



Heating technology since 1959

Instruction Manual ***for model***

RK 34/B Ekobox

*Premix condensing boiler
version for remote storage cylinder connection*



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1. GENERAL INFORMATION

1.1 General warnings

-  Professionally qualified authorised in accordance with current laws and standards and in line with the manufacturer's instructions must install the appliance.
 -  With 'Professionally qualified authorised is intended a personnel with technical knowledge in the field of installation and maintenance of components for central heating water production system for domestic and industrial use.
 -  The appliance must be used solely for the purpose for which it has been designed and manufactured: central heating water production. Any other use is deemed as improper and as such dangerous. Under no circumstances will the manufacturer be held responsible for damage or injury to persons or animals caused by errors in the installation and/or use of the appliance, or through non-compliance with current local and national standards and/or the manufacturer's instructions.
 -  The installation, operation and maintenance manual forms an integral and essential part of the product and must be kept near the appliance always.
 -  This manual must be kept in a safe place and made available for any future reference. If the appliance is sold or transferred to a different owner, this must follow the appliance to be read by the new owner and/or installer.
 -  The warnings contained in this chapter have been written for the appliance user, the installer and the service engineer or authorised person.
 -  The user manual must be read carefully as it provides information on the operation and the operating limits of the appliance.
 -  This appliance must be used exclusively in a pressurised central heating system, not suitable for use as a pool heater.
- After the removal of all the packaging, check that the appliance has not been damaged. In case of doubt, do not attempt to use the product but refer to the supplier. Packing materials (cardboard box, wooden crate, nails, staples, plastic bags, polystyrene, etc.) must not be left within reach of children in that these items represent a potential hazard and must be disposed of in a responsible manner.
 - Before carrying out any cleaning or maintenance operations, disconnect the appliance from the mains electricity supply by switching off at the main switch and/or any other isolating device.
 - Do not obstruct the air intake or flue exhaust grills.
 - Do not obstruct the air intake or flue exhaust terminals.
 - In the case of a fault and/or malfunction in the appliance, shut down the system. Do not interfere with or attempt any repairs. Call for professionally qualified technical assistance only.
 - Any warranty repairs to the appliance must be carried out exclusively by the manufacturer's authorised service centre using original spare parts. Non-compliance with the above requirements may compromise the safety of the appliance and invalidate the warranty. In order to guarantee the efficiency of the appliance and its correct operation, it must be serviced regularly by professionally qualified personnel in line with the manufacturer's instructions.
 - When the appliance is no longer required for use, any parts that may constitute potential sources of danger must be rendered harmless.
 - Only original accessories or optional extras (including electrical parts) must be used with the appliance.
 - Should there be a smell of gas present in the room where the appliance is installed, **DO NOT** attempt to activate any electric switches, telephones or any other equipment that may cause sparks. Open doors and windows immediately to create a current of air and ventilate the room. Shut-off the main gas supply valve (at the meter), or on the cylinder in the case of bottled gas, and call an authorised service centre.
 - **Do not attempt to interfere with or modify the appliance in any way.**

- As dictated by current legislation, this appliance **must be installed exclusively by qualified authorised personnel**. Before starting the boiler for the first time, make sure that it is connected to a water supply and central heating system compatible with its performance characteristics.
- The room must be ventilated in accordance with AS/NZS5601 by means of an air intake positioned at floor level and protected with a grill. Make sure the grill does not reduce the passage section.
- The air inflow from adjacent rooms is allowed providing that those rooms are in depression with respect to the atmosphere and that **there are not fireplace or fan installed**. When the appliance is installed outdoor, i.e. on balcony or terrace, make sure it is not directly exposed to atmospheric agents / conditions to prevent any damage to components which would lead to a warranty invalidation. It is recommended to provide the boiler with a protective casing/box against bad weather conditions.
- **Check the gas type and technical data reported on the packing and on the rating plate** located on the inside of the front casing. Also check that the burner is appropriate for the type of gas to burn.
- **Make sure that the pipes and fittings used for the gas service are installed in accordance with AS/NZS5601 perfectly tight and that there are no gas leaks.**
- Prior to start-up, the central heating pipes should be flushed to remove any residues that could compromise the operation of the appliance.
- The appliance can be regarded as being electrically safe when it has been connected to an efficient earth system installed in accordance with the requirements of current electrical safety standards. This fundamental safety requirement must be checked and verified. In case of doubt, have the electrical system checked by a qualified electrician. The manufacturer will not be held liable for any damage or injury caused as a result of an ineffective or non-existent earth system.
- The domestic power supply must be checked by a qualified electrician to ensure that it can support the maximum power absorption of the appliance, as indicated on the appliance data plate (positioned on the inside of the front casing). In particular, make sure that the cable ratings are adequate for the power absorbed.
- Do not use adapters; multiple sockets or extension leads to connect the appliance to the mains power supply.
- The appliance must be connected to the mains power supply through an appropriate electrical isolator in accordance with the current wiring regulations.
- When using an electrical appliance, a few fundamental rules must be observed:
 - Do not touch the appliance with damp or wet parts of the body or when barefoot
 - Do not pull on the electric wires
 - Do not leave the appliance exposed to atmospheric elements (rain, sun, etc.) unless these conditions have been expressly provided for.
 - Do not allow the appliance to be used by children or anyone unfamiliar with its operation.
 - The user must not replace the power supply cable.
 - If the cable is damaged in any way, switch off the appliance and have the cable replaced by a suitably qualified electrician.
- **When the appliance is no longer required for use, switch off the main power supply, to switch all electrical components off (circulating pump, burner etc.)**

1.2 Product conformity

RADIANT BRUCIATORI S.p.A. declares that all its products are manufactured to a high specification and in compliance with the relevant standards.

All **RADIANT** boilers are **CE** certified and possess technical and functional characteristics that comply with the following standards:

UNI EN 297 for GAS-FIRED CENTRAL HEATING BOILERS TYPE B OF NOMINAL HEAT INPUT ≤ 70 kW

EN 483 for GAS-FIRED CENTRAL HEATING BOILERS TYPE C OF NOMINAL HEAT INPUT ≤ 70 kW

UNI EN 677 for GAS-FIRED CENTRAL HEATING BOILERS. SPECIFIC REQUIREMENTS FOR CONDENSING BOILERS WITH NOMINAL HEAT INPUT ≤ 70 kW

Gas fired boilers also comply with the following directives:

GAS APPLIANCES DIRECTIVE 90/396 CEE for CE compliance

LOW VOLTAGE DIRECTIVE 2006/95 CEE

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2004/108 CEE

BOILER EFFICIENCY DIRECTIVE 92/42 CEE

The materials used such as copper, brass, stainless steel, etc. form a compact, homogeneous, highly functional unit that is easy to install and simple to operate. In its simplicity, the wall-mounted appliance is equipped with all the appropriate accessories required to make it a fully independent boiler capable of satisfying central heating needs. All boilers are fully inspected and are accompanied by a quality certificate, signed by the inspector, and a guarantee certificate. This manual must be kept in a safe place and must **accompany the boiler at all times**.

RADIANT BRUCIATORI S.p.A. will not be held responsible for any misinterpretation of this manual resulting from the inaccurate translation of same.

RADIANT BRUCIATORI S.p.A. will not be held responsible for the consequences in the case of non-observance of the instructions contained in this manual or in the case where actions not specifically described herein are undertaken.

Radiant Bruciatori S.p.A. declare that no substances harmful to health are contained in the appliance or used during appliance manufacture and have not used or intend to use any of the following substances in the manufacture of Radiant heating products.

