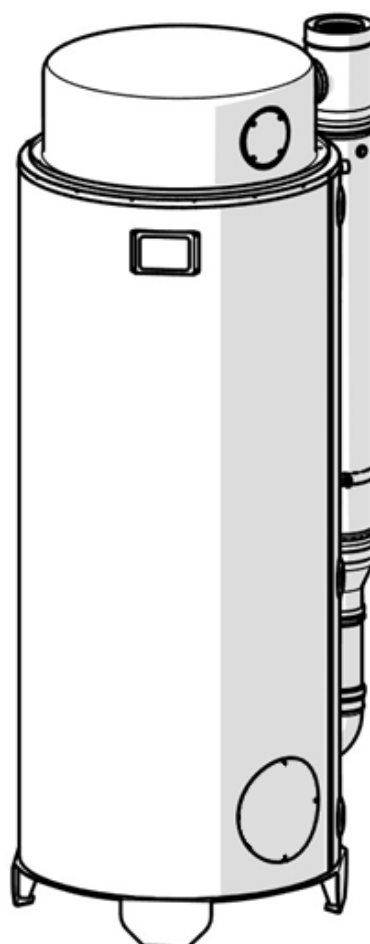


# HYDRODENS

## Gas-fired, condensing domestic hot water generator.

HY49-350



## Installation, use and maintenance manual

Read and follow the following instructions before installing the appliance.

Always keep this manual at hand during maintenance.

This manual is also available in electronic format and can be downloaded from the website

[www.flexiheatuk.com](http://www.flexiheatuk.com)

## SUMMARY

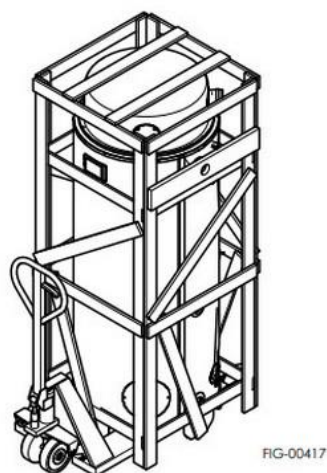
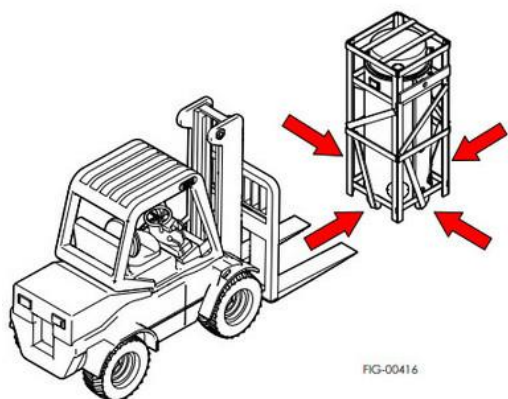
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## 1. GENERAL WARNINGS

- ⚠ THIS INSTRUCTION MANUAL CONSTITUTES AN INTEGRAL AND ESSENTIAL PART OF THE APPLIANCE AND MUST BE CAREFULLY STORED NEAR THE APPLIANCE ITSELF FOR ANY FURTHER CONSULTATION. IT CONTAINS IMPORTANT INFORMATION REGARDING SAFETY, INSTALLATION, USE AND MAINTENANCE.
- ⚠ THE APPLIANCE HAS BEEN CONCEIVED FOR HOT WATER PRODUCTION: ANY OTHER USE OF IT HAS TO BE CONSIDERED UNSUITABLE AND DANGEROUS.
- ⚠ THE APPLIANCE SHOULD NOT BE INSTALLED IN HUMID ROOMS. IT MUST BE PRESERVED FROM SPLASHES, JETS OF WATER OR OTHER LIQUIDS, TO AVOID MALFUNCTIONS TO THE ELECTRICAL AND THERMAL EQUIPMENT.
- ⚠ INSTALLATION MUST BE CARRIED OUT BY PROFESSIONALLY QUALIFIED TECHNICIANS RESPONSIBLE FOR COMPLIANCE WITH CURRENT SAFETY REGULATIONS. AN INCORRECT INSTALLATION, WITHOUT OBSERVING THE INSTRUCTIONS GIVEN BY THE MANUFACTURER, MAY CAUSE DAMAGE TO PEOPLE, ANIMALS OR THINGS, FOR WHICH THE MANUFACTURER DECLINES ALL RESPONSIBILITY.
- ⚠ ONLY A QUALIFIED INSTALLER OR A SPECIALIST SHALL ADJUST THE APPLIANCE AND CARRY OUT ANY GAS CONVERSION TO ONE OF THE GASES LISTED IN THIS MANUAL, IN ACCORDANCE WITH THE REGULATIONS IN FORCE IN THE COUNTRY OF INSTALLATION.
- ⚠ PACKAGING PARTS (PLASTIC BAGS, POLYSTYRENE, WOOD, STAPLES, ETC.) MUST NOT BE LEFT WITHIN THE REACH OF CHILDREN, AS THEY ARE POTENTIAL SOURCES OF DANGER.
- ⚠ THE APPLIANCE CAN BE USED BY CHILDREN UNDER THE AGE OF 8, BY PEOPLE WITH REDUCED PHYSICAL, SENSORY OR MENTAL SKILLS, OR BY PEOPLE WITHOUT EXPERIENCE OR NECESSARY KNOWLEDGE, PROVIDED THAT THEY ARE UNDER SURVEILLANCE OR HAVE RECEIVED INSTRUCTIONS ABOUT THE SAFE USE OF THE EQUIPMENT AND THE UNDERSTANDING OF THE DANGERS INHERENT TO IT.
- ⚠ CHILDREN SHOULD NOT PLAY WITH THE APPLIANCE.
- ⚠ CLEANING AND MAINTENANCE, WHICH ARE INTENDED TO BE CARRIED OUT BY THE USER, MUST NOT BE CARRIED OUT BY CHILDREN WITHOUT SUPERVISION.
- ⚠ IF THE APPLIANCE HAS TO BE SOLD OR TRANSFERRED TO ANOTHER OWNER, MAKE SURE THAT THIS MANUAL GOES WITH IT, SO THAT IT CAN BE CONSULTED BY THE NEW OWNER AND/OR INSTALLER.
- ⚠ DO NOT PLACE ANY TYPE OF OBJECT ON THE APPLIANCE. TO AVOID RISKS OF DAMAGE DUE TO FROST, IT IS ADVISABLE TO EMPTY THE APPLIANCE COMPLETELY, IF YOU INTEND TO LEAVE IT UNUSED FOR A LONG PERIOD IN AN UNHEATED ROOM. THE MANUFACTURER DECLINES ALL RESPONSIBILITY FOR FAILURES OR BREAKINGS OF COMPONENTS DUE TO FROST AND WATER LEAKS FROM THE SYSTEM.
- ⚠ TO OBTAIN THE BEST PERFORMANCE AND THE WARRANTY ACKNOWLEDGMENT, WE RECOMMEND YOU CAREFULLY FOLLOW THE INSTRUCTIONS BELOW AND ONLY USE THE ORIGINAL SPARE PARTS AND KITS SUPPLIED BY THE MANUFACTURER.
- ⚠ IT IS STRICTLY FORBIDDEN TO TAMPER WITH ANY DEVICE, WHICH WAS FACTORY CALIBRATED AND SEALED BY THE MANUFACTURER.

## 2. TRANSPORT, STORAGE AND RECYCLING

- The appliance must be transported and stored dry and protected from frost.
- The appliance must be stored, transported and used at a temperature between +10 and +40 C° and at a humidity between 40% and 80%.
- The appliance must not be moved and/or placed horizontally: it can only be transported vertically.
- Use a forklift or a manual pallet truck for handling. Insert the parallel arms of the trolley into the lower part of the appliance, as shown in the picture below.



- Remove the packaging by unscrewing the 4 screws located at the bottom corners of the appliance, then remove the entire packaging upwards, being careful not to damage the appliance.

## 3. CORRECT DISPOSAL OF THE PRODUCT



PRODUCT IN COMPLIANCE WITH EU DIRECTIVE 2012/19/EU- Legislative Decree 49/2014 pursuant to art. 26 of Legislative Decree 14 March 2014, n. 49 "Implementation of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)" (Applicable in European Union countries and in those countries with separate collection systems).

The marking shown on the product or on its documents indicates that the product must NOT be disposed of with other household waste at the end of its life cycle. To avoid any damage to the environment or health caused by inappropriate waste disposal, the user is invited to separate this product from other types of waste and recycle it responsibly, to encourage the sustainable reuse of material resources. Domestic users are invited to contact the retailer, where the product was purchased, or the local office in charge for all information relating to separate waste collection and recycling for this type of product. Business users are encouraged to contact their supplier and check the terms and conditions of the purchase agreement. This product must not be disposed of with other commercial waste.

#### 4. CONTENTS, WEIGHT AND DIMENSIONS OF THE PACKAGING

The appliance is delivered packaged in a wooden case with appropriate protections. A separate box contains the flue adapter. See table below for packaging dimensions.

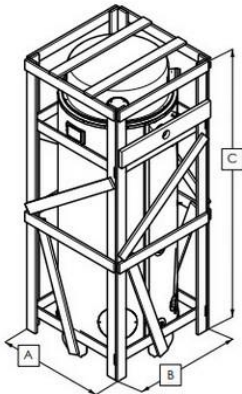


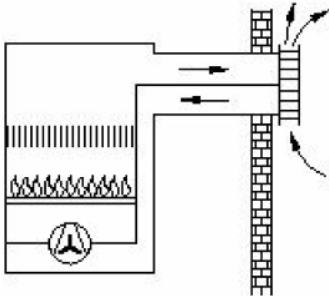
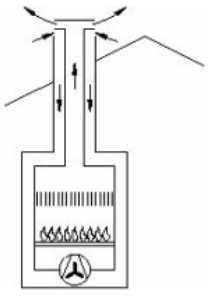
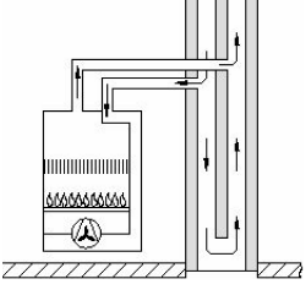
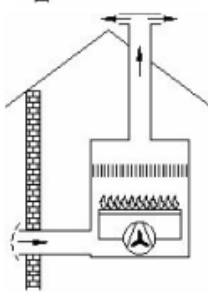
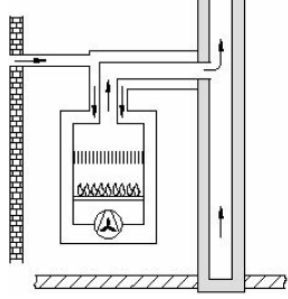
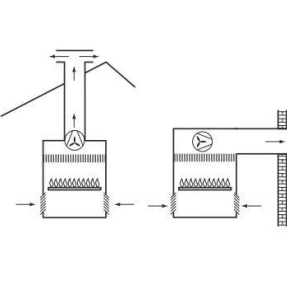
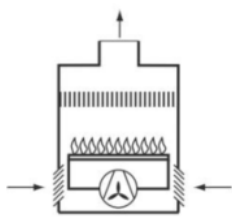
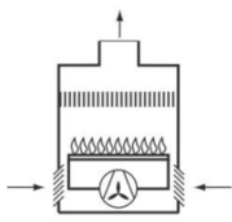
FIG-00418

	unit of measurement	HY49-350
A	mm	759
B	mm	759
C	mm	1967
Weight with packaging	kg	220

#### 5. EQUIPMENT CATEGORIES

These devices are classified as: "Condensing, storage gas-fired hot water generators".

