



# Installation, Use and Maintenance Manual for model

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## R2KA 34 /20

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### WARNING

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

-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 an outside phone. Follow the gas supplier's instructions.

→If you cannot reach your gas supplier, call the fire department.

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





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## 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 boiler 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 boiler.

The boiler 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 boiler.



### 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 boiler.*



### 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 stored carefully 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. 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 its own authorized Technical Support Centers, listed for each Region on the site [www.radianthydronics.com](http://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 ANSI Z21.13-2014 • CSA 4.9-2014 GAS FIRED LOW PRESSURE STEAM AND HOT WATER BOILERS, declares that its gas boilers 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 boiler is equipped with all accessories necessary to provide a dependable independent heating unit. All boilers 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 boiler 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 boiler should be installed only by qualified service technician, 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 BOILER, THE INSTALLER MUST MAKE SURE THAT THE FOLLOWING CONDITIONS ARE PRESENT:**

- › The unit is connected to a heating plant 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 air flow.

- › The unit is suitable for use with the type of gas available by checking the boiler 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. BOILER LOCATION ENVIRONMENTAL REQUIREMENTS

The boiler 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 boiler 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



boiler, sufficient air openings must be available to provide fresh air when all appliances are operating simultaneously. It is essential that in rooms where the boiler is installed to provide as much air as required by normal combustion of the gas consumed by the various appliances. Consequently, it may be necessary to make openings in the walls to provide air inlet into the rooms.

Application 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 at least 25 mm<sup>2</sup> every kW (1 in<sup>2</sup> for every 1000 Btu/hr) of heat input, with a minimum of 100 cm<sup>2</sup> (15.5 in<sup>2</sup>);
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 boiler may be installed in any room in the home. Keep boiler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

**WARNING**

*If the temperature in the boiler installation location goes below 14°F centigrades, please fill the system with anti-freeze liquid and insert and electrical resistances kit (see 1.1.14 'ANTI-FREEZE PROTECTION').*

### 1.1.3. REFERENCE LEGISLATION

This boiler 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.



## 1. INSTALLATION

### 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.*

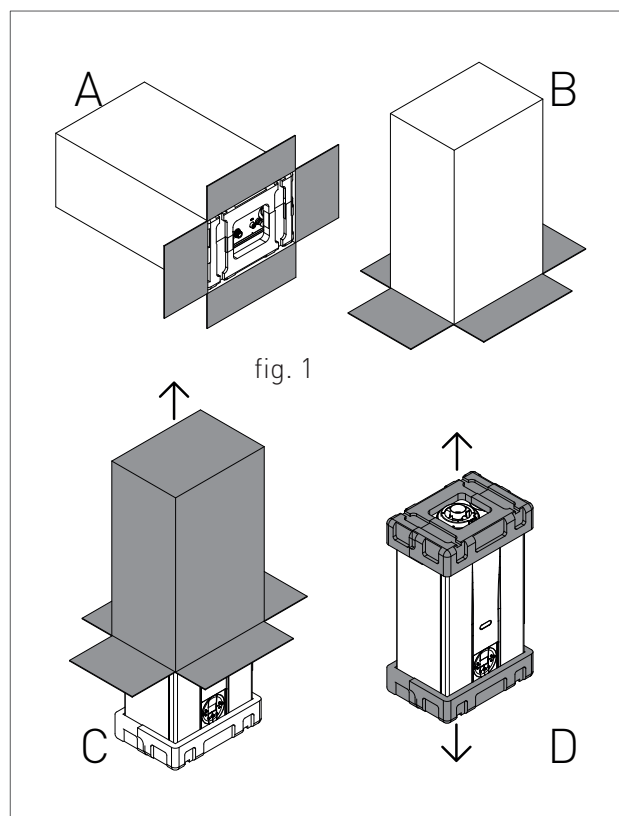


#### WARNING

*The packing elements (cardboard box, wooden crate, nails, fasteners, plastic bags, expanded polystyrene, etc.) are dangerous and must be kept out of the reach of children, they should be discarded properly.*

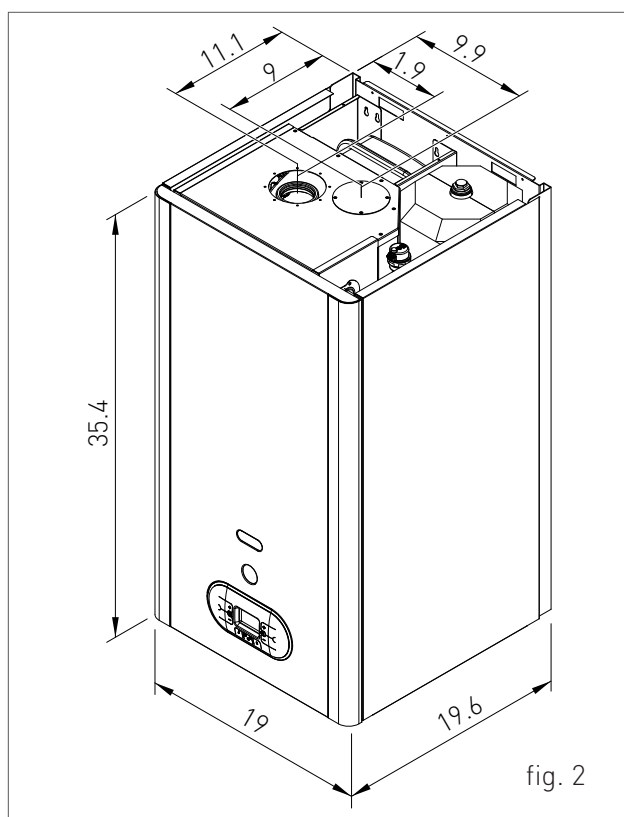
To unpack the boiler, proceed as follows:

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

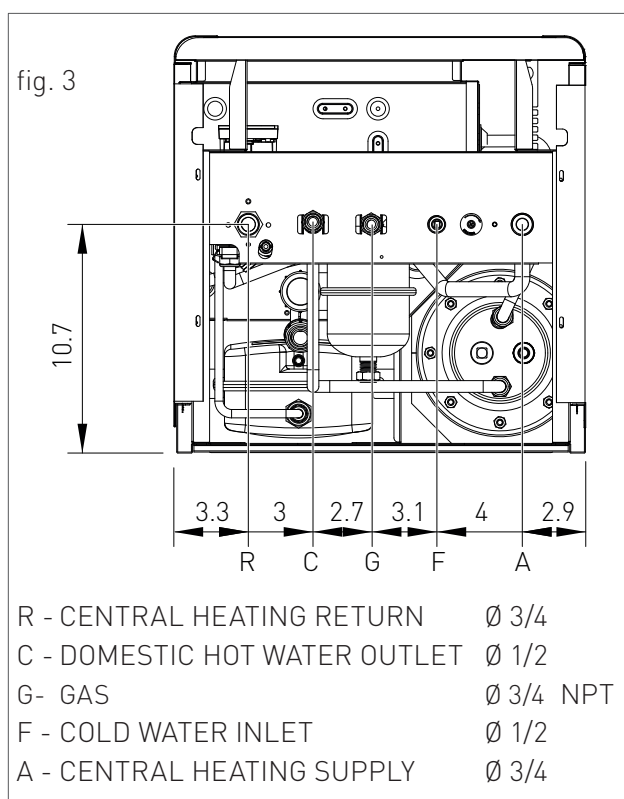




## 1.1.5. OVERALL DIMENSIONS (inch)

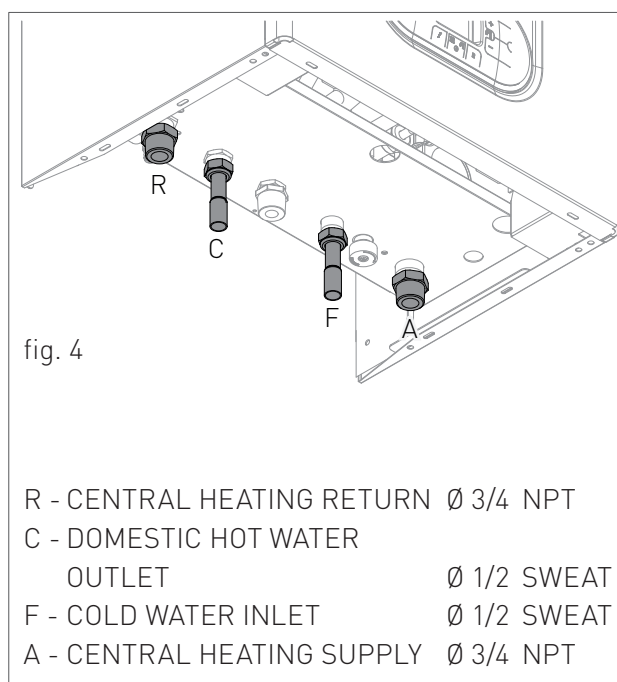


## 1.1.6. PIPING LAYOUT/IDENTIFICATION



## 1.1.7. HYDRAULIC CONNECTION KIT

An hydraulic kit equipped is available and supplied by RADIANT upon demand.





## 1. INSTALLATION

### 1.1.8. POSITIONING AND CLEARANCES TO COMBUSTIBLE MATERIAL AND SERVICE CLEARANCES

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

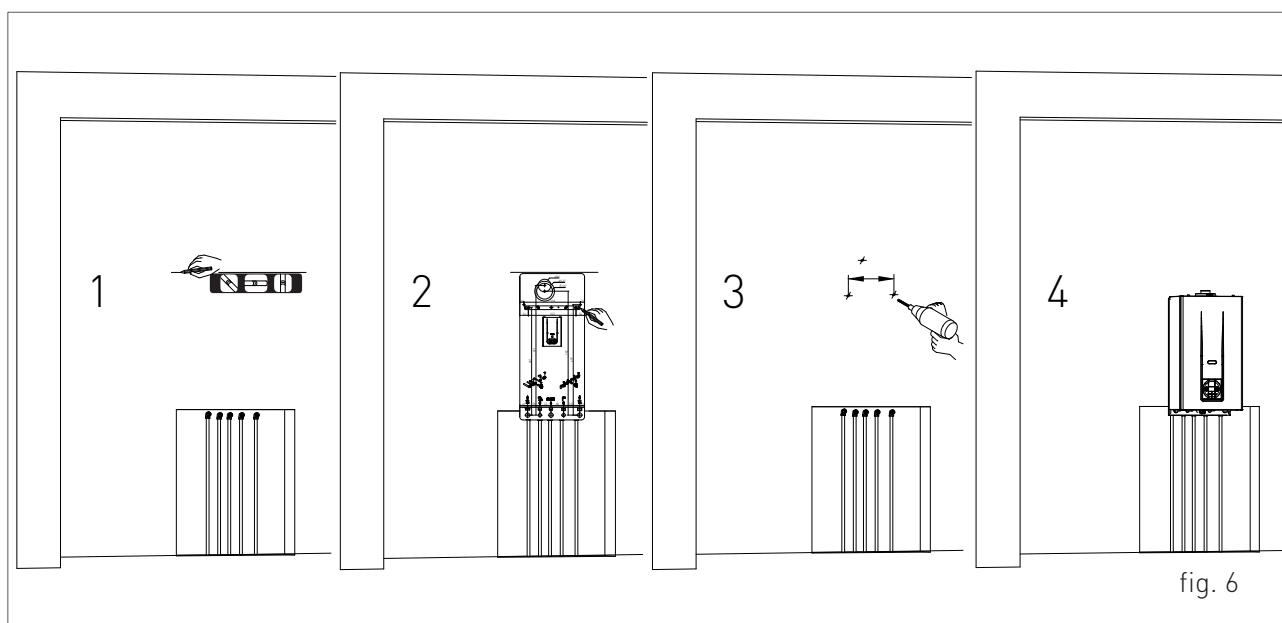
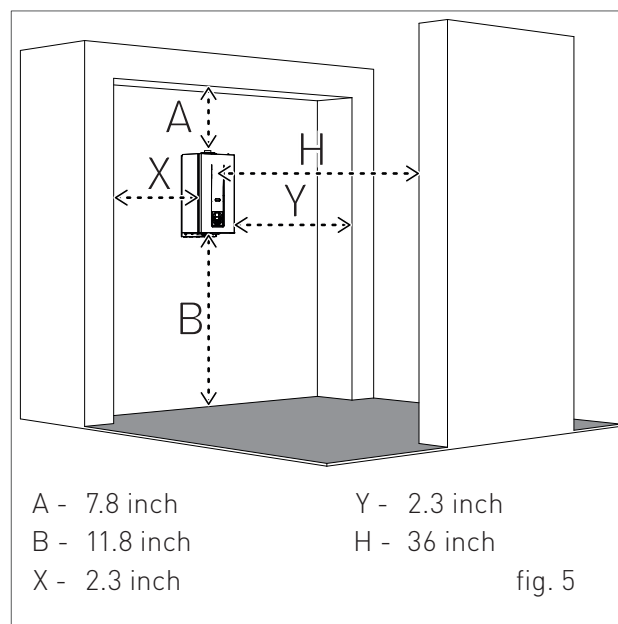
This boiler has been certified to be installed with "0" clearances to combustible material.

In order to allow the access inside the boiler for maintenance operations, follow the minimum service clearances indicated in figure 5.

To facilitate the installation, the boiler is provided with a jig that allows setting in advance the connections to the tubes providing the ability of connecting the boiler to completed masonry structure.

To position the unit, proceed as follows (see fig. 6):

1. Trace a line using a spirit level (min. length 9.8 inch) on the installation wall.
2. Place the top of the jig along the traced line respecting the distances of the water connections; then mark the two points to insert the fasteners, then trace the points for the exhaust vent;
3. Remove the jig and drill the wall;
4. Fix the wall bracket using the screws provided. Hang the unit on the bracket.





**WARNING**

Using a level, make sure the boiler is properly levelled (see fig.7) so as to allow the condensates to drain.

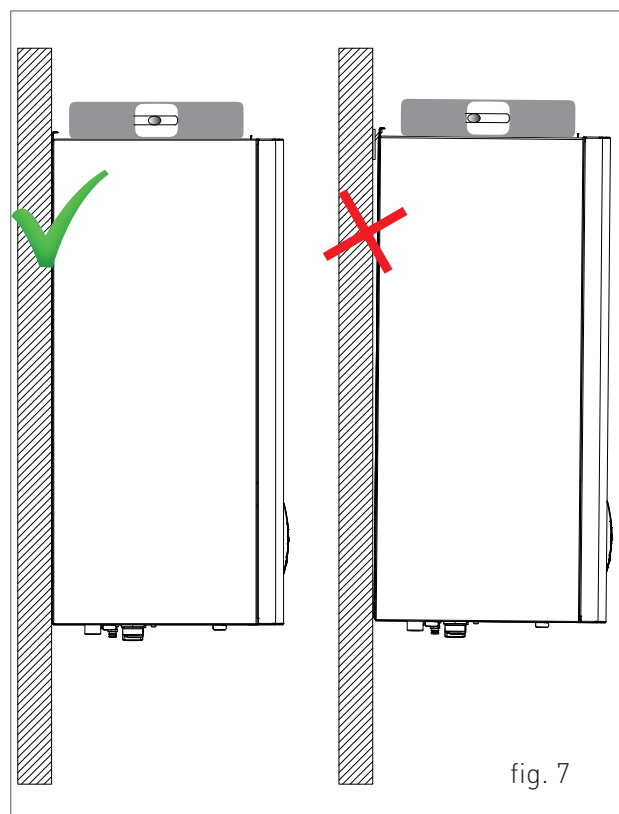


fig. 7

## 1.1.9. CIRCULATOR PERFORMANCE CURVE

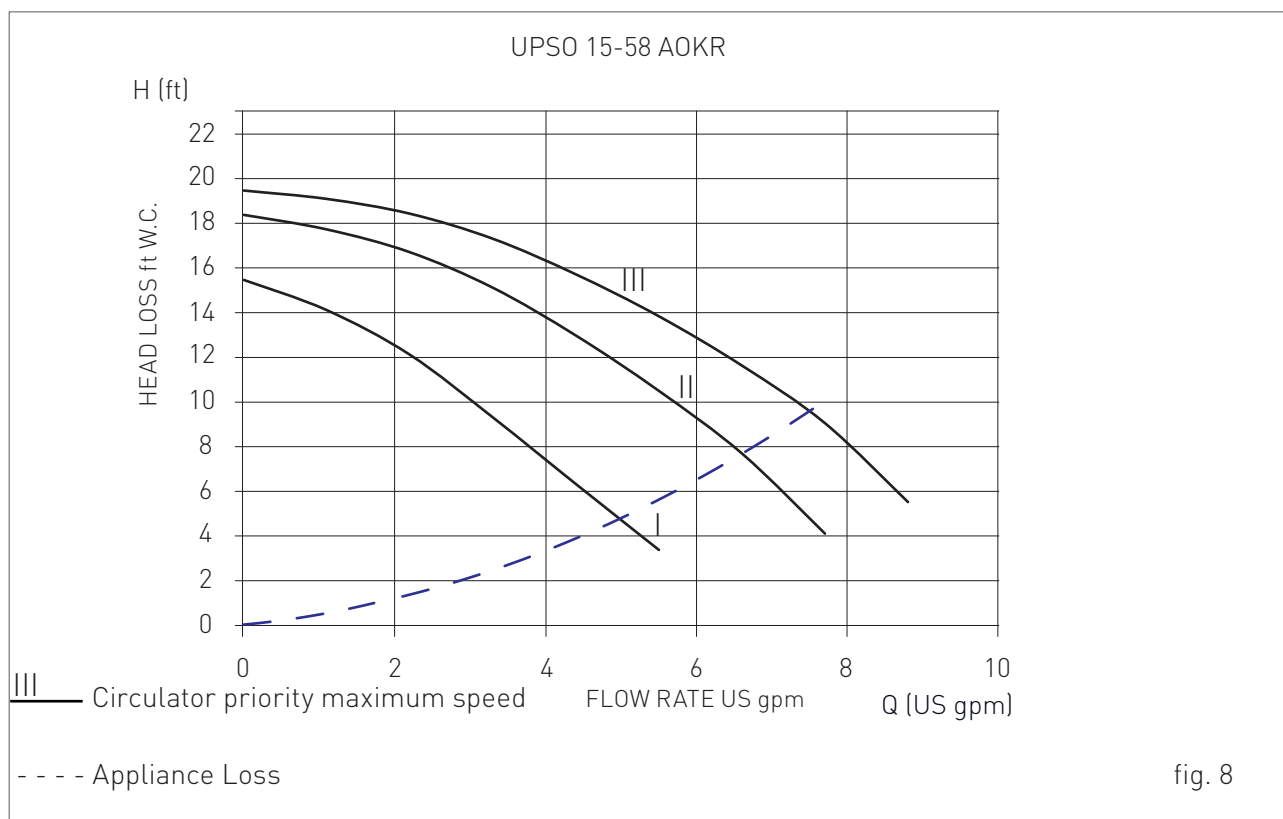


fig. 8



## 1. INSTALLATION

### 1.1.10. WATER CONNECTIONS



#### DANGER

*Make sure that the tubes of the water and heating unit are not used as grounding system for the electrical unit. There are not suitable for such use.*



#### WARNING

*To prevent voiding the warranty and to ensure the proper operation of the boiler, wash the unit (if possible when hot) with suitable descaling solution to remove the impurities coming from tubes and radiators.*



#### WARNING

*If the boiler is installed in a hydrostatic position lower than those of the user devices (radiators, fan coils, etc.), mount the shut-off valves on the domestic water heating circuit to ease the performance of the maintenance operations if necessary to only empty the boiler.*



#### WARNING

*When connecting the equipment to water supply, avoid excessive bending and recovery operations from improper positioning that may damage the tubes causing leaks, malfunction or premature wear.*



#### WARNING

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

### DOMESTIC CIRCUIT

In order to prevent limestone build-up and damages to the domestic water heat exchanger, the hardness of the domestic supply water should not exceed 8.4° dh (degrees hardness). 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, you should install suitable water

treatment devices, for residues presence. Please install an inline filter.

The pressure of the cold inlet water should be between 7.2 psi (0.5 bar) and 150 psi (10.34 bar). In case of greater pressure values, please install a pressure reducer upstream from the boiler. Please refer to local jurisdictions on the requirements for cold inlet water pressure.

### HEATING CIRCUIT

In order to avoid any scale or deposits on the primary exchanger, the hardness of the heating circuit inlet water should not exceed 14° dh (degrees hardness). However, please check the characteristics of the water used and install suitable treatment devices.

To protect the central heating system from damaging corrosion, flakes or deposits it is important to clean the hydronic system using cleaners such as Fernox F3 Cleaner. For long term protection against corrosion and deposits, the use of inhibitor (such as Fernox F1 inhibitor) is required after cleaning and flushing of the hydronic system. It is important to monitor the concentration of the inhibitor during commissioning and during servicing of unit.



#### WARNING

*Failure to clean the central heating system or add adequate inhibitor invalidates the compliance warranty.*

Connect the boiler safety drains (heating circuit safety valve) to a discharge funnel. The manufacturer is not responsible for any floods due to safety valve opening in case of unit excessive pressure build up.