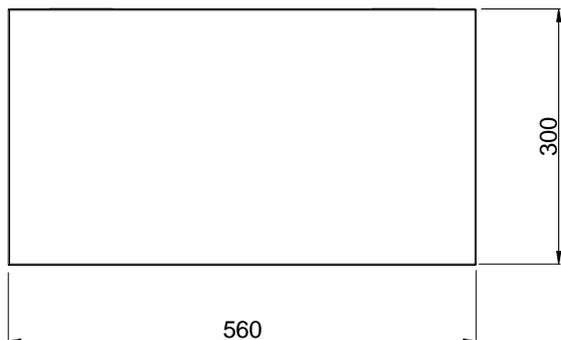
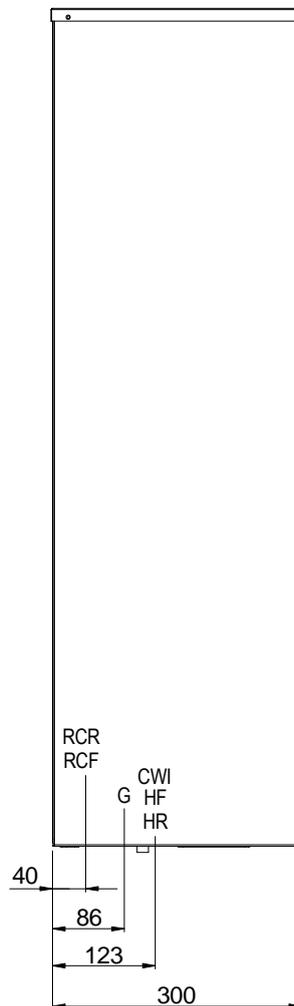
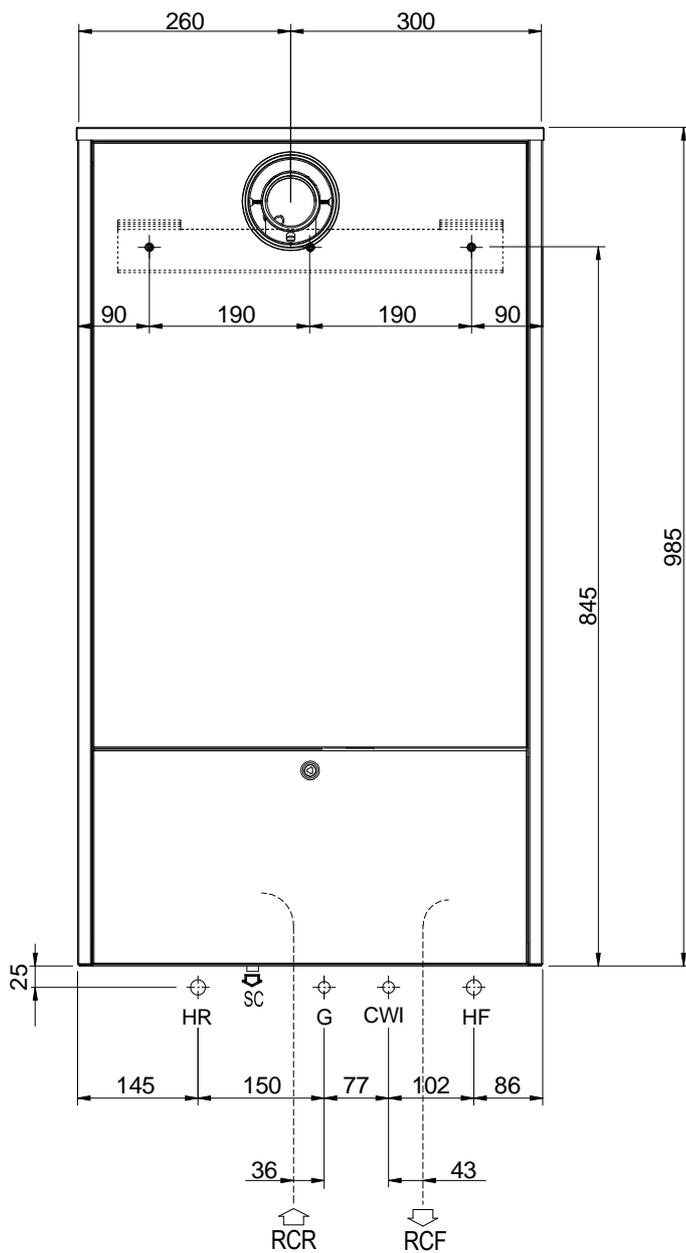
- **Asbestos**
- **Mercury**
- **CFC's.**

2. TECHNICAL CHARACTERISTICS

2.1 Technical data

Model		RK 34/B
CE Certification	n°	0694BN3485
Appliance Type		
Appliance Category		
Heat Input max	kW	34
Heat Input min	kW	10
Heat Output max (50/30°)	kW	36.24
Efficiency 100% (full load 50/30°)	%	106.6
Efficiency 30% (partial load 50/30°)	%	107.9
Heat Output max - 80/60°C (Non condensing)	kW	33.42
Heat Output min - 80/60°C (Non condensing)	kW	9.73
Efficiency 100% (full load 80/60°)	%	98.3
Efficiency 30% (partial load 80/60°)	%	100.7
GAS DIRECTIVE 92/42/ECC - Efficiency marking	stars	4
Central Heating circuit		
Central Heating water temperature setting (min-max)	°C	30-80
Max. heating working temperature	°C	95
Expansion vessel capacity	litres	7
Max. working pressure (heating)	bar	3
Min. working pressure (heating)	bar	0.3
Domestic Hot Water circuit		
D.H.W. temperature setting (min-max)	°C	35-60
Max. Hot water working pressure	bar	6
Min. Hot water working pressure	bar	0.5
Dimensions (Boiler casing size)		
Width	mm	410
Height	mm	730
Depth	mm	310
Weight (net)	kg	42
Hydraulic connections		
Central Heating Flow connection	Ø	¾"
Central heating Return connection	Ø	¾"
Central heating flow connection to DHW storage cylinder	Ø	¾"
Central heating return connection from DHW storage cylinder	Ø	¾"
Cold water inlet	Ø	½"
Gas connection	Ø	¾"
Flue systems		
Horizontal-Concentric flue system	Ø mm	100/60
Max. Flue length	m	1
Gas Supply		
Natural gas		
Inlet pressure	kPa	1.13
Gas consumption	MJ/h	130.5
Universal LPG		
Inlet pressure	kPa	2.75
Gas consumption	MJ/h	130.5
Electrical specifications		
Power supply	V/Hz	230/50
Electrical power consumption	W	180
Electrical protection	IP	X4D