- Gas categories: I2H, I2Esi
- TYPE C and TYPE B equipment classes (UNI EN 1749) (see table):

<p><b>C13</b> coaxial or split flue system, close enough to have the same horizontal wind conditions (wall) with fan upstream of the exchanger.</p> 	<p><b>C33</b> coaxial or split flue system close enough to have the same vertical wind conditions (roof) with fan upstream of the exchanger.</p> 
<p><b>C43</b> coaxial or split flue system close enough to have the same wind conditions, which draws and sucks from the shaft, and with a fan upstream of the exchanger.</p> 	<p><b>C53</b> connected to two points having different pressure; the fan is upstream of the exchanger.</p> 
<p><b>C83</b> split flue system with external air intake and flue discharge into the shaft; the fan is upstream of the exchanger.</p> 	<p><b>B53</b> The evacuation of combustion products occurs, via a flue duct, outside of the room. The air intake takes place in the same room where the appliance is installed.</p> 
<p><b>B23</b> type B appliance without windproof draft-breaking device and with fan in the combustion circuit upstream of the combustion chamber/heat exchanger.</p> 	<p><b>C63 (C13, C63)</b> type C6 appliance with fan in the combustion circuit upstream of the combustion chamber/heat exchanger.</p> 

**6. TECHNICAL DATA**

	<b>unit of measurement</b>	<b>HY49-350</b>
Nominal heat input Q - nominal calorific flow rate QN	kW	49.9
Minimum heat flow Q - minimum calorific flow rate Qm	KW	N/A
Nominal thermal power P - nominal thermal output PN	KW	50.6
Minimum thermal power P - minimum thermal output Pm	KW	N/A
Gas consumption G20	m <sup>3</sup> /h	5.11
Gas consumption G25	m <sup>3</sup> /h	6.19
Gas consumption G20+hydrogen 20%	m <sup>3</sup> /h	5.99
Flue gas temperature	°C	65
Mass of exhaust fumes	g/s	22.5
CO <sub>2</sub> (G20)	%	9.00% ±0.1
CO <sub>2</sub> (G25)	%	9.00% ±0.1
CO <sub>2</sub> (G20+hydrogen 20%)	%	7.70% ±0.1
CO	ppm	0
Heating up time	s	918
NO <sub>x</sub> emission value (G20)	mg/kWh	39
η combustion - H combustion	%	98.5
η water - H water	%	101.5
Δ 30°C continuous draw off	m <sup>3</sup> /h	1.4
Health efficiency class	-	A
Load profile	-	XXL
Tank nominal capacity	L	330
Energy efficiency	%	92
Water production at 40° (V40)	L	501.85
Daily gas consumption	kWh	26,388
Daily power consumption	kWh	0.113
Annual gas consumption	GJ	21
Annual power consumption	kWh	25
Degree of protection – protection level for electrical appliance	IP	51
Nominal electric power	W	100
Electrical features	V/Hz	230V ~ 50Hz
Max water pressure	kPa (bar)	600 (6)
Temperature set point range	°C	45-60
Sound power level (Lwa)	dB(A)	62.9

## 7. DESTINATION COUNTRIES AND GAS CATEGORIES

Type of flue system	Category	Supply pressure [mbar]	Reference gas	Destination Country
B23, B53 C13, C33, C43, C53, C63, C83	I2H	20	G20	AT, BG, CH, CY, CZ, DK, EE, ES, FI, GB, GR, HR, IE, IT, LT, LU, LV, NO, PT, RO, SE, SI, SK, TR
	I2H	25	G20	HU
	I2Esi	25	G25	FR

## 8. DATA PLATE

Below is an example of a data plate, containing:

- Manufacturer
- Device classes
- Model and serial number
- Capacity
- Gas category
- Various technical data (thermal input / ooutput, gas flow, electrical features, maximum water pressure)
- Manufacturing period

GENERATORE DI ACQUA CALDA AD ACCUMULO A  
CONDENSAZIONE - TIPO C13, C33, C43, C53, C63, C83,  
B23, B53

**MODELLO : HY49-350**

**MATRICOLA : K38656**

**CAPACITA' : 330 L**

**CATEGORIA : IT I2H G20 (20 mbar)**

**PORTATA TERMICA NOMINALE (Q) : 49,9 kW**

**POTENZA TERMICA NOMINALE (P) : 50,6 kW**

**PORTATA NOMINALE GAS : G20: 5,435 m<sup>3</sup>/h**

**CARATTERISTICHE ELETTRICHE :**

**230 V ~ 50 Hz (IP51) 100 w**

**PRESSIONE MAX ACQUA : 6 bar**

**PERIODO FABBR.**

ETICHETTA MATR. - DATA LABEL

09/2022



## 9. DIMENSIONS AND FEATURES OF THE APPLIANCE

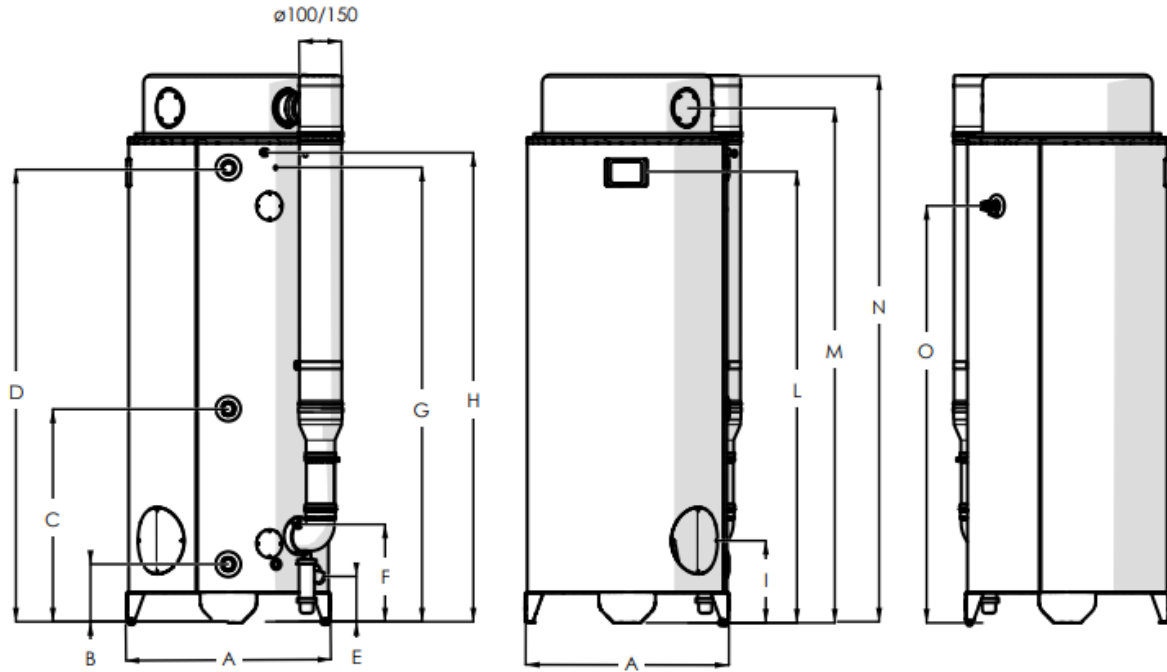


FIG-00419

	<b>HY49-350</b>
<b>A WIDTH</b>	720
<b>B BOILER WATER INLET</b>	207
<b>C BOILER WATER RECIRCULATION</b>	755
<b>D BOILER WATER OUTLET</b>	1605
<b>E CONDENSATE DRAIN</b>	158
<b>F FLUE ANALYSIS</b>	363
<b>G ELECTRICAL POWER SUPPLY</b>	1605
<b>H GAS INLET / AIR INTAKE ANALYSIS</b>	1659
<b>I BOILER INSPECTION FLANGE</b>	288
<b>L COMMAND DISPLAY</b>	1588
<b>M VALVE ADJUSTMENT</b>	1815
<b>N HEIGHT</b>	1932
<b>O T&amp;P VALVE</b>	1470

Measurements in millimeters: mm



## 10.FUNCTIONAL AND CONSTRUCTION DESCRIPTION

The purpose of this appliance is to produce domestic hot water, thanks to the heat exchange between the flue gas and the water stored in the tank, through a heat exchanger which is in contact with the burner and the tank.

Combustion occurs in a completely sealed manner with respect to the room where the appliance is installed, taking the air necessary for combustion and discharging the combustion products outside the room where the unit is installed.

The condensate is discharged in the lower part, by means of a siphon, while the flue gases are conveyed upwards through the Ø100/150 mm concentric duct.