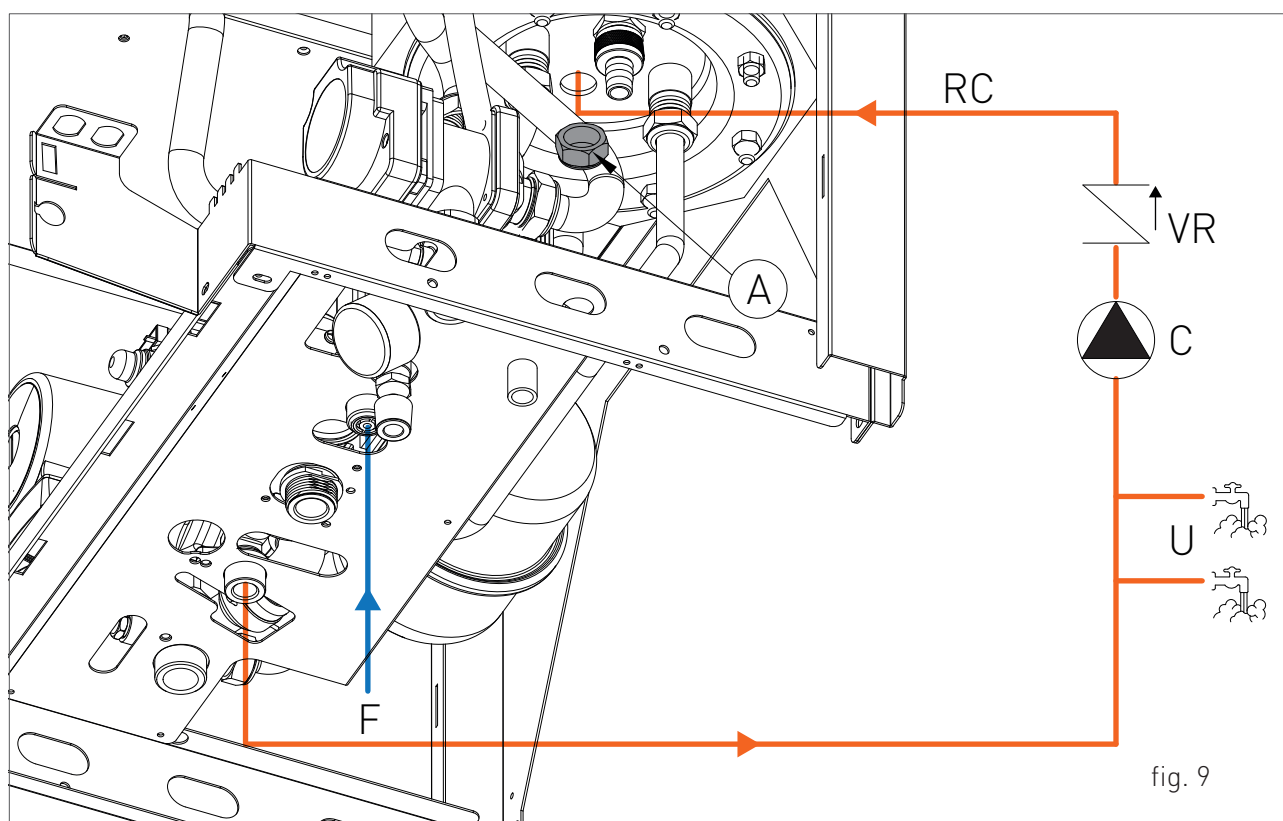
#### WARNING

*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.*

### 1.1.11. D.H.W. CIRCULATING LOOP

In order to joint the D.H.W out loop pipe, proceed as follows:

- › unscrew the 1/2" cap A (fig.9);
- › joint the nipple to the D.H.W. circulating pipe.



#### KEY

- RC- D.H.W. RECIRCULATING LOOP
- VR- NON-RETURN VALVE (CHECK VALVE)
- C- CIRCULATOR
- U- FIXTURES
- F- COLD WATER MAINS



## 1. INSTALLATION

### 1.1.12. SYSTEM FILLING



**WARNING**

*For system filling use only clean tap water.*

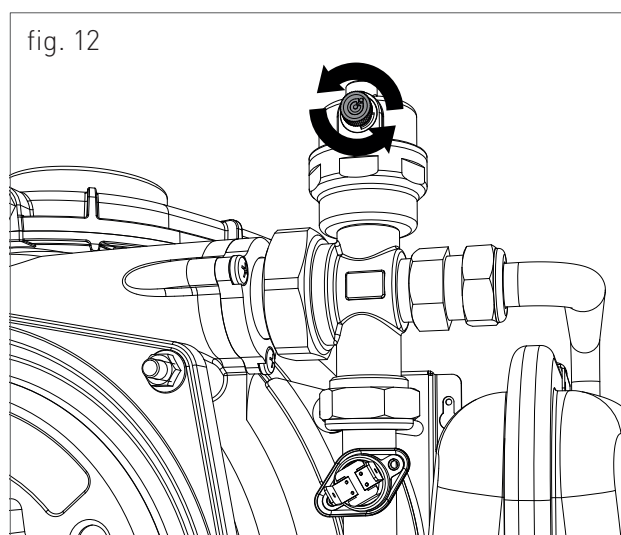
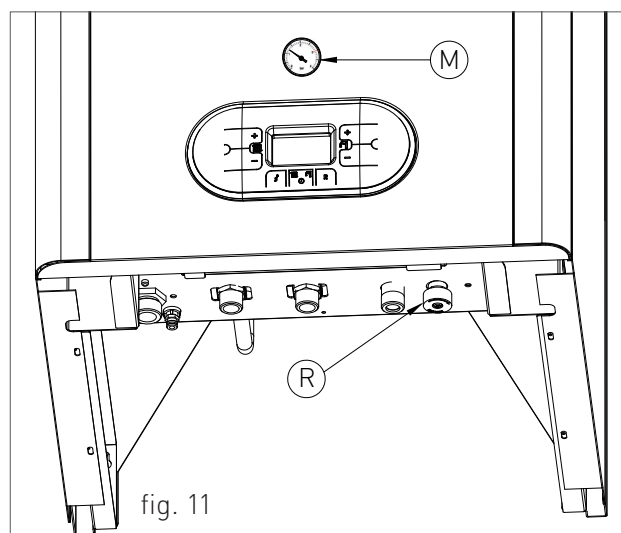
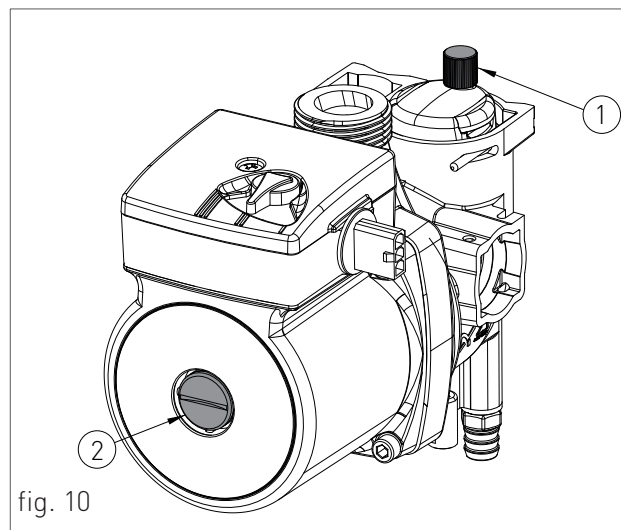


**WARNING**

*If the system is filled by adding ethylene glycol-type chemical agents it is suggested to install a system fender on the hydronic system in order to separate the heating circuit from the domestic circuit.*

Before powering up the boiler, fill the system as follows:

1. Make sure the circulator is not blocked;
2. Slightly loosen the cap of the circulator air eliminator (1-fig. 10) to release the air from the system;
3. Slightly loosen the cap of the air eliminator placed on the top of the condensing block (fig. 12) to release the air from the top of the system;
4. Open the feeding tap "R" (fig. 11);
5. Release all the air;
6. Use pressure gauge "M" (fig. 11) to make sure that the system pressure reaches 1.2 bar (fig. 13);
7. After performing this operation, make sure that the loading tap "R" (fig. 12) is properly closed.



8. Unscrew the circulator cap [2-fig.10] to release any air bubbles and close it to prevent water leakage;
9. Open the air relief valves of the radiators and check the air removal process. When the water starts to leak close the radiators air relief valves.
10. If after performing these operations you observe a decrease of the water pressure inside the system, open once again the loading tap "R" until the pressure gauge indicates the value of 1.2 bar [fig. 13]

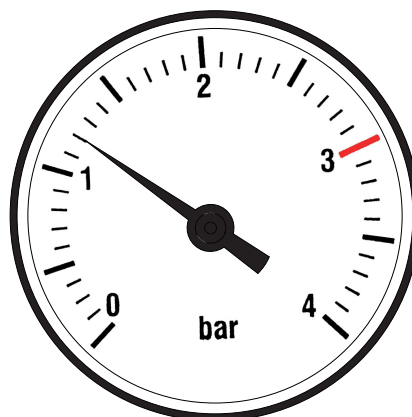


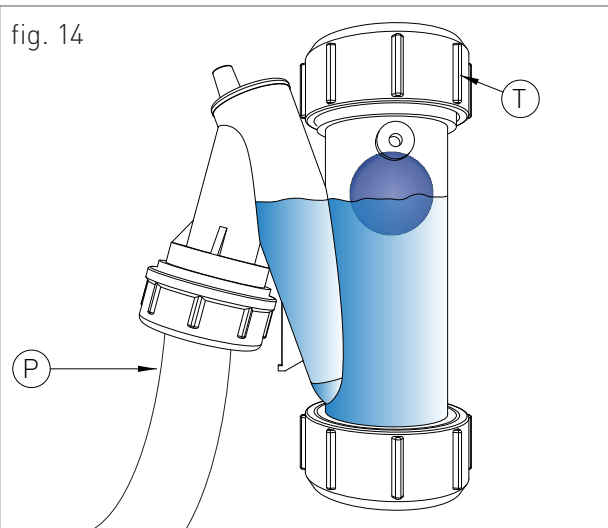
fig. 13

### 1.1.13. FILLING THE CONDENSATE COLLECTION SIPHON

Before starting the boiler you have to fill the condensate collection siphon in order to avoid fuel back up through the siphon.

Fill the condensate collection siphon as follows [see fig. 14]:

- › 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 tube "P" to a waste disposal system. The condensate can be drained directly in the sewer system by inserting an easily serviceable siphon.



#### WARNING

After the first months of boiler operation, it is recommended to clean the condensate trap, to eliminate possible deposits coming from the first flow of the condensate inside the boiler technical components. These deposits could cause a malfunctioning of the trap.



## 1. INSTALLATION

### CONDENSATE DRAIN

The boiler produces a significant amount of condensate during operation. This condensation has an acidic pH of 3-5. Follow all local codes and regulations when disposing of condensate from the boiler.

The project engineer should consider the possibility of installing systems to eliminate the acidic condensation, according to system power and buildings' use.

The system should be designed to avoid the condensate freezing. Before the boiler commissioning, check the correct condensate flow.



#### WARNING

*Check before connecting the condensate trap to the drain pipe, for the proper gradient of boiler as described in paragraph "1.1.8 POSITIONING AND MINIMAL TECHNICAL SPACES".*



#### WARNING

*Properly connect the siphon condensate from the boiler to a drain system having adequate slope. Where possible, you should make this connection using transparent tubing to check for proper condensate drainage and avoid stagnation that could cause hazardous backflow of the condensate into the boiler.*

To connect the condensate drain use only corrosion-resistant material for the drain line.

### CONDENSATE NEUTRALIZER KIT

The condensate neutralization system neutralizes the condensate created by the products of combustion.

Acid condensate, introduced into the neutralization box, follows a two-step set course. First phase: nitrates and sulphates filtration through active carbons contained in the first part of the carbon site pipe. In the second phase the pH rises.

The acidity of the condensate can be controlled through the use of appropriate tools for the determination of Ph, such as the litmus paper.

Neutralized condensate can then be routed to the drainage system.

### MAINTENANCE

The pH value of the condensate after the neutralizer must be in between **<5,5 – 9,5>**.

Every six months, you need to determine the pH of the condensate treated in the neutralizer. Litmus paper or a digital instrument can be used to measure the pH level.

Neutral point is on the 6,8-7 value; in case of lower value the condensate is acid, in case of a higher value it is basic.

If necessary, replace the active carbon and the reagent granulate.



### 1.1.14. ANTI-FREEZE PROTECTION

The boiler is protected against freezing using the electronic board design with a function that start the burner and heat the water in the boiler when their water temperature goes below the minimum pre-set values, protecting the boiler up to an external temperature of 14 °F (-10 °C).

The device starts when the hot water temperature goes below 41 °F (5 °C), automatically starting the burner until the water reaches the temperature of 86 °F (30 °C).

The system starts even if display appears "OFF", as long as the boiler is connected to the power (120 V) and gas supply.

For long periods of standby, please empty the boiler and the plant.

If the temperature goes below 14 °F (-10 °C) centigrades, please fill the plant with anti-freeze liquid (CLEANPASS FLUIDO AG cod. 98716LA) and insert and electrical resistances kit (cod. 82259LP).

#### DILUTION PERCENTAGE OF CLEANPASS FLUIDO AG

ANTIFREEZE - ETHYLENE GLYCOL (%) VOLUME	TEMPERATURE FREEZING POINT °F (°C)
20	18 (-7.5)
30	8.6 (-13)
35	-0.4 (-18)
40	-8.5 (-22.5)
45	-18 (-28)
50	-28 (-33.5)
55	-44 (-42)
60	-58 (-50)

RECOMMENDED MINIMUM PERCENTAGE OF GLYCOL : 20 %



## 1. INSTALLATION

### 1.1.15. GAS CONNECTION



#### WARNING

*The gas piping must be installed according to all local and state codes, or in absence of local and state codes, with the latest "Natural gas and propane installation code", CAN/CSA-B 149.1 or "National Fuel Gas Code", ANSI Z223.1 (NFPA 54). Consult the "Natural gas and propane installation code" or "National Fuel Gas Code" for the recommended gas pipe size of other materials.*

**BEFORE PERFORMING THE GAS CONNECTION, MAKE SURE THAT:**

- › The gas line size and length meets requested;
- › The gas line is equipped with all safety and control devices required by the standards in force;
- › The internal and external seals of the gas inlet lines of the plant are checked;
- › The device is suitable for use with the type of gas available by checking the boiler data plate (located on the inner side of the front casing. If they do not match you must take the necessary measures to adapt the boiler to another type of gas (see 2.2.19 CONVERSION TO A DIFFERENT GAS TYPE);
- › The gas supply pressure falls within the values indicated on the data plate.

### 1.1.16. ELECTRICAL CONNECTION



#### DANGER

*The equipment is electrically safe only if it is properly connected to an efficient grounding system, performed in compliance with the safety standards in force (National Electrical Code, ANSI/NFPA 70 and or the Canadian Electrical Code Part I, CSA C22.1, Electrical Code). You should check this essential safety requirement. 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 grounding system.*

- › Make sure that the electrical systems is suitable for the maximum power consumed by the equipment, value indicated on the data plate.
- › Make sure that the cables section is appropriate for the maximum power consumed by the equipment.
- › The equipment works with alternating current of 120 V and 60 Hz. The electrical connection must be installed using an all-pole switch with an opening of at least 0.12 in (3 mm) between contacts placed upstream from the device.



#### WARNING

*Make sure that the phase and neutral cables connection is installed in compliance with the wiring diagram (see 1.1.17 POWER SUPPLY).*



#### WARNING

*It is strictly forbidden to use adaptors, multiple plugs and/or extensions for the general power supply of the equipment from the electrical supply.*



### 1.1.17. POWER SUPPLY

To power the boiler connect the electrical cables to the terminal inside the control panel as follows:



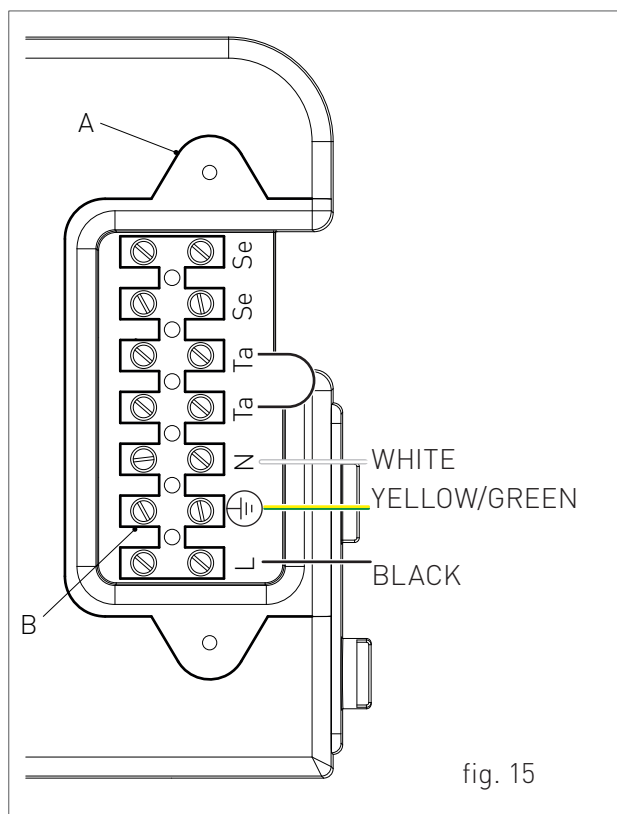
#### DANGER

*Cut off the voltage from the main switch.*

- › remove the boiler's front casing (refer to 2.2.13 ACCESSING THE BOILER).
- › loosen the two screws and remove the plate "A" (see fig. 15).
- › after removing the plate, connect the electrical cables to terminal "B" (see fig. 15):
  - 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.

Note: A 3-prong plug is provide with every unit and the above wiring has been performed.





### 1.1.18. OPTIONAL ELECTRICAL CONNECTIONS

To wire the options below:

- (SE) EXTERNAL TEMPERATURE PROBE COD. 73518LA
- (TA) ENVIRONMENT THERMOSTAT
- (CR) REMOTE CONTROL OPEN THERM COD. 40-00017

use the terminal placed inside the control panel as follows:



**DANGER**

*Shutoff the voltage from the main switch.*

- › Remove the front casing of the boiler (see 2.2.13 ACCESSING THE BOILER); unscrew the screws and remove plate "A" (see fig. 16).
- › After removing the plate, connect the electrical cables to terminal "B" (see fig. 16):
  - For the external temperature Probe connect the two non-polarized conductors to the Se-Se contacts.
  - For the environment Thermostat or Remote control, first remove the bridge on the Ta-Ta contacts and then connect the two non-polarized conductors to the Ta-Ta contacts.

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

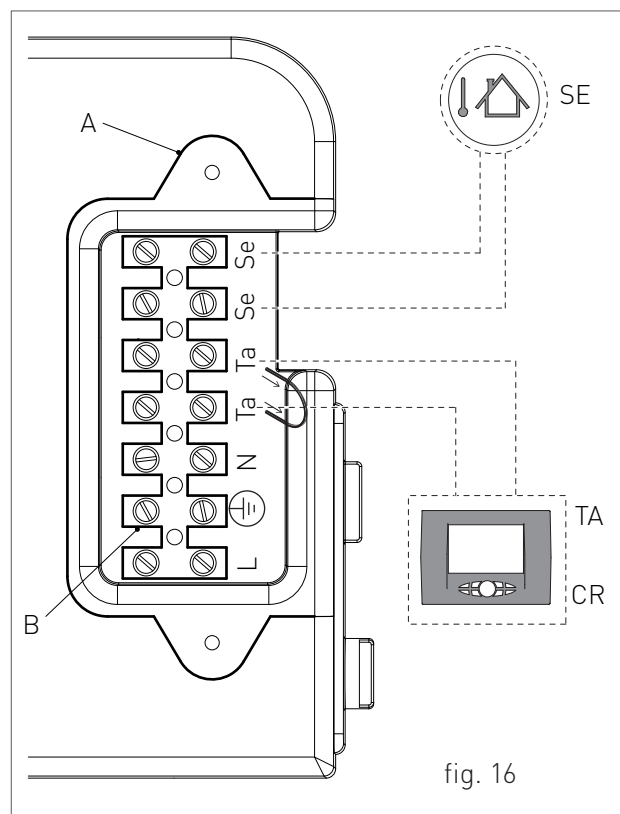


fig. 16

**NB:** In case of simultaneous presence of external probe and remote control, the modulation board only sends the external temperature value to the remote device without using it for modulation.

The communication between board and remote control takes place independently from the boiler's operating mode and after establishing the connection, the used interface on the board is disabled and the display shows the symbol

To wire the options below:



### DANGER

Shutoff the voltage from the main switch.

