINIMUM SPEED ADJUSTMENT*** THROUGH THIS PARAMETER YOU CAN SET THE FAN MINIMUM SPEED IN HEATING PHASE THAT CORRESPONDS TO THE MINIMUM BURNING POWER DURING A REQUEST TO OPERATE IN HEATING MODE. [SEE CHAPTER "COMBUSTION BLOWER FREQUENCY/ HEAT CAPACITY DIAGRAM]. THE VALUE IS PRE-SET BASED ON THE SET POWER (SEE PARAMETER P00) AND ON THE GAS TYPE (SEE PARAMETER P01)	45 - VALUE SET FOR PARAMETER P24	THE VALUE IS EXPRESSED IN HERTZ (1HZ = 60 RPM)

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P24	***HEATING FAN MAXIMUM SPEED ADJUSTMENT*** THROUGH THIS PARAMETER YOU CAN SET THE FAN MAXIMUM SPEED IN HEATING PHASE THAT CORRESPONDS TO THE MINIMUM BURNING POWER DURING A REQUEST TO OPERATE IN HEATING MODE. [SEE CHAPTER "COMBUSTION BLOWER FREQUENCY/ HEAT CAPACITY DIAGRAM]. THE VALUE IS PRE-SET BASED ON THE SET POWER (SEE PARAMETER P00) AND ON THE GAS TYPE (SEE PARAMETER P01)	VALUE SET FOR PARAMETER P23 - 203	THE VALUE IS EXPRESSED IN HERTZ (1HZ = 60 RPM)
P25	***CLIMATE COMPENSATION CURVE*** ***(NOT APPLICABLE TO THE SFK 57 MODEL)(ONLY WITH EXTERNAL PROBE CONNECTED)*** YOU CAN CONNECT AN EXTERNAL TEMPERATURE PROBE (SEE CHAPTER 'ELECTRICAL CONNECTIONS') THAT AUTOMATICALLY CHANGES THE DELIVERY TEMPERATURE BASED ON THE EXTERNAL MEASURED TEMPERATURE. THE NATURE OF THE CORRECTION DEPENDS ON THE THERMO-ADJUSTMENT VALUE KD SET (SEE CHART). THE SELECTION OF THE CURVE IS DETERMINED BY THE MAXIMUM DELIVERY TEMPERATURE TM AND THE MINIMUM EXTERNAL TEMPERATURE TE TAKING INTO ACCOUNT THE HOUSE INSULATION DEGREE. THE VALUES OF THE DELIVERY TEMPERATURES TM, REFER TO STANDARD SYSTEMS 86-167° F (30-7560° C) OR FLOOR SYSTEMS 77-113° F (25-45° C). THE SYSTEM TYPE CAN BE SET FROM PARAMETER P30	0 - 30	THE NUMERICAL VALUE CORRESPONDS TO THE "KD" CURVE ON THE CHART. SEE CHART BELOW (SET BY DEFAULT AT 15)

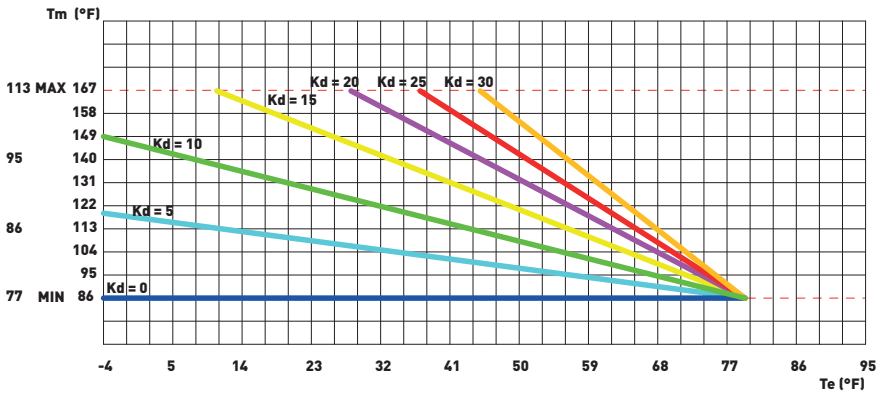


fig. 41

SUPPORT CENTER

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P26	***MODBUS ADDRESS*** BY MEANS OF THIS PARAMETER, IT IS POSSIBLE TO SET THE ADDRESS OF THE BOARD ON MODBUS IN ORDER TO PERFORM A CASCADE SYSTEM	1 - 16	BOILER NUMBERING FOR MODBUS (FACTORY SET AT 1)
P27	***MODBUS COMMUNICATION BAUD RATE*** BY MEANS OF THIS PARAMETER, IT IS POSSIBLE TO SELECT THE MODBUS COMMUNICATION BAUD RATE SUPPORTED BY THE SAME INTERFACE.	0 - 5	0 = 9600 1 = 1200 2 = 2400 3 = 4800 4 = 9600 5 = 19200
P28	***MODBUS MODE***	0 - 2	0 = ENABLED 1=ENABLED (WITH SOME SETTINGS TO BE ADJUSTED FROM THE WATER HEATER CONTROL PANEL) 2 = DISABLED (SET BY DEFAULT)
P29	***SETTING THE HEATING TEMPERATURE*** IN CASE THE BOILER IS INSTALLED AS PART OF A LOW TEMPERATURE CIRCUIT, PLEASE INSTALL A SAFETY THERMOSTAT ON THE HEATING FLOW, WHICH CAN STOP THE BOILER ACTIVITY IN CASE OF HIGH HEATING FLOW TEMPERATURE. THE COMPANY ASSUMES NO LIABILITY FOR DAMAGE CAUSED TO PERSONS OR FOR FAILURE TO COMPLY WITH THESE INSTRUCTIONS.	0 - 1	0 = STANDARD 86-167 ° F (30-75 ° C) (SET BY DEFAULT) 1 = REDUCED 77-113 ° F (25-45 ° C) FOR FLOOR SYSTEMS
P30	***MINIMUM HEATING SETPOINT*** THROUGH THIS PARAMETER YOU CAN SET THE USER-ADJUSTABLE MINIMUM HEATING TEMPERATURE.	68 - 104	THE VALUE IS EXPRESSED IN ° F
P31	***MAXIMUM HEATING SETPOINT*** THROUGH THIS PARAMETER YOU CAN SET THE USER-ADJUSTABLE MAXIMUM HEATING TEMPERATURE.	104 - 160	THE VALUE IS EXPRESSED IN ° F