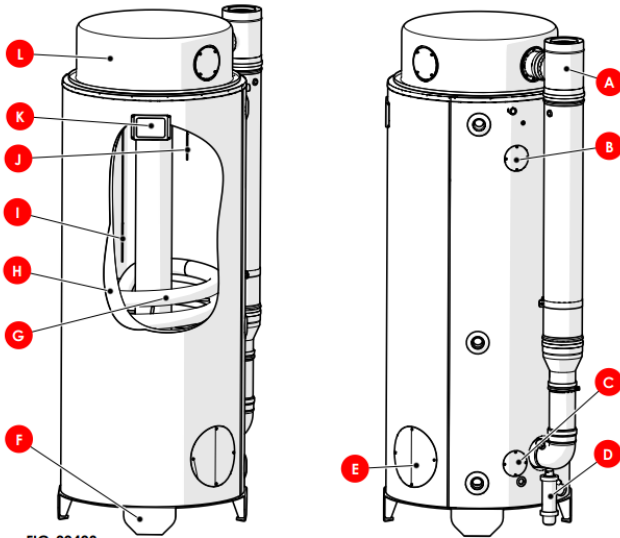


FIG-00428

- A. FLUE SYSTEM ADAPTER
- B. UPPER PROBE
- C. LOWER PROBE
- D. CONDENSATE DRAIN SIPHON
- E. BOILER INSPECTION FLANGE
- F. BASEMENT
- G. HEAT EXCHANGER
- H. TANK
- I. LOWER ANODE
- J. TOP ANODE
- K. DISPLAY
- L. TOP COVER

- A. BURNER ASSEMBLY
- B. GAS VALVE
- C. PREMIX FAN
- D. VENTURI
- E. SNORKEL
- F. CONTROL UNIT
- G. IGNITION ELECTRODE
- H. DETECTION ELECTRODE
- I. LOWER IMPRESSED CURRENT ANODE
- L. IGNITER
- M. CATHODIC PROTECTION CONTROL UNIT
- N. UPPER IMPRESSED CURRENT ANODE

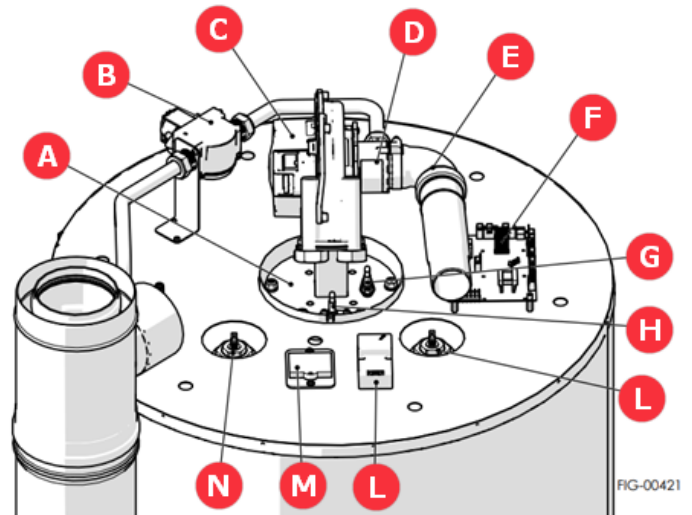


FIG-00421

## **11. SAFETY AND INSTALLATION LOCAL REGULATIONS**

### **LOCAL REGULATIONS**

During installation, local regulations relating to:

- △ Fire fighters
- △ Gas company
- △ Power supply company
- △ Hygiene and health office

### **SAFETY RULES**

- Turn off the water heater and cut off the power supply to the unit, before carrying out any cleaning or maintenance intervention.
- It is absolutely forbidden to operate the water heater with the protection of the electrical devices removed or with the safety devices excluded. It is absolutely forbidden to remove or tamper with the safety devices.
- In the event of a faults and/or malfunction, turn off the appliance, close the gas tap and do not try to repair it, but contact authorized assistance centers.
- In case of fire, powder extinguishing agents must be used: do not point water jets directly against the water heater, as they could cause short circuits.
- Use suitable manual and/or electrical tools or equipment which are in good condition. Take care to use them correctly.
- Make sure that portable ladders and/or bunk ladders are stably supported, that they are suitable, that the steps are intact and not slippery, that they are not moved with someone on them, and that someone is watching over them.

### **INSTALLATION RULES**

- In the event of installation and maintenance interventions at heights (generally with a difference in height of more than two metres), ensure that standard scaffolding is used and that the space underneath is free, in case of tools or objects falling.
- When installing and/or maintaining the unit, make sure that the workplace has adequate hygienic and sanitary conditions with regard to lighting, ventilation and solidity.
- Wear suitable personal protective clothing and equipment during installation and maintenance operations.
- Do not undertake any operation without first checking the absence of gas leaks using a specific detector.
- The installer must be authorized to install heating appliances according to local regulations i.e. Gas safe for the UK
- The appliance must be connected to a domestic hot water distribution network, depending on its performance and power. Make sure that the installation room and the systems, to which the appliance must be connected, comply with current regulations.
- Being a type C appliance, the unit can be installed in any type of room, without any limitation on its ventilation conditions and volume.
- In case of a type B installation, it is necessary to place the appliance in a ventilated room with an opening in the wall greater than Ø100.
- Before any installation, maintenance, or repair operation, disconnect the power supply. Protect external connection pipes and cables, in such a way as to avoid their damage.
- The appliance must be installed leaning on the floor, leaving a suitable clearance from the side walls to allow gas and water connections, as well as any maintenance operation. Furthermore, the appliance must be installed on a flat, even and solid floor, that has to be subject to no vibrations.
- Hermetically close the openings used to detect the CO2 values at maximum and minimum power.
- Any intervention inside the appliance must be carried out with the necessary caution, to avoid sudden contact with sharp parts.
- Do not undertake any operation without first ascertaining the absence of open flames or ignition sources.
- If you smell burning, see smoke coming out of the appliance, or smell a gas leak, disconnect the power supply, close the gas tap, open the windows and notify the nearest authorized service center.

**IN ANY CASE IT IS ALWAYS GOOD TO REMEMBER THAT COMMON SENSE IS THE BEST SAFETY AGAINST ANY DAMAGE AND/OR INJURY.**

## 12. INSTALLATION



**IMPORTANT: THE INSTALLATION OF THE APPLIANCE MUST BE CARRIED OUT BY QUALIFIED TECHNICIANS ONLY IN ORDER TO AVOID DAMAGE OR INJURY.**

Before installing the appliance, check that the nominal power supply voltage is 220/240V - 50Hz.

- Make sure that the electrical system is suitable to supply, in addition to the operating power required by the unit, also the power necessary to power the household appliances and equipment already in use.
- Carry out the electrical connections according to the laws and national standards in force.
- Upstream of the unit, provide a single-pole switch with a minimum contact distance of 3.5 mm.

The installation of the appliance is divided into 5 different phases that are listed below. Followed them carefully, respecting the order.

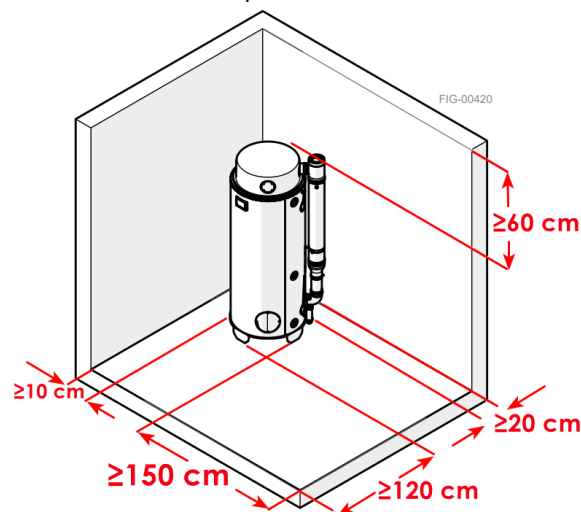
1. POSITIONING OF THE APPLIANCE
2. FLUE GAS EXHAUST
3. WATER CONNECTIONS
4. GAS CONNECTION
5. ELECTRICAL CONNECTION

The unit must always be earthed. Check that the power cable is in perfect condition. Under no circumstances should the damaged cable be repaired with insulating tape or clamps. If the power cable is damaged, it must be replaced by the technical assistance service or, in any case, by a person with similar qualifications, in order to prevent any risk. Incorrect installation can cause damage to people and things, for which the manufacturer cannot be held responsible.

## 13. POSITIONING OF THE APPLIANCE

The location of the appliance must be chosen taking into account the maximum length allowed for each type of drain, gas and electrical connection. The appliance has been designed to have the water, electrical and gas connections on the right side of the appliance. The flue outlet is placed in the upper part of the appliance. It is recommended to position the water heater in such a way as to facilitate installation and maintenance operations.

Being a type C appliance, it can be installed in any type of room, without any limitation on its ventilation conditions and volume. Refer to the necessary minimum clearance as shown in the picture below.



The front and right side of the appliance must be easily accessible, in order to facilitate correct installation and periodic maintenance.

To avoid possible water infiltration during storms, we recommend a slight downward slope of the flue exhaust and air intake pipe.



**WARNING: FOLLOW THE PROVISIONS PROVIDED BY THE NATIONAL INSTALLATION REGULATIONS.**

## 14. FLUE GAS EXHAUST

Respect the provisions established by municipal, provincial, or sectoral regulations.

The flue gases of more than one appliance must not be conveyed into the same flue gas duct.

The appliance is supplied as standard without flue system. Purchase the flue kit depending on the type of exhaust you want to carry out.

The following chart shows the kits available for this appliance. Use only the original kits supplied by the manufacturer.

FLUE KIT	DESCRIPTION	UNI CEN/TR 1749 CLASSIFICATION	
AKIT31 Ø100/150 Horizontal coaxial flue system		Width: 0.81m Height: 0.25m ↔ Minimum length: 0.5m Maximum length: 20m	C13 C43
AKIT32 Ø100/150 Vertical coaxial flue system		Width: 0.15m Height: 1.38m ↔ Minimum length: 1m Maximum length: 20m	C33
AKIT33 Ø100/100 Horizontal single wall flue system		Width: 1.43m Height: 0.25m ↔ Minimum length: 1m (air)+1m (flue gas exhaust) Maximum length: 3m (air)+10m (flue gas exhaust)	C53 C83
AKIT34 Ø100 Horizontal single wall flue system / open chamber  Installation required in a ventilated room with opening greater than Ø100		Width: 0.94m Height: 0.36m ↔ Minimum length: 0.75m Maximum length: 15m	B23 B53

To increase the duct length, it is necessary to purchase the appropriate extension pipes listed here below. The maximum allowed length is shown in the previous table. **Each bend used in the flue system equates to a 1 meter in reduction of overall length.**

The possibility of choosing one solution rather than another, must obviously take into account the regulations in force, as well as specific technical reasons.