#### • (PM) MODULATING PUMP

#### • (TP) DOMESTIC HOT WATER PRE-HEATING DEACTIVATION TIMER

#### • (CT) TELEPHONE DIALER

#### • BUS 0-10V

#### • (SVZ) CONTROL BOARD FOR AREA VALVES CONNECTED TO A REMOTE CONTROL COD. 65-00030

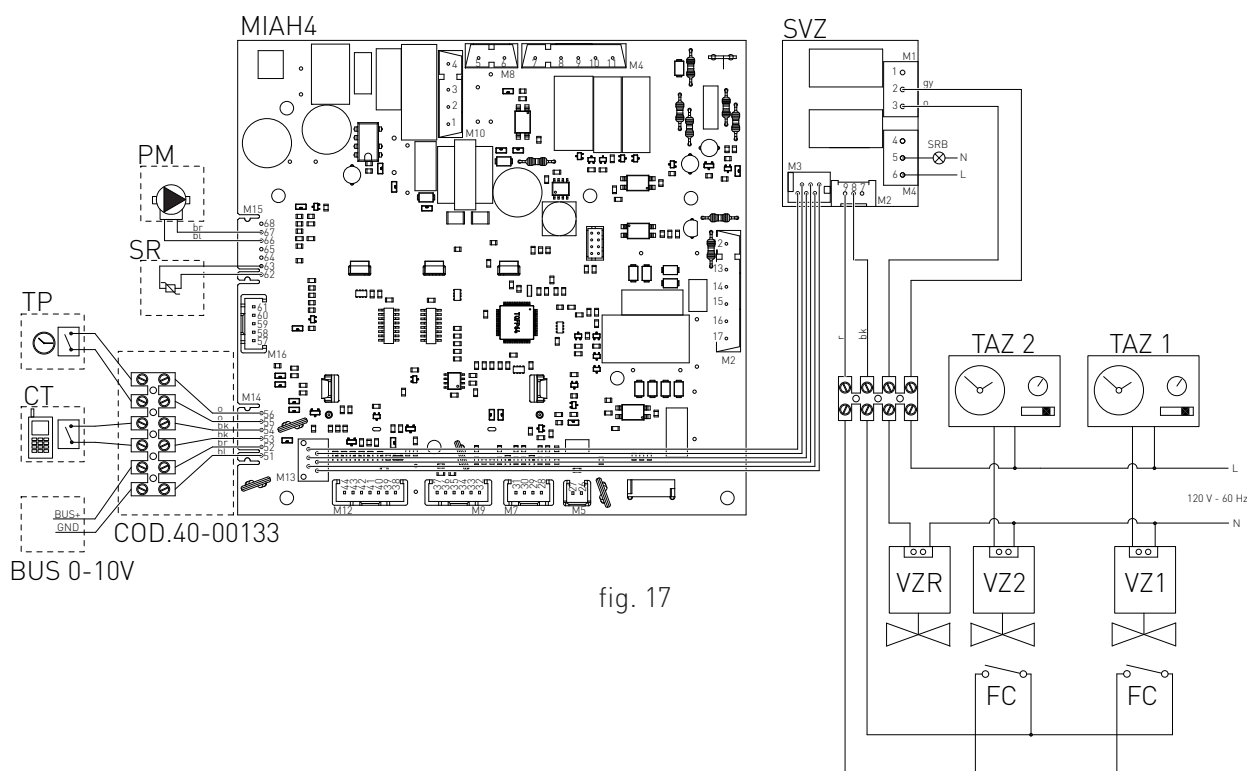
› Remove the boiler's front casing (refer to 2.2.13 ACCESSING THE BOILER).

› Remove the crankcase of the control panel (see 2.2.14 ACCESSING THE ELECTRONIC BOARD).

› After removing the crankcase, connect the items below to the electronic board (see fig. 17):

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

Use the electronic board placed inside the control panel as follows:



SR:	RETURN PROBE
SRB:	REMOTE LED FOR SIGNALLING BOILER LOCKOUT
TAZ1:	ENVIRONMENT THERMOSTAT AREA 1
TAZ 2:	ENVIRONMENT THERMOSTAT AREA 2
VZ1:	AREA 1 VALVE
VZ2:	AREA 2 VALVE
VZR:	REMOTE CONTROLLED AREA VALVE

FC:	AREA VALVES LIMIT SWITCH
GY:	GREY
O:	ORANGE
BK:	BLACK
BR:	BROWN
BL:	LIGHT BLUE
R:	RED



## 1. INSTALLATION

### 1.1.19. VENTING



#### WARNING

*In order to ensure proper operation and efficiency of the device you have to connect the boiler fume exhaust fitting to the exhaust and fresh air adapters (loosely supplied in water heaters). It is recommended to install discharge systems approved by Radiant.*



#### WARNING

*All termination kits must be located and installed in accordance with local building code and CSA B149.1 Natural Gas and Propane Installation Code.*



#### WARNING

*For condensate collection please follow the local codes.*

- › All exhaust runs shall be sloped such that any condensate would move towards the combustion chamber so that it can be collected and drained via the internal condensate trap of the appliance (Refer to section 1.1.20).
- › All combustion air intake runs where possible should be sloped in a manner to avoid rain water, dust or foreign objects from entering the appliance (Refer to section 1.1.20).
- › In case of horizontal polypropylene co-axial system installation, properly orientate the horizontal co-axial terminal in relation to the slopes inside the exhaust pipe and to protect the combustion air pipe from adverse weather conditions (Refer to section 1.1.20, sub-section **III (a)** and figure 20).

This appliance is certified to be installed using polypropylene, PVC and CPVC. For Canada use System 636 polypropylene, PVC and CPVC Type BH Gas Venting Systems certified to ULC S636. Types of venting configurations for this appliance are, co-axial vent (pipe with in a pipe), co-linear vent (separate pipes for exhaust and combustion

air), and single exhaust vent (uses room air for combustion).

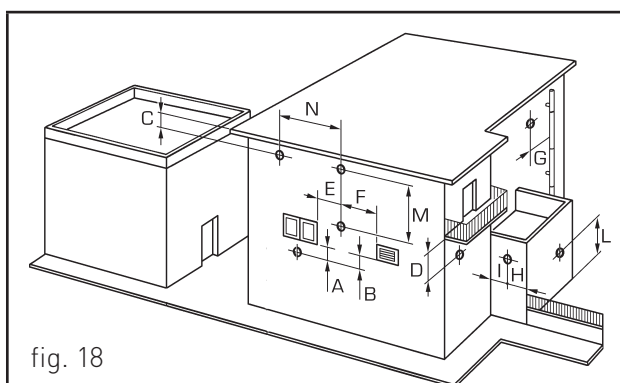


fig. 18

**TABLE MINIMUM DISTANCE**

	feet	mm
A- below openable window or door	3*	900*
B- below ventilation opening (non mechanical)	3*	900*
C- below soffits	1	300
D- below balcony	1	300
E- from adjacent window or door	3*	900*
F- from adjacent ventilation opening (non mechanical)	3*	900*
G- from horizontal or vertical soil or drain pipes	1	300
H- from corner of building	1	300
I - from recess in building	1	300
L - above a paved sidewalk or a paved driveway that is located on public property	7	2100
M- between two terminals set vertically	2	600
N- between two terminals set horizontally	2	600

(\*)- FOR APPLIANCE WITH INPUTS UP TO AND INCLUDING 100,000 Btu/h (29.3 kW) THIS DISTANCE REDUCES TO 1 ft (300 mm).

1. The vent shall not terminate:

- a) where it may cause hazardous frost or ice accumulations on adjacent property surfaces;
- b) less than 7 ft (2.1 m) above a paved sidewalk or a paved driveway that is located on public property;

c) within 6 ft (1.8 m) of a mechanical air-supply inlet to any building;

d) above a regulator within 3 ft (900 mm) horizontally of the vertical centerline of the regulator vent outlet to a maximum vertical distance of 15 ft (4.5 m);

e) within 3 ft (900 mm) of any gas service regulator vent outlet;

f) less than 1 ft (300 mm) above grade level plus expected snow level;

g) within the following distances of a window or door that can be opened in any building, of any non-mechanical air supply inlet to any building, or of any combustion air inlet of any other appliance;

- i) 12 in (300 mm) for inputs up to and including 100,000 Btu/h.
- ii) 3 ft (900 mm) for inputs exceeding 100,000 Btu/h.

h) Underneath a veranda, porch, or deck unless;

- i) the veranda, porch, or deck is fully open on a minimum of two sides beneath the floor; and
- ii) the distance between the top of the vent termination and the underside of the veranda, porch, or deck is greater than 1 ft (300 mm);

2. Building material within 5 ft (1.5m) of a vent terminal will be subjected to products of combustion and therefore may be subject to discoloration or deterioration, of building materials.



## 1. INSTALLATION

### 1.1.20. TYPES OF EXHAUST SYSTEMS

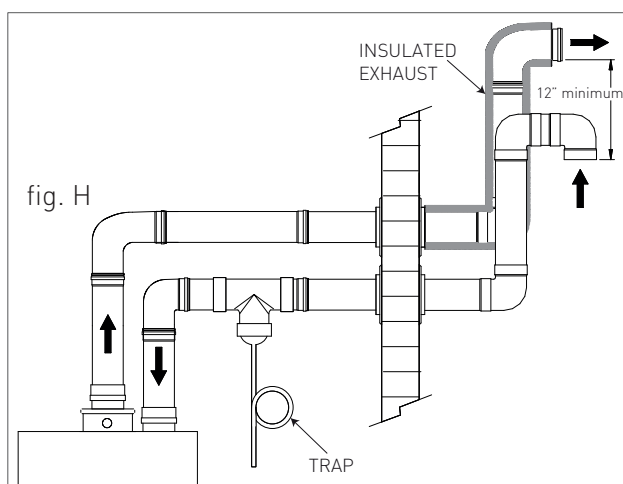
#### GENERAL INTRODUCTION

The venting installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

Horizontal exhaust runs shall slope upwards not less than 1/4 in/ft [21 mm/m] from the boiler to the vent terminal. Venting shall be installed so as to prevent the accumulation of condensate throughout the vent run. Provide means for drainage of condensate on all vertical exhaust runs and where necessary.

Horizontal combustion air intake runs should slope downwards not less than 1/4 in/ft [21 mm/m] from the boiler to the air intake terminal where possible.

For installations in which the combustion air run cannot slope to the outdoors, it is recommended that a trap be installed closed to the appliance (see figure 'H').



Where not possible a water trap shall be installed so as to collect moisture or water from entering into the air box of the boiler. Provide means for drainage of moisture and water on all vertical air intake runs and where necessary.

Traps, if used, should have pipe slopes not less than 1/4 in/ft [21 mm/m] downwards to the trap.

#### I - CO-LINEAR VENT (FRESH AIR AND EXHAUST)

The Gas-Fired wall mounted hot boilers can be installed with two separate pipes. The two separate pipes consists of one for the exhaust and the other for combustion air intake.

Please refer to Table 1: Allowable vent lengths for maximum vent and combustion air intake runs.

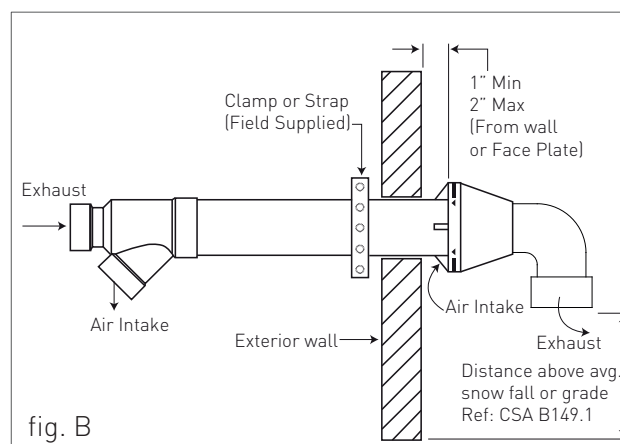
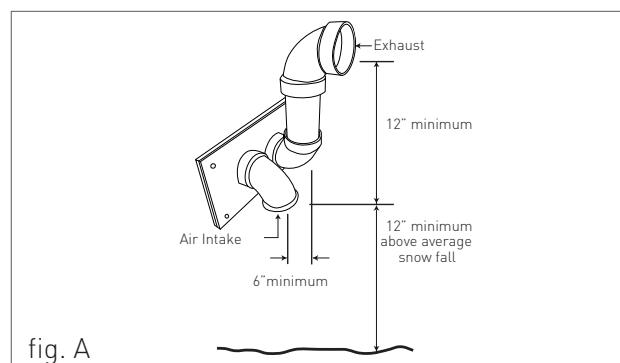
Co-linear vent installations can be either be installed through the wall or through the roof.

#### I (a) - THROUGH THE WALL INSTALLATION:

Through the wall installations can terminate with two separate pipes or with a concentric terminal.

Please refer to figure 'A' for installations using terminations using co-linear vent.

Refer to figure 'B' for installations using co-linear vent with co-axial terminal.



**I (b) - THROUGH THE ROOF LNSTALLATION:**

Through the roof installations can terminate with two separate pipes or with a co-axial terminal.

Please refer to figure 'C' for installations using co-linear vent with vertical termination.

Refer to figure 'D' for installations using a co-linear vent with vertical co-axial terminal.

**II - SINGLE VENT**

This gas-fired wall mounted hot boilers can be installed with one single vent pipe for exhaust.

Please refer to Table 1: Allowable vent lengths for maximum vent run.

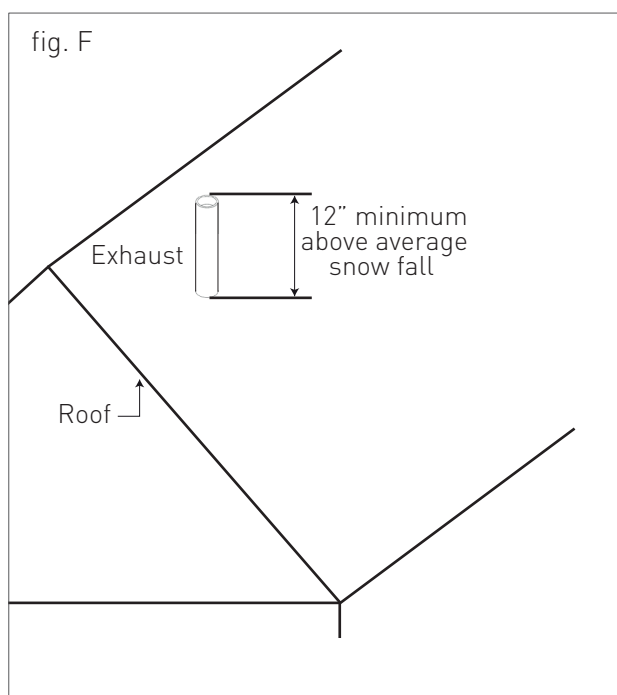
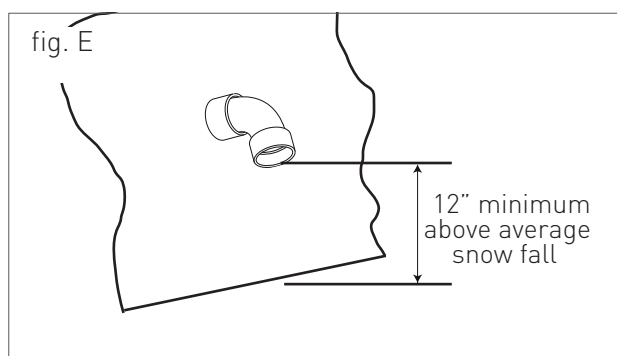
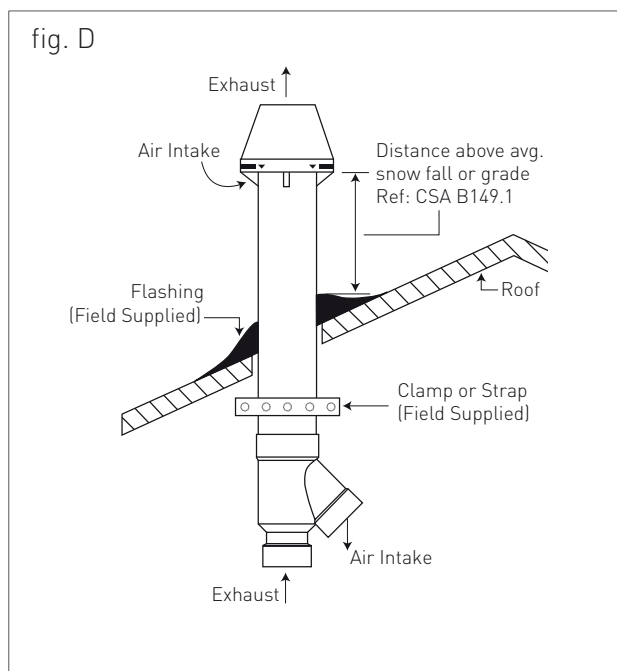
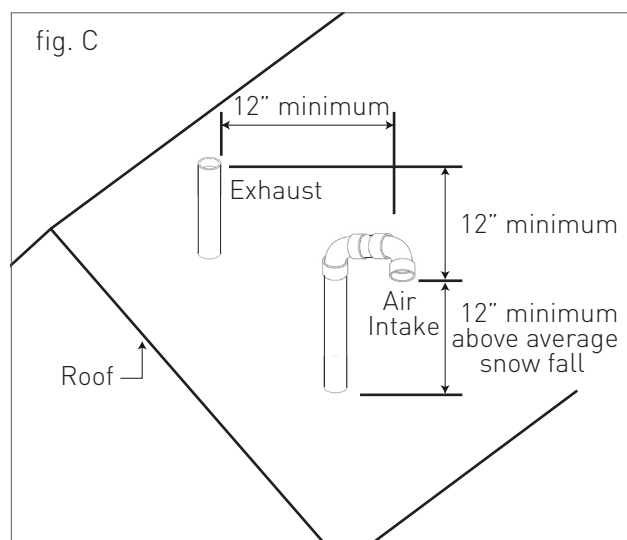
Single vent installations can be either be installed through the wall or through the roof.

**II (a) - THROUGH THE WALL INSTALLATION:**

Please refer to figure 'E' for through the wall single vent installations.

**II (b) - THROUGH THE ROOF INSTALLATION:**

Please refer to figure 'F' for through the roof single vent installations.





## 1. INSTALLATION

AIR INTAKE / FLUE EXHAUST Ø 3" (80 MM)  
ADAPTORS WITH PP TEST POINT (COD.: 65-00433)

These adapters are to be installed on co-linear vent (two separate pipes for exhaust and combustion air), and single exhaust vent (using room air for combustion). Additional bushings or couplings are required to transition from 3" schedule 40 pipe to 2" or 4" schedule 40 pipe only for installations using 2" or 4" schedule 40 pipe. Additional transition adapters are not needed for installations using only 60 mm or 80 mm polypropylene, or 3" schedule 40 PVC or CPVC pipe.

Ensure that the adapters are installed correctly into the correct locations as per the attached figure 19.

Installation instructions:

- Remove the air intake cover plate.
- Clean the inspection collar surface and the area of the air intake hole.
- Stick the appropriate neoprene gaskets onto the underside of the mounting flange of the adapters. Pay attention to aligning the four mounting through holes.
- Mount the intake/flue exhaust adapters with self tapping screws provided with the flue kit.
- Install the first piece of 60 mm or 80 mm polypropylene or 3" schedule 40 PVC or CPVC pipe until it bottoms out.
- Finally use the gear clamp to tighten the first piece of pipe to the adaptor.

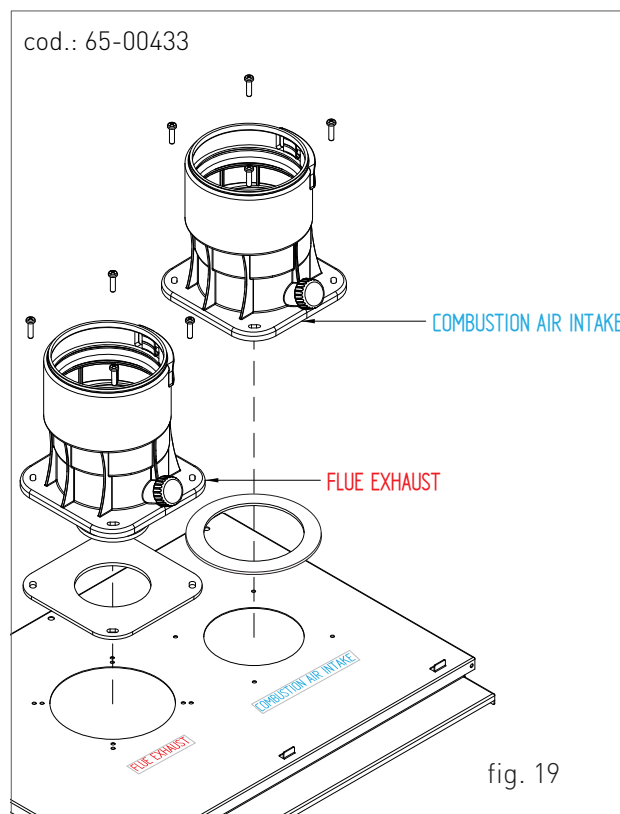


fig. 19



### III (a) - KIT M&G HORIZONTAL CO-AXIAL SYSTEM Ø3.1/4.9 in (Ø80/125 mm) INTERNAL POLYPROPYLENE DUCT ADJUSTABLE AT 360°.