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P32	***HEATING TIMING*** THROUGH THIS PARAMETER YOU CAN SET THE MINIMUM TIME FOR WHICH THE BURNER WILL BE TURNED OFF ONCE THE HEATING TEMPERATURE REACHED THE USER SET TEMPERATURE.	0 - 90	VALUE EXPRESSED IN MULTIPLES OF 5 SECONDS (PRE-SET AT 6 X 5 = 30 SECONDS)
P33	***HEATING RUN-UP*** THROUGH THIS PARAMETER YOU CAN SET THE TIME, DURING START-UP PHASE, NECESSARY FOR THE WATER HEATER TO REACH THE MAXIMUM SET POWER (ON THE HEATING SIDE).	0 - 4	0 = (DISABLED) 1 = 50 SECONDS 2 = 100 SECONDS (SET BY DEFAULT) 3 = 200 SECONDS 4 = 400 SECONDS
P34	***ENABLING THE SAFETY CHECK, IN CASE OF INSUFFICIENT CIRCULATION UPON THE IGNITION.*** THE ACTIVATION OF THIS PARAMETER, AGAINST EACH IGNITION OF THE BURNER, LEADS TO THE VERIFICATION OF THE CORRECT OPERATION OF THE CIRCULATING PUMP. SHOULD THE PUMP NOT RUN CORRECTLY, THIS PROTECTS THE HEAT EXCHANGER, AS WELL THE OTHER PARTS THAT MIGHT BE AFFECTED BY THE UN-DISSIPATED HEAT.	0 - 1	0 = DISABLED 1 = ENABLED (SET BY DEFAULT)
P35	***ACTIVATION OF THE WATER FLOW CONTROLLER*** THROUGH THIS PARAMETER YOU CAN ACTIVATE AN OPTIONAL EXTERNAL WATER FLOW CONTROLLER	0 - 1	0 = DISABLED 1 = ENABLED (SET BY DEFAULT)
P36	***ACTIVATION OF THE ELECTRONIC TEMPERATURE CONTROLLER*** THROUGH THIS PARAMETER YOU CAN ACTIVATE THE ELECTRONIC TEMPERATURE CONTROLLER IF THE UNIT IS EQUIPPED WITH AN ELECTROINIC TEMPERATURE CONTROLLER	0 - 1	0 = DISABLED 1 = ENABLED FOR SFK 56 COMBINATION MODE (DHW + HEATING) **IF PARAMETER 'P02' IS SET TO '0' *or* '2' 2 = ENABLED FOR SFK 57 COMBINATION MODE (DHW = HEATING WITH TANK) **IF PARAMETER 'P02' IS SET TO '0' *or* '1'

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P37	***ACTIVATION OF THE ELECTRONIC TEMPERATURE CONTROLLER*** THROUGH THIS PARAMETER YOU CAN ACTIVATE THE ELECTRONIC TEMPERATURE CONTROLLER IF THE UNIT IS EQUIPPED WITH AN ELECTROINIC TEMPERATURE CONTROLLER	0 - 1	0 = DISABLED (SET BY DEFAULT) 1 = ENABED
P38	***PCB OPERATION MODIFICATION*** THROUGH THIS PARAMETER FACTORY ENGINEERING MODIFICATION AND ANALYSIS CAN BE PERFORMED (FACTORY PASSWORD PROTECTED)	1	1 = FACTORY PASSWORD PROTECTED SET BY DEFAULT

3.1.3. COMBUSTION BLOWER FREQUENCY/HEAT CAPACITY DIAGRAM

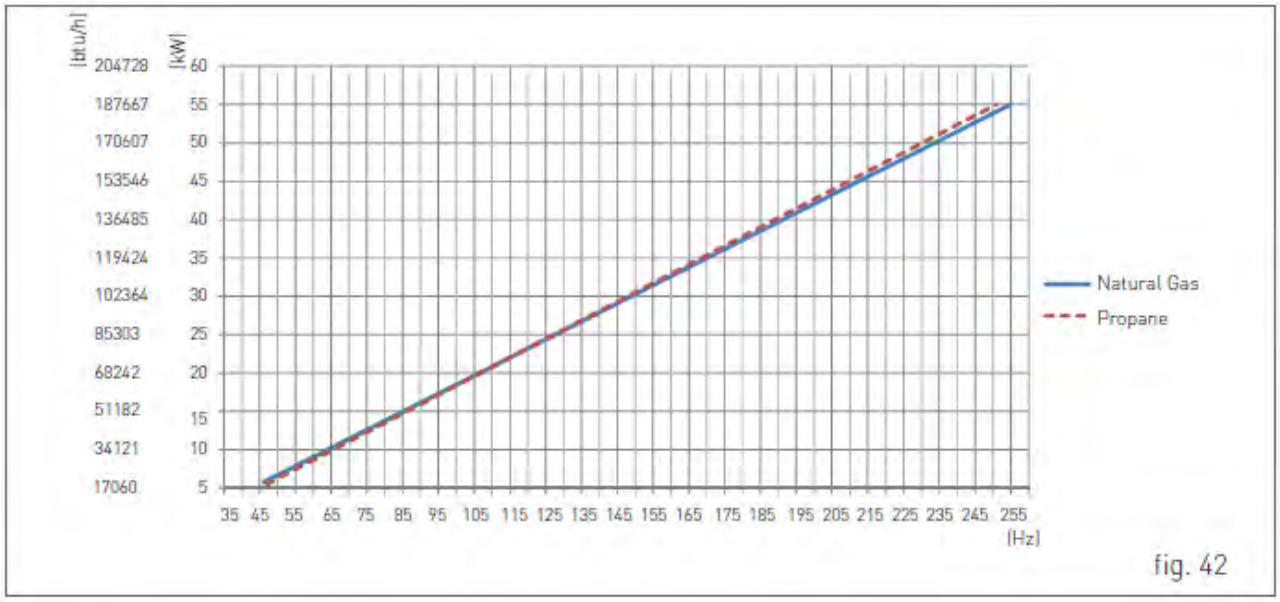


fig. 42

GAS TYPE		MINIMUM HEATING FREQUENCY	MAXIMUM HEATING FREQUENCY	MINIMUM FREQUENCY IN DOMESTIC HOT WATER LINE	MAXIMUM FREQUENCY IN DOMESTIC HOT WATER LINE
Natural Gas	Hz	45	255	45	255
Propane	Hz	45	251	45	251

Note: The frequency would change based on vent length. See section '1.1.21 TABLE 1: ALLOWABLE VENT LENGTHS' for change on frequency with feference to vent lengths.

3.2. MAINTENANCE

3.2.7 GENERAL MAINTENANCE WARNINGS

ATTENTION

All maintenance operations must be performed in compliance with standards and subsequent amendments by qualified staff and authorized by RADIANT BRUCIATORI spa.

WARNING

The maintenance operations are recommended to once every twelve months starting from the water heaters installation date.

WARNING

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

DANGER

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

Please perform the following operations once a year:

- check the sealing of the water components, and replace the gaskets if necessary;
- if present, check the pre-load pressure of the D.H.W. expansion tank;
- check that the wiring is installed 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, if necessary, clean it;
- check the operation of the gas burner start up and safety systems. If necessary, remove and clean the flame detection and start up electrodes from incrustations paying attention to respect the distances with respect to the burner;
- check the sealing of the gas components, and replace the gaskets if necessary;
- visually check the flame and the condition of the combustion chamber;
- if necessary make sure that the combustion is adjusted correctly and if required proceed as indicated in section "CO2 VALUE CHECK AND CALIBRATION";
- periodically check the integrity of the venting system for safety and proper operation;
- make sure that the permanent ventilation outlets are present, correctly sized and functioning, based on the in-stalled devices. Follow the requirements provided by Local and National legislation;
- check the proper operation of the condensate draining system, including the devices outside the water heaters such as condensate collection devices installed along the path of the venting duct or neutralization devices for acid condensate; check that the liquid flow is not obstructed and that there is no combustion gas build up inside the internal sy-stem;
- check the flow and temperature of domestic hot water.

› Maintenance procedures:

› Check the vent pipe.

› Visually inspect the flue gas vent piping monthly for detecting any signs of blockage, leakage or deterioration of the piping. Please contact a qualified service technician immediately if you find any problem.

› Check the air inlet pipe.

› Visually inspect the air inlet monthly to be sure it is unobstructed. Inspect entire length of air piping for ensuring that piping is intact, and all joints are properly sealed. Call your qualified service technician if you notice any problems.

› Check the relief valve.

› Inspect the Boiler relief valve and the relief valve discharge pipe monthly for any signs of discharge. If the relief valve often discharges, immediately contact your qualified service technician for inspecting the Boiler and system.