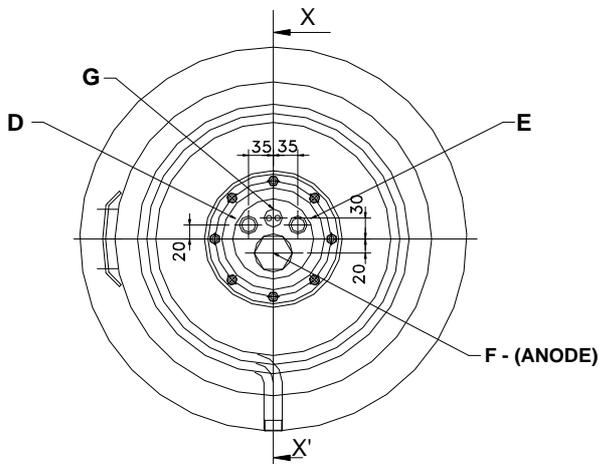
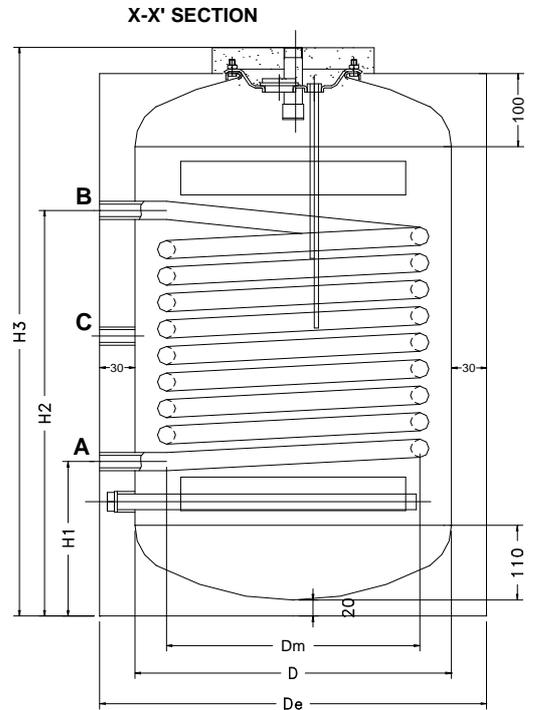
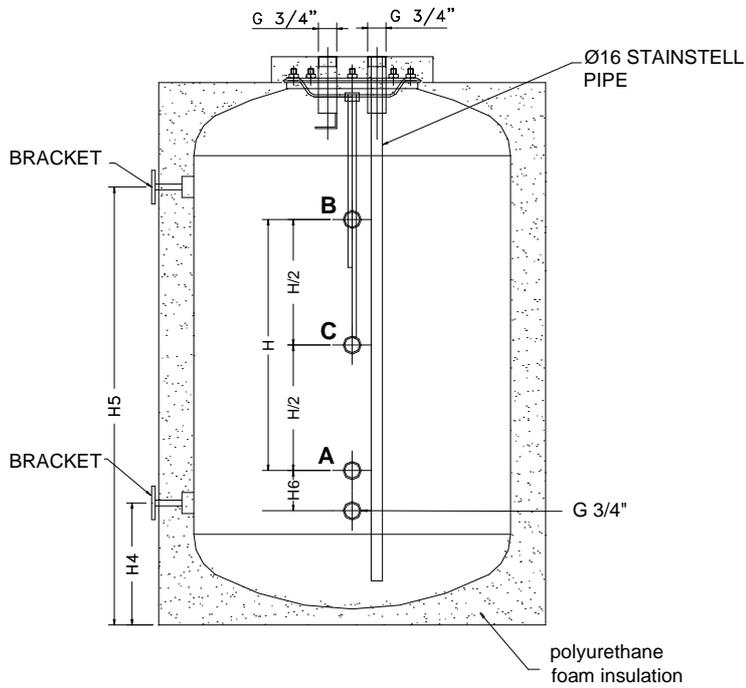
2.2 Dimensions



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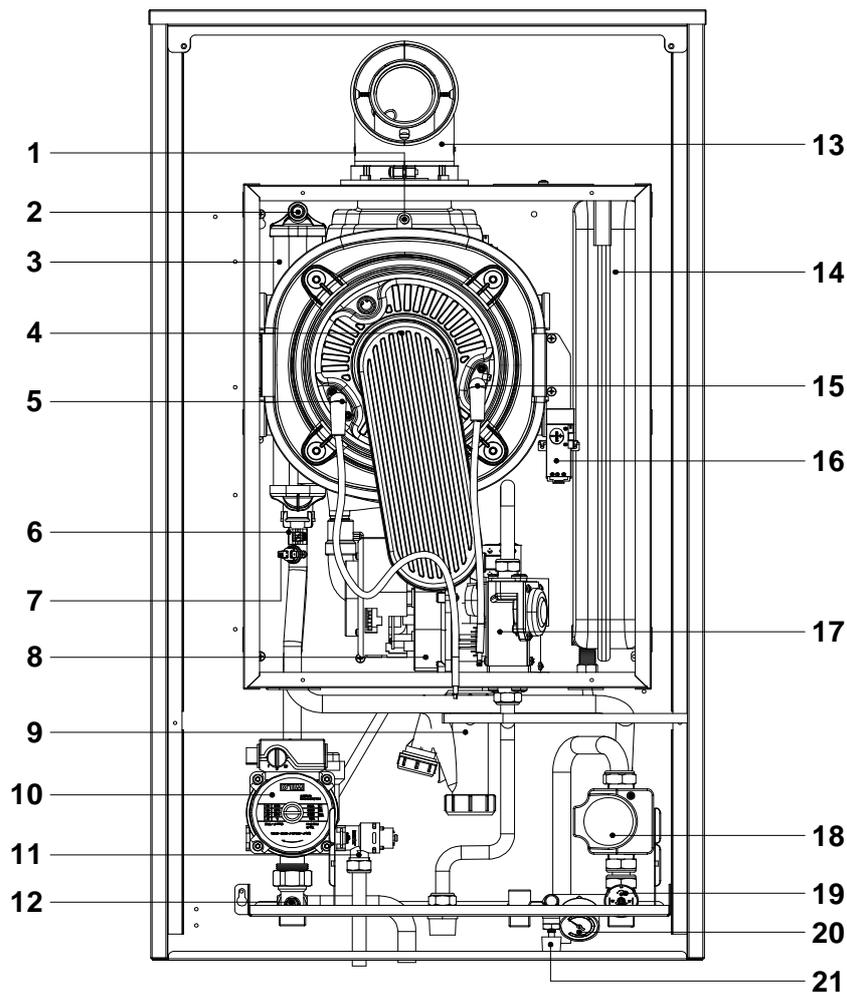
HR	HEATING RETURN	Ø 3/4"
HF	HEATING FLOW	Ø 3/4"
RCR	REMOTE D.H.W. CYLINDER RETURN	Ø 3/4"
RCF	REMOTE D.H.W. CYLINDER FLOW	Ø 3/4"
CWI	COLD WATER INLET	Ø 1/2"
G	GAS	Ø 3/4"
SC	CONDENSATE DRAIN	Ø 25

Storage tank 150 lt.



MODEL	U.M	150
Storage cylinder capacity	Lt	150
Storage cylinder exchange area	m ²	1
Circulation pump	lt/h	2860
Heat Input max	kW	53
Hot water flow rate Dt 30°	Lt/h	1149
Externa diameter (De)	mm	510
Internal diameter (Di)	mm	450
H	mm	440
H1	mm	334
H2	mm	774
H3	mm	1113
H4	mm	175
H5	mm	633
H6	mm	162
A	mm	Ø3/4"
B	mm	Ø3/4"
C	mm	Ø3/4"
D	mm	Ø1/2"
E	mm	Ø1/2"
Max. heating working pressure	bar	12
Max. Hot water working pressure	bar	6
Max. temperature	°C	99