It allows exhaust and air intake from external wall.

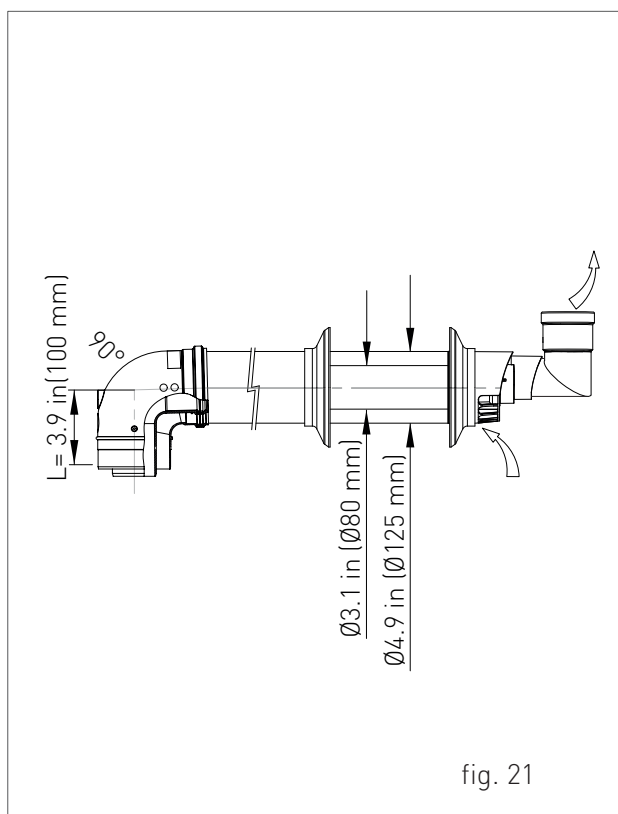
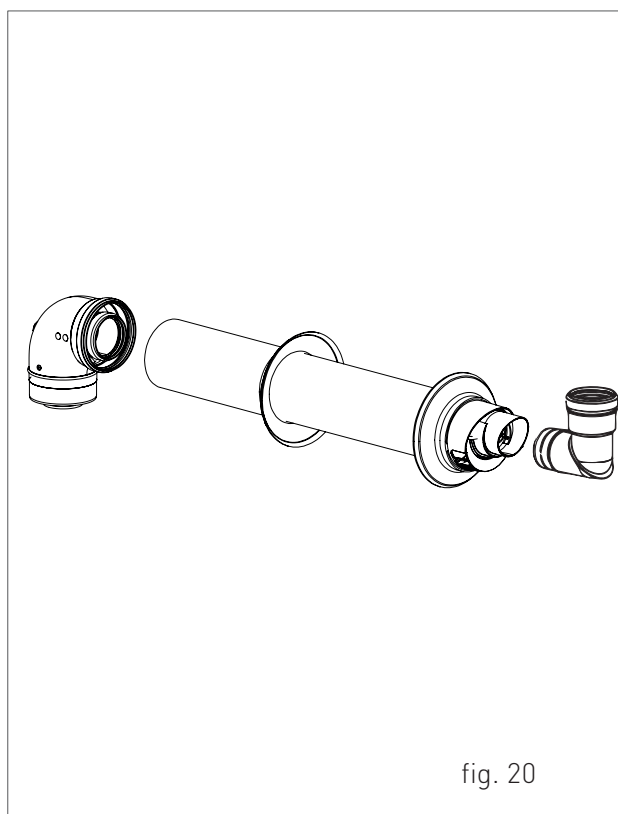
Suitable only for condensing unit.

It allows exhaust and air intake for combustion through co-axial ducts, the external one for air intake, the plastic internal one for exhaust.

PLEASE SEE THE MAXIMUM EXHAUST LENGTH IN THE TABLE IN 1.1.21 "ALLOWABLE VENT LENGTHS".

The maximum exhaust length (or linear reference length) can be calculated by summing the length of the linear tube.

When terminating horizontally, install an elbow at the end of the terminal. For area where snow is a concern it is recommended to point the elbow downwards.





## 1. INSTALLATION

### III (b) - KIT M&G VERTICAL CO-AXIAL SYSTEM Ø3.1/4.9 in (Ø80/125 mm) INTERNAL POLYPROPYLENE DUCT.

It allows exhaust and air intake directly from roof.

Suitable only for condensing boilers.

It allows exhaust and air intake for combustion through co-axial ducts, the external one for air intake, the plastic internal one for exhaust.

PLEASE SEE THE MAXIMUM EXHAUST LENGTH IN THE TABLE IN 1.1.21 "ALLOWABLE VENT LENGTHS".

The maximum exhaust length (or linear reference length) can be calculated by summing the length of the linear tube.

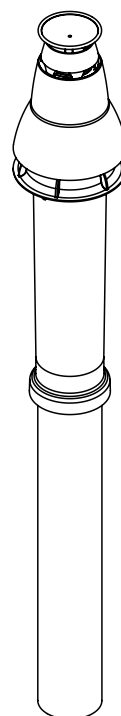


fig. 22

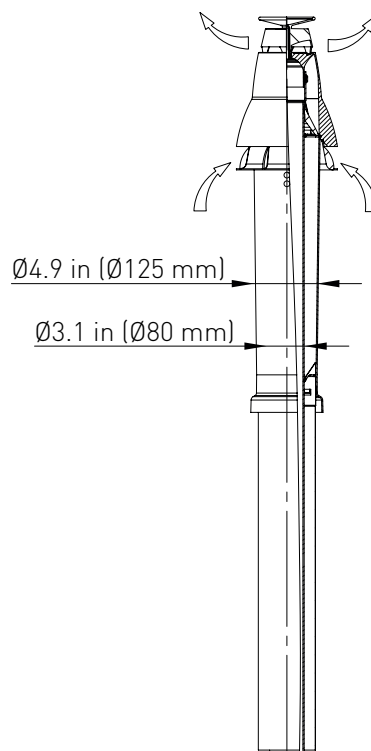


fig. 23



## 1.1.21. TABLE 1: ALLOWABLE VENT LENGTHS

Vent Configuration	Pipe Size	Minimum Length Vertical and Horizontal for Vent Run	Max Equivalent length Vertical and Horizontal for vent run	Gas Type	Exhaust Vent	Intake Vent
Co-axial vent	Ø2.3/3.9" (Ø60/100 mm)	1 ft (0.3 m) + elbow	19 ft (6 m) + elbow*	Natural or Propane	Polypropylene	Polypropylene
Co-linear vent (2 Separate pipes)****	2" (60 mm)	3.3 ft (1 m)	65 ft (20 m)**	Natural or Propane	PVC, CPVC, Polypropylene	PVC, CPVC, Polypropylene, ABS
Co-linear vent (2 Separate pipes)****	3" (80 mm)	3.3 ft (1 m)	150 ft (46 m)	Natural or Propane	PVC, CPVC, Polypropylene	PVC, CPVC, Polypropylene, ABS
Single vent	2" (60 mm)	1.6 ft (0.5 m)	36 ft (11 m)***	Natural or Propane	PVC, CPVC, Polypropylene	PVC, CPVC, Polypropylene, ABS
Single vent	3" (80 mm)	1.6 ft (0.5 m)	100 ft (30 m)	Natural or Propane	PVC, CPVC, Polypropylene	PVC, CPVC, Polypropylene, ABS

\* The domestic fan maximum speed adjustment (P11) must be changed to a value of 198 Hz and the heating fan maximum speed adjustment (P13) must be changed to a value of 183 Hz with a total vent run of above 10 ft (3 m).

\*\* The domestic fan maximum speed adjustment (P11) must be changed to a value of 198 Hz and the heating fan maximum speed adjustment (P13) must be changed to a value of 183 Hz with a total vent run of above 22 ft (7 m).

\*\*\* The domestic fan maximum speed adjustment (P11) must be changed to a value of 198 Hz and the heating fan maximum speed adjustment (P13) must be changed to a value of 183 Hz with a total vent run of above 19 ft (6 m).

\*\*\*\* Vent run consists of allowable vent length for exhaust pipe and an additional allowable vent length for combustible air.

NOTE: In Canada, exhaust vent must be approved to ULC S636 standard.

**EQUIVALENT LENGTHS**

Each 2"/3" (60 mm / 80 mm) 45° elbow equates to 2.5 linear feet to vent pipe.

Each 2"/3" (60 mm / 80 mm) 90° short radius elbow equates to 7.5 linear feet to vent pipe.

Each 2"/3" (60 mm / 80 mm) 90° long radius elbow equates to 5 linear feet to vent pipe.

Each Ø2.3/3.9" (Ø60/100 mm) co-axial 90° short radius elbow equates to 5 linear feet to vent pipe.

The total maximum equivalent vent pipe distance cannot exceed the maximum length listed for horizontal and vertical venting distance. The maximum lengths are not including elbows unless otherwise stated. Exceeding the maximum venting distances will cause the appliance to malfunction or cause an unsafe condition.





## 2. SUPPORT CENTER SECTION

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



### 2.1. FIRST START-UP

#### 2.1.1. PRELIMINARY OPERATIONS FOR FIRST START-UP

The first start-up operations consist of checking the correct installation, adjustment and operation of the device. Proceed as follows:

- › Check the inner components and ensure that they are sealed in accordance with the specifications provided and by standard and regulations.
- › Check if the gas used is suitable for the boiler;
- › Check if the gas capacity and relative pressures comply with those on the rating plate;
- › Check the operation of the safety device in case of lack of gas;
- › Make sure that the device supply voltage corresponds with that on the plate (120 V – 60 Hz) and that the wiring is correct;
- › Make sure that the grounding system works properly;
- › Make sure that the combustion air circulation, exhaust and condensate discharge take place properly in compliance with the Local and National Laws and Standards in force;
- › Make sure that the venting and their connections and comply with the requirements of the Local and National Laws and Standards;
- › Make sure that the heating system valves are open;
- › Make sure that there is no intake of gaseous products within the system;
- › Make sure that there are no flammable liquids or materials near the device;
- › Open the boiler gas valve and make sure that there are no gas leaks upstream from the device (the burner gas connection must be checked while the unit is running);
- › In case of new installation of the gas supply network, the air inside the gas line may lockout the device at first start-up. Repeat the start-up procedure to purge all the air inside the gas line.



## 2.1.2. BOILER COMMISSIONING



### WARNING



*Make sure that the system is correctly filled.*

Proceed with boiler commissioning as follows:

- › Power the boiler.

THE START-UP SYSTEM WILL AUTOMATICALLY ACTIVATE THE SYSTEM AIR RELIEF CYCLE FUNCTION DISPLAYED ON SCREEN WITH CODE "F33" (ONLY AT FIRST START-UP WILL LAST FOR 5 MINUTES). When function "F33" is active, the pump is enabled and the burner start-up request is disabled. The boiler can work normally only after completing the operation.

NOTE: Only at the first start-up the system relief cycle performed by the boiler lasts 5 minutes. After each water pressure reset the boiler will automatically perform a reduced system relief cycle, of 2 minutes. Throughout this function the display will show the code "F33". The boiler can work normally only after completing the operation.

- › Open the gas valve.
- › Use the button  to select the desired operation mode. If the symbol is displayed fixed, it means that the function was activated.
- › The burner will start as soon as the thermostat contact is closed;
- › If the flame is not sensed, the board will repeat the start-up operations after post-ventilation (20 seconds).
- › You might have to repeat the start-up operation several times to release all air inside the gas lines. Before repeating the operation, wait at least 5 seconds from the last start-up attempt and unlock the boiler from "E01" error code by pressing the Reset  key.

### 2.1.3. CO<sub>2</sub> VALUE CHECK AND CALIBRATION




#### WARNING


*The CO<sub>2</sub> value should be measured with the casing assembled, while the gas valve could only be adjusted with the casing open.*

To check and calibrate the CO<sub>2</sub> value to minimum and maximum heating power proceed as follows:

#### FOR MINIMUM HEATING POWER

- › Enable chimney-sweep function holding the key 'R' for 7 seconds (maximum operating time is 15 minutes), then press key '⊖' of the heating circuit  to set minimum power for heating function, the display will show 'Lo'.
- › Insert the combustion analyser probe in the provided exhaust tap 'PF' (fig. 24), then make sure that the CO<sub>2</sub> value complies with the requirements indicated in 2.2.8 "Technical data", otherwise adjust using screw 'A' (fig. 25) and adjust using a 4 Allen wrench the screw '2' (fig. 25) of the Off-Set adjuster. To increase the CO<sub>2</sub> value, turn the screw clockwise and counter-clockwise if you want to decrease it.
- › Once completed the adjustment, tighten the protection screw 'A' (fig. 25) on the Off-Set adjuster.

#### FOR MAXIMUM HEATING POWER

- › Press key '⊕' of the heating circuit  to set maximum power for heating function, the display will show 'HI'.
- › Make sure that the CO<sub>2</sub> value complies with the indications in 2.2.8 "Technical data", otherwise adjust using screw '1' (fig. 25) of the gas flow adjuster. To increase the CO<sub>2</sub> value, turn the screw counter-clockwise and clockwise if you want to decrease it.



- › After each adjustment variation on screw '1' (fig. 25) of the gas flow adjuster you have to wait for the boiler to stabilize itself to the set value (about 30 seconds).
- › Then press key '⊖' of the heating circuit  to set minimum power for heating function and check that CO<sub>2</sub> value hasn't changed, in case it has changed, please repeat the setting as described previously.
- › Press the button  to deactivate the chimney sweep function.

fig. 24

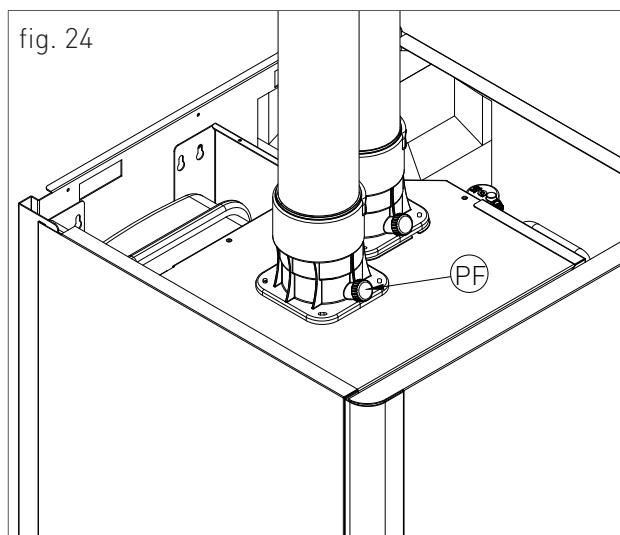
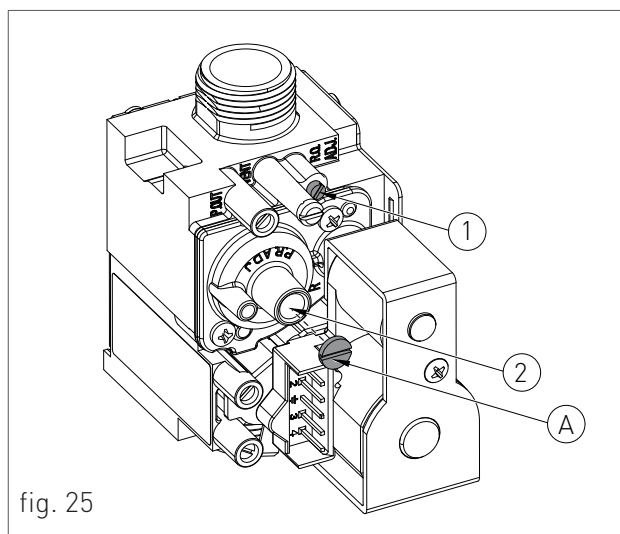


fig. 25





## 2.1.4. 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 .

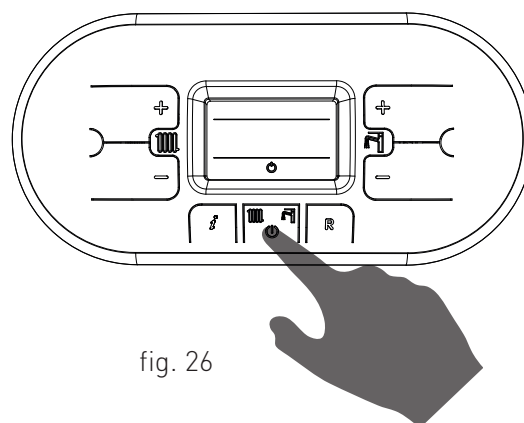







fig. 26

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 .

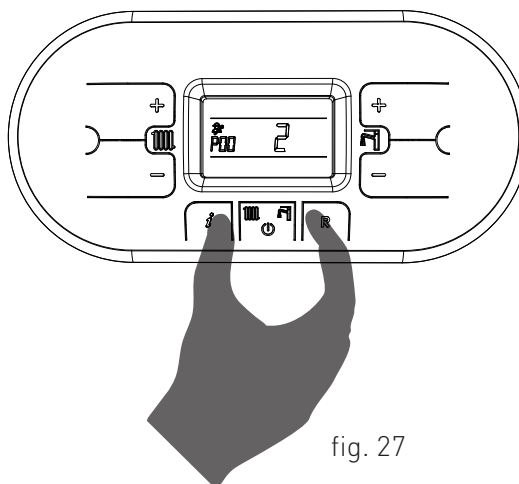


fig. 27

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

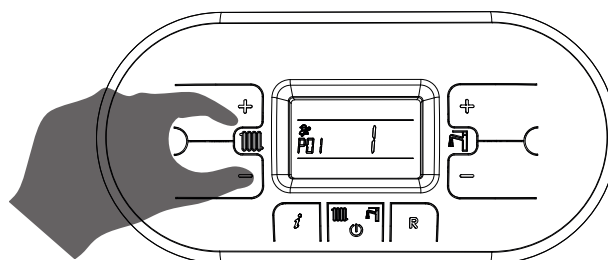


fig. 28

4. Use the keys '+' and '-' of the domestic circuit  to change the value of the parameter.

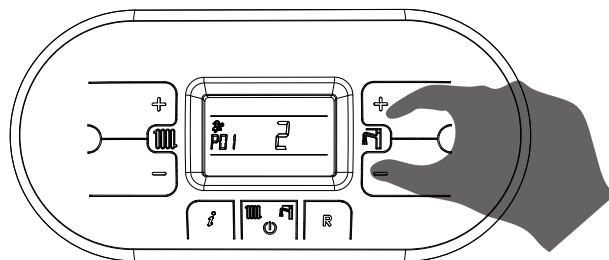


fig. 29

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

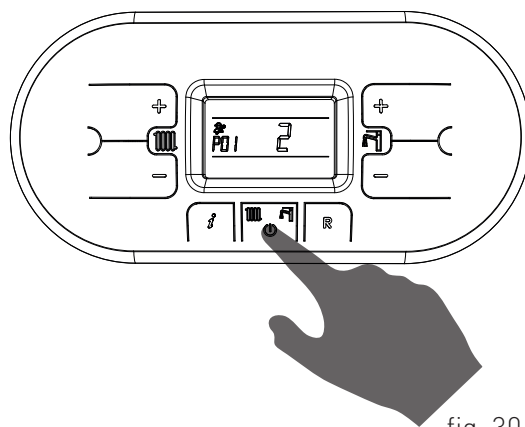



fig. 30

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.