› Check the condensate line.

› While the Boiler is running, check the discharge end of the condensate drain tubing monthly. Make sure that no flue gas is escaping from the condensate drain tubing. If flue gas is continuously escaping, refill the condensate trap in the appliance. Call your qualified service technician for inspecting the Boiler and condensate line.

› Check the vent terminal.

› Visually inspect the terminal screen monthly. Clean the terminal of any debris and call your qualified service technician to replace any parts if needed.

› Check the air vent.

› Check the air vents within the appliance to see if they are eliminating air properly and that there is no debris being discharged. Call your qualified technician to replace defective air eliminators..

› Check the boiler piping (gas and water).

› Visually inspect for leaks around internal and external water piping every six months. Immediately call a qualified service technician to repair any leaks. Failure to comply with this instruction could result in severe personal injury, death or substantial property damage.

› Check the burner state.

› Have a technician inspect the condensate trap, burner and the combustion chamber every six months. A cleaning may be required depending on the usage and dirt during operation of appliance.

3.2.8. TECHNICAL DATA

Model		**SFK 56**
Gas category		Natural Gas (Gas A) / Propane (Gas E)
Maximum nominal heat capacity	BTU/hr (kW)	187667 (55)
Minimum nominal heat capacity	BTU/hr (kW)	18766 (5.5)
Noise factor	dB	52.4
Combustion data		
Fumes temperature at nominal heat capacity	°F (°C)	105.80 (41)
CO_2 at nominal heat capacity - Gas A	%	9.6 - 9.2
CO_2 at minimum heat capacity - Gas A	%	9.3 - 8.9
CO_2 at nominal heat capacity - Gas E	%	10.7 - 10.3
CO_2 at minimum heat capacity - Gas E	%	9.70
Fumes mass at nominal heat capacity - Gas A	g/s	22.0
Fumes mass at minimum heat capacity - Gas A	g/s	2.20
Fumes mass at nominal heat capacity - Gas E	g/s	22.5
Fumes mass at minimum heat capacity - Gas E	g/s	2.20
Heating circuit		
Adjustable heating temperature	F° (°C)	86-167 / 77-113 (30-75 / 25-45)
Maximum operating temperature for heating circuit	F° (°C)	203 - (95)
Maximum operating pressure for heating circuit	psi (bar)	60 - (4.1)
Minimum operating pressure for heating circuit	psi (bar)	4.29 - (0.3)
Domestic circuit		
Adjustable domestic temperature	°F (°C)	104 - 140 (40 - 60)
Maximum pressure for domestic circuit	PSI (bar)	150 (10.34)
Minimum pressure for domestic circuit	PSI (bar)	10 (0.69)
Specific capacity in continuous service - ΔT 54°F (30°C)	GPM (litres/min)	7.08 - (26.8)
Specific capacity in continuous service - ΔT 77°F (43°C)	GPM (litres/min)	5.1 - (19.3)
Minimum flow rate	GPM (litres/min)	0.66 (2.5)
Dimension (Water heater casing size)		
Width	in (mm)	16.14 (410)
Depth	in (mm)	19.09 (485)
Height	in (mm)	25.19 (640)
Gross weight	lb (kg)	97 (44)
Water connections		
Cold water inlet	Ø	3/4" *
Hot water outlet and heating water outlet	Ø	3/4" *
Gas	Ø	1/2" *
Recirculation mode or heating water inlet	Ø	3/4" NPT
(*) NOTE: THESE ARE CONNECTION SIZES BEFORE VALVE KIT/CONNECTION CONVERSION KIT IS INSTALLED.		
Electrical specifications		
Voltage-frequency	V/Hz	120/60
Maximum absorbed power	W	75
Recirculation pump electrical power consuption	W	15.7

Absorbed power (water heater OFF)	W	2.8
Gas supply		
Nominal supply pressure - Natural Gas (Gas A)	psi - (mbar)	0.25 - (17.4)
Heating Max. fan speed - Natural Gas (Gas A)	Hz	255
D.H.W Max fan speed - Natural Gas (Gas A)	Hz	255
Heating Min. fan speed - Natural Gas (Gas A)	Hz	45
D.H.W Min. fan speed - Natural Gas (Gas A)	Hz	45
Fuel consumption - Natural Gas (Gas A)	ft^3/h - (m^3/h)	183.7 - (5.20)
Nominal Supply pressure - Propane (Gas E)	psi - (mbar)	0.39 - (27.4)
Heating Max. fan speed - Propane (Gas E)	Hz	251
D.H.W Max fan speed - Propane (Gas E)	Hz	251
Heating Min. fan speed - Propane (Gas E)	Hz	45
D.H.W Min. fan speed - Propane (Gas E)	Hz	45
Fuel consumption - Propane (Gas E)	lb/h (Kg/h)	8.56 - (3.88)

3.2.9.TECHNICAL ASSEMBLY

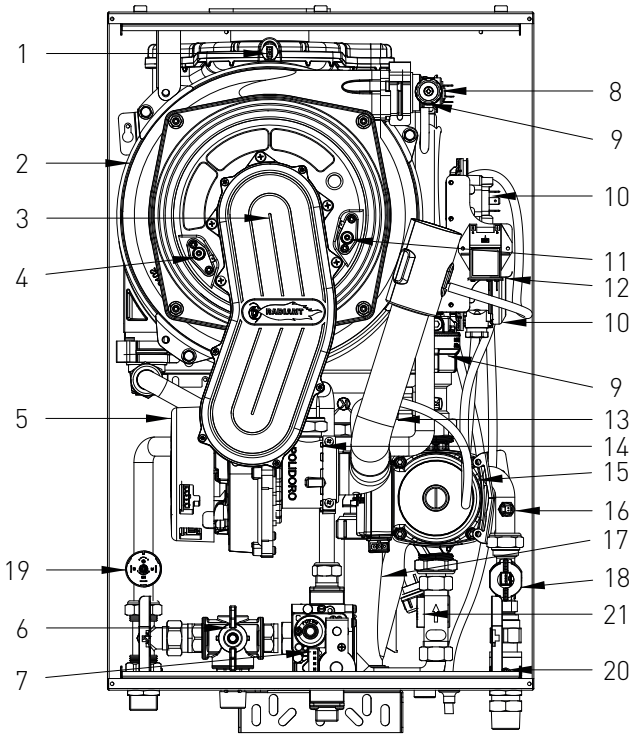


fig. 43

KEY

1. EXHAUST SAFETY HIGH LIMIT SWITCH
2. HEAT EXCHANGER
3. BURNER UNIT
4. IONIZATION ELECTRODE
5. COMBUSTION BLOWER
6. 3-WAY VALVE - RECIRCULATION MODE
7. GAS VALVE
8. WATER TEMPERATURE HIGH LIMIT SWITCH
9. AIR ELIMINATOR
10. AIR PRESSURE SWITCH
11. SPARK ELECTRODE
12. IGNITION TRANSFORMER
13. AIR SUCTION TUBE
14. PROPORTIONAL VENTURI
15. CIRCULATOR
16. DOMESTIC TEMPERATURE PROBE INLET
17. CONDENSATE COLLECTION SIPHON
18. FLOW METER
19. WATER PRESSURE SWITCH
20. FLOW LIMITER
21. FLOW SWITCH