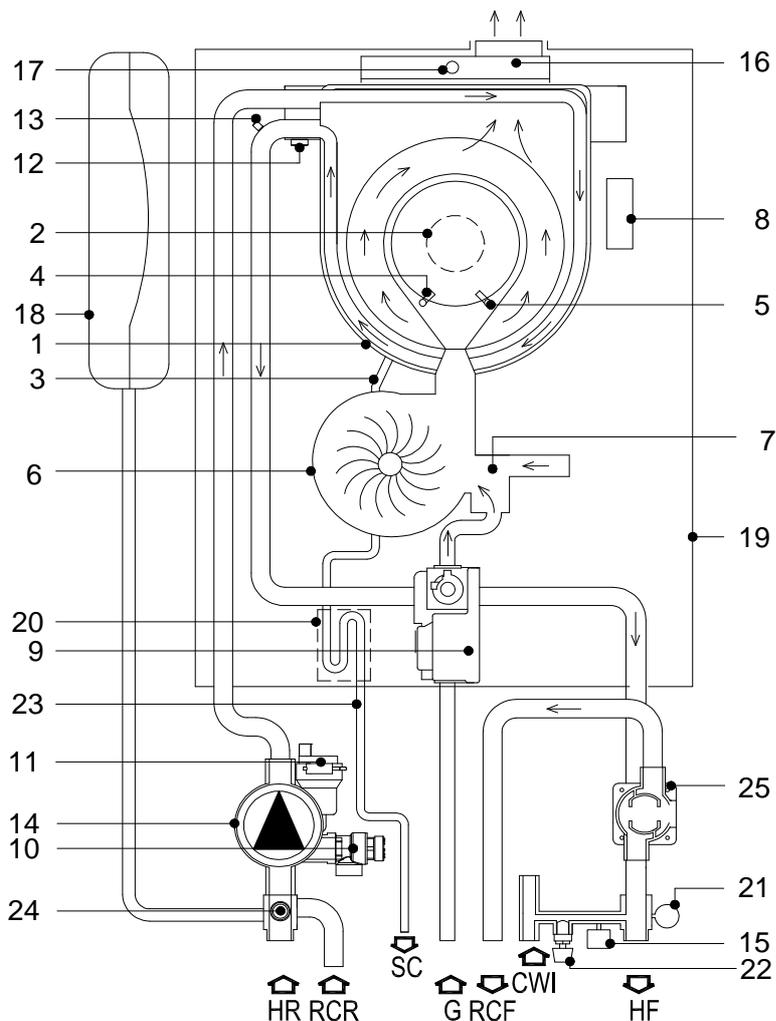
2.3 Internal parts of the boiler



LEGEND

- 1. SAFETY THERMO FUSE
- 2. AIR VENT VALVE
- 3. PRIMARY CONDENSING HEAT EXCHANGER
- 4. PREMIX BURNER UNIT (GAS MANIFOLD+BURNER)
- 5. IGNITION ELECTRODE
- 6. HEATING SENSOR
- 7. HEATING SAFETY THERMOSTAT
- 8. FAN
- 9. CONDENSATE TRAP
- 10. PUMP WITH AIR VENT
- 11. 3 BAR PRESSURE RELIEF VALVE - HTG CIRCUIT
- 12. SYSTEM DRAIN VALVE
- 13. FLUE BEND
- 14. EXPANSION VESSEL
- 15. IONISATION ELECTRODE
- 16. IGNITION TRANSFORMER
- 17. ELECTRONIC GAS VALVE
- 18. 3-WAY VALVE
- 19. WATER PRESSURE SWITCH
- 20. WATER PRESSURE GAUGE
- 21. FILLING TAP

2.4 Water circuit



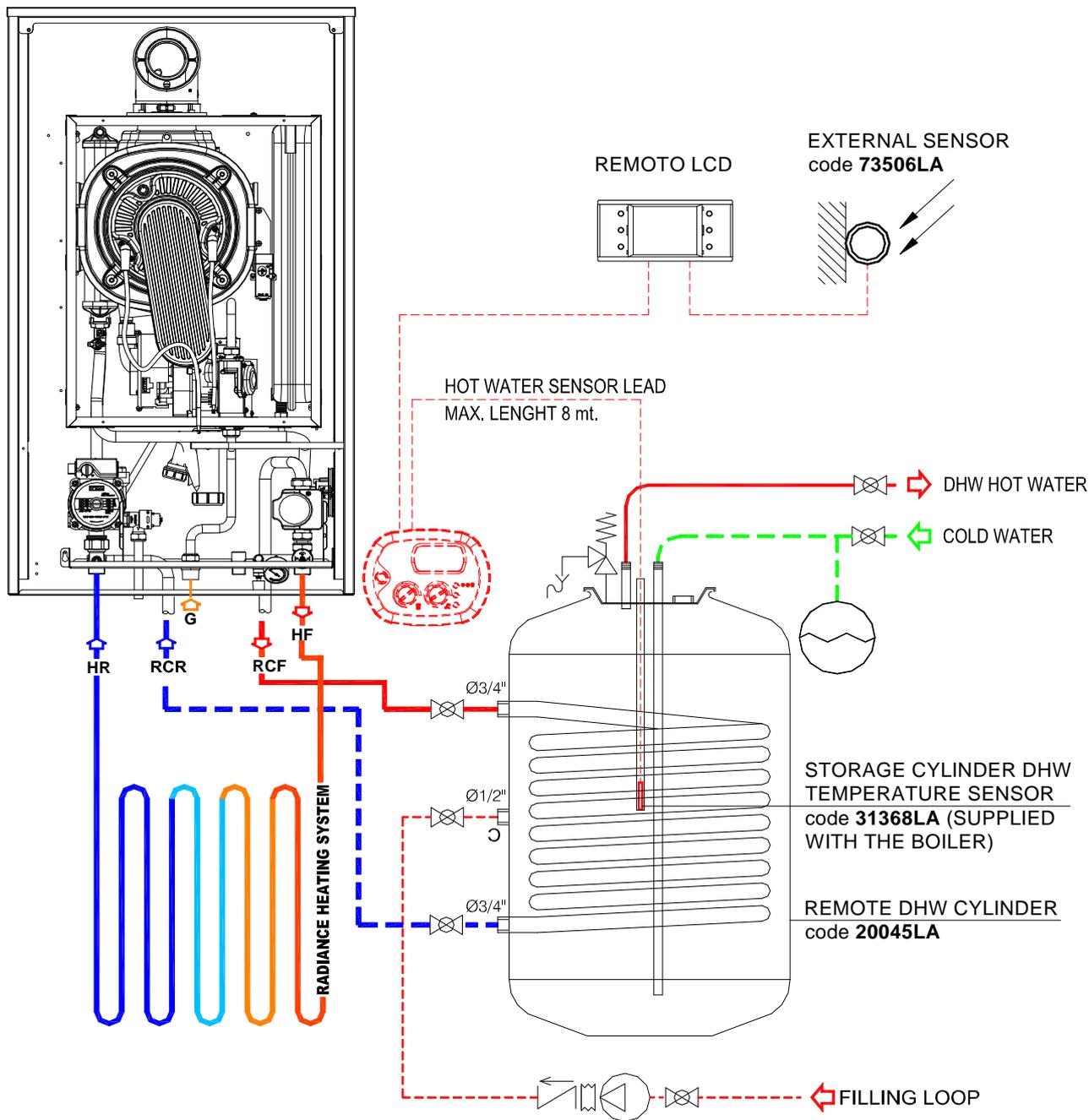
LEGEND

- 1. PRIMARY CONDENSING HEAT EXCHANGER
- 2. PREMIX BURNER UNIT (GAS MANIFOLD+BURNER)
- 3. PRIMARY CONDENSING HEAT EXCHANGER CONDENSATE DRAIN PIPE
- 4. IONISATION ELECTRODE
- 5. IGNITION ELECTRODE
- 6. FAN
- 7. VENTURI
- 8. IGNITION TRANSFORMER
- 9. ELECTRONIC GAS VALVE
- 10. 3 BAR PRESSURE RELIEF VALVE - HTG CIRCUIT
- 11. AUTOMATIC AIR VENT VALVE
- 12. HEATING SAFETY THERMOSTAT
- 13. HEATING SENSOR
- 14. PUMP WITH AIR VENT
- 15. WATER PRESSURE SWITCH
- 16. FLUE HOOD
- 17. SAFETY THERMO FUSE
- 18. EXPANSION VESSEL
- 19. ROOM SEAL CHAMBER BACK SID
- 20. CONDENSATE TRAP
- 21. WATER PRESSURE GAUGE
- 22. FILLING TAP
- 23. CONDENSATE DRAIN PIPE
- 24. SYSTEM DRAIN VALVE
- 25. 3-WAY VALVE

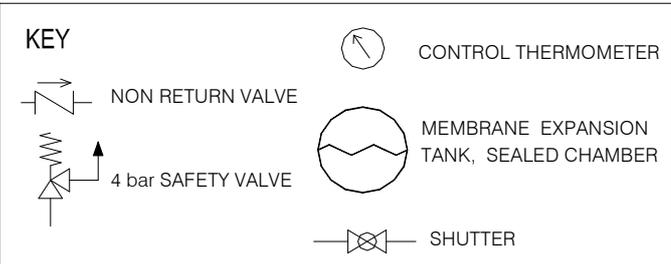
LEGEND

HR	HEATING RETURN
HF	HEATING FLOW
RCR	REMOTE D.H.W. CYLINDER RETURN
RCF	REMOTE D.H.W. CYLINDER FLOW
CWI	COLD WATER INLET
G	GAS
SC	CONDENSATE DRAIN