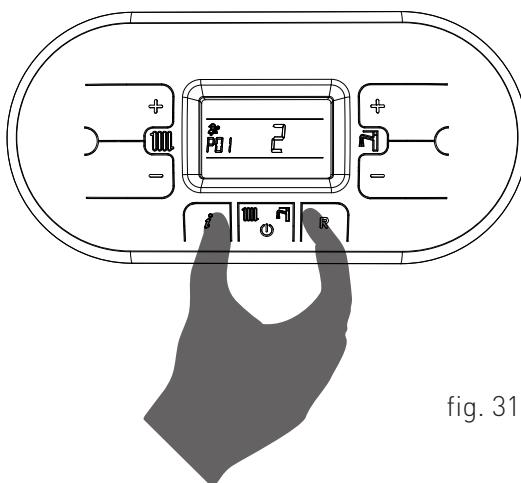


fig. 31



## 2.1.5. DIGITECH CS (MIAH402) PARAMETERS TABLE

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P00	<b>BOILER MODEL SELECTION</b>	0 - 10	0 - 7 = N.A.  8 = R2K 24 - R2KA 24/8  9 = R2K 34 - R2KA 34/20 - R1K 34/B  10 = R1K 55-R2K 55
P01	<b>BOILER TYPE SELECTION</b>	0 - 5	0 = INSTANTANEOUS → R2K  1 = N.A.  2 = ACCUMULATION (STORAGE) → R1K /B - R2KA  3 = ACCUMULATION (STORAGE) COMFORT → R1K /B - R2KA  4 = INSTANTANEOUS COMFORT - FAST H2O → R2K  5 = HEATING ONLY → R1K 55
P02	<b>GAS TYPE SELECTION</b> <b>ATTENTION:</b> READ THE INSTRUCTION IN 2.2.19 'CONVERSION TO A DIFFERENT GAS TYPE' BEFORE CHANGING THIS PARAMETER.	0 - 1	0 = NATURAL GAS (AND SETS FAN SPEED SETTING AT PARAMETERS P10 - P11 - P12 - P13)  1 = PROPANE (AND SETS FAN SPEED SETTING AT PARAMETERS P10 - P11 - P12 - P13)
P03	<b>SETTING THE HEATING TEMPERATURE</b> 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 86-176 °F (30-80 °C) (SET BY DEFAULT)  1 = REDUCED 77-113 °F (25-45 °C) FOR FLOOR SYSTEMS



## 2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P04	<b>HEATING RUN-UP</b> THROUGH THIS PARAMETER YOU CAN SET THE TIME, DURING START-UP PHASE, NECESSARY FOR THE BOILER TO REACH THE MAXIMUM SET POWER (ON THE HEATING SIDE).	0 - 4	0 = [DISABLED]  1 = 50 SECONDS (SET BY DEFAULT)  2 = 100 SECONDS  3 = 200 SECONDS  4 = 400 SECONDS
P05	<b>ANTI-WATER HAMMER SELECTION</b> ONCE THIS FUNCTION IS ENABLED, THE DHW CONTACT WILL BE DELAYED FOR A TIME EQUAL TO THE SET VALUE.	0 - 20	0 = DISABLED  1 - 20 = THE VALUE IS EXPRESSED IN SECONDS
P06	<b>DOMESTIC CIRCUIT PRESERVATION FUNCTION (ONLY FOR INSTANTANEOUS BOILER)</b> THROUGH THIS PARAMETER YOU CAN PRESERVE THE CIRCULATOR THE DIVERTER VALVE IN DOMESTIC POSITION FOR A PERIOD OF TIME EQUAL TO THE POST-CIRCULATION (SEE PARAMETER P09), SO AS TO MAINTAIN THE SECONDARY EXCHANGER HOT.	0 - 1	0 = DISABLED (SET BY DEFAULT)  1 = ENABLED
P07	<b>HEATING TIMING</b> 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 36 X 5 = 180 SECONDS)
P08	<b>POST-CIRCULATION HEATING TIMING</b> THROUGH THIS PARAMETER YOU CAN SET THE PUMP DURATION OF OPERATION DURING HEATING CYCLE, AFTER THE MAIN BURNER TURNS OFF DUE TO THE ENVIRONMENT THERMOSTAT.	0 - 90	VALUE EXPRESSED IN MULTIPLES OF 5 SECONDS (PRE-SET AT 36 X 5 = 180 SECONDS)
P09	<b>POST-CIRCULATION DOMESTIC / BOILER TIMING</b> THROUGH THIS PARAMETER YOU CAN SET THE PUMP OPERATION DURATION ON THE DOMESTIC CIRCUIT, AFTER THE TAP IS CLOSED.	0 - 90	VALUE EXPRESSED IN MULTIPLES OF 5 SECONDS (PRE-SET AT 18 X 5 = 90 SECONDS)



PARAMETER	DESCRIPTION	RANGE	FUNCTION
P10	<b>DOMESTIC FAN MINIMUM SPEED ADJUSTMENT</b> THROUGH THIS PARAMETER YOU CAN SET THE FAN MINIMUM SPEED IN DOMESTIC PHASE, THAT CORRESPONDS TO THE MINIMUM BURNER POWER DURING A REQUEST TO OPERATE IN DOMESTIC MODE. [SEE 2.1.6 '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 P02).	45 - VALUE SET FOR PARAMETER P11	THE VALUE IS EXPRESSED IN HERTZ (1HZ = 30 RPM)
P11	<b>DOMESTIC FAN MAXIMUM SPEED ADJUSTMENT</b> THROUGH THIS PARAMETER YOU CAN SET THE FAN MAXIMUM SPEED IN DOMESTIC PHASE, THAT CORRESPONDS TO THE MAXIMUM BURNER POWER DURING A REQUEST TO OPERATE IN DOMESTIC MODE [SEE 2.1.6 '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 P02).	VALUE SET FOR PARAMETER P10 - 203	THE VALUE IS EXPRESSED IN HERTZ (1HZ = 30 RPM)
P12	<b>HEATING FAN MINIMUM SPEED ADJUSTMENT</b> THROUGH THIS PARAMETER YOU CAN SET THE FAN MINIMUM SPEED IN HEATING PHASE, THAT CORRESPONDS TO THE MINIMUM BURNER POWER DURING A REQUEST TO OPERATE IN HEATING MODE. [SEE 2.1.6 '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 P02).	45 - VALUE SET FOR PARAMETER P13	THE VALUE IS EXPRESSED IN HERTZ (1HZ = 30 RPM)
P13	<b>HEATING FAN MAXIMUM SPEED ADJUSTMENT</b> THROUGH THIS PARAMETER YOU CAN SET THE FAN MAXIMUM SPEED IN HEATING PHASE, THAT CORRESPONDS TO THE MAXIMUM BURNER POWER DURING A REQUEST TO OPERATE IN HEATING MODE [SEE 2.1.6 '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 P02).	VALUE SET FOR PARAMETER P12 - 203	THE VALUE IS EXPRESSED IN HERTZ (1HZ = 30 RPM)
P14	<b>STARTING STEP ADJUSTMENT</b> THROUGH THIS PARAMETER YOU CAN SET THE FAN SPEED DURING START-UP. THE VALUE IS PRE-SET BASED ON THE SET POWER (SEE PARAMETER P00) AND ON THE GAS TYPE (SEE PARAMETER P02).	VALUE SET FOR PARAMETER P10 - 203	THE VALUE IS EXPRESSED IN HERTZ (1HZ = 30 RPM) - (PRE-SET AT 120 HZ)



## 2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P15	<b>ANTI-LEGIONELLA FUNCTION</b> <b>(ONLY FOR ACCUMULATION BOILER)</b>  THROUGH THIS PARAMETER YOU CAN ACTIVATE/DEACTIVATE "ANTI LEGIONELLA" HEAT TREATMENT OF THE ACCUMULATION BOILER. EVERY 7 DAYS THE WATER TEMPERATURE INSIDE THE ACCUMULATION BOILER IS HEATED BEYOND 140 °F (60 °C) THUS GENERATING A BURNING HAZARD. KEEP UNDER CONTROL SUCH DOMESTIC HOT WATER TREATMENT (AND INFORM THE USERS) TO AVOID UNFORESEEABLE DAMAGES TO PERSONS, ANIMALS, PROPERTY. A THERMOSTATIC VALVE SHOULD BE INSTALLED AT THE DOMESTIC HOT WATER OUTLET TO AVOID ANY BURNS.	0 - 1	0 = DISABLED  1 = ENABLED (PRE-SET BY DEFAULT ON ACCUMULATION BOILERS)



PARAMETER	DESCRIPTION	RANGE	FUNCTION
P16	<p><b>CLIMATE COMPENSATION CURVE</b></p> <p><b>(ONLY WITH EXTERNAL PROBE CONNECTED)</b></p> <p>YOU CAN CONNECT AN EXTERNAL TEMPERATURE PROBE (SEE 1.1.16 '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).</p> <p>THE SELECTION OF THE CURVE IS DETERMINED BY THE MAXIMUM DELIVERY TEMPERATURE T<sub>M</sub> AND THE MINIMUM EXTERNAL TEMPERATURE T<sub>E</sub> TAKING INTO ACCOUNT THE HOUSE INSULATION DEGREE.</p> <p>THE VALUES OF THE DELIVERY TEMPERATURES T<sub>M</sub>, REFER TO STANDARD SYSTEMS 86-176 °F (30-80 °C) OR FLOOR SYSTEMS 77-113 °F (25-45 °C). THE SYSTEM TYPE CAN BE SET FROM PARAMETER P03.</p>	0 - 30	(SET BY DEFAULT AT 15) THE NUMBERING OF THE VALUE CORRESPONDS TO 'Kd' CURVES ON THE CHART (SEE CHART BELOW).

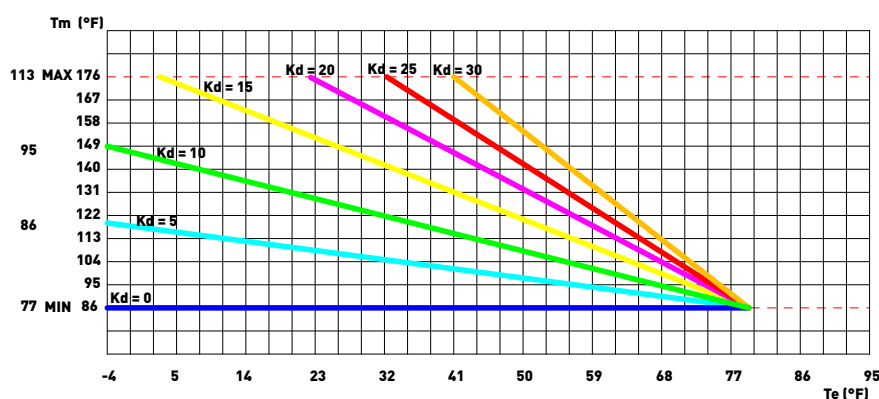


fig. 32

P17	<p><b>SETS THE TEMPERATURE MEASUREMENT UNIT</b></p> <p>THROUGH THIS PARAMETER YOU CAN SET THE TEMPERATURE MEASUREMENT UNIT DISPLAYED: CELSIUS (°C) OR FAHRENHEIT (°F) DEGREES.</p>	0 - 1	<p>0 = °C</p> <hr/> <p>1 = °F</p>
P18	<p><b>ENABLING BUS INDUSTRIAL PILOTING 0-10V</b></p> <p>THROUGH THIS PARAMETER YOU CAN ENABLE OR DISABLE THE BUS INDUSTRIAL INPUT 0-10V TO SET THROUGH EXTERNAL BUS THE BURNER POWER OR THE DELIVERY TEMPERATURE.</p>	0 - 2	<p>0 = DISABLED (SET BY DEFAULT)</p> <hr/> <p>1 = TEMPERATURE CONTROL MODE</p> <hr/> <p>2 = POWER CONTROL MODE</p>



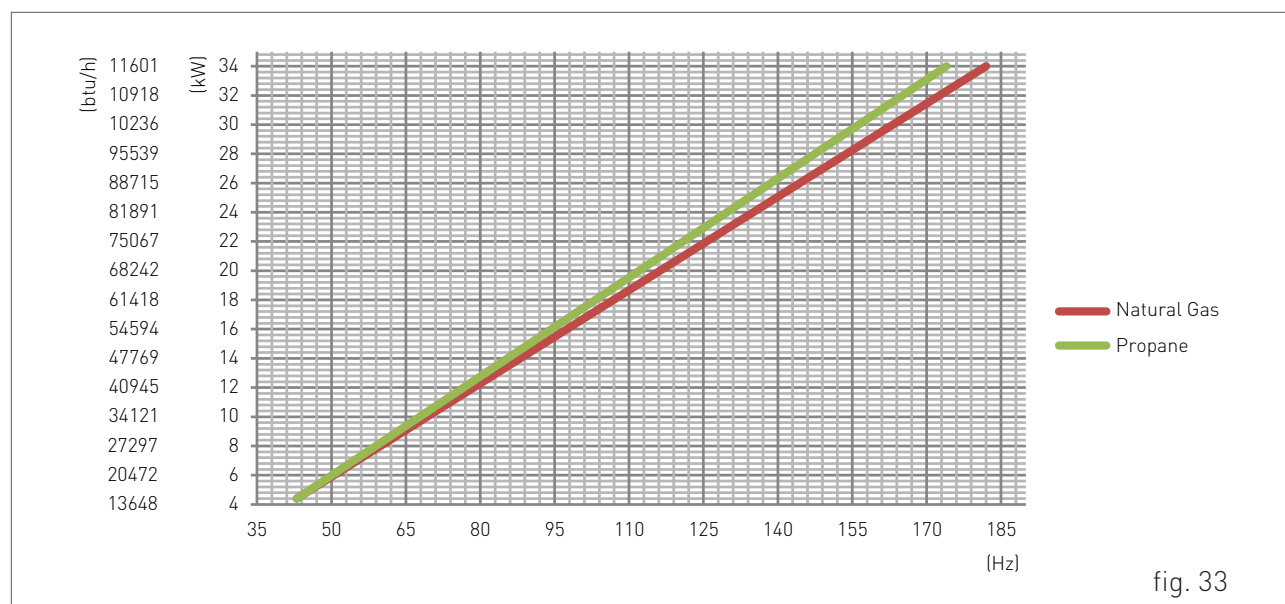
## 2. FIRST START-UP

PARAMETER	DESCRIPTION	RANGE	FUNCTION
P19	<b>MINIMUM HEATING SETPOINT</b> THROUGH THIS PARAMETER YOU CAN SET THE USER-ADJUSTABLE MINIMUM HEATING TEMPERATURE.	20 - 40	THE VALUE IS EXPRESSED IN °C
P20	<b>MAXIMUM HEATING SETPOINT</b> THROUGH THIS PARAMETER YOU CAN SET THE USER-ADJUSTABLE MAXIMUM HEATING TEMPERATURE.	40 - 90	THE VALUE IS EXPRESSED IN °C
P21	<b>MAXIMUM DOMESTIC SETPOINT</b> THROUGH THIS PARAMETER YOU CAN SET THE USER-ADJUSTABLE MAXIMUM DOMESTIC TEMPERATURE.	45 - 75	THE VALUE IS EXPRESSED IN °C
P22	<b>SET POINT <math>\Delta T</math> DELIVERY-RETURN</b> <b>(ONLY WITH MODULATING PUMP AND RETURN PROBE CONNECTED)</b> THROUGH THIS PARAMETER YOU CAN SET THE TEMPERATURE DIFFERENCE BETWEEN DELIVERY AND RETURN.	0 10 - 40	0 = DISABLED THE VALUE IS EXPRESSED IN °C
P23	<b>MODULATING PUMP MINIMUM SPEED</b> <b>(ONLY WITH MODULATING PUMP AND RETURN PROBE CONNECTED)</b> THROUGH THIS PARAMETER YOU CAN SET THE MINIMUM SPEED VALUE OF THE MODULATING PUMP DURING A REQUEST TO OPERATE IN HEATING MODE.	50 - 70	THE VALUE IS EXPRESSED IN PERCENTAGE
P24	<b>MODULATING PUMP MAXIMUM SPEED</b> <b>(ONLY WITH MODULATING PUMP AND RETURN PROBE CONNECTED)</b> THROUGH THIS PARAMETER YOU CAN SET THE MAXIMUM SPEED VALUE OF THE MODULATING PUMP DURING A REQUEST TO OPERATE IN HEATING MODE.	70 - 100	THE VALUE IS EXPRESSED IN PERCENTAGE
P25	<b>CONTROL PERIOD <math>\Delta T</math> DELIVERY-RETURN</b> <b>(ONLY WITH MODULATING PUMP AND RETURN PROBE CONNECTED)</b> THROUGH THIS PARAMETER YOU CAN SET THE RESPONSE TIME TO THE PUMP MODULATION.	20 - 100	THE VALUE IS EXPRESSED IN SECONDS
P26	<b>OUTDOOR RESET FUNCTION</b>	0 - 1	0 = 86-176 °F (30-80 °C)  1 = STANDARD RESET FUNCTION 77-140 °F (25-60 °C) WITHOUT OUTDOOR TEMPERATURE SENSOR OR 86-176 °F (30-80 °C) WITH OUTDOOR TEMPERATURE SENSOR (SET BY DEFAULT).





## 2.1.6. COMBUSTION BLOWER FREQUENCY/HEAT CAPACITY DIAGRAM



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	43	182	43	182
Propane	Hz	43	174	43	174

## 2.2. MAINTENANCE

### 2.2.7. GENERAL MAINTENANCE WARNINGS



#### ATTENTION

*All maintenance operations must be performed by qualified staff and authorized by RADIANT BRUCIATORI spa.*



#### WARNING

*The maintenance operations must be performed once every twelve months starting from the boiler installation date.*



#### WARNING

*To ensure longer life span and proper operation of the device, 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 boiler.*

Please perform the following operations once a year:

- › check the sealing of the gas components, and replace the gaskets if necessary;
- › check the sealing of the water 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 2.1.3 "CO2 VALUE CHECK AND CALIBRATION";
- › 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 heating circuit safety systems: limit temperature safety thermostat; limit pressure safety;
- › check the pre-load pressure of the expansion tank;
- › make sure that the permanent ventilation outlets are present, correctly sized and functioning, based on the installed devices. Follow the requirements provided by Local and National legislation;
- › periodically check the integrity of the venting system for safety and proper operation;
- › check that the wiring is installed in compliance with the requirements in the boiler instruction manual;
- › check the wiring inside the control panel;
- › check the flow and temperature of domestic hot water;
- › check the proper operation of the condensate draining system, including the devices outside the boiler such as condensate collection devices installed along the path of the venting 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 system.



## 2.2.8. TECHNICAL DATA

Model		R2KA 34 /20
Maximum nominal heat capacity in heating circuit	btu/h - (kW)	116013 - {34}
Maximum nominal heat capacity in domestic circuit	btu/h - (kW)	116013 - {34}
Minimum nominal heat capacity in heating circuit	btu/h - (kW)	15013 - {4.4}
Minimum nominal heat capacity in domestic circuit	btu/h - (kW)	15013 - {4.4}
Useful thermal power - 140/176°F (60/80°C)	btu/h - (kW)	113215 - {33.18}
Minimum useful thermal power - 140/176°F (60/80°C)	btu/h - (kW)	14706 - {4.31}
Performance at 100% Pn - 140/176°F (60/80°C)	%	97.6
Fumes temperature at nominal heat capacity	°F - (°C)	161.96 {72.2}
Fumes temperature at minimum heat capacity	°F - (°C)	144.68 {62.6}
CO <sub>2</sub> at nominal heat capacity - Natural Gas	%	9.2 - 9.5
CO <sub>2</sub> at minimum heat capacity - Natural Gas	%	8.9 - 9.2
CO <sub>2</sub> at nominal heat capacity - Propane	%	10.3 - 10.6
CO <sub>2</sub> at minimum heat capacity - Propane	%	10 - 10.3
CO at nominal heat capacity	ppm	78
CO at minimum heat capacity	ppm	1
<b>Heating circuit</b>		
Adjustable heating temperature	°F - (°C)	86-176 / 77-113 (30-80 / 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}
Expansion tank pre-charge pressure	psi - (bar)	14.5 - {1}
Capacity of the system expansion vessel	gal(US) - (litres)	2.11 - {8}
<b>Domestic circuit</b>		
Adjustable domestic temperature	°F - (°C)	95-140 {35-60}
Maximum pressure for domestic circuit	psi - (bar)	150 - {10.34}
Minimum pressure for domestic circuit	psi - (bar)	7.25 - {0.5}
Storage cylinder capacity	gal(US) - (litres)	5.28 - {20}
Continuous hot water supply - ΔT 54°F (30°C) - mixed water - 1 hour	gal(US) - (litres)	267.9 - {1014}
Continuous hot water supply - ΔT 54°F (30°C) - mixed water - for the first 10 minutes	gal(US) - (litres)	47.95 {181.5}
<b>Dimensional characteristics</b>		
Width	in - (mm)	19 - {490}
Depth	in - (mm)	19.6 - {500}
Height	in - (mm)	35.43 - {900}
Gross weight	lb - (Kg)	148 - {67}



## 2. MAINTENANCE

### Water connections

Flow	Ø	3/4"
Cold water	Ø	1/2"
Hot water	Ø	1/2"
Gas	NPT	3/4"
Return	Ø	3/4"

### Electrical specifications

Voltage-frequency	V/Hz	120/60
Max Absorbed Power	W	78
Insulation rate	IP	X4D

### Gas supply

Nominal supply pressure - Natural Gas	psi - (mbar)	0.25 - (17.4)
Heating Max. fan speed - Natural Gas	Hz	182
D.H.W Max fan speed - Natural Gas	Hz	182
Heating Min. fan speed - Natural Gas	Hz	43
D.H.W Min. fan speed - Natural Gas	Hz	43
Fuel consumption - Natural Gas	ft <sup>3</sup> /h - (m <sup>3</sup> /h)	114.41 - (3.24)
Nominal Supply pressure - Propane	psi - (mbar)	0.47 - (27.4)
Heating Max. fan speed - Propane	Hz	174
D.H.W Max fan speed - Propane	Hz	174
Heating Min. fan speed - Propane	Hz	43
D.H.W Min. fan speed - Propane	Hz	43
Fuel consumption - Propane	lb/h - (kg/h)	5.32 - (2.41)