SUPPORT CENTER

3.2.10. INTERNAL PIPING SCHEMATIC

DRAW DEMAND WITH CIRCULATOR ACTIVE AND WITHOUT RECIRCULATION LINE

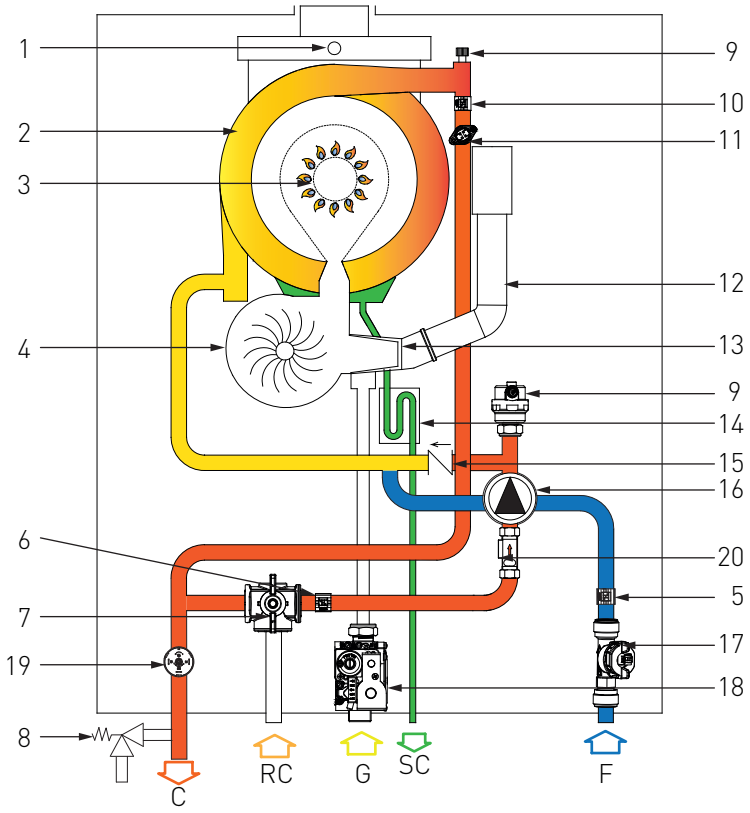


fig. 44

KEY

C. DOMESTIC HOT WATER OUTLET AND HEATING WATER OUTLET
F. COLD WATER INLET
RC. RECIRCULATION MODE OR HEATING WATER INLET
G. GAS INLET
SC. CONDENSATE DRAIN

1. EXHAUST SAFETY HIGH LIMIT SWITCH
2. HEAT EXCHANGER
3. BURNER UNIT
4. COMBUSTION BLOWER
5. DOMESTIC TEMPERATURE PROBE INLET
6. RECIRCULATION PROBE
7. 3-WAY VALVE - RECIRCULATION MODE
8. PRESSURE RELEIF VALVE
9. AIR ELIMINATOR
10. DOMESTIC TEMPERATURE PROBE OUTLET
11. WATER TEMPERATURE HIGH LIMIT SWITCH
12. AIR SUCTION TUBE
13. PROPORTIONAL VENTURI
14. CONDENSATE COLLECTION SIPHON
15. CHECK VALVE
16. CIRCULATOR
17. FLOW METER
18. GAS VALVE
19. WATER PRESSURE SWITCH
20. FLOW SWITCH

3.2.11. OPERATIONAL SCHEMES

DRAW MODE
(RECIRCULATION NON ACTIVE)

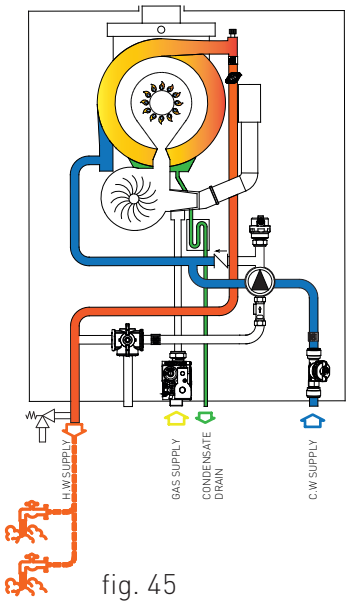


fig. 45

POST-CIRCULATION MODE
(RECIRCULATION NON ACTIVE)

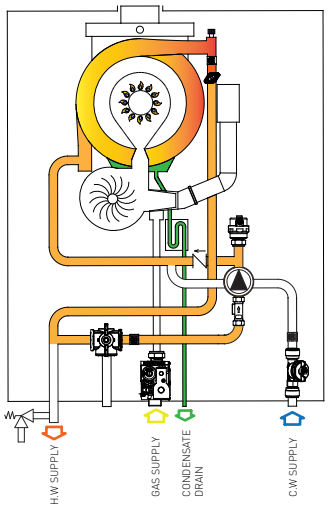


fig. 46

RECIRCULATION MODE
(POST-CIRCULATION ACTIVE)

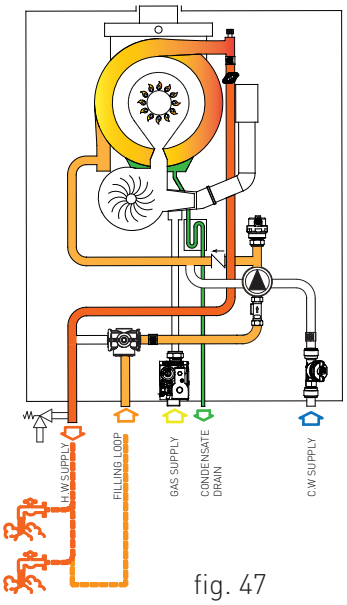


fig. 47

D.H.W. PRODUCTION THRU A REMOTE TANK

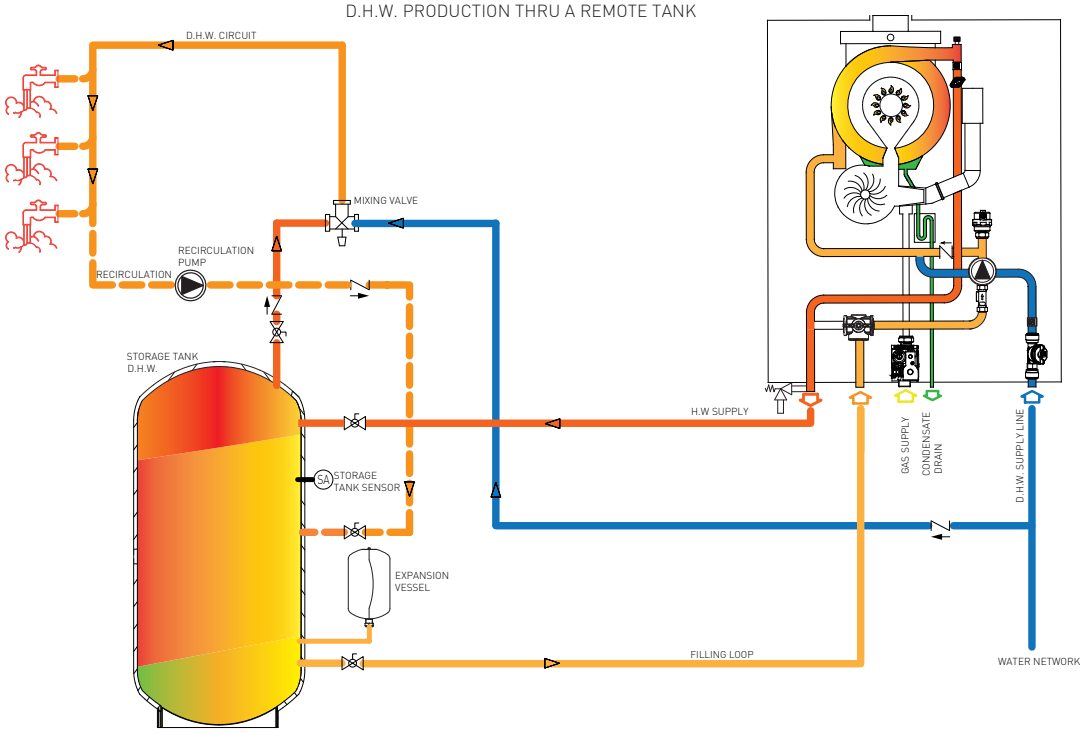


fig. 48

SUPPORT CENTER

COMBINATION MODE (DHW + HEATING)