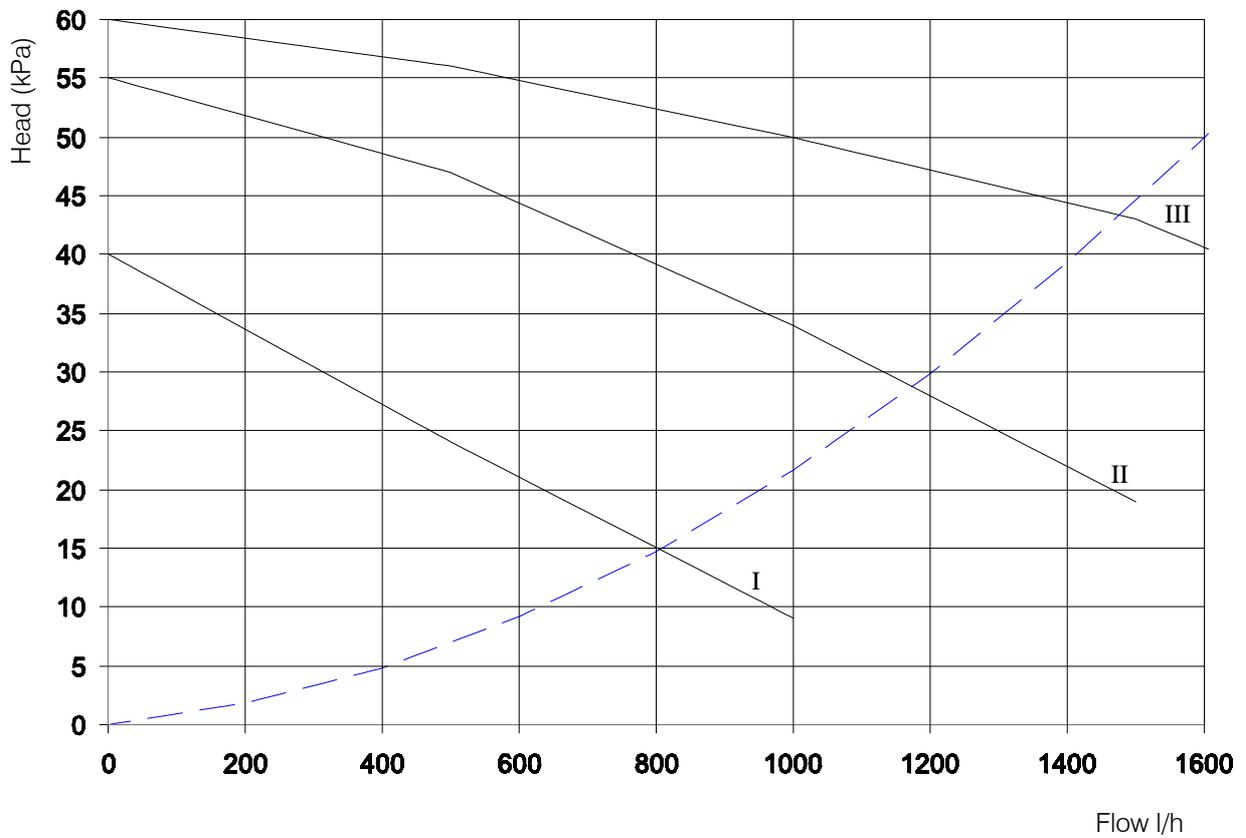
Water circuit (installation example)



NOTE
THERE IS A STRAINER ON THE HEATING CIRCUIT..
THE INSTALLATION OF AN ADDITIONAL STRAINER ON THE
SECONDARY CIRCUIT IS RECOMMENDED.



2.5 Circulation pump head/flow graph



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

2.6 DIGITECH 2[®] printed circuit board – SM30003

Technical characteristics

Adjustments possible by service personnel only

- Standard (30/80°C) / reduced (25-40°C) central heating temperature
- Water hammer prevention function
- Central Heating timer - (adjustable from 0 to 7,5 minutes)
- Central Heating pump overrun timer
- Domestic Hot Water pump overrun timer
- Minimum Gas pressure setting
- Maximum Heating Load
- Heating output rising time

User settings

- On/Off
- Heating Temperature setting (30-80°C) – (25-40°C)
- D.H.W. temperature setting (35-60°C)
- Summer only mode / Winter only mode / Summer + Winter mode selection

Operation/Functions display

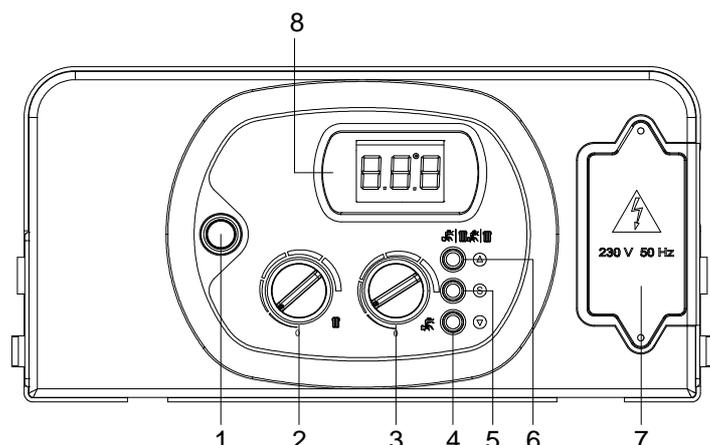
- Lock-Out
- Water deficiency indicator
- Temperature display

- **When the boiler is switched off at the switch on the control panel, the word OFF appears on the display. The D.H.W and central heating frost protection system, nevertheless, remain enabled. If the boiler was previously on, it is switched off and the post-ventilation, pump overrun , circulation pump and three-way valve inactivity protection functions are enabled.**
- **The remote control, where fitted, remains active and illuminated.**

2.7 Control panel

LEGEND

1. ON/OFF SWITCH
2. HEATING TEMPERATURE CONTROL KNOB
3. D.H.W TEMPERATURE CONTROL KNOB.
4. D.H.W TEMPERATURE BUTTON. KEEP PRESSED FOR 5 SECONDS TO DISPLAY OUTSIDE TEMPERATURE (ONLY WITH OPTIONAL OUTDOOR SENSOR)
5. SERVICE BUTTON.
6. SUMMER, WINTER OR SUMMER/WINTER MODE SELECTION BUTTON.
7. TERMINAL BOARD FOR EXTERNAL WIRING.
8. TEMPERATURE, ERROR CODE AND OPERATING STATUS DISPLAY



3. INSTALLATION (authorised personnel)

3.1 Reference standard

This appliance meets the requirements of:

AS 4552-2005 Gas fired water heaters for Hot water supply and/or Central Heating

- IPX4D rating for electrical appliances.
- EMC DIRECTIVE 89/336 CEE
- LVD DIRECTIVE 73/23 CEE
- BOILER EFFICIENCY DIRECTIVE 92/42 CEE

Failure to install a gas appliance correctly and in accordance with the above norms could lead to prosecution. It is in the interest of the installer and safety that the law is complied with.

The manufacturer's instructions form an integral part of the installation and should be left with the appliance but do not over ride in anyway statutory obligations.

3.2 Installation requirements

Please refer to local and national standards in force in the Country of destination of the product. In particular the manufacturer recommends: Installation must be in accordance with the following; Manufacturer's installation instructions, AS5601.1 'gas installations' for installation and pipe sizing, local gas fitting regulations, Municipal building codes, Local electrical regulations and any other Statutory regulation.