## 2.2.9. TECHNICAL ASSEMBLY TECHNICAL ASSEMBLY

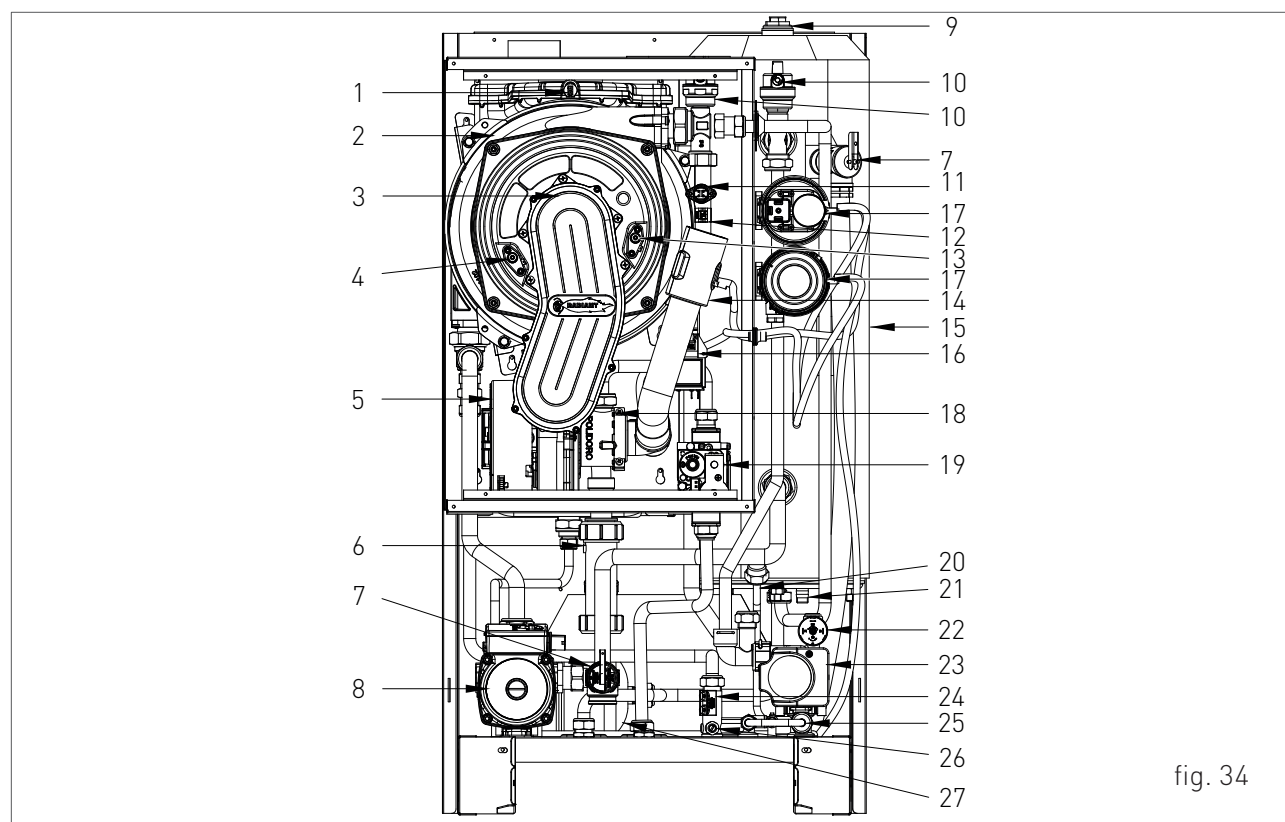


fig. 34

## KEY

1. EXHAUST SAFETY HIGH LIMIT SWITCH
2. INTEGRATED HEAT EXCHANGER
3. BURNER UNIT
4. IONIZATION ELECTRODE
5. COMBUSTION BLOWER
6. CONDENSATE COLLECTION SIPHON
7. PRESSURE RELIEF VALVE
8. CIRCULATOR
9. ANODE
10. AIR ELIMINATOR
11. WATER TEMPERATURE HIGH LIMIT SWITCH
12. CENTRAL HEATING TEMPERATURE PROBE
13. SPARK ELECTRODE
14. AIR SUCTION TUBE
15. INDIRECT TANK
16. IGNITION TRANSFORMER
17. AIR PRESSURE SWITCH
18. PROPORTIONAL VENTURI
19. GAS VALVE
20. BY-PASS
21. TANK DRAINING TAP
22. WATER PRESSURE TRANSDUCER

23. DIVERTER VALVE
24. FLOW SWITCH
25. CHECK VALVE
26. FLOW LIMITER
27. THERMAL EXPANSION TANK

## 2.2.10. INTERNAL PIPING SCHEMATIC

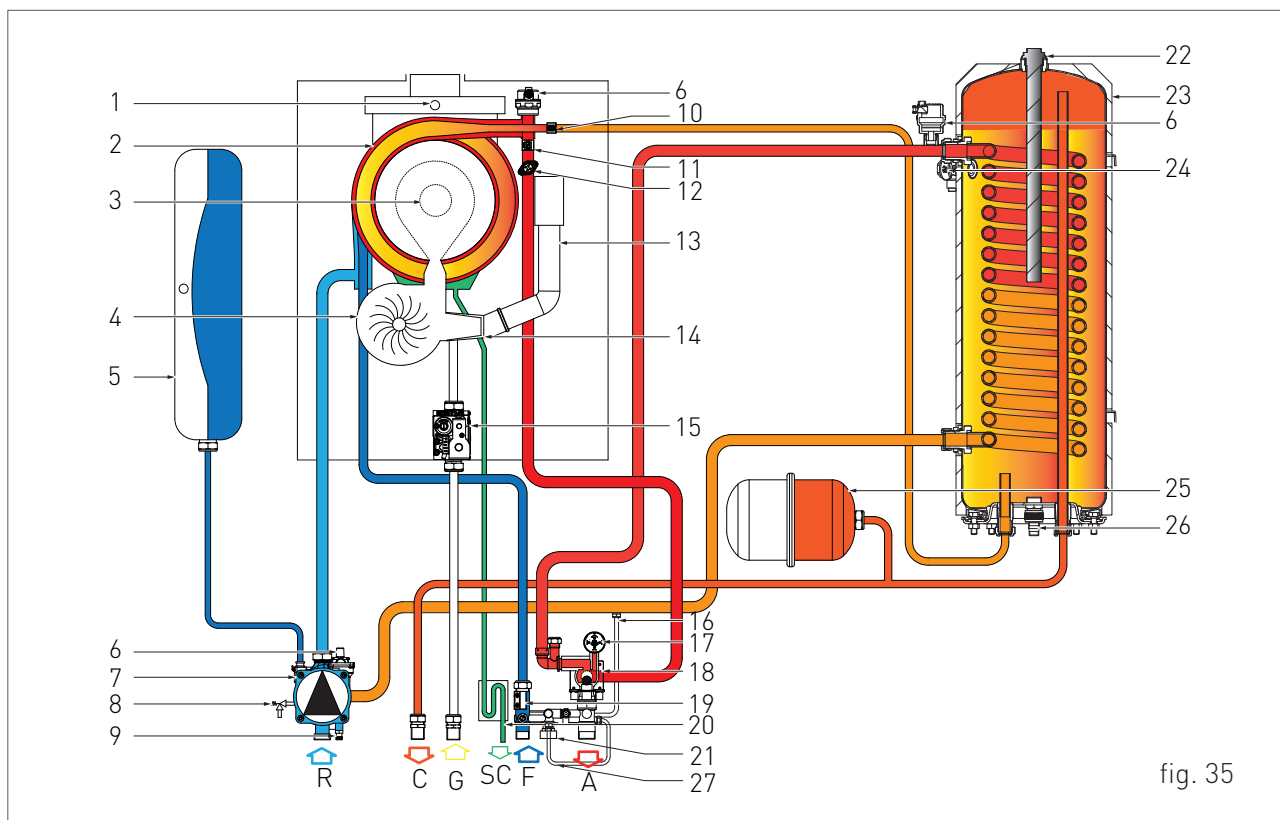


fig. 35

## KEY

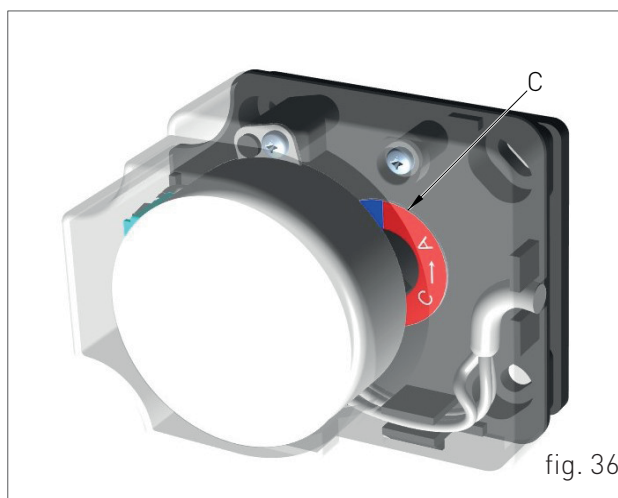
- R. CENTRAL HEATING RETURN
- C. DOMESTIC HOT WATER OUTLET
- G. GAS INLET
- SC. CONDENSATE DRAIN
- F. COLD WATER INLET
- A. CENTRAL HEATING SUPPLY
- 1. EXHAUST SAFETY HIGH LIMIT SWITCH
- 2. INTEGRATED HEAT EXCHANGER
- 3. BURNER UNIT
- 4. COMBUSTION BLOWER
- 5. THERMAL EXPANSION TANK
- 6. AIR ELIMINATOR
- 7. CIRCULATOR
- 8. PRESSURE RELIEF VALVE 30 psi [2 bar]
- 9. SYSTEM DRAINING TAP
- 10. DOMESTIC TEMPERATURE PROBE

- 11. CENTRAL HEATING TEMPERATURE PROBE
- 12. WATER TEMPERATURE HIGH LIMIT SWITCH
- 13. AIR SUCTION TUBE
- 14. PROPORTIONAL VENTURI
- 15. GAS VALVE
- 16. BY-PASS
- 17. WATER PRESSURE TRANSDUCER
- 18. DIVERTER VALVE
- 19. FLOW SWITCH
- 20. CONDENSATE COLLECTION SIPHON
- 21. SYSTEM FILLING TAP
- 22. ANODE
- 23. INDIRECT TANK
- 24. PRESSURE RELIEF VALVE 150 psi [10.3 bar]
- 25. THERMAL EXPANSION TANK D.H.W.
- 26. TANK DRAINING TAP
- 27. CHECK VALVE

### 2.2.11. 3-WAY VALVE OPERATION

Important: The working position of the 3-way valve is indicated by the color (Red or Blue) visible in the inside of the valve. (see 'C' - fig. 36).

- › The RED color (with C-A) indicates the operation in the Domestic Hot water mode.
- › The BLUE color (with C-B) indicates the operation in Heating mode.



### 2.2.12. WIRING DIAGRAM

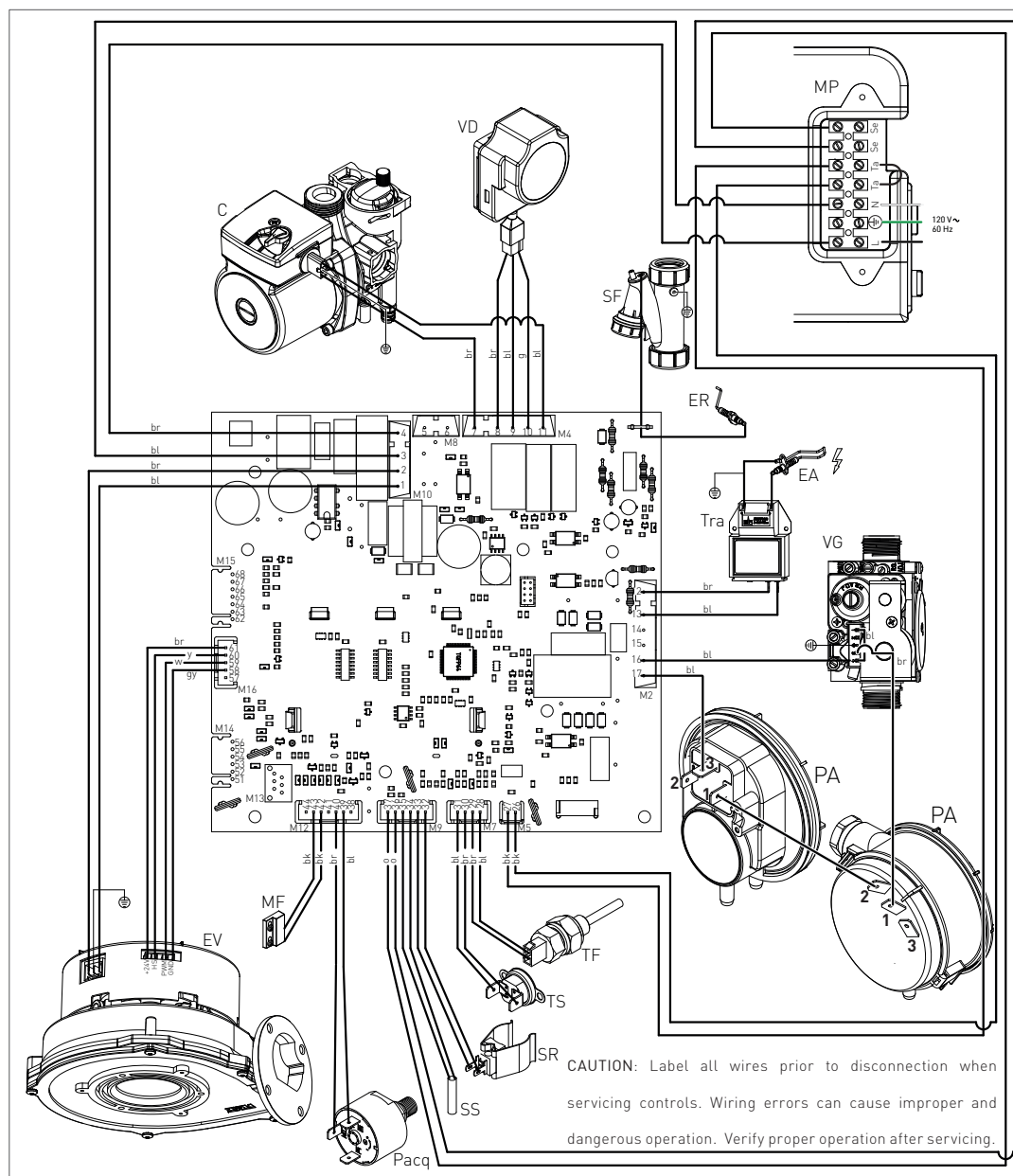


fig. 37

ER: IONIZATION ELECTRODE

TS: WATER TEMPERATURE HIGH LIMIT SWITCH

MP: PANEL TERMINAL

BL: BLUE

EA: SPARK ELECTRODE

PACQ: WATER PRESSURE TRANSDUCER

SE: OUTDOOR TEMPERATURE

BR: BROWN

C: CIRCULATOR

MF: MICRO-FLOW SWITCH

TA: ENVIRONMENT THERMOSTAT

O: ORANGE

VG: GAS VALVE

SR: CENTRAL HEATING TEMPERATURE PROBE

L: LINE

Y: YELLOW

TRA: IGNITION TRANSFORMER

SS: DOMESTIC TEMPERATURE PROBE

N: NEUTRAL

W: WHITE

TF: EXHAUST SAFETY HIGH LIMIT SWITCH (102°C)

EV: COMBUSTION BLOWER

BK: BLACK

GY: GREY

VD: DIVERTER VALVE

PA: AIR PRESSURE SWITCH

G: GREEN

SF: CONDENSATE COLLECTION SIPHON



### 2.2.13. ACCESSING THE BOILER

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 boiler proceed as follows:

- › grasp the front panel base and pull it outwards to release the two fixing pins (1 - fig. 38) placed at the bottom;
- › remove the front panel releasing one at a time the fixing pins at the top.

To intervene on the side panels of the boiler proceed as follows:

- › remove the fastening screws (2 - fig.38) placed on the side panel;
- › grab the bottom of the panel and remove it by moving it sideways and then pulling it upwards (see fig. 38).

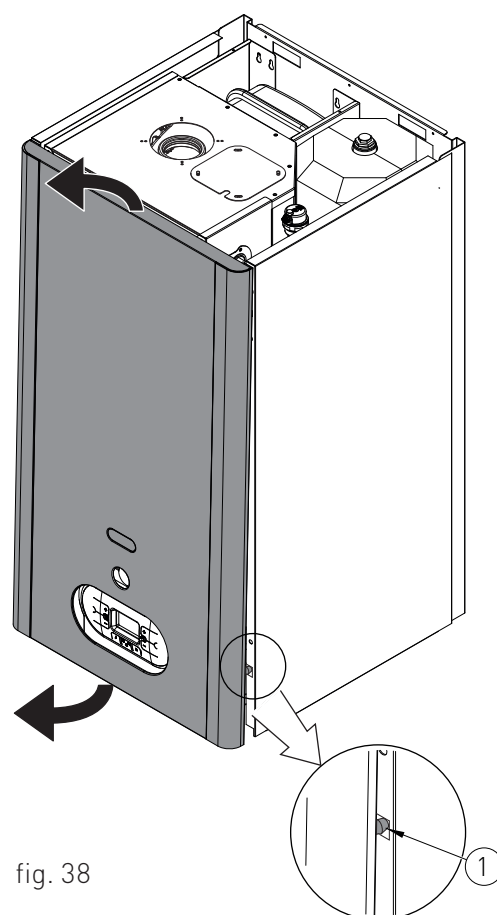
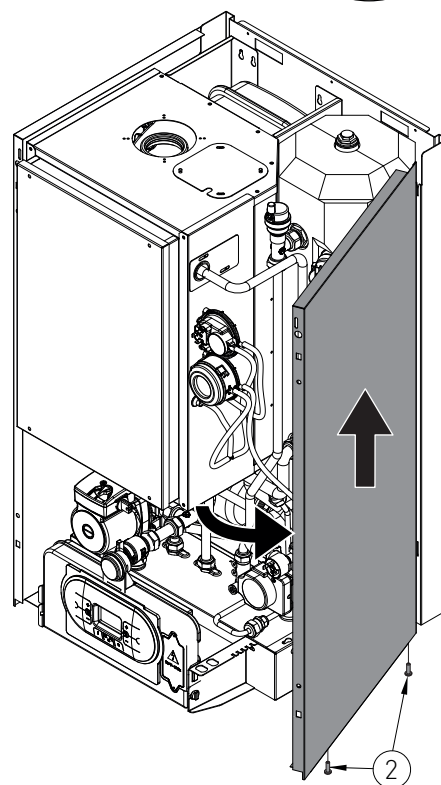


fig. 38



### 2.2.14. 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. 1) loosening them and turn the panel downwards;
- › unscrew the four fastening screws 1 - fig. 39;
- › remove the crankcase pulling it upwards.

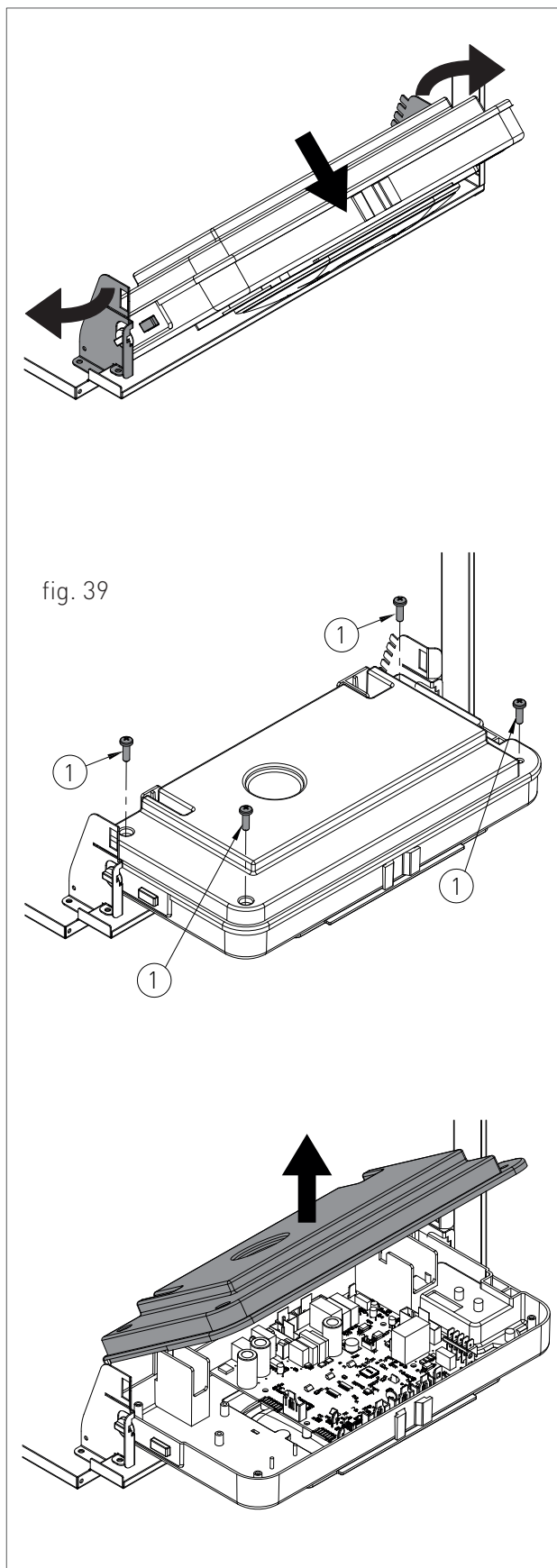


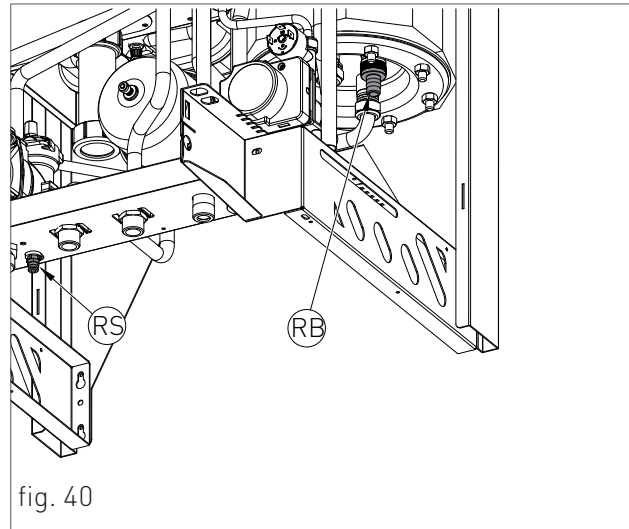
fig. 39

## 2.2.15. SYSTEM EMPTYING

### HEATING SYSTEM EMPTYING

Whenever you need to empty the system, proceed as follows:

- › switch the boiler to “WINTER” mode and activate it;
- › turn off the main power supply switch or unplug the appliance;
- › wait for the boiler to cool down;
- › connect a flexible tube to the system emptying outlet and connect the other end of the tube to a suitable discharge;
- › turn the discharge tap of the system ‘RS’ (fig. 40);
- › open the relief valves of the radiators starting from the one at the top and continuing downwards;
- › after draining out all water, close the relief valves of the radiators and the emptying tap.