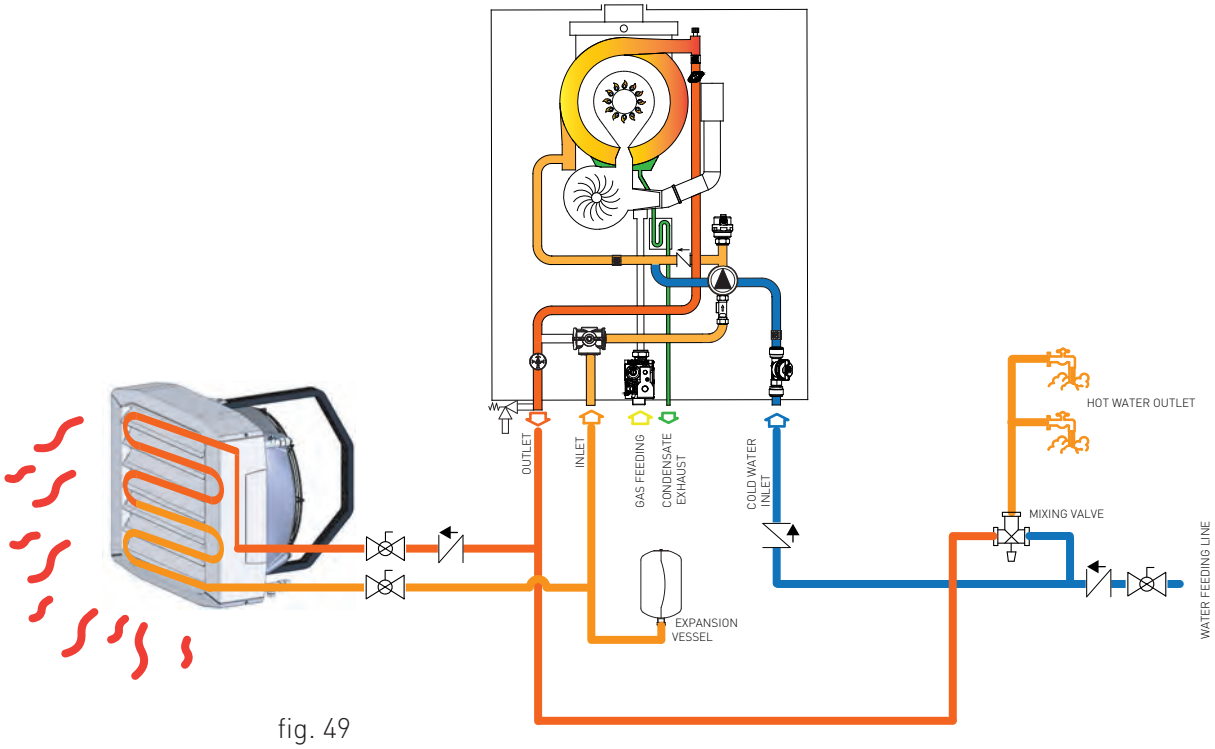


fig. 49

COMBINATION MODE (DHW + HEATING) WITH EXTERNAL RECIRCULATION LOOP

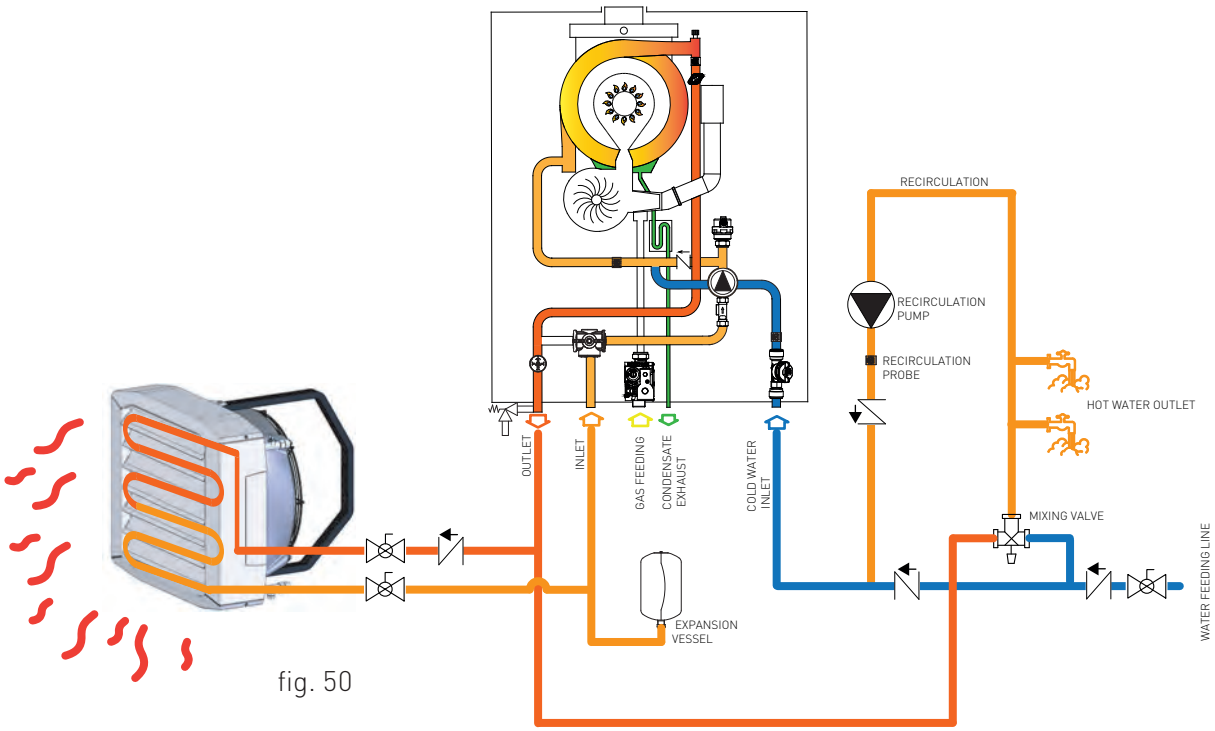
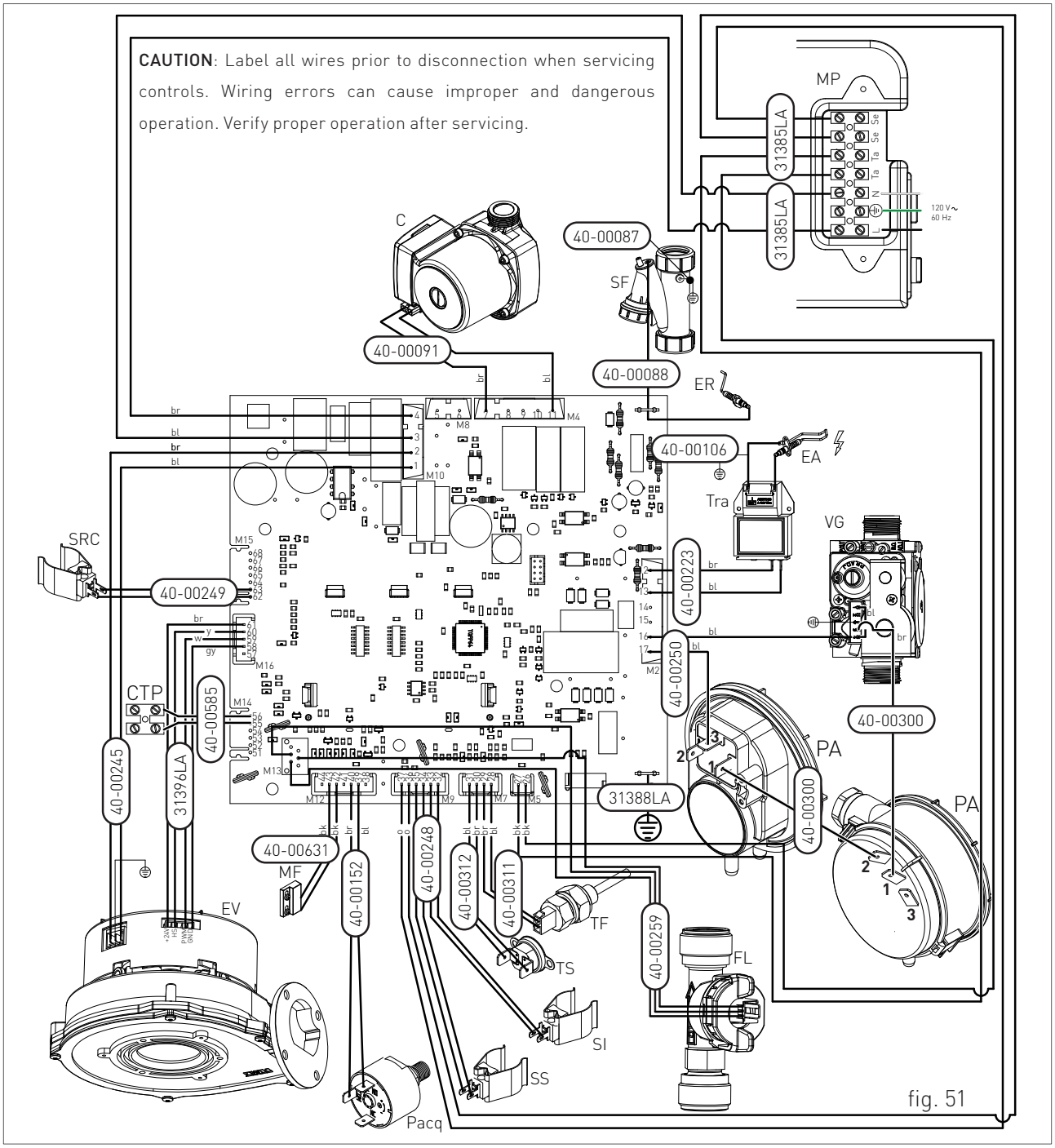