For Australia – refer to AS 5601 and local authority for minimum clearances as illustrated below:

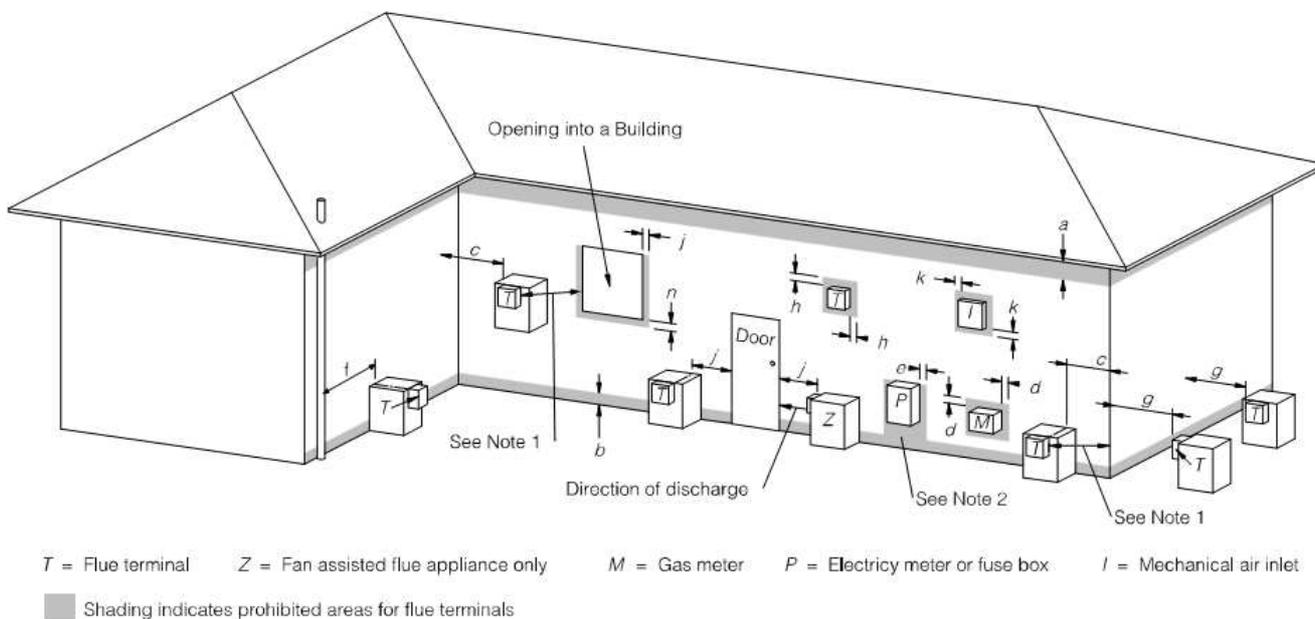


FIGURE 6.2 MINIMUM CLEARANCES REQUIRED FOR *BALANCED LUE* TERMINALS, FAN-ASSISTED *FLUE TERMINALS*, ROOM-SEALED APPLIANCE TERMINALS OR THE TERMINALS OF OUTDOOR APPLIANCES

⚠ The presence of threaded connections on the gas line, require that the room in which the appliance is installed is ventilated by means of air intakes.

3.3 Unpacking

- The materials (cardboard) used for packing the appliance are fully recyclable.
- It is recommended that the packing material is only removed prior to installing the boiler. The manufacturer will not be held responsible for damage caused by incorrect storage of the product.
- Packing materials (plastic bags, polystyrene, nails, etc.) must not be left within reach of children, in that these items represent a potential hazard.

A. Place the packed appliance on the floor (see fig. 1) making sure that the "up" arrow is facing down. Remove the staples and open out the four flaps of the box.

B. Rotate the boiler 90° while manually supporting it from underneath

C. Lift the box and remove the protections. Lift the boiler by grasping the rear part and proceed with the installation.

STORAGE & HANDLING

Please note that prior to installation the Radiant boilers should be stored in the horizontal position with no more than three boilers to a stack; Ensure that the boilers are stored in dry conditions and be aware that the carton is a tow-man lift;

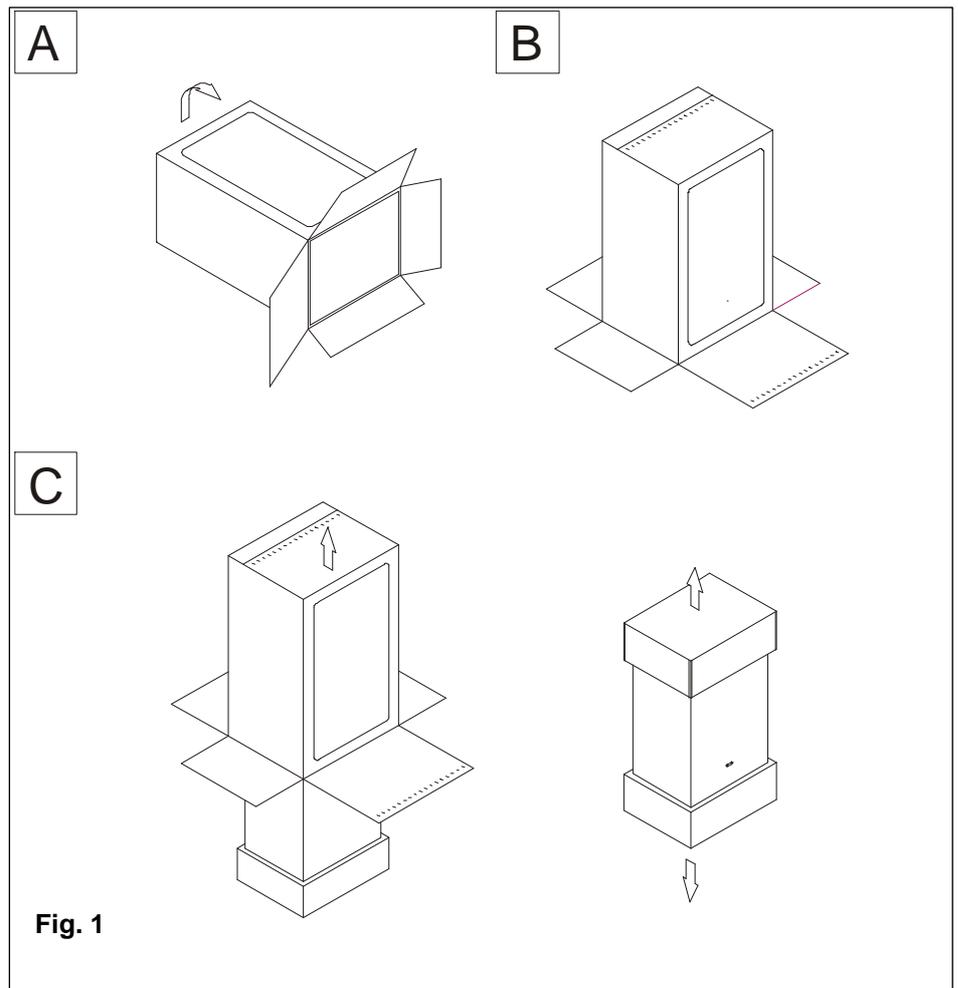


Fig. 1

3.4 Installing the boiler

- The appliance must be installed exclusively on a flat vertical solid wall capable of supporting its weight.

In order to allow access to the interior of the boiler for maintenance purposes, it is important that the necessary clearances indicated in figure 1 are respected.