### 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;
- › Joint the water draining pipe and open the cylinder draining tap ‘RB’ (fig. 40)
- › open all cold and hot water taps;
- › after completing all operations, close the cylinder draining tap ‘RB’ (fig. 40) and all previously opened water taps.

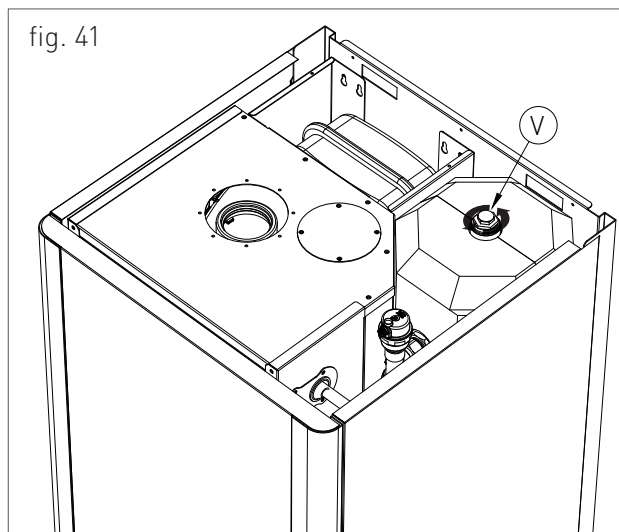
### 2.2.16. BOILER MAINTENANCE

It's necessary to check and replace the magnesium anode after a year or more frequently if the quality and the water worn require it.

In order to check the anode functioning it's necessary to open the cap 'V' (fig.41) situated on the top of the boiler.

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

fig. 41





## 2.2.17. FAULT SIGNALLING CODES

CODE	FAULT	POSSIBLE CAUSE	SOLUTION	RESET
E01	<b>FLAME FAILURE</b>	<b>NO FLAME LIGHT UP</b>		MANUAL    RESET (PRESS THE RESET Ⓡ KEY).
		NO GAS PRESSURE;	CHECK THE ADDUCTION NETWORK;	
		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;	
		VALVE INFEEED PRESSURE TOO HIGH (ONLY FOR GPL BOILERS).	CHECK THE MAXIMUM ADJUSTMENT PRESSURE	
		THE CONDENSATE DISPOSAL SYSTEM IS BLOCKED.	CHECK THE CONDENSATE DISPOSAL SYSTEM AND EMPTY THE CONDENSATE TRAP.	
		AIR PRESSURE SWITCH TRIPPED	CHECK FLUE GAS DUCTS, CHECK CABLE, REPLACE PART	
		<b>WITH FLAME LIGHT UP</b>		
		NEUTRAL AND PHASE INVERTED POWER SUPPLY;	PROPERLY CONNECT THE POWER SUPPLY;	
		IONIZATION ELECTRODE BROKEN;	REPLACE IT;	
		IONIZATION ELECTRODE CABLE DISCONNECTED.	CHECK THE WIRING.	
		ELECTRICAL CURRENT PHASE-PHASE	IF THE TENSION MEASURES BETWEEN NEUTRAL AND GROUND IS ALMOST EQUAL TO THE ONE MEASURED BETWEEN PHASE AND GROUND, YOU HAVE TO INSTALL A PHASE-PHASE TRANSFORMER KIT (COD. 88021LA)	



## 2. MAINTENANCE

CODE	FAULT	POSSIBLE CAUSE	SOLUTION	RESET
E02	<b>WATER TEMP. HIGH LIMIT SWITCH 203°F (95°C)</b>	THERMOSTAT CABLE DISCONNECTED;	CHECK THE WIRING;	MANUAL RESET (PRESS THE RESET Ⓡ KEY).
		BROKEN HIGH LIMIT.	REPLACE IT.	
E03	<b>EXHAUST SAFETY HIGH LIMIT SWITCH 216°F (102°C)</b>	HIGH LIMIT BROKEN;	REPLACE IT;	MANUAL RESET (PRESS THE RESET Ⓡ KEY).
		HIGH LIMIT CABLE DISCONNECTED.	CHECK THE WIRING.	
E04	<b>WATER MISSING IN THE SYSTEM</b>	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	<b>DOMESTIC INLET TEMPERATURE</b>	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	<b>DOMESTIC INLET TEMPERATURE PROBE</b>	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	<b>RETURN PROBE</b>	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.	




CODE	FAULT	POSSIBLE CAUSE	SOLUTION	RESET
E16	<b>COMBUSTION BLOWER</b>	COMBUSTION BLOWER BOARD BROKEN;	REPLACE IT;	AUTOMATIC.
		COMBUSTION BLOWER BROKEN;	REPLACE IT;	
		FAULTY POWER SUPPLY CABLE.	REPLACE IT.	
E18	<b>INSUFFICIENT CIRCULATION</b>	EXCHANGER OBSTRUCTED;	CLEAN OR REPLACE THE EXCHANGER;	AUTOMATIC.
		CIRCULATOR BROKEN OR DIRTY IMPELLER.	CLEAN THE IMPELLER OR REPLACE THE CIRCULATOR.	
E21	<b>GENERAL INTERNAL BOARD ERROR</b>	INCORRECT SIGNAL RECOGNITION BY THE MODULATION BOARD MICRO-PROCESSOR.	IF THE MODULATION BOARD DOES NOT RESET THE ERROR AUTOMATICALLY, REPLACE IT.	AUTOMATIC.
E22	<b>PARAMETERS PROGRAMMING REQUEST</b>	MICRO-PROCESSOR MEMORY LOSS.	PARAMETERS REPROGRAMMING.	MANUAL RESET (CUT OFF THE TENSION).
E35	<b>RESIDUAL FLAME</b>	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	<b>SUPPLY VOLTAGE</b>	SUPPLY VOLTAGE OFF THE OPERATION RANGE.	CHECK THE POWER SUPPLY NETWORK (THE ERROR DEACTIVATES AUTOMATICALLY AS SOON AS THE SUPPLY VOLTAGE FALLS BACK WITHIN THE REQUESTED LIMITS).	AUTOMATIC.

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.



## 2. MAINTENANCE

### 2.2.18. ACTIVE FUNCTIONS SIGNALLING CODES

CODE	FUNCTION	DESCRIPTION
F07	<b>CHIMNEY SWEEP ACTIVE</b>	YOU CAN ACTIVATE IT BY HOLDING FOR 7 SECONDS THE RESET  KEY AND YOU CAN DEACTIVATE IT BY TURNING OFF THE BOILER. THIS FUNCTION BRINGS THE BOILER TO ITS MINIMUM AND MAXIMUM HEATING POWER FOR 15 MINUTES DEACTIVATING THE MODULATION FUNCTION. GENERALLY USED FOR PERFORMING THE COMBUSTION AND CALIBRATION TESTS.
F08	<b>HEATING CIRCUIT ANTI-FREEZE</b>	IT ACTIVATES AUTOMATICALLY WHEN THE HEATING PROBE DETECTS A TEMPERATURE OF 32.9°F (5°C). THE BOILER OPERATES AT MINIMUM GAS PRESSURE WITH THE DIVERTER VALVE SET TO 'WINTER' MODE. IT DEACTIVATES WHEN THE HEATING PROBE DETECTS A TEMPERATURE OF 86°F (30°C).
F09	<b>D.H.W CIRCUIT ANTI-FREEZE</b>	THE FUNCTION IS AUTOMATICALLY ENABLED WHEN THE D.H.W SENSOR DETECTS A TEMPERATURE OF 39.2°F (4 °C). THE BOILER OPERATES AT MINIMUM GAS PRESSURE WITH THE DIVERTER VALVE IN THE 'SUMMER' POSITION. THE FUNCTION IS DISABLED WHEN THE TEMPERATURE DETECTED BY THE SENSOR IS 46.4°F (8 °C) IN THE D.H.W CIRCUIT.
F28	<b>ANTI-LEGIONELLA</b>	THE FUNCTION IS ACTIVATED FOR THE FIRST TIME, 60 MINUTES AFTER THAT THE BOILER 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.
F33	<b>SYSTEM AIR RELEASE CYCLE</b>	IT ACTIVATES AUTOMATICALLY AT FIRST BOILER START-UP, PERFORMING FOR 5 MINUTES A SERIES OF CYCLES DURING WHICH THE PUMP IS ACTIVATED FOR 40 SECONDS AND DEACTIVATED FOR 20 SECONDS. REGULAR OPERATION IS ALLOWED ONLY AFTER THIS FUNCTION IS COMPLETED. IT CAN ALSO ACTIVATE DURING NORMAL BOILER OPERATION, IF THE WATER PRESSURE SWITCH CONFIRMATION IS MISSING, WHEN THE CONTACT IS RE-CLOSED, A 2 MINUTES RELEASE CYCLE WILL BE PERFORMED.



### 2.2.19. CONVERSION TO A DIFFERENT GAS TYPE



#### ATTENTION

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

- › loosen the two screws '1' (fig. 42) from the fastening clamp, and remove the air suction tube;
- › unscrew the tube coupling that connects the gas valve to venturi;
- › unscrew the three fastening screws '2' (fig. 41) of the venturi 'V' (fig. 42) using a 10 key, as shown in figure 43;
- › remove the two screws '3' (fig. 44) and apply pressure on the rear side of venturi 'C' (fig. 44);
- › replace the body venturi with the one suitable for the type of supply gas (cod. 30-00207 for methane / cod. 30-00237 for PROPANE) and make sure the tooth 'D' (fig.44) is adjusted downwards on the aluminium ring nut (see fig. 44);
- › remount the components following the demounting operations in reverse making sure that gasket 'G' is re-assembled as shown in fig. 42;
- › set the boiler to operate with the new type of gas, changing the value of the parameter P02 'GAS TYPE SELECTION' from the control panel (see 2.1.5 'DIGITECH CS PARAMETERS TABLE' and 2.1.4 'ACCESSING AND PROGRAMMING THE PARAMETERS');
- › adjust the CO<sub>2</sub> combustion value as indicated in 2.1.3 'CO<sub>2</sub> VALUE CHECK AND CALIBRATION'.

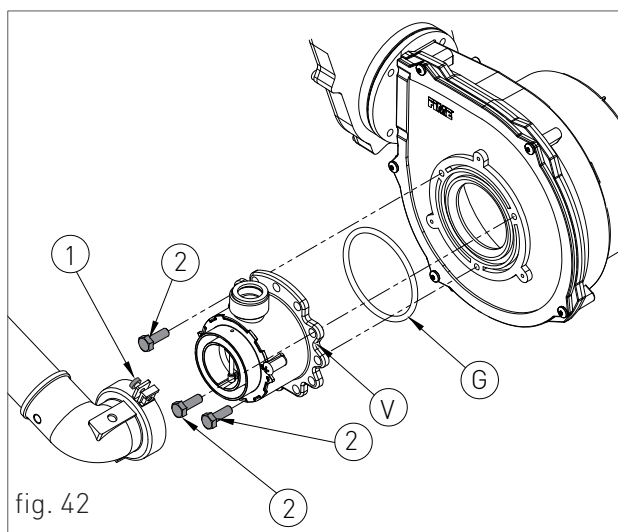


fig. 42

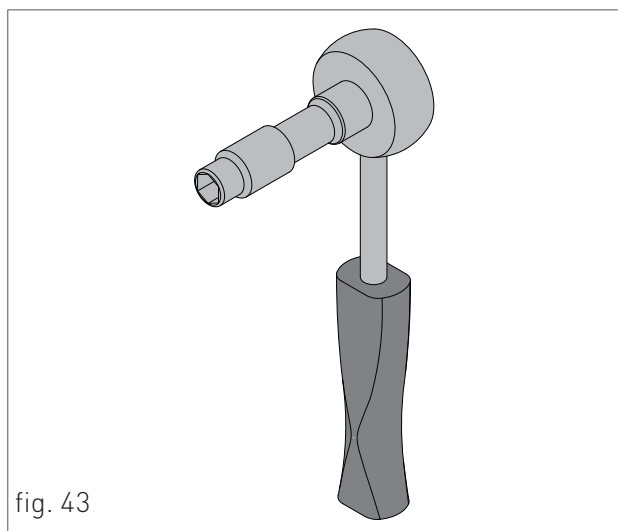


fig. 43

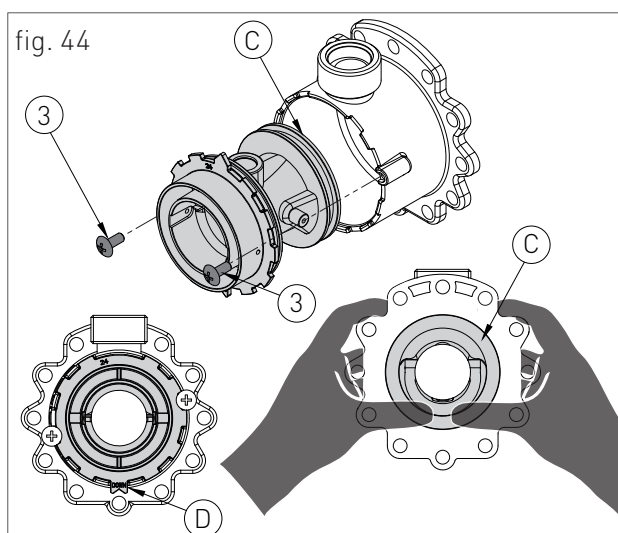
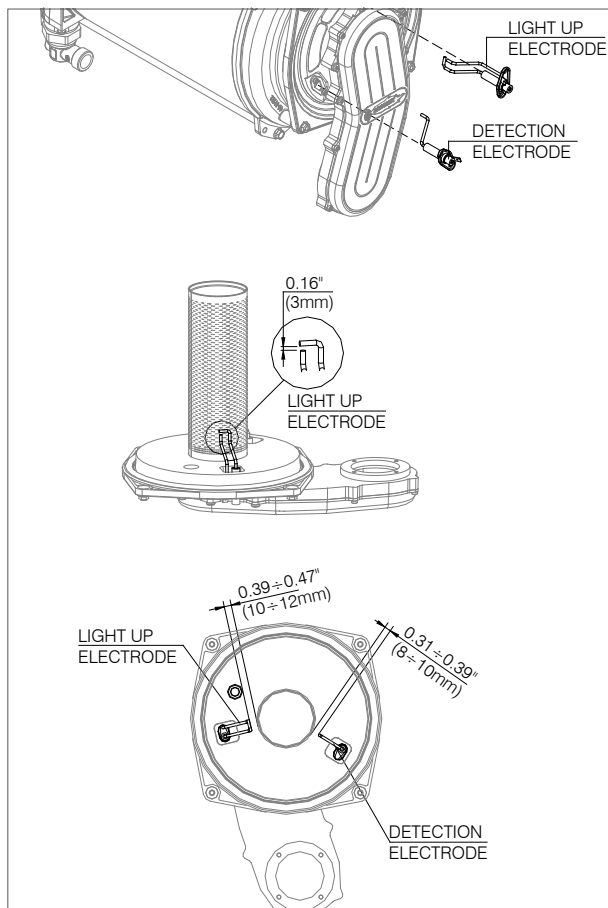


fig. 44

### 2.2.20. POSITIONS OF THE ELECTRODES

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





## 3. USER SECTION

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

## 3.1. USE

### 3.1.1. GENERAL USE WARNINGS



#### WARNING

*Before starting the boiler the User must make sure that the First start-up by a qualified technician and that the installation is installed according to the manual.*



#### WARNING

*To validate the warranty, the boiler must be started by a qualified technician no later than 30 days from the date of installation.*



#### WARNING

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



#### ATTENTION

*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 incorrect use.*



#### DANGER

*The boiler should not be used by persons (including children) without suitable knowledge, without reading instructions in this section 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 odor in the location in which the boiler 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 vent the location;
- › Evacuate the building. Phone the utility from neighbours home and follow instructions from utility.
- › Request immediate intervention of qualified staff.



#### DANGER

*The use of the electrical power boiler implies respecting some fundamental rules such as:*

- › DO NOT touch any part of device with wet and/or humid components as poses grave electric shock risks;
- › DO NOT pull the electrical cables;
- › DO NOT leave the device exposed to the outdoor elements as this appliance is not certified for outdoor installation;
- › in case of cable damage, turn off the device and contact qualified technician to replace it.



#### WARNING

*Should overheating occur, or the gas supply fail to shut off, shut off the gas supply external to the appliance. Do not switch off the electrical supply to the pump.*



#### WARNING

*Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.*



## FOR YOUR SAFETY READ BEFORE OPERATING

**WARNING:** If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

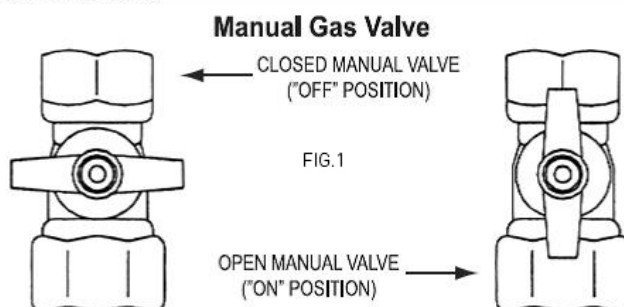
- |  |   |
|--|---|
| <p>A. This appliance does not have a pilot. It is equipped with a direct ignition device, which automatically lights the burner. Do not try to light the burner by hand.</p> <p>B. BEFORE OPERATING: Smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.</p> <p><b>WHAT TO DO IF YOU SMELL GAS</b></p> <ul style="list-style-type: none"> <li>Do not try to light any appliance.</li> <li>Do not touch any electric switch; do not use any phone in your building.</li> </ul> | <p>C. Use <b>only</b> your hand to operate the remote control keypad. Never use tools. If the remote keypad doesn't work, do not try to repair it, call a qualified service technician. Forced or improper repair may result in a fire or explosion.</p> <p>D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.</p> <ul style="list-style-type: none"> <li>Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.</li> <li>If you cannot reach your gas supplier, call the fire department.</li> </ul> |
|--|---|

## OPERATING INSTRUCTIONS

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>STOP! Read the safety information above before proceeding.</li> <li>Set the thermostat to the lowest setting.</li> <li>Turn off all power to the electrical appliance.</li> <li>This appliance does not have a pilot. It is equipped with a direct ignition device, which automatically lights the burner. Do not try to light the burner by hand.</li> <li>Turn the manual valve located at the gas inlet of the appliance clockwise to "OFF"</li> </ol> | <ol style="list-style-type: none"> <li>Wait (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.</li> <li>Turn the manual valve located at the gas inlet of appliance counterclockwise to "ON" (see Figure 1 ).</li> <li>Turn on all electric power to the appliance.</li> <li>Set the thermostat to desired setting.</li> <li>If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.</li> </ol> |
|--|--|

## TO TURN OFF GAS TO THE APPLIANCE

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>Set the thermostat to the lowest setting.</li> <li>Turn off all electric power to the appliance if service is to be performed.</li> </ol> | <ol style="list-style-type: none"> <li>Turn the manual valve at gas inlet of appliance clockwise to "OFF" (see figure 1 ).</li> </ol> |
|--|---|






## **WARNING**



### **FIRE AND EXPLOSION HAZARD**

Can result in serious injury or death

 Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. Storage of or use of gasoline or other inflammable vapors or liquids in the vicinity of this or any other appliance can result in serious injury or death.