FLUE KIT	DESCRIPTION	REFERENCE	
AKIT31 Ø100/150 Horizontal coaxial flue system	AKIT32 Ø100/150 Vertical coaxial flue system	Ø100/150 L=500 PP/Stainless steel coaxial extension	WXPX1015050
		Ø100/150 L= 1000 PP/Stainless steel coaxial extension	WXPX1015100
		Ø100/150 45° PP/Stainless steel coaxial bend	WXPX101545
		Ø100/150 90° PP/Stainless steel coaxial bend	WXPX101590
AKIT33 Ø100/100 Horizontal single wall flue system	AKIT34 Ø100 Horizontal type B flue system	Ø100 L=500 PP extension	AKIT33-01
		Ø100 L=1000 PP extension	AKIT33-02
		Ø100 45° PP bend	AKIT33-03
		Ø100 90° PP bend	AKIT33-04

For C5 applications: terminals for the supply of oxidizing air and for the evacuation of combustion products must not be installed on opposite walls of the building

Collective flue system: use a C43 air supply and exhaust system only when the collective duct is a natural flue draft chimney. The collective duct must be part of the building; it is not a part of the system.

The only configurations allowed for flue systems in category C63 are: C13 and C33.

Contact the assistance service for more information regarding C43 and C63 systems.

Make sure that the mechanical stability of the air/fume duct is always granted. The hole, for the passage through the wall of the exhaust and air intake pipe, must not be cemented: the fume exhaust pipe must be free to move through the hole, so that it can be removed later. To that end, the wall covering rosettes supplied with the flue exhaust kit can be used to cover the empty space of the hole.

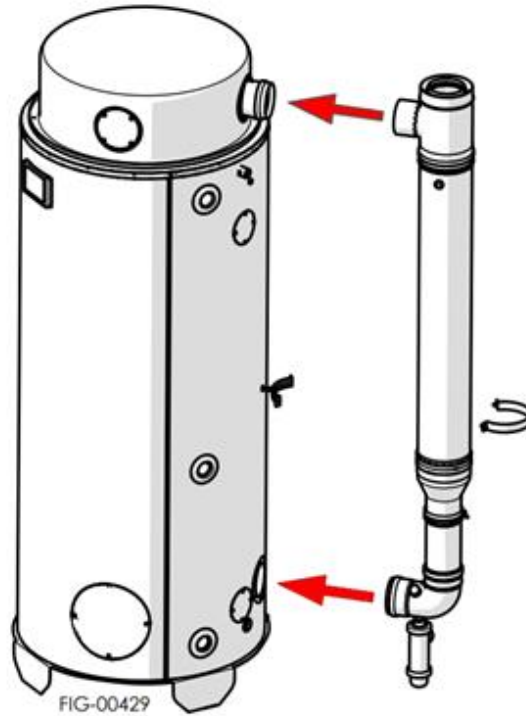


**ATTENTION: compulsorily respect the maximum prescribed lengths of the flue kits stated above. Furthermore, make sure to install the horizontal exhaust duct section with a minimum slope of 5%, to ensure the flow of condensate towards the appliance, which is equipped with a siphon/condensate drain.**

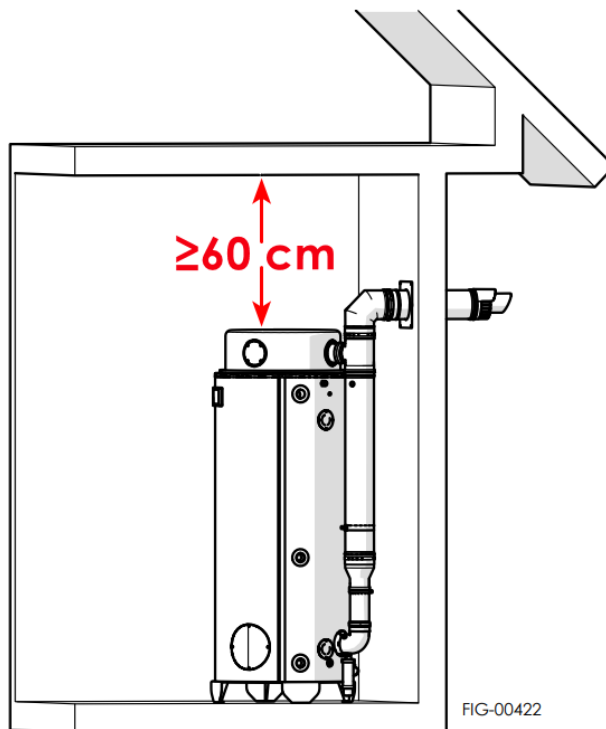
**FLUE SYSTEM ADAPTER**

The flue system connector, supplied as standard and ready to be installed, has a diameter of  $\varnothing 100/150$  and is made of PP/Stainless steel material.

It is equipped with an air and smoke exhaust inspection at the two ends of the duct.



**IMPORTANT: LEAVE A CLEARANCE OF MINIMUM 60 CM ABOVE THE APPLIANCE TO ALLOW ANY MAINTENANCE INTERVENTION ON THE TOP PART**

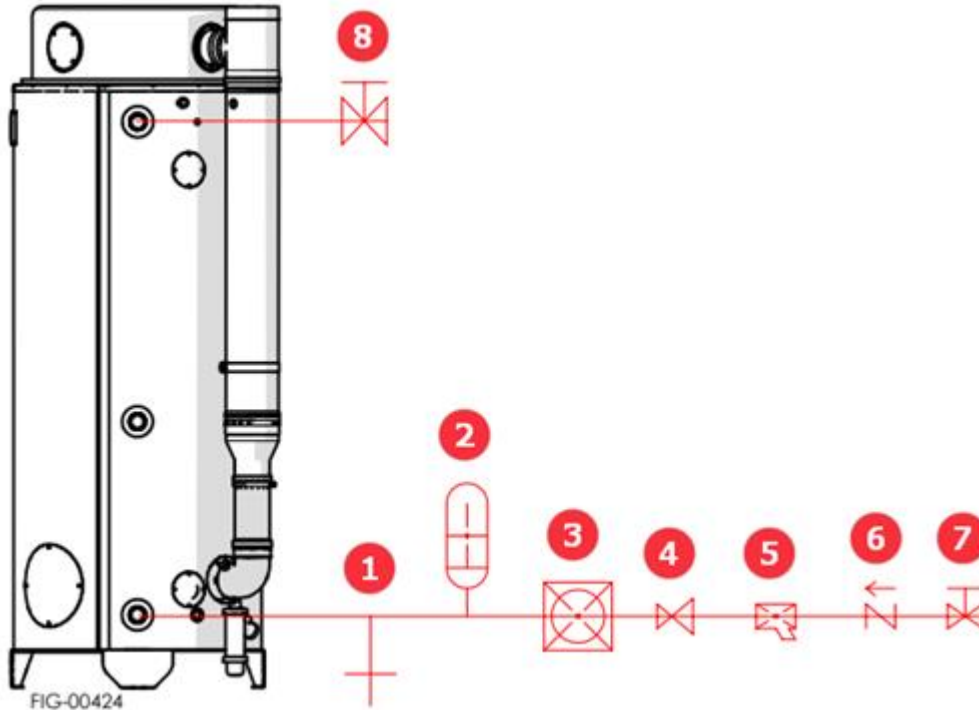


## 15. WATER CONNECTIONS

Comply with the following domestic water parameters:

1. **Total hardness:** between 10 and 25 °f
2. **PH:** between 6 and 8
3. **Chlorides:** maximum value 200 mg/l
4. **Conductivity:** maximum value 2500 µS/cm

### HYDRAULIC COMPONENTS TO INSTALL (NOT INCLUDED)



1. T-shaped drain valve.
2. Expansion tank with a capacity of not less than 5% of the contents of the appliance.
3. Softener for particularly hard water (mandatory above 25°f).
4. Pressure reducer (when water has an inlet pressure  $\geq 6$  bar).
5. Filter to eliminate water impurities.
6. Check valve.
7. Shut-off valve.
8. Shut-off valve.

### CONDENSATE DRAIN

Connect a flexible hose to the outlet of the siphon drain to channel the condensate discharge. Connect it to the building's waste water system, to dispose of the condensate produced in compliance with the regulations in force in the country of installation, respecting the 5% slope in the horizontal sections to grant the proper condensate flow. Foresee a condensate neutralizer in the plant, when required by current legislation in the country of installation. Furthermore, the condensate drain must be maintained constantly without obstructions or interruptions.

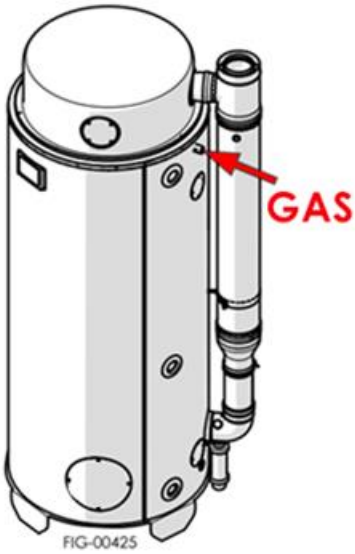
### TEMPERATURE AND PRESSURE SAFETY VALVE

It discharges the water from the tank when the internal pressure is higher than 7 bar and/or when the temperature of 92°C is reached. If the valve comes into operation releasing water, it will be necessary to reduce the water inlet pressure in the appliance.



**ATTENTION: THE VALVE IS SEALED BY THE MANUFACTURER AND ITS TAMPERING IS PROHIBITED.**  
**IN THE EVENT OF TAMPERING, THE WARRANTY OF THE APPLIANCE WILL NOT BE RECOGNIZED**

GAS CONNECTION



Connect the gas supply line to the threaded fitting on the appliance using a removable rigid fitting.

The gas connection is G 3/4": fit a manual gas shut-off valve along the pipe near the generator and in an easily accessible position.

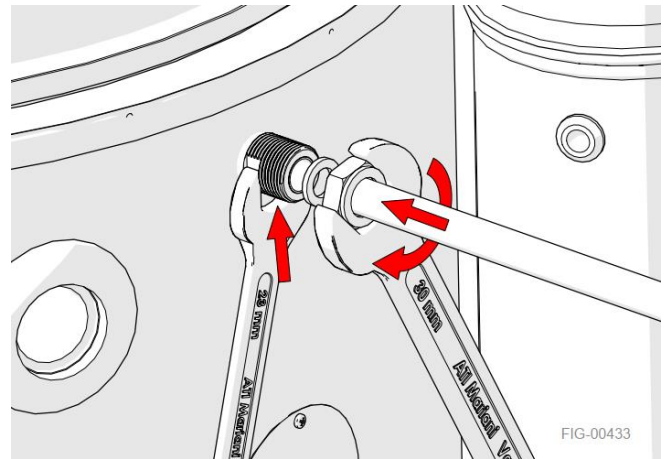
Check the gas pipe for tightness and make sure that it has been carried out in compliance with the regulations in force on gas systems.