Note: Flue Terminal Locations must also comply with Section 6.9 of AS/NZS 5601.1:2010

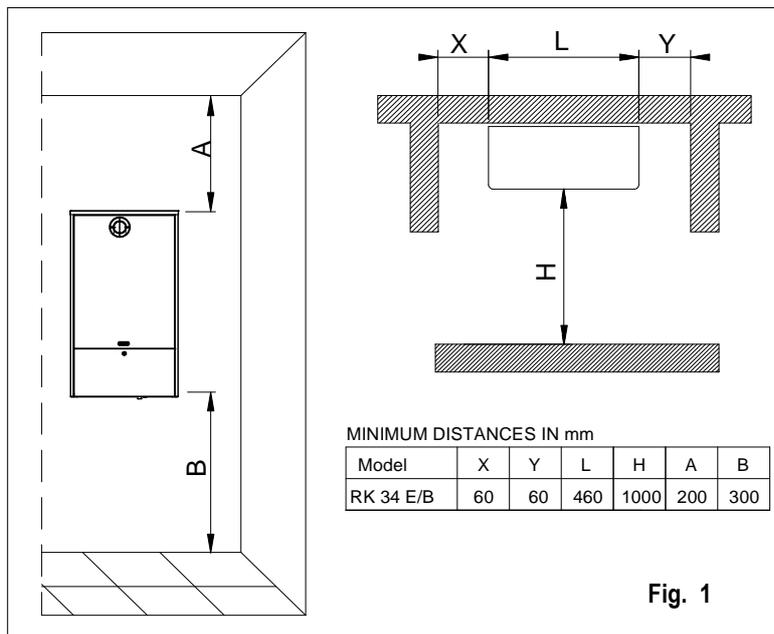


Fig. 1

To install the boiler, proceed as follows (see fig. 2):

1. Use a spirit level to mark a horizontal line (of 62 mm long) on the wall where the boiler is to be fitted.
2. Then mark the centres of the positions of the two wall-plugs or anchors. Finally, mark the positions of the water and gas pipes.
3. Drill holes into wall and install cold water pipes, the gas supply pipe and the central heating.
4. Fix the boiler to the wall using the wall-plugs or anchors and connect the pipes.

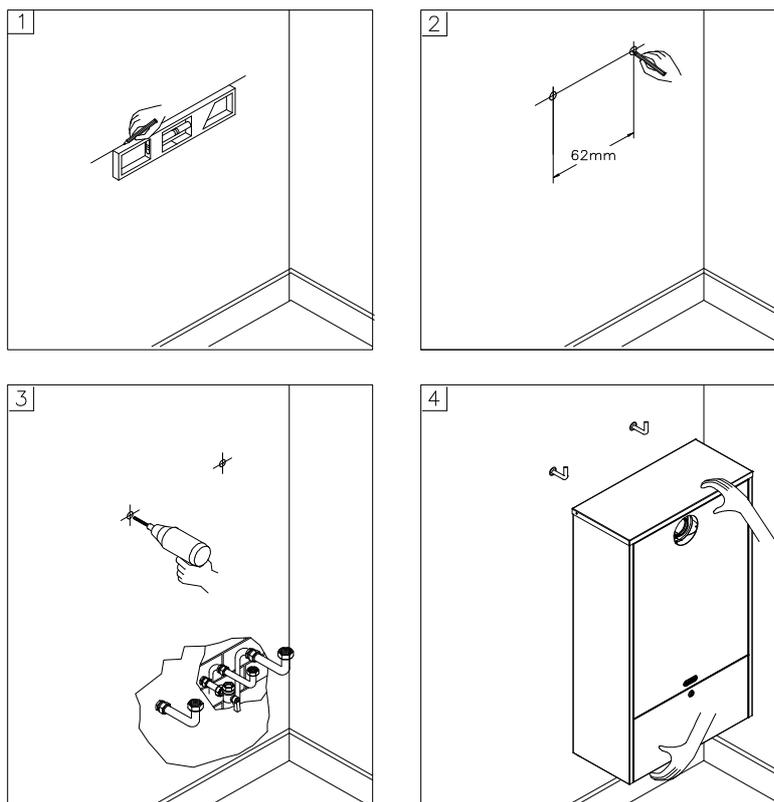


Fig. 2

3.5 Water connections

⚠ In order to safeguard the heat exchanger and circulation pump, especially in case of boiler replacement, it is recommended that the system is hot-flushed to remove any impurities (especially oil and grease) from the pipes and radiators.

⚠ Make sure that the domestic water and central heating pipes are not used to earth the electrical system. The pipes are totally unsuitable for this purpose.

⚠ Isolation Valves must be installed on the heating and D.H.W circuits. This will facilitate all maintenance and service operations where the boiler needs to be drained.

- To prevent vibration and noise coming from
- the system, do not use pipes of reduced diameter, short radius elbows or severe reductions in the cross sections of the water passages.
- To facilitate the installation, the boiler is supplied with an hydraulic connection kit (see fig.2).

Domestic hot water circuit

- In order to prevent scaling and eventual damage to the D.H.W heat exchanger, the mains water supply must not have a hardness rating of more than 17.5 °Ck. It is nevertheless advisable to check the properties of the water supply and install the appropriate treatment devices where necessary.

The cold water supply pressure at the inlet to the boiler must be between 0.5 and 6 bar.

In areas with higher water inlet pressure a pressure reducing valve must be fitted before the boiler.

The frequency of the heat exchanger coil cleaning depends on the hardness of the mains water supply and the presence of residual solids or impurities, which are often present in the case of a new installation. If the characteristics of the mains water supply are such that require it to be treated, then the appropriate treatment devices must be installed, while in the case of residues, an in-line filter should be sufficient.

All D.H.W. circuits, connections, fittings, etc. should be fully in accordance with relevant standards and water supply regulations.

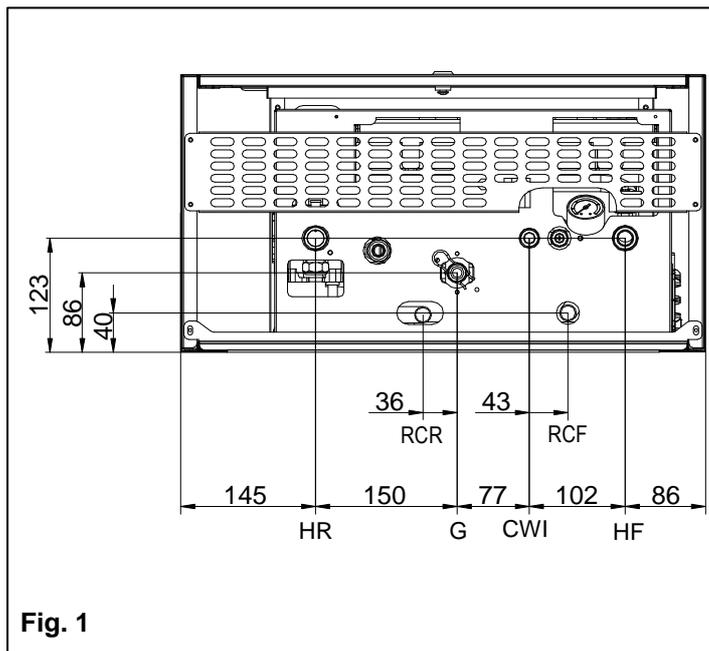


Fig. 1

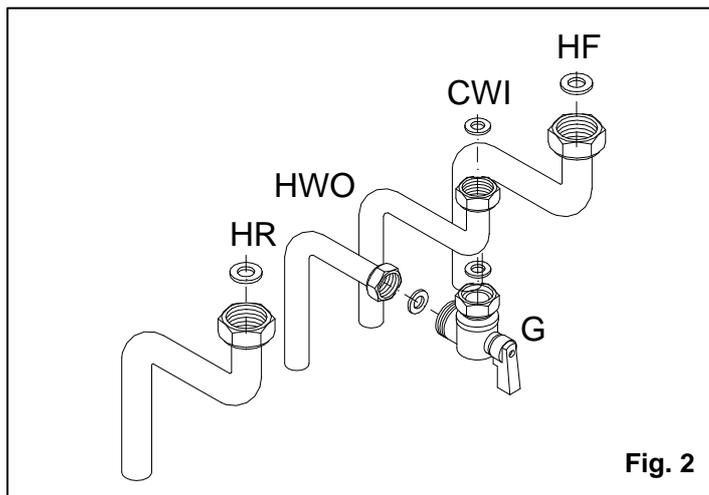


Fig. 2

LEGEND

HR	HEATING RETURN
HF	HEATING FLOW
RCR	REMOTE D.H.W. CYLINDER RETURN
RCF	REMOTE D.H.W. CYLINDER FLOW
CWI	COLD WATER INLET
G	GAS

Central heating circuit

In order to prevent scaling or deposits in the primary heat exchanger, the mains supply water to the heating circuit must be treated according to the requirements of local standards.