Vapors from flammable liquids can explode and catch fire causing death or severe burns.

Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near this appliance, or any other appliance or any possible ignition source.

Keep flammable products:

1. far from any possible ignition source,
2. in approved containers
3. tightly closed and
4. out of children's reach

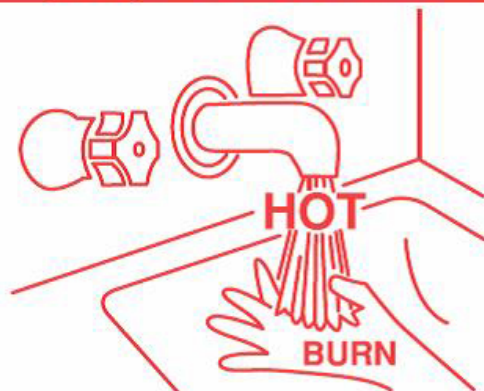
Vapors:

1. cannot be seen,
2. are heavier than air
3. go a long way on the floor
4. can be carried away from other rooms to possible ignition sources by air currents

Boilers in residential garages must be installed and located, or protected, to avoid physical damage.

Read and follow boiler warnings and instructions. If owner's manual is missing contact the distributor or manufacturer.

# ! DANGER



The temperature at which injury occurs varies with the person's age and time of exposure.

The slower response time of disabled persons increases the hazards to them. Never **allow** small children to use a hot water tap, or to draw their own bath water. Never leave a child or disabled person unattended in a bathtub or shower.

The boiler should be located in an area where the general public does not have access to the temperature control.

Lower water temperatures should be used to avoid the risk of scalding. It is further recommended, in all cases, that the water temperature be set for the lowest temperature which satisfies the user's hot water needs. This will also provide the most energy efficient operation of the water heater and minimize scale formation in the heat exchanger, thus prolonging the life of the unit.

Setting the boiler temperature at 120°F will reduce the risk of scalds. Some states require settings at specific lower temperatures. The table below shows the approximate time-to-burn relationship for normal adult skin.

Hot water temperatures required for automatic dishwasher and laundry use can cause scalds and burns resulting in serious personal injury and/or death.

**Table - Risk of Scalds**

Temperature Setting	Time to Produce, 2nd, 3rd Degree Burns on Adult Skin
Over 170 °F	Nearly instantaneous
160 °F	About 1/2 second
150 °F	About 1-1/2 seconds
140 °F	Less than 5 seconds
130 °F	About 30 seconds
120 °F or less	More than 5 minutes

To protect against injury, you should install a tempering valve in the water system. This valve will reduce point of discharge temperature by mixing cold and hot water in branch supply lines. Such valves are available from the local plumbing supplier.



## WARNING

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

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

Minimum clearances from combustible construction, 0-inches sides, 0-inches back, 0-inches top.

For closet installation, 0-inches front, or for alcove installation.

This boiler is provided with a pressure relief valve. For safe operation of the boiler, the relief valve(s) must not be removed from its designated point of installation or unplugged.

The temperature and pressure relief valve provided by the manufacturer shall be installed at the time of installation of the heater in the location specified by the manufacturer. Local codes shall govern installation of relief devices. For safe operation of the boiler, the relief valve must not be removed or unplugged.

### "Warning"

"This appliance must be installed in accordance with the local codes or, in the absence of local codes, the National Fuel Gas Code, ANSI Z223.1/NFPA 54 or the CSA B149.1, Natural Gas and Propane Installation Code".

### SUITABLE FOR WATER (POTABLE) HEATING AND SPACE HEATING

Toxic chemicals, such as used for boiler treatment, shall not be introduced into potable boiler used for space heating. This boiler may never be connected to any existing heating system or component(s) previously used with a non potable water heating appliance.

"For operation at outlet water temperatures not in excess of 180°F (88°C)"



### 3.1.2. CONTROL PANEL

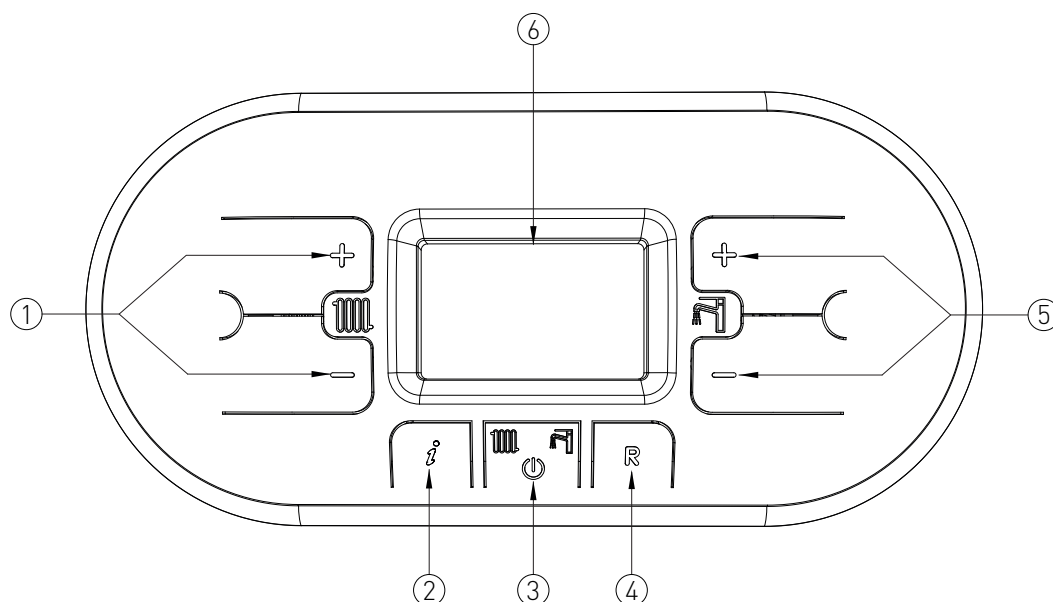


fig. 45

#### KEY

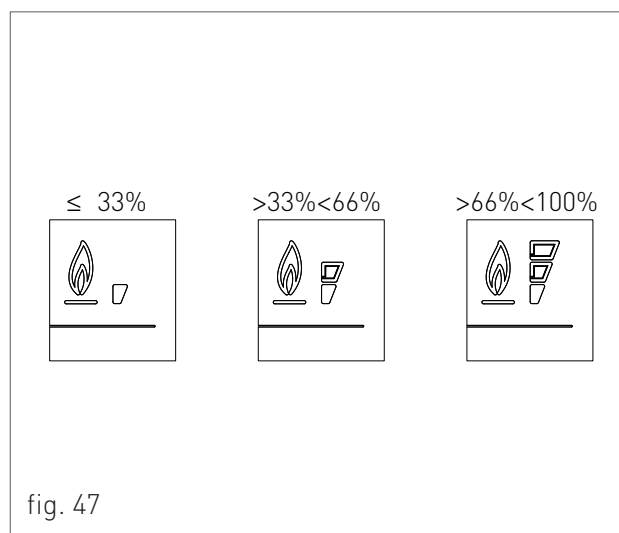
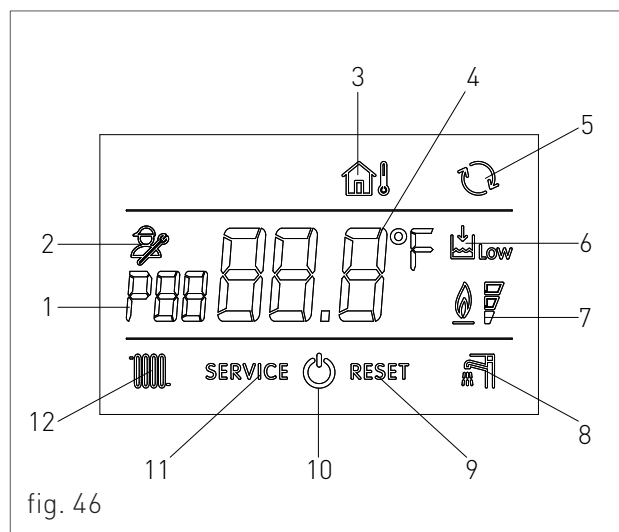
#### 6. DISPLAY

1. HEATING TEMPERATURE ADJUSTMENT KEYS.
2. INFO KEY: PRESS ONCE TO VIEW THE TEMPERATURES AND OTHER INFORMATION (see 3.1.4 'INFO MENU DISPLAY') - HOLD FOR 5 SECONDS, IN OFF OPERATING MODE, TO VIEW THE LAST 5 FAULTS.
3. OPERATING MODE SELECTION KEY: SUMMER / ONLY HEATING / WINTER / OFF.
4. RESET KEY: FAULTS RESET - CHIMNEY SWEEP FUNCTION ACTIVATION (HOLD FOR 7 SECONDS).
5. DOMESTIC HOT WATER TEMPERATURE ADJUSTMENT KEY / HOLD THE KEYS AT THE SAME TIME FOR 5 SECONDS TO ACTIVATE DISPLAY BACK LIGHT FOR 10 MINUTES.

### 3.1.3. DISPLAY ICONS






#### KEY

1. INDICATION OF PARAMETER NUMBER OR DISPLAYED INFO CODE
2. PARAMETERS PROGRAMMING FUNCTION ACTIVE
3. EXTERNAL PROBE INSTALLED / EXTERNAL PROBE TEMPERATURE (d1)
4. TEMPERATURE DISPLAY / SET POINT / PARAMETER VALUE
5. OPEN THERM COMMUNICATION PRESENT (REMOTE CONTROL / AREA CONTROL UNIT)
6. INSUFFICIENT SYSTEM WATER PRESSURE SIGNALLING
7. FLAME PRESENT SIGNALLING / IT ALSO INDICATES, ON 3 PERCENTAGE LEVELS, THE MODULATING POWER LEVEL OF THE BOILER (fig.47)
8. OPERATION IN DOMESTIC MODE ENABLED
9. ERROR DISPLAY THAT CAN BE RESET
10. OFF OPERATING MODE
11. ERROR DISPLAY THAT CAN NOT BE RESET
12. OPERATION IN HEATING MODE ENABLED







### 3.1.4. INFO MENU DISPLAY DATA


To view the boiler data from info menu press the INFO  key. 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 keys  and  of the heating circuit  to scroll through the list of displayed data. To exit display mode press the INFO  key.

#### LIST OF DISPLAYED DATA

INFO CODE	ICON	DESCRIPTION
d0		DOMESTIC CIRCUIT PROBE TEMPERATURE
d1		EXTERNAL PROBE TEMPERATURE
d2		FAN SPEED
d3		BOTTOM AREA PROBE TEMPERATURE [IF AREA BOARD INSTALLED]
d4		RETURN PROBE TEMPERATURE

### 3.1.5. START-UP



Before starting the boiler make sure that it is powered and that the gas tap below the boiler is open.


To start the boiler press the function key  and select the desired operating mode. If the symbol is displayed fixed, it means that the function was activated.

### 3.1.6. OPERATING MODE

#### SUMMER MODE



In this mode the boiler meets only the demands of domestic hot water.


To switch the boiler to SUMMER operating mode, press the function key , the symbol  will appear fixed on the display, indicating that the function is enabled.

Whenever hot domestic water is needed the automatic start-up system will start the burner; this is indicated by displaying the symbol  blinking.

#### ONLY HEATING MODE




In this mode the boiler meets only the demands of heating.



To switch the boiler to ONLY HEATING operating mode, press the function key , the symbol  will appear fixed on the display, indicating that the function is enabled.

Whenever heating energy is needed to heat the rooms the automatic start-up system will start the burner; this is indicated by displaying the symbol  blinking.




#### WINTER MODE



In this mode the boiler meets the demands of heating and of domestic hot water.

To switch the boiler to WINTER operating mode, press the function key , the symbols  and  will appear fixed on the display, indicating that the function is enabled.

Whenever heating energy and domestic hot water are needed the automatic start-up system will start the burner; this is indicated by displaying the symbol  and  blinking.




#### ADJUSTING THE HEATING TEMPERATURE



You can adjust the temperature using keys  and  of the heating circuit .

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

The heating temperature adjustment field ranges from 86 to 176 °F [30 to 80 °C] [77 to 113 °F [25 to 45 °C] for floor systems].

#### DOMESTIC HOT WATER TEMPERATURE ADJUSTMENT

You can adjust the temperature using keys  and  of the domestic circuit .

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

The hot domestic water temperature adjustment field ranges from 95 to 140 °F [35 to 60 °C].

#### OFF MODE

In this mode the boiler no longer meets the heating and domestic hot water demands, the anti-freeze, pump anti-locking and diverter valve anti-locking systems still remain active.



To switch the boiler to OFF operating mode, press the function key ; the symbol will appear fixed on the display, indicating that the function is enabled.

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

If you have to deactivate the boiler for a long period of time, proceed as follows:

- › contact the qualified service technician that will empty the water system, where no anti-freeze is intended, and will cut off the power, water and gas supply.
- › Or leave the boiler in OFF operating mode keeping active the electrical and gas supplies so that the anti-freeze function may activate

### 3.1.7. INFORMATIONAL NOTE ON ANTI-FREEZE FUNCTION

The boiler is protected against freezing with the electronic board design with functions that start the burner and heat the necessary parts when their temperature goes below the minimum pre-set values.



#### WARNING

*This function is available only if:*

- › the boiler is powered;
- › the gas supply is open;
- › the pressure of the system is adequate;
- › the boiler is not blocked.

### 3.1.8. SYSTEM FILLING

To restore the water pressure inside the system open the loading tap "R" (fig. 48) and make sure using pressure gauge "M" (fig. 48), that the system pressure reaches 1.2 bar (see fig. 49).

After performing this operation, make sure that the loading tap "R" (fig. 48) is properly closed.

After the water pressure reset the boiler will automatically perform a 2 minutes system relief cycle. Throughout this function the display will show the code "F33". The boiler can work normally only after completing the operation.

For installations that may need an automatic means to maintain central heating system pressure, it is recommended that a water feed by installed to feed the central heating system.

Refer to local jurisdictions for water feed requirements and backflow requirements.

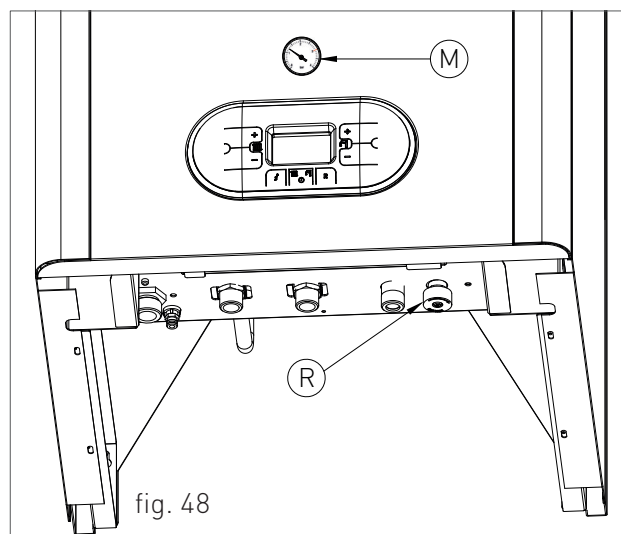


fig. 48

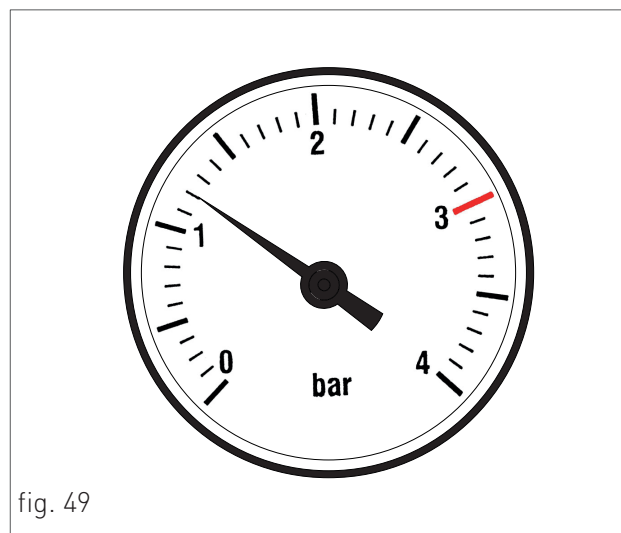





fig. 49




### 3.1.9. FAULT SIGNALLING CODES

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

CODE	ICON	FAULT	INTERVENTION
E01	<b>RESET</b>	<b>FLAME FAILURE</b>	<p>MAKE SURE THAT THE BOILER AND SUPPLY GAS VALVES ARE OPEN.</p> <p>PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE FAULT, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE BOILER WILL START AUTOMATICALLY.</p> <p>IF THE ERROR PERSISTS CONTACT A QUALIFIED SERVICE TECHNICIAN.</p>
E02	<b>RESET</b>	<b>WATE TEMP. HIGH LIMIT SWITCH (95 °C)</b>	<p>PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE FAULT, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE BOILER WILL START AUTOMATICALLY.</p> <p>IF THE ERROR PERSISTS CONTACT A QUALIFIED SERVICE TECHNICIAN.</p>
E03	<b>RESET</b>	<b>EXHAUST SAFETY HIGH LIMIT SWITCH (102 °C)</b>	CONTACT A QUALIFIED SERVICE TECHNICIAN.
E04	 <b>Low</b>	<b>WATER MISSING IN THE SYSTEM</b>	<p>IF THE SYSTEM PRESSURE IS BELOW 1.2 BAR, FILL THE SYSTEM AS DESCRIBED IN "SYSTEM FILLING".</p> <p>IF THE ERROR PERSISTS CONTACT A QUALIFIED SERVICE TECHNICIAN.</p>
E05	<b>SERVICE</b>	<b>HEATING PROBE</b>	CONTACT A QUALIFIED SERVICE TECHNICIAN.
E06	<b>SERVICE</b>	<b>DOMESTIC INLET TEMP. PROBE</b>	CONTACT A QUALIFIED SERVICE TECHNICIAN.
E15	<b>SERVICE</b>	<b>RETURN PROBE</b>	CONTACT A QUALIFIED SERVICE TECHNICIAN.
E16	<b>SERVICE</b>	<b>COMBUSTION BLOWER</b>	CONTACT A QUALIFIED SERVICE TECHNICIAN.
E18	<b>SERVICE</b>	<b>INSUFFICIENT CIRCULATION</b>	CONTACT A QUALIFIED SERVICE TECHNICIAN.



### 3. USE

CODE	ICON	FAULT	INTERVENTION
E21	<b>SERVICE</b>	<b>GENERAL INTERNAL BOARD ERROR</b>	<p>CUT OFF THE POWER SUPPLY FROM THE MAIN SWITCH AND THEN RESTORE IT, AS SOON AS THE ERROR CODE DISAPPEARS, THE BOILER WILL RESTART AUTOMATICALLY.</p> <p>IF THE ERROR PERSISTS CONTACT A QUALIFIED SERVICE TECHNICIAN.</p>
E22	<b>SERVICE</b>	<b>PARAMETERS REQUEST</b>	<b>PROGRAMMING</b> <p>CUT OFF THE POWER SUPPLY FROM THE MAIN SWITCH AND THEN RESTORE IT, AS SOON AS THE ERROR CODE DISAPPEARS, THE BOILER WILL RESTART AUTOMATICALLY.</p> <p>IF THE ERROR PERSISTS CONTACT A QUALIFIED SERVICE TECHNICIAN.</p>
E35	<b>RESET</b>	<b>RESIDUAL FLAME</b>	<p>PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE FAULT, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE BOILER WILL START AUTOMATICALLY.</p>
E40	<b>SERVICE</b>	<b>SUPPLY VOLTAGE</b>	<p>CONTACT A QUALIFIED SERVICE TECHNICIAN.</p>





### 3.1.10. ACTIVE FUNCTIONS SIGNALLING CODES

CODE	FUNCTION	INTERVENTION
F08	<b>HEATING ANTI-FREEZE FUNCTION ACTIVE</b>	WAIT UNTIL THE OPERATION IS COMPLETED
F09	<b>D.H.W CIRCUIT ANTI-FREEZE</b>	WAIT UNTIL THE OPERATION IS COMPLETED
F28	<b>ANTI-LEGIONELLA FUNCTION</b>	WAIT UNTIL THE OPERATION IS COMPLETED
F33	<b>SYSTEM AIR RELEASE CYCLE IN PROGRESS</b>	WAIT UNTIL THE OPERATION IS COMPLETED

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### 3.1.11. MAINTENANCE

To ensure proper boiler safety and efficiency, please contact RADIANT technical support network to check the unit every year.

An accurate maintenance should improve system management.

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### 3.1.12. COVER CLEANING

Clean the unit cover using a wet cloth and mild soap.



#### WARNING

*DO NOT use abrasive or powder detergents as they may damage the plastic cover and control elements.*

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### 3.1.13. DISPOSAL

The boiler and all its accessories must be differentiated, suitably disposed of in accordance with the standards in force.



The use of the symbol WEEE (Waste Electrical and Electronic Equipment) shows that this

product can not be dismantled as domestic waste. Proper dismantle of this product helps preventing potentially negative consequences on human health and environment.





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