**TYPE OF GASES SUPPORTED**

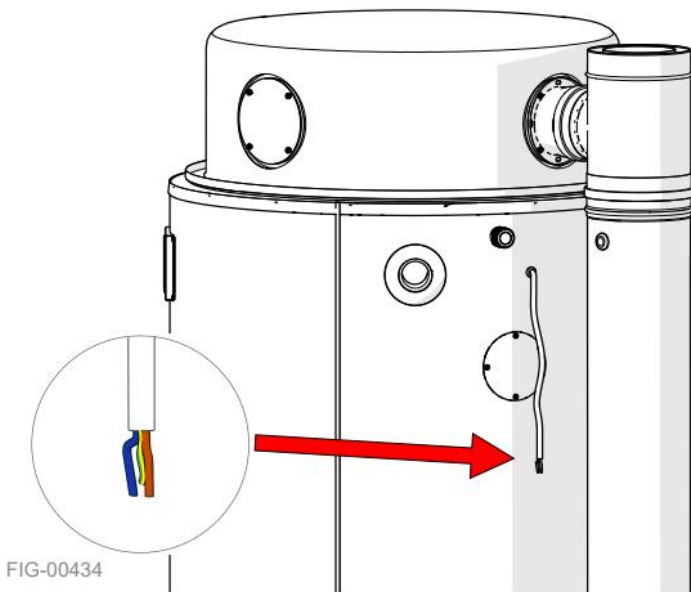
- G20 - 20 mbar
- G25 - 25 mbar
- G20+hydrogen 20% - 20 mbar

**CONNECT THE GAS PIPE**

1. Use a suitable gas sealing gasket.
2. Use a rigid or flexible tube to connect the gas pipeline to the appliance: make sure that the tube is free from impurities inside and that it can ensure the flow rate of the appliance.
3. Hold the male fitting locked by means of a 23mm wrench.
4. Screw the nut into the male fitting.
5. When you turn the appliance on for the first time, check the gas tightness and, if necessary, increase the tightening torque.



**16. ELECTRICAL CONNECTIONS**



The appliance is sold with no electrical plug: connect the appliance to a switchboard.

Connect electrically to a 230V-50Hz, single-phase power supply network and to an efficient earthing.

Install a double pole switch near the appliance in the event a general shutdown is needed.

Connect the power cable of the appliance, taking care to comply with the electrical regulations in force in the country in which the appliance is installed.

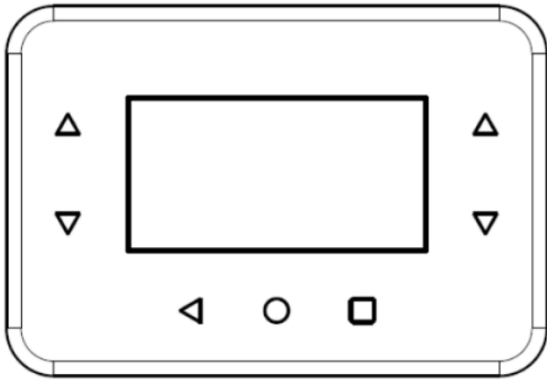
If replacing the electric power cable, use exclusively a cable with the same characteristics (H05 VV-F cable – 3x0.75).

Warning: the appliance has no protection against the effects caused by lightning.

Before accessing any electrical device of the appliance, turn off the power by means of the double pole switch.

The installation is completed and the appliance is ready to be switched on and used.

## 17. COMMAND DESCRIPTION



The display has interactive touch controls. Through these it is possible to:

- ▲ ▼ Adjust the water thermostat (left side of display)
- ◀ Unlock the appliance
- Enter the settings menu\*
- Turn the appliance on and off

\*Settings list:

Info boiler	
Setting boiler	Installer menu
	Factory menu
	Devices menu
	Faults history
	Chimney sweep(max/min input)
	Boiler version
	Special functions
	Menu Burner
Setting display	Language
	Time setting
	Contrast
	Brightness
	Touch sensitivity
	Factory reset
	Data monitor
	Conn. method
	Server rate
	Start wizard
Setting WiFi	Info WiFi
	WiFi monitor
	Password App
	Download certs
	Set program
	Day copy
	Enable program
Programming	

## 18. THERMOSTAT ADJUSTMENT

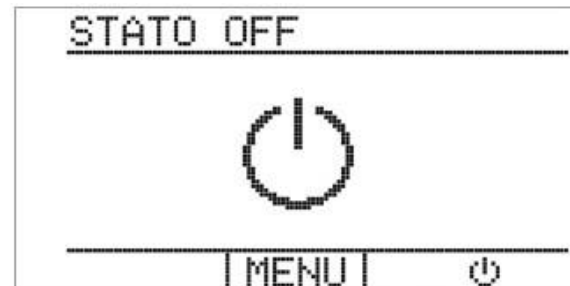
### START

When you turn the display on for the first time, you will be asked to set the language, in which the device is used, the day and time:



### OFF

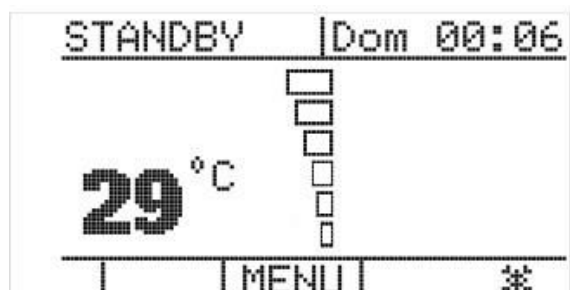
Once the boiler is powered and the language has been set, it is in the OFF state:



- The MENU key is at the bottom. It can be accessed using the • key.
- The OFF icon appears on the right.

### ON

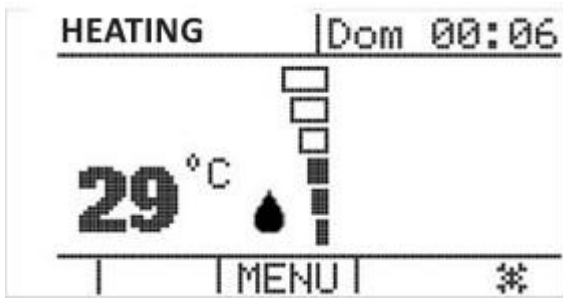
By pressing the ■ button for 3 seconds, the system enters ON mode, the display is illuminated and the following information is displayed:




- The current status (Standby or Heating) is displayed at the top left, depending on the water temperature.
- the day of the week and the time are displayed at the top right.



If the water temperature is lower than the one set on the display, the burner ignition sequence will start:



- The icon  appears in the center of the display. It states that the burner is turned on.
- It is possible to adjust the boiler water thermostat by using the ▲ and ▼ keys on the left. The setpoint temperature to be set will flash instead of the current temperature.
- The modulation bar\* is at the center of the display and it shows the current burner power percentage.

*\*Since the unit is a storage water heater, the burner, when switched on, is always kept at maximum power until the set point temperature is reached. The hysteresis phase will follow at minimum power.*

#### INTERNAL POWER RESERVE

The display is equipped with an internal power reserve capable of buffering the absence of power for a few hours, so that the user can avoid resetting the current time.

#### STORAGE OF DATA IN MEMORY

If the internal energy reserve described in the paragraph above runs out, the display still saves some settings and data in memory; in particular, the display settings, the weekly program and the faults history.

## 19. OPERATING CYCLE

During the ignition phase, the system always behaves as described below:

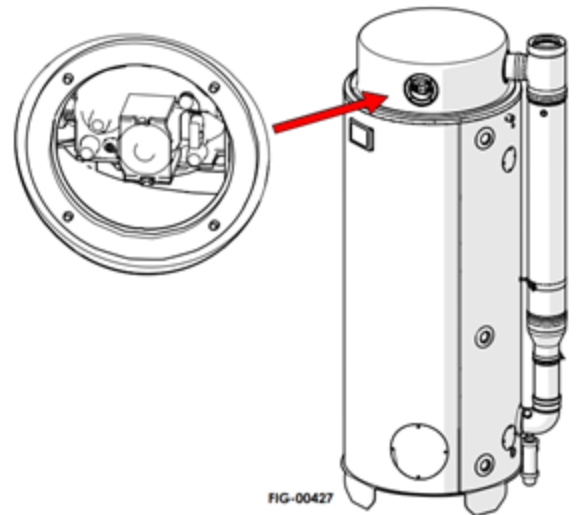
1. The fan is activated and reaches the on speed. The system starts counting the pre-ventilation time. During this time the fan speed remains constant at the switch-on value.
2. At the end of the pre-ventilation time (inter-ventilation, if it is not the first ignition attempt) the igniter and the gas valve are activated. During this time, the fan speed remains constant at the switch-on value.
3. If the flame is not detected, the igniter and the gas valve are deactivated at the end of the safety time; if the maximum number of ignition attempts foreseen has not yet been reached, the fan goes to inter-ventilation speed for the inter-ventilation time, after which we return to point 2.
4. On the contrary, if the number of attempts has been reached, the system goes into the locked state, due to failure to turn on. It is necessary to unlock the system manually, by pressing and releasing the ◀ button to restore the normal operation.
5. If the flame is detected during the ignition attempt, at the end of the safety time the system inhibits the igniter and goes into steady state; the number of ignition attempts is reset. From here on the operation varies depending on the current operating state.
6. The steady state continues as long as the request to turn the burner on persists, some anomaly occurs, which causes the burner to turn off, or the flame goes out.
7. In the event that during the steady state the flame goes out, and the burner ignition request condition persists, the system will repeat the ignition sequence as just described.

## 20. CO2 REGULATION

At the end of the installation, it is necessary to check the CO2 values: in the event of a defect, it is necessary to make an adjustment to restore the values as indicated in the table. In the event of a gas change and/or air intake or exhaust duct change, the CO2 values will have to be readjusted according to the new type of flue system.

Type of gas	CO2 values
G20 - 20 mbar	9.0% max / 8.7%
G25 -25 mbar	9.0% max / 8.7%
G20+hydrogen 20% - 20 mbar	7.7% max / 7.4%

To verify the correct combustion, it is necessary to carry out an analysis using an exhaust fume analyzer compliant with CR1404.



The CO2 adjustment is done by means of the two maximum and minimum adjustment screws on the gas valve. To access it, remove the side flange which is located on the upper cap.

You need to unscrew the 4 nuts on the circumference and remove the plate.