fig. 50

3.2.12. WIRING DIAGRAM



ER: IONIZATION ELECTRODE
EA: SPARK ELECTRODE
C: CIRCULATOR
VG: GAS VALVE
TRA:IGNITION TRANSFORMER
TF: EXHAUST SAFETY HIGH LIMIT SWITCH_(102°C)
SRC: RECIRCULATION TEMPERATURE PROBE
CTP: RECIRCULATION DEACTIVATION TIMER CONTACT
MF: FLOW SWITCH

TS: WATER TEMPERATURE HIGH LIMIT SWITCH
FL: FLOW METER
SI: DOMESTIC TEMPERATURE PROBE INLET
SS: DOMESTIC TEMPERATURE PROBE
EV: COMBUSTION BLOWER
PA: AIR PRESSURE SWITCH
SF: CONDENSATE COLLECTION SIPHON
PACQ:WATER PRESSURE SWITCH

MP: PANEL TERMINAL
L: LINE
N: NEUTRAL
G: GREEN
RE: RED
BK: BLACK
SE: OUTDOOR TEMPERATURE
TA: ENVIRONMENT THERMOSTAT

BL: BLUE
BR: BROWN
O: ORANGE
Y: YELLOW
W: WHITE
GY. GREY

3.2.13. ACCESSING THE WATER HEATERS

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 heaters proceed as follows:

› remove the fastening screws (1 - fig.52) placed on the lower edge of the front panel;

› grab the front panel from the bottom and remove it pulling it towards you A and then upwards B (see fig. 52).

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

› remove the fastening screws (2 - fig. 52) placed on the front edge of the side panel;

› grab the bottom of the panel and remove it by moving it sideways C and then pulling it upwards D (see fig. 52).

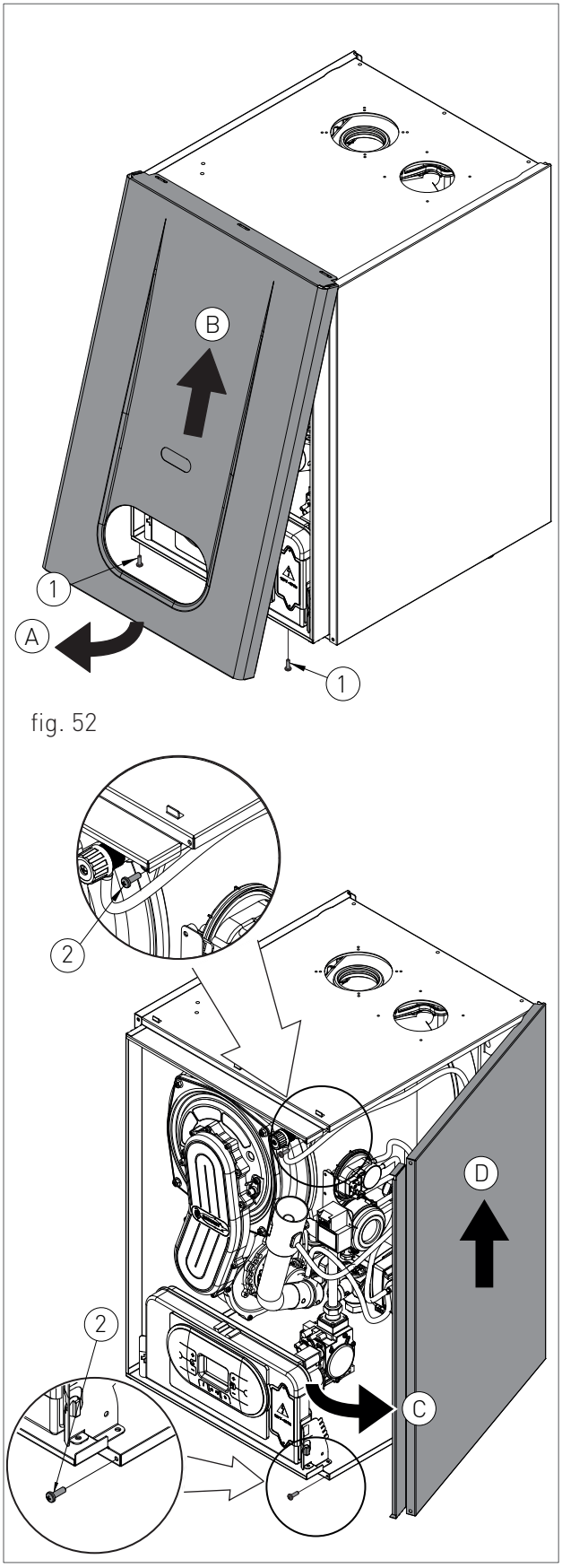


fig. 52

3.2.14. ACCESSING THE ELECTRONIC BOARD

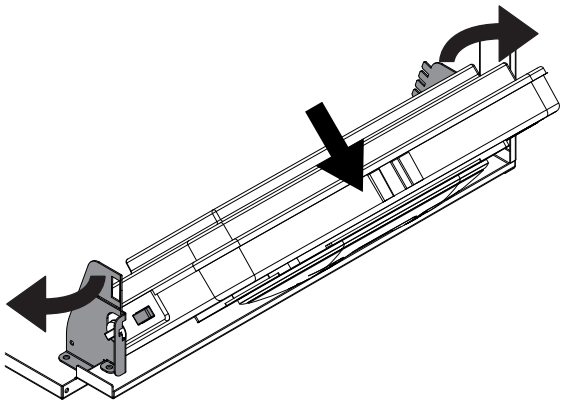
In order to intervene on the wirings of the control panel, please proceed as follows:

DANGER
Cut off the voltage from the main switch.