This treatment is indispensable in the case where the circuit is frequently topped-up or when the system is often either partially or fully drained.

The outlet connection of the boiler safety valve must be connected to a discharge trap. The manufacturer will not be held responsible for flooding caused by the operation of the safety valve in the case of system overpressure.

Condensate Drain

The condensate drain flexible pipe supplied with the boiler (conforming to UNI EN 677 standard) must be connected to a proper condensate trap. The condensate discharge into the drainage system is allowed providing a condensate trap (siphon) is installed.

Any condensate discharge pipe work external to the building (or in an unheated part of it) must be insulated to protect against frost. Before switching the boiler On, check the correct condensate discharge.

3.6 Gas Connection

 **The connection to the gas supply must be carried out by professionally qualified personnel in accordance with relevant standards:**

 **When connecting the boiler to the gas supply pipe, only use appropriate washers and gas fittings. The use of hemp, Teflon tape and similar materials is not allowed.**

Before installing the boiler, check the following:

- The pipe work must have a section appropriate for the flow rates requested and the pipe lengths installed, and must be fitted with all the safety and control devices provided for by current standards. For Australia refer to AS5601.
- The gas supply line must be a minimum of a 22 mm diameter pipe with an uninterrupted supply from meter to boiler and comply with current standards and regulations.
- **Check the internal and external seals of the gas supply system.**
- A gas shut-off valve must be installed upstream of the appliance
- The gas pipe work must have and bigger or equal section to the one of the boiler.
- Before starting up the boiler, make sure that the type of gas corresponds to that for which the appliance has been set-up (see gas type label inside the boiler).
- The gas supply pressure must be between the values reported on the rating plate (see gas type label inside the boiler).
- Prior to installation, it is good practice to ensure that there are no machining residues on the gas supply pipe.
- Conversion of the appliance from natural gas to LPG or vice versa must be carried out by qualified **authorised** personnel.

3.7 Electrical connections

General warnings

-  **The connection to the mains power supply must be carried out by professionally qualified personnel, registered in accordance with current legislation and authorised by Radiant Bruciatori s.p.a.**
-  **Always check to make sure that the appliance has an efficient earth system. This requirement is only satisfied if it has been properly connected to an efficient earth system installed in accordance with the requirements of current safety standards and carried out by professionally qualified personnel.**

This basic safety measure must be checked, verified and carried out by professionally qualified personnel. In case of doubt, have the electrical system checked by a qualified electrician. The manufacturer will not be held liable for any damage or injury caused as a result of an inefficient or inexistent earth system;

- The boiler functions with an alternating current of 230 V and 50 Hz and has maximum power absorption of 155 W. **The appliance should be protected by a 3 A fuse.** The connection to the mains electricity supply must be via a single-pole switch, with at least 3 millimetres gap between open contacts, mounted upstream of the appliance. Make sure that the positions of the live and neutral wires correspond to the wiring diagram;
- Ensure the domestic power supply is checked by a qualified electrician to ensure that it can support the maximum power absorption of the appliance, as indicated on the rating plate. In particular, make sure that the cable sizes are adequate for the power absorbed by the appliance;
- The power supply cable must not be replaced by the user. If the cable is damaged in any way, switch off the appliance and have the cable replaced by a suitably qualified electrician;
- The power supply cable must be at least of section 1mm²;

When using an electrical appliance, a few fundamental rules must be observed:

- Do not touch the appliance with damp or wet parts of the body or when barefoot.
- Do not pull on the electric wires.
- Do not leave the appliance exposed to atmospheric elements (rain, sun, etc.) unless these conditions have been expressly provided for.
- Do not allow the appliance to be used by children or anyone unfamiliar with its operation;

Remote control connection

Connect the power supply to the terminal board inside the control panel as follows:

- a. Switch off the power supply at the main switch.
- b. Remove the front case panel of the boiler.
- c. Slacken the screws and remove plate A (see fig. 1).
- d. With the plate removed, connect the wires to the terminal board B as follows:
 - Connect the earth wire (normally coloured green/yellow) to the terminal marked with the earth symbol “ \perp ”.
 - Connect the neutral wire (normally coloured blue) to the terminal marked with the letter “N”.
 - Connect the live wire (normally coloured brown) to the terminal marked with the letter “L”.
 - Terminals identified by the letters: Ta \Rightarrow Room thermostat
Se \Rightarrow Outside temperature sensor

When the wires have been connected, place plate “A” back to position.

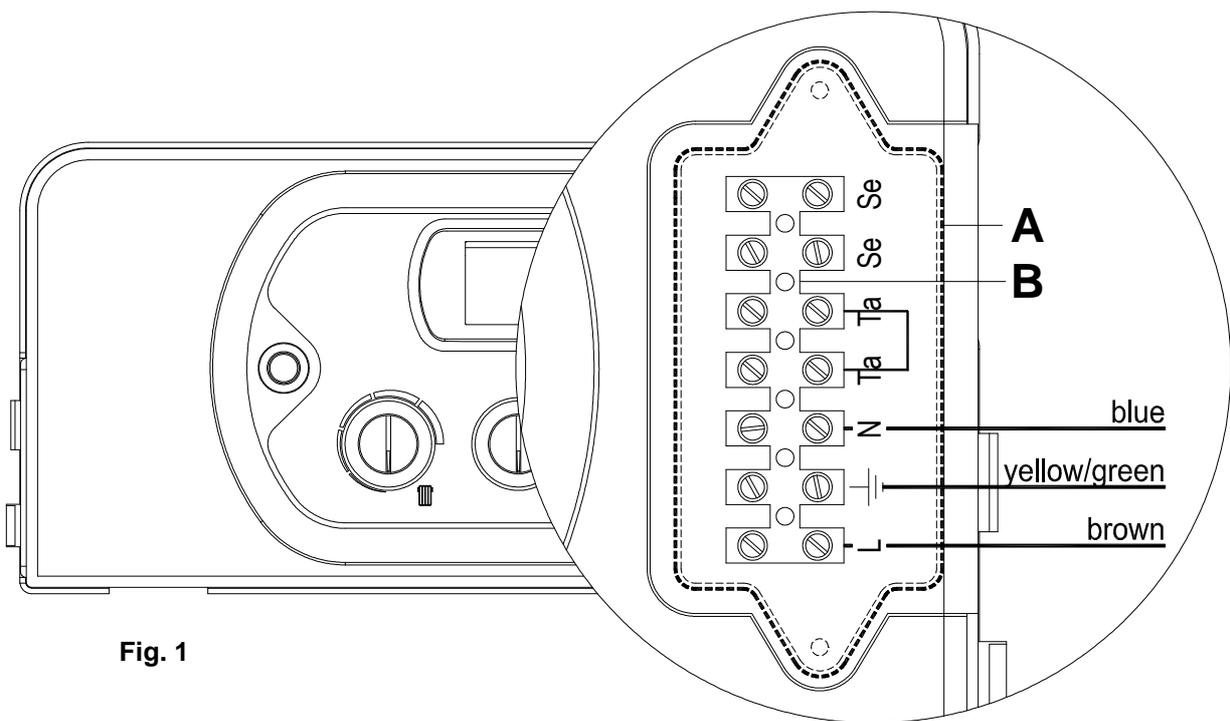


Fig. 1

3.8 Flue connections

⚠ In order to ensure that the appliance functions correctly and efficiently, the flue connection between the boiler and the flue terminal must be made using original components specifically designed for condensing boilers.