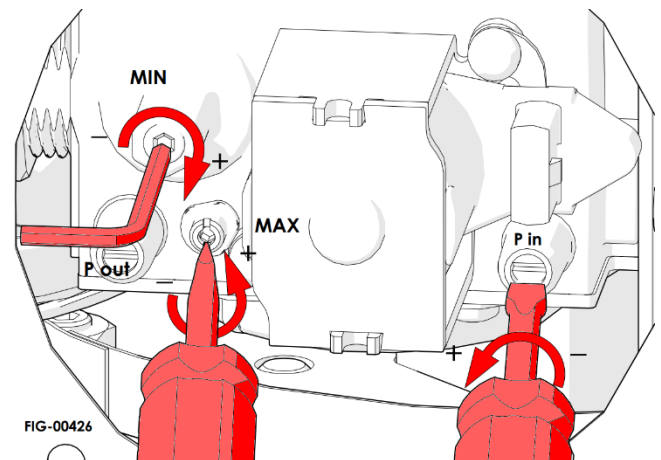
When CO2 is correctly adjusted, combustion produces no CO (with 0% O2). Value admitted for CO by law: < 1000 ppm

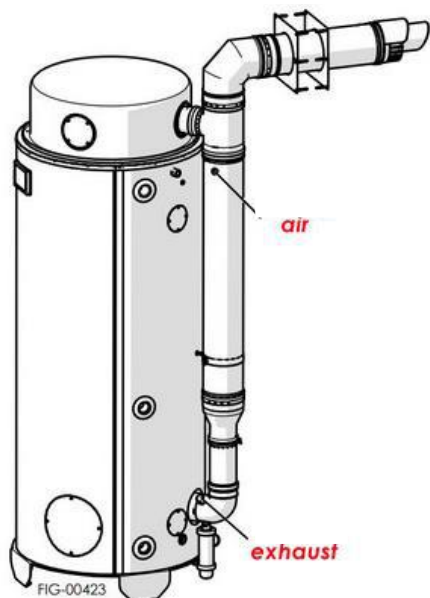


**ATTENTION: MAKE SURE THAT THERE ARE NO OBSTRUCTIONS IN BOTH THE AIR INTAKE AND THE FLUE EXHAUST DUCT. A REDUCTION IN THE FLOW RATE DUE TO ACCIDENTAL OBSTRUCTION OF THE DUCTS WILL RESULT IN A REDUCTION IN THE GAS FLOW RATE, UNTIL THE BURNER TURNS OFF.**

### READING AND ADJUSTMENT OF CO2 VALUES AT MAXIMUM POWER

- Enter the SETTING menu > “Setting Boiler”
- Activate the “chimney sweep” function and scroll the [-] and [+] keys to activate the HIGH mode.
- Detect the CO2 value on the analyzer, through the inspection placed on the smoke outlet bend at the bottom of the system.
- If this value does not correspond to the correct one shown in the table, it is necessary to adjust the MAX screw to obtain the indicated value.
- Use a flat-blade screwdriver and turn the MAX screw anticlockwise to increase the CO2 value and clockwise to reduce it.





#### READING AND ADJUSTMENT OF CO<sub>2</sub> VALUES AT MINIMUM POWER

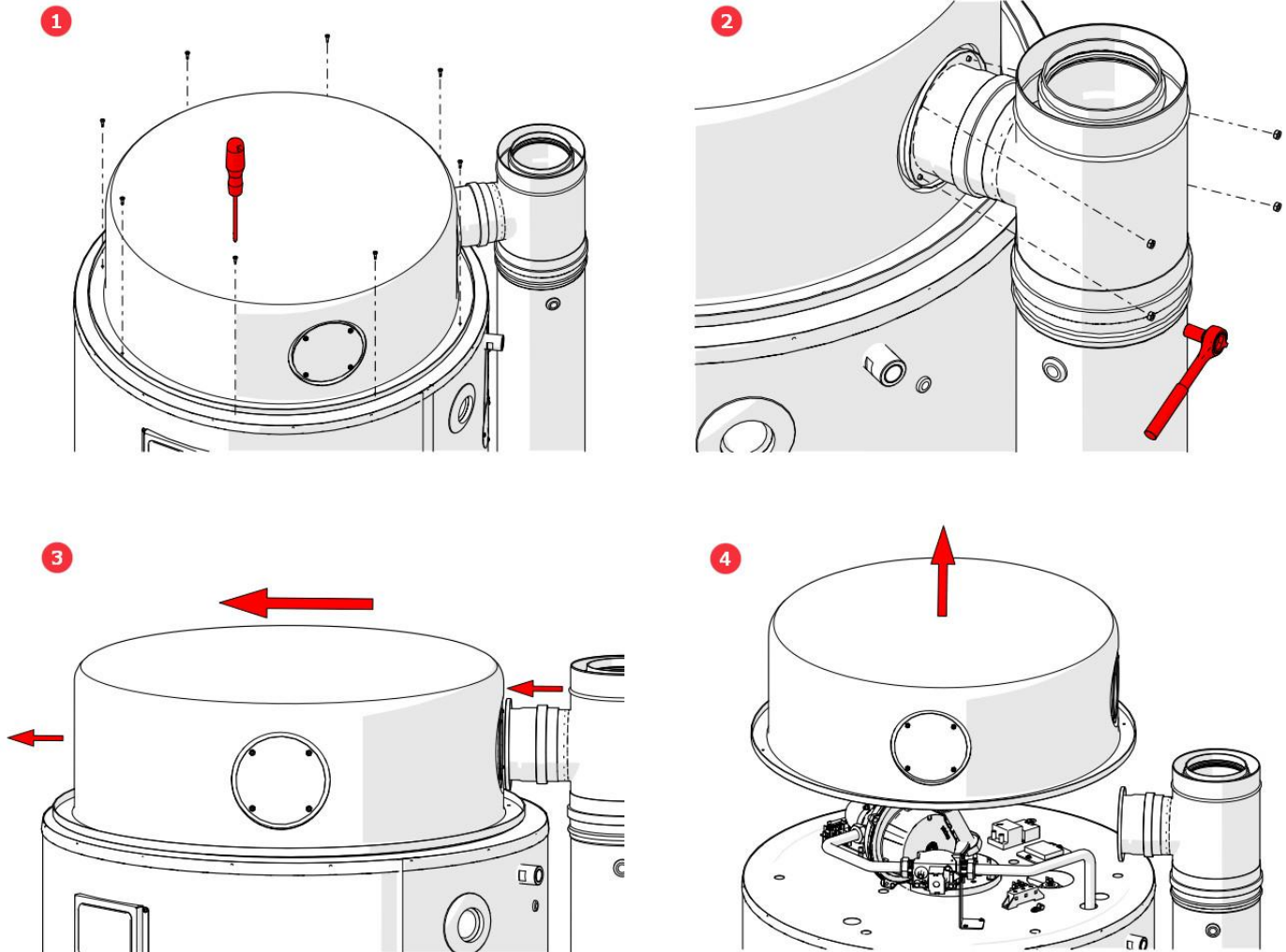
- With the boiler already in “chimney sweep” mode, press the [-] key to activate the LOW chimney sweep.
- Detect the CO<sub>2</sub> value on the analyzer, through the same inspection on the bend.
- If this value does not correspond to the correct one shown in the table, it is necessary to adjust the MIN screw to obtain the indicated value. Use a 2mm Allen key.
- Turn the screw clockwise to increase the CO<sub>2</sub> value and anticlockwise to reduce it.
- Return to maximum power using the [+] key, to check that the CO<sub>2</sub> adjustment at minimum has not influenced the one at maximum.
- To exit the “chimney sweep” mode, press the OK button.

## 21. GAS CHANGE

To change the gas, replace the mixer with the specific model for the gas of destination. Proceed by removing the upper cap to access the mixer.

### REMOVE THE TOP COVER

1. Remove the screws around the shell using a screwdriver (not supplied).
2. Remove the screws on the rear flange of the tee fitting with a hex wrench (not supplied).
3. Push the cap in the opposite direction to the tee fitting (1-2 cm), removing the pins on the cap.
4. Pull the cap upwards and place it on a flat surface. Be careful not to touch the internal components of the boiler.



To reinstall the cover, reinsert it in the same position and tighten the removed screws. Follow the previous steps in reverse order.

### METHANE GAS AND HYDROGEN MIXTURE

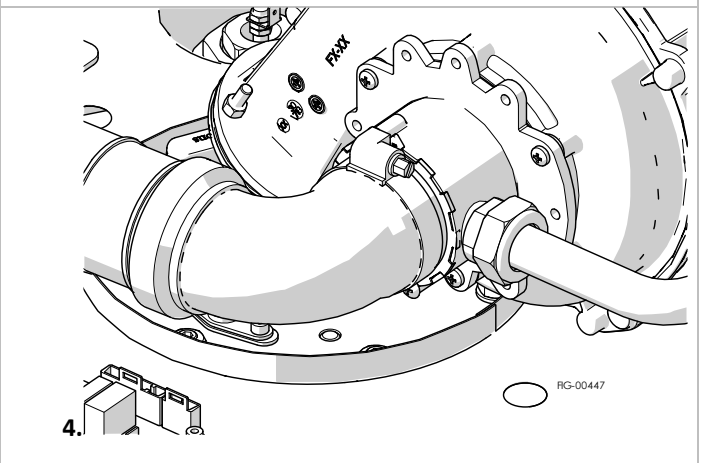
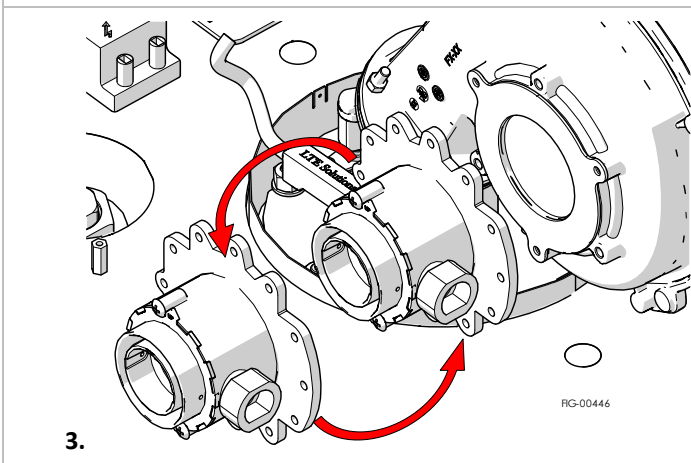
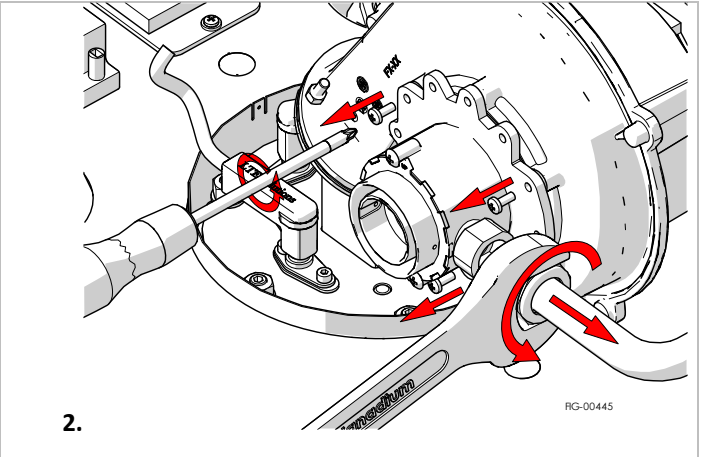
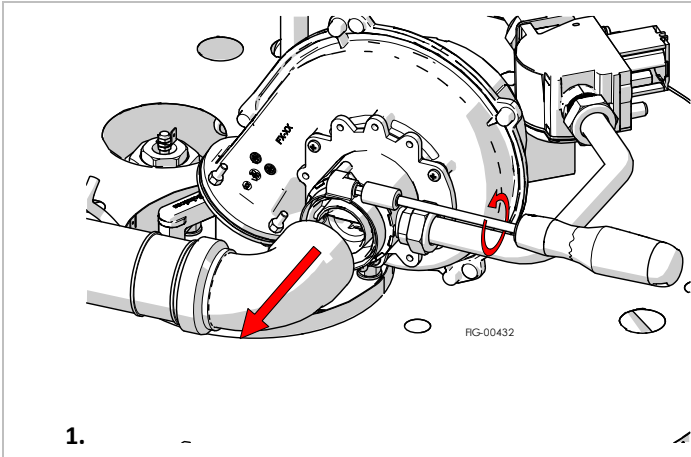
The HY49-350 appliance is already suitable for and compliant with the operation of the G20 gas + 20% hydrogen mixture. The G20 methane mixer is used.