› Grab at the same time the support brackets of the control panel (fig. 53) loosening them and turn the panel downwards;

› unscrew the four fastening screws 1 - fig. 53;

› remove the crankcase pulling it upwards.



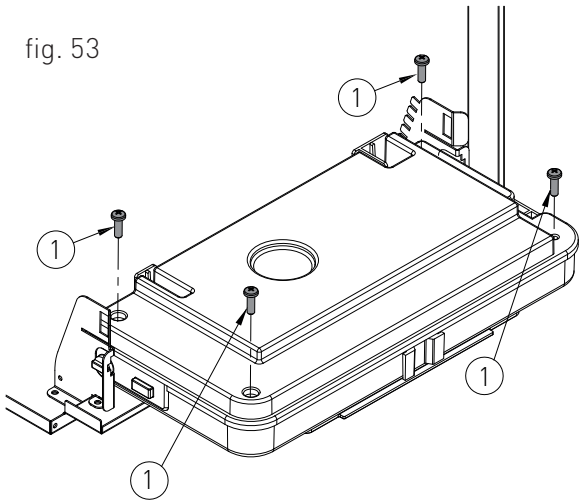
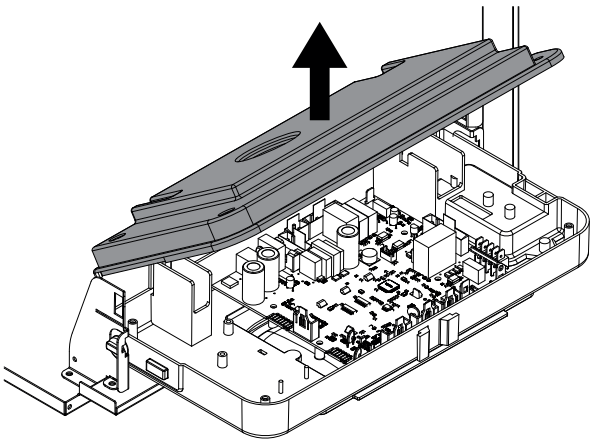


fig. 53



3.2.15. 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.

3.2.16 FAULT SIGNALLING CODES

To view the last 5 fault signalling codes chronologically, starting with the most recent one, activate the 'OFF' mode by pressing the FUNCTION '⏻' key and hold the key INFO 'ⓘ' for 5 seconds. Use keys '⊕' and '⊖' of the heating circuit to scroll through the list of saved faults. To reset the fault history press the RESET 'Ⓡ' key. To exit display mode press the INFO 'ⓘ' key.

CODE	FAULT	POSSIBLE CAUSE	SOLUTION	RESET
E01	***FLAME FAILURE***	***NO FLAME LIGHT UP***		MANUAL RESET (PRESS THE RESET 'Ⓡ' KEY).
		NO GAS PRESSURE;	CHECK THE GAS SUPPLY;	
		MASS OR BROKEN START-UP ELECTRODE;	REPLACE IT;	
		GAS VALVE NOT OPENING;	REPLACE IT;	
		SLOW LIGHT UP TOO LOW ADJUSTMENT;	ADJUST MINIMUM OR SLOW LIGHT UP;	
		GAS SUPPLY PRESSURE TOO HIGH (ONLY FOR LP WATER HEATERS).	CHECK THE MAXIMUM ADJUSTMENT PRESSURE (60 MBAR W.C. NOT BE EXCEEDED)	
		THE CONDENSATE LINE IS BLOCKED.	CHECK THE CONDENSATE LINE AND EMPTY/CLEAN THE CONDENSATE TRAP.	
		AIR PRESSURE SWITCH TRIPPED	CHECK VENTING, CHECK CABLE, REPLACE PART	
		WITH FLAME LIGHT UP		
		REVERSE POLARITY;	PROPERLY CONNECT THE POWER SUPPLY;	
		IONIZATION ELECTRODE BROKEN;	REPLACE IT;	
		IONIZATION ELECTRODE CABLE DISCONNECTED.	CHECK THE WIRING.	
E02	***WATER TEMP. HIGH LIMIT SWITCH***	THERMOSTAT CABLE DISCONNECTED;	CHECK THE WIRING:	MANUAL RESET (PRESS THE RESET 'Ⓡ' KEY).
		BROKEN HIGH LIMIT.	REPLACE IT.	

CODE	FAULT	POSSIBLE CAUSE	SOLUTION	RESET
E03	***EXHAUST SAFETY HIGH LIMIT SWITCH***	HIGH LIMIT BROKEN;	REPLACE IT;	MANUAL RESET (PRESS THE RESET ® KEY).
		HIGH LIMIT CABLE DISCONNECTED.	CHECK THE WIRING.	
E04	***LOW WATER CUTOFF***	INSUFFICIENT WATER PRESSURE INSIDE THE SYSTEM [LOWER THAN 4.3 PSI (0.3 BAR)]	LOAD THE SYSTEM;	AUTOMATIC.
		WATER PRESSURE SWITCH CABLE DISCONNECTED;	CHECK THE WIRING;	
		WATER PRESSURE SWITCH BROKEN.	REPLACE IT.	
E05	***DOMESTIC INLET TEMP. PROBE (COLD WATER)***	BROKEN OR INCORRECTLY CALIBRATED PROBE (RESISTANCE VALUE 10 KOHM AT 77°F (25°C) NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET PROBE CONNECTOR.	CHECK THE WIRING.	
E06	***DOMESTIC INLET TEMP. PROBE***	BROKEN OR INCORRECTLY CALIBRATED PROBE (RESISTANCE VALUE 10 KOHM AT 77°F (25°C) NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET PROBE CONNECTOR.	CHECK THE WIRING.	
E10	***INSUFFICIENT WATER FLOW RATE DURING THE RECIRCULATION FUNCTION***	THE FLOW RATE VALUE, READ BY THE FLOWMETER, IS LOWER THAN THE VALUE SET TO THE P17 PARAMETER.	CHECK THAT THE RECIRCULATION PUMP IS WORKING CORRECTLY, IF IT DOES NOT WORK PROPERLY OR IT IS DAMAGED, REPLACE IT.	AUTOMATIC.