**WARNING: SOME PARTS MAY BE SHARP. USE PROTECTIVE DEVICES. THE MANUFACTURER DOES NOT ASSUME ANY RESPONSIBILITY FOR POSSIBLE INJURIES.**

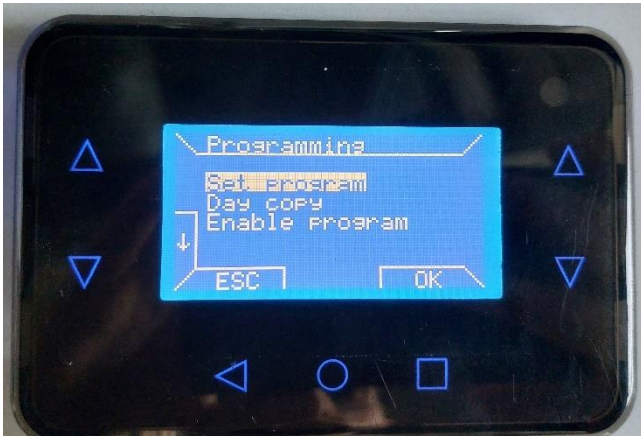
**MIXER REPLACEMENT**

1. Loosen the metal band and remove the tube outwards.
2. Remove the 3 screws on the mixer and unscrew the nut on the gas fitting.
3. Replace the mixer with the reference model.
4. Reassemble the removed components



**ATTENTION: IN CASE OF WORN SCREWS AND/OR SEALS FOLLOWING THE REPLACEMENT OF THE MIXER, PROCEED WITH THEIR REPLACEMENT**

## 22. TIMER PROGRAMMING



The "Programming" menu allows to manage a weekly schedule. By following the set daily program, it is possible to activate the burner.

The time resolution is 30 minutes.

By selecting the "set program" entry in the "Programming" submenu, the following screen appears, where you can change the weekly program.



The day you want to program is highlighted next to the entry "Day". By pressing the [+] and [-] keys you can select the various days of the week, whereas below, as a reminder, the corresponding daily program is shown. Supposing you want to program "Monday", touching "OK" takes you into the time slot programming.

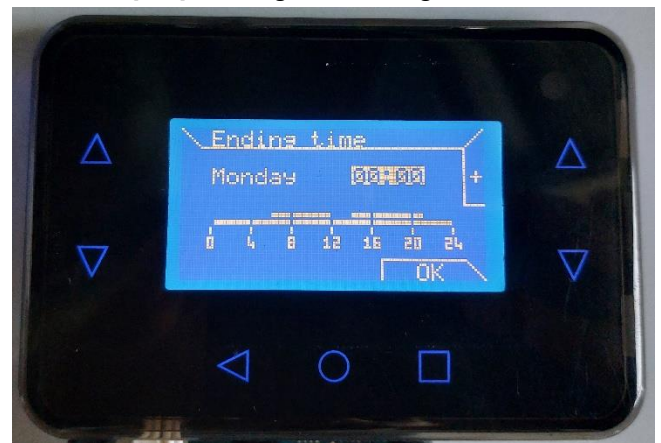
The slots are programmed in three steps: 1) Start of slot (to select the starting time of the slot) 2) Demand (to set the required presence) 3) End of slot (to set the ending time of the slot)



In the first step, enter the starting time using the [+] and [-] keys, at minimum intervals of 15 minutes, and confirm with [OK]. If, however, you want to abandon the programming of the selected day and change day, simply touch [ESC].



Then you select whether you want to activate the heat demand "ON" or not ("OFF"), by moving on the display with the [▶] and [◀] keys to select and touching [OK] to confirm or [ESC] to change the starting time of the slot.



In the final step, select the ending time and confirm with [OK]. This time cannot be less than the starting time of the slot; by selecting two coinciding values for the starting and ending time of the slot, the daily program is not modified.

The second item of the "Programming" menu allows to copy the program of one day to another, selecting the source day at the top and the destination day at the bottom.



Simply select "ALL" as the destination, to have the same program every day.

When the [OK] key is pressed, a message confirms that the program has been copied.

The third item "Enable program" in the menu allows you to activate the weekly program and view some information, such as the current time, the status of the heat demand and the daily diagram of the current day.

It is therefore necessary to set the weekly program to ON to activate its operation.

This screen remains fixed until the [ESC] button is pressed.



### INTERNAL POWER RESERVE

The display is equipped with an internal power reserve capable of buffering the absence of power for a few hours, so that the user can avoid resetting the current time. However, the time it takes for the power reserve to run out varies depending on the humidity and ambient temperature, as well as the aging of the electronic components. For the power reserve to be fully operational, the device must have been correctly and uninterruptedly powered for at least a couple of hours.

### STORAGE OF DATA IN MEMORY

If the internal energy reserve described in the paragraph above runs out, the display still saves some settings and data in memory; in particular, the display settings, the WiFi settings, the weekly program and the faults history. It is possible to restore all settings to default values via the "Factory reset" submenu in the "SETTING DISPLAY" menu. ATTENTION: Pressing the reset button on the back of the display does not restore the factory settings.

## **23.ANTI-LEGIONELLA FUNCTION**



**WARNING: LEGIONELLA IS A BACTERIA THAT AFFECTS THE RESPIRATORY SYSTEM. THE PREVENTION OF THIS INFECTION IS BASED ON THE CORRECT DESIGN AND CONSTRUCTION OF WATER-SANITARY SYSTEMS.**

The appliance has an anti-legionella function, which allows to heat the water in the tank to prevent the bacterium from proliferating inside it. To avoid infection throughout the building system, it is necessary to ensure that the water treated by the device can circulate to the individual users.

The system brings the water to a temperature of 65° for 20 minutes. The writing "LEg" appears at the bottom of the display.

### **ACTIVATION**

#### **Anti-legionella 3h:**

It is automatically activated as "Anti-legionella 3h" three hours after the first time the system has been electrically powered and turned on, or after a period of inactivity because disconnected from the electrical system, and, in the meantime, no demand has been served which led the boiler water to a temperature greater than or equal to 65°C.

#### **Anti-legionella 7 days:**

It is automatically activated as "Anti-legionella 7 days" 7 days from the moment in which the anti-legionella 3h or anti-legionella 7 days status was last activated, and in the meantime no demand has been served which led the water boiler to a temperature greater than or equal to 65°C.

## **24.ANTIFREEZE FUNCTION**



**ATTENTION: THIS FUNCTION IS LIMITED TO THE TANK VOLUME.  
TO PROTECT THE WATER SYSTEM, INSULATE THE PIPES CORRECTLY.**

The appliance has an antifreeze function, which allows the water in the tank to be heated to prevent it from freezing due to prolonged periods of inactivity and/or installations in very cold rooms.

### **ACTIVATION**

It is activated automatically if the lower probe of the appliance detects a temperature lower than  $\leq 5^{\circ}\text{C}$ .

The antifreeze symbol appears on the display.

The burner is turned on to heat the water contained in the boiler and turns off, as soon as the probe itself detects a temperature above  $\geq 30^{\circ}\text{C}$ .

## **25.IMPRESSED CURRENT CATHODIC PROTECTIVE SYSTEM**

To protect the tank against corrosion, a direct current is circulated between the tank and two special active titanium anodes which are placed inside the tank itself.

The electronic cathodic protection device acts on the element to be protected in a totally automatic way: no calibration or setting is necessary.

Unlike sacrificial magnesium anodes, these electrodes do not wear out, ensuring protection without time limits.

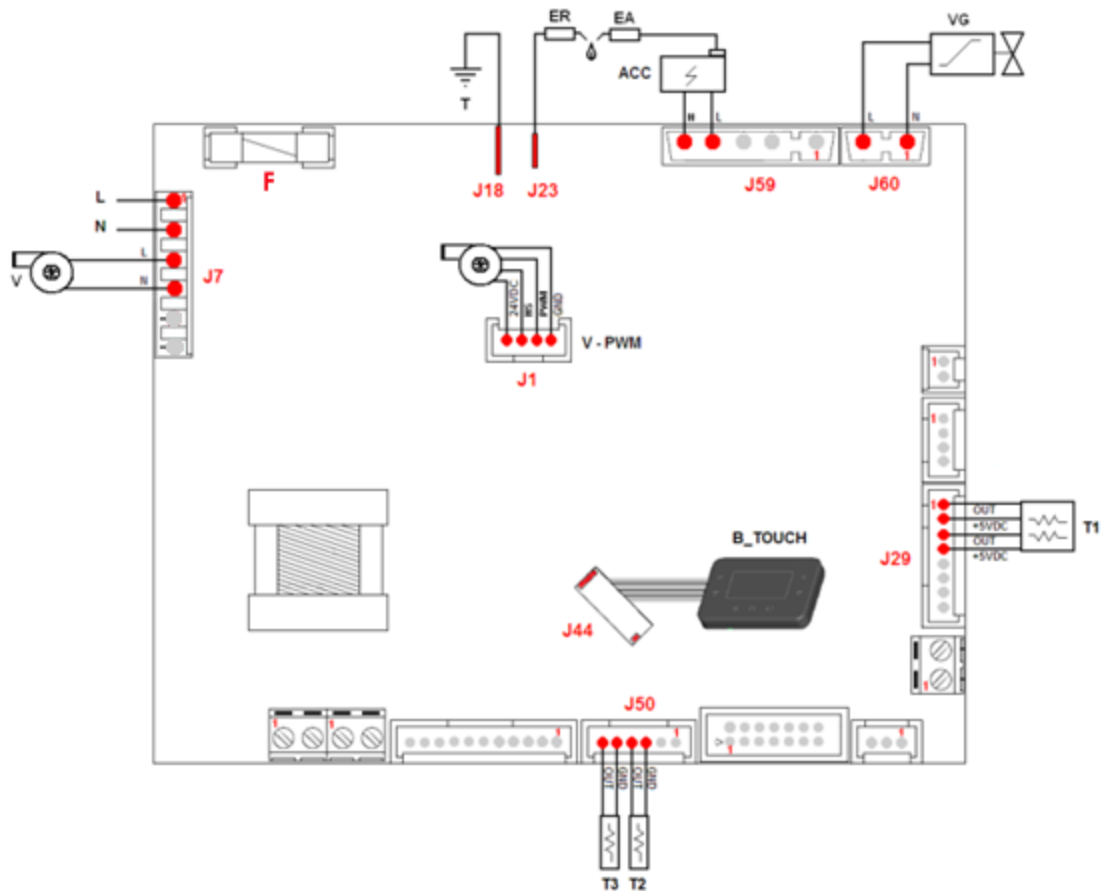


**ATTENTION: IF THE BOILER IS EMPTY, SWITCH OFF THE POWER SUPPLY TO AVOID ACTIVATING THE ANTI-FREEZE, ANTI-LEGIONELLA AND CATHODIC PROTECTION MODES.**



## 26. ELECTRONIC BOARD AND WIRING

### MI860 MOTHERBOARD



#### F - FUSE

3.15 A @ 250 VAC fast

#### J7 - L/N: Power supply

Description: Board power supply (non-polarized, Line and Neutral can be reversed)

Pin: 1. Line - 230 VAC 50 Hz

2. Neutral

Voltage: High (230 VAC)

#### J7 - Fan power supply

Description: Brushless fan with on-board regulation electronics

Pin: 3. Line

4. Neutral

Voltage: High (230 VAC)

#### J1 – PWM Fan

Pin: 1. 24 VDC

2. Speed signal input (Hall sensor)

3. PWM signal output

4. GND

#### J50 - Smoke probe

Description: Probe for measuring flue gas temperature

Contacts: Connector: J50

Pin: 5. GND

6. Signal input

Voltage: Low (5 VDC)

#### J50 - Antifreeze and Anti-Legionella probe

Description: Probe for antifreeze and anti-Legionella operation

Pin: 3. GND

4. Signal input

Voltage: Low (5 VDC)

**J44 - Touch display**

Description: Command board for viewing and setting information

Voltage: Low (5 VDC)

**J29 - Regulation probe + safety**

Description: Integrated double NTC probe which performs the regulation and safety thermostat functions.

Pin: 1. Probe signal input

2. 5 VDC

3. Probe signal input

4. 5 VDC

Voltage: Low (5 VDC)

**J60 - Gas valve**

Description: Modulating gas valve with pneumatic air-gas ratio control

Pin: 1. Neutral

2. Line

Voltage: High (230 VAC)

**J59 - Electronic igniter**

Description: High efficiency electronic igniter

Pin: 4. Line

5. Neutral

Voltage: High (230 VAC)

**J23 - Flame detection electrode**

Description: Connection for the flame detection electrode

Voltage: High (230 VAC)

**J18 – Earth**

Description: Earthing (functional) connection of the board

## **27. CONTROL UNIT FAULTS**

Any faulty operation is detected and displayed on the control board display. In particular, the item "Err." appears at the bottom right, alternating with the specific error code for the anomaly in progress (or, if the system is affected by multiple anomalies at the same time, for the last anomaly detected). The notation for the error code is as follows: "xx.yy", where "xx" indicates the generic anomaly code (i.e. the type of error, such as error relating to the temperature probes, error relating to the water pressure in the system, error relating to the burner ignition cycle, etc.), while "yy" indicates the code of the specific anomaly.

### **IGNITION CYCLE, FLAME DETECTION AND SAFETY FAULTS**

<b>Code</b>	<b>Description</b>	<b>Operations</b>	<b>Reset</b>
02.20	Lockout due to no ignition	Check electrodes and gas compartment	Auto
02.22	Parasitic flame	Check the gas compartment	Auto
02.23	Water safety temperature exceeded	Check upper probe	
02.28	Microcontrollers communication fault	Replace the control unit and/or display	NO
02.29	Gas valve fault	Check the valve or cable	NO
02.90	Control unit fault	Check the electrical circuitry	Manual
[02.91 - 02.96]	Safety circuit component faults	Replace the control unit	NO
[02.97 - 02.99]	Double upper safety probe anomaly	Replace the upper probe	NO

### **TEMPERATURE PROBE FAULTS**

<b>Code</b>	<b>Description</b>	<b>Operations</b>	<b>Reset</b>
03.30	Upper probe - interrupted	Check the status of the probe	NO
03.31	Upper probe - short circuit	Replace the probe	NO
03.32	Upper probe - overtemperature	Check the status of the probe	NO
03.33	Lower probe - interrupted	Check the status of the probe	NO
03.34	Lower probe - short circuit	Replace the probe	NO
03.35	Lower probe - overtemperature	Check the status of the probe	NO
03.36	Smoke probe - interrupted	Check the status of the probe	NO
03.37	Smoke probe - short circuit	Replace the probe	NO
03.38	flue gas probe - overtemperature	Check the status of the probe	NO

### **FAN FAULTS**

<b>Code</b>	<b>Description</b>	<b>Operations</b>	<b>Reset</b>
06.60	Fan still	Faulty fan, replace it	NO
06.61	Fan runs without input	Faulty fan, replace it	NO
06.62	Fan out of range	Faulty fan, replace it	NO

## 28. CATHODIC PROTECTIVE SYSTEM FAULTS



The cathodic protection control unit has a LED to transmit information on the operating status, as well as alarm signals.

The transmission of impulses occurs through a green or red sequence, with different intermittences. Below is the diagram with the meaning of the various signals:

WHEN SWITCHING ON: BEGINNING OF USE TIME COUNTING	
	3 rapid red flashes = start of the counting function
	Number of red flashes = Number of months of operation
	Number of green flashes = Number of years of operation
	3 rapid green flashes = Exit from the counting function

To check the "Use Time" during the normal unit operation, simply unplug and reconnect the power pack. The counting function is locked and cannot be tampered with

ALARM SIGNALS – POWER SUPPLY	
	One red flash every second = Insufficient Power (<11V)
	2 red flashes every second. = Supercharge (>14V)
	No Signal = Device Not Working

ALARM SIGNALS - CONNECTIONS	
	One green flash followed by a long, alternating red flash = Anode Disconnected
	3 red flashes every second. = Short Circuit on the Anode/Earth output

ALARM SIGNALS - OPERATION	
	1 green flash every second. repeated = Protection OK ( * )
	1 green flash and one red flash, repeated = Insufficient Protection ( * )
	1 green and 2 red flashes, repeated = No Protection ( * )
	1 green and 3 red flashes, repeated = Overprotection ( * )

( \* ) : Upon switching on, it is possible to have the 3 signals present simultaneously, if the potential of the enameled casing is close to the Protection Limit

PRIORITY OF SIGNALS - IN CASE OF SIMULTANEOUS SIGNALS	
1- High Priority	Alarms regarding power supply
2- Medium Priority	Alarms regarding Connections
3- Low Priority	Alarms regarding Operation



**ATTENTION: IF THE CATHODE PROTECTION HAS BEEN INACTIVE FOR LONG PERIODS, OR IT IS INSUFFICIENT DUE TO SPECIAL INSTALLATIONS, THE GUARANTEE OF THE APPLIANCE AGAINST BOILER CORROSION WILL NOT BE RECOGNIZED. MAKE SURE TO USE INSULATING JOINTS AND PERFORM CORRECT EARTHING.**

## **29. PERIODIC MAINTENANCE**

To ensure the safety of the appliance and prolong its life, it is necessary to have it checked at least once a year by an authorized service centre, who will carry out the following operations:

- Check of the functioning of cathodic protection
- Check and, if necessary, cleaning of the burner
- Check and, if necessary, cleaning of the exchanger
- Internal check of the boiler and possible cleaning
- Check of gas pipes tightness
- Check of the flue duct and exhaust terminals

## **30. WARRANTY VALIDATION**

The guarantee starts from the date of purchase, proven by a valid document for tax purposes (receipt or tax receipt), considered essential to be able to exercise the right to the guarantee.



**ATTENTION: IT IS STRICTLY FORBIDDEN TO TAMPER WITH ANY DEVICE, WHICH WAS FACTORY CALIBRATED AND SEALED BY THE MANUFACTURER.**

For any further details regarding the terms of the guarantee, see the guarantee certificate supplied with the appliance itself. The warranty certificate must be kept together with the purchase document (receipt or tax receipt) and must be shown to the authorized assistance center staff in the event of warranty intervention. Possession of the appliance alone does not entitle you to the warranty.

### 31. MAINTENANCE SHEET

SERIAL SERIAL			
No.	DATES	DESCRIPTION	SIGNATURE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			



# **hot water generator model. HY49-350**

complies with European Directives:

2016/426/EU – Gas Appliances Regulation (GAR)

2014/35/EU – Low Voltage Directive (LVD)

2014/30/EU – Electromagnetic Compatibility Directive (EMC)

2013/814/EU – Ecocompatibility Regulation (ErP)

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