CODE	FAULT	POSSIBLE CAUSE	SOLUTION	RESET
E12	***STORAGE TANK PROBE***	BROKEN OR INCORRECTLY CALIBRATED PROBE (RESISTANCE VALUE 10 KOHM AT 77°F (25°C) NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET PROBE CONNECTOR.	CHECK THE WIRING.	
E15	***RECIRCULATION TEMP. PROBE***	BROKEN OR INCORRECTLY CALIBRATED PROBE (RESISTANCE VALUE 10 KOHM AT 77°F (25°C) NTC);	REPLACE IT;	AUTOMATIC.
		DISCONNECTED OR WET PROBE CONNECTOR.	CHECK THE WIRING.	
E16	***COMBUSTION BLOWER***	COMBUSTION BLOWER BOARD BROKEN;	REPLACE IT;	AUTOMATIC.
		COMBUSTION BLOWER BROKEN;	REPLACE IT;	
		FAULTY POWER SUPPLY CABLE.	REPLACE IT.	
E18	***INSUFFICIENT CIRCULATION***	HEAT EXCHANGER OBSTRUCTED;	CLEAN OR REPLACE THE HEAT EXCHANGER;	AUTOMATIC.
		CIRCULATOR PUMP BROKEN OR DIRTY IMPELLER.	CLEAN THE IMPELLER OR REPLACE THE CIRCULATOR PUMP.	
E19	***LACK OF WATER CIRCULATION***	HEAT EXCHANGER OBSTRUCTED;	CLEAN OR REPLACE THE HEAT EXCHANGER;	MANUAL RESET (PRESS THE RESET "Ⓡ" KEY).
		CIRCULATOR PUMP BROKEN OR DIRTY IMPELLER;	CLEAN THE IMPELLER OR REPLACE THE CIRCULATOR PUMP;	
		DEFECTIVE MICRO.	REPLACE IT.	

CODE	FAULT	POSSIBLE CAUSE	SOLUTION	RESET
E21	***GENERAL INTERNAL BOARD ERROR***	INCORRECT SIGNAL RECOGNITION BY THE MODULATION BOARD MICRO-PROCESSOR.	IF THE MODULATION BOARD DOES NOT RESET THE ERROR AUTOMATICALLY, REPLACE IT.	AUTOMATIC.
E22	***PARAMETERS PROGRAMMING REQUEST***	MICRO=PROCESSOR MEMORY LOSS.	REPROGRAM PARAMETERS.	MANUAL RESET (DICONNECT MAIN POWER SUPPLY).
E32	***COMMUNICATION ERROR BETWEEN THE WATER HEATER BOARD AND THE MODBUS BOARD***	NO ELECTRICAL CONNECTION;	CHECK THE WIRING;	AUTOMATIC.
		MODBUS BOARD BROKEN;	REPLACE IT;	
E35	***RESIDUAL FLAME***	FAULTY IONIZATION ELECTRODE;	CLEAN IT OR REPLACE IT;	MANUAL RESET (PRESS THE RESET ® KEY).
		FAULTY IONIZATION ELECTRODE CABLE;	REPLACE IT;	
		FAULTY MODULATION BOARD.	REPLACE IT.	
E40	***SUPPLY VOLTAGE***	SUPPLY VOLTAGE OUT OF OPERATION RANGE	CHECK THE POWER SUPPLY LINE (THE ERROR DEACTIVATES AUTOMATICALLY AS SOON AS THE SUPPLY VOLTAGE FALLS BACK WITHIN THE REQUESTED LIMITS).	AUTOMATIC.
E52	***COMMUNICATION FAULT BETWEEN MODBUS CONTROLLER AND MODBUS CONTROL UNIT***	NO ELECTRICAL CONNECTION;	CHECK THE WIRING;	AUTOMATIC.
		MODBUS CONTROL UNIT BROKEN.	REPLACE IT;	
E56	***BLOCKED WATER FLOW CONTROLLER***	BLOCKED MAGNET WITHIN THE WATER FLOW CONTROLLER;	REMOVE ANY DEBRIS THAT MIGHT HAVE BEEN FORMED WITHIN THE WATER FLOW SWITCH;	AUTOMATIC.
		DEFECTIVE MICRO.	REPLACE IT.	

3.2.17. ACTIVE FUNCTIONS SIGNALLING CODES

CODE	FUNCTION	DESCRIPTION
F09	***D.H.W CIRCUIT ANTI-FREEZE***	WHEN THE SANITARY SENSOR DETECTS A TEMPERATURE BELOW 41 °F (5°C), THE PUMP RUNS AND THE BURNER LIFTS UP THE TEMPERATURE TO 68 °F (20°C). WHEN THIS LATTER TEMPERATURE IS ACHIEVED, THE BURNER SHUTS OFF AND THE PUMP RUNS FOR 20 SECONDS AS POST CIRCULATION.
F28	***ANTI-LEGIONELLA***	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 CYLINDER UP TO 140°F (60°C). THIS FUNCTION IS ENABLED INDEPENDENTLY FROM THE CONTACT TO THE CYLINDER CLOCK, PROVIDING THAT THE RELATIVE PARAMETER (P15) IS ENABLED.

3.2.18 POSITIONS OF THE ELECTRODES

If the water heaters does not restart, check the positions of the electrodes (especially the ignition electrode).

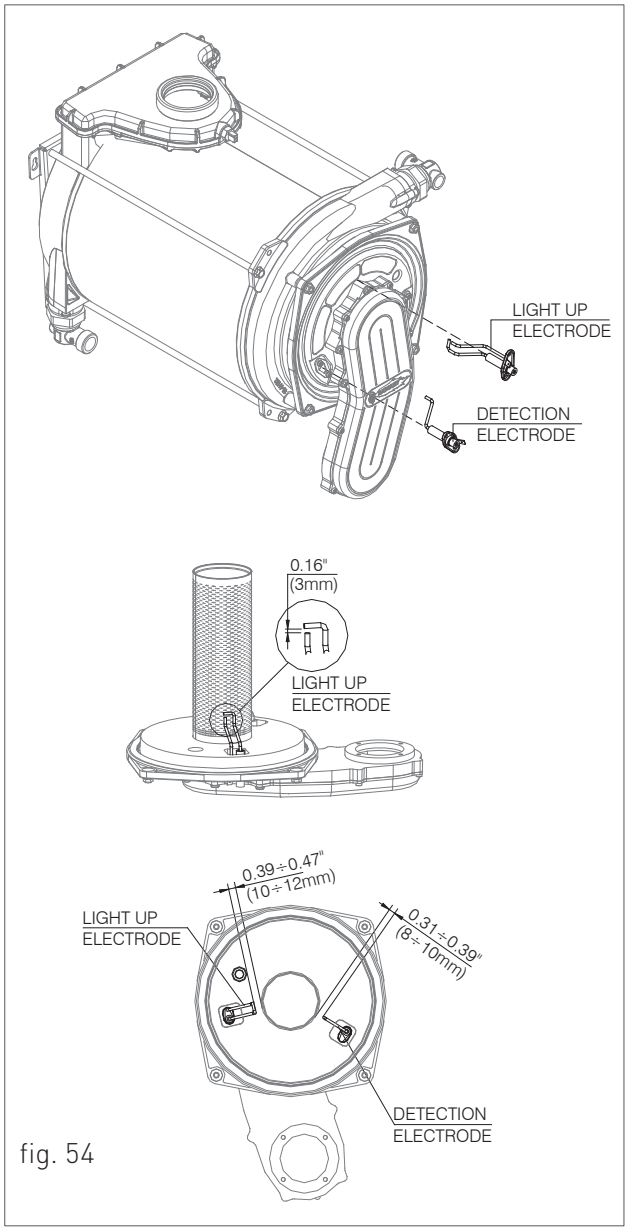


fig. 54

RADIANT BRUCIATORI s.p.a.

Via Pantanelli, 164/166 - 61025 Loc. Montelabbate (PU)

Tel. +39 0721 9079.1 • fax. +39 0721 9079279

e-mail: info@radiant • Internet: http://www.radiant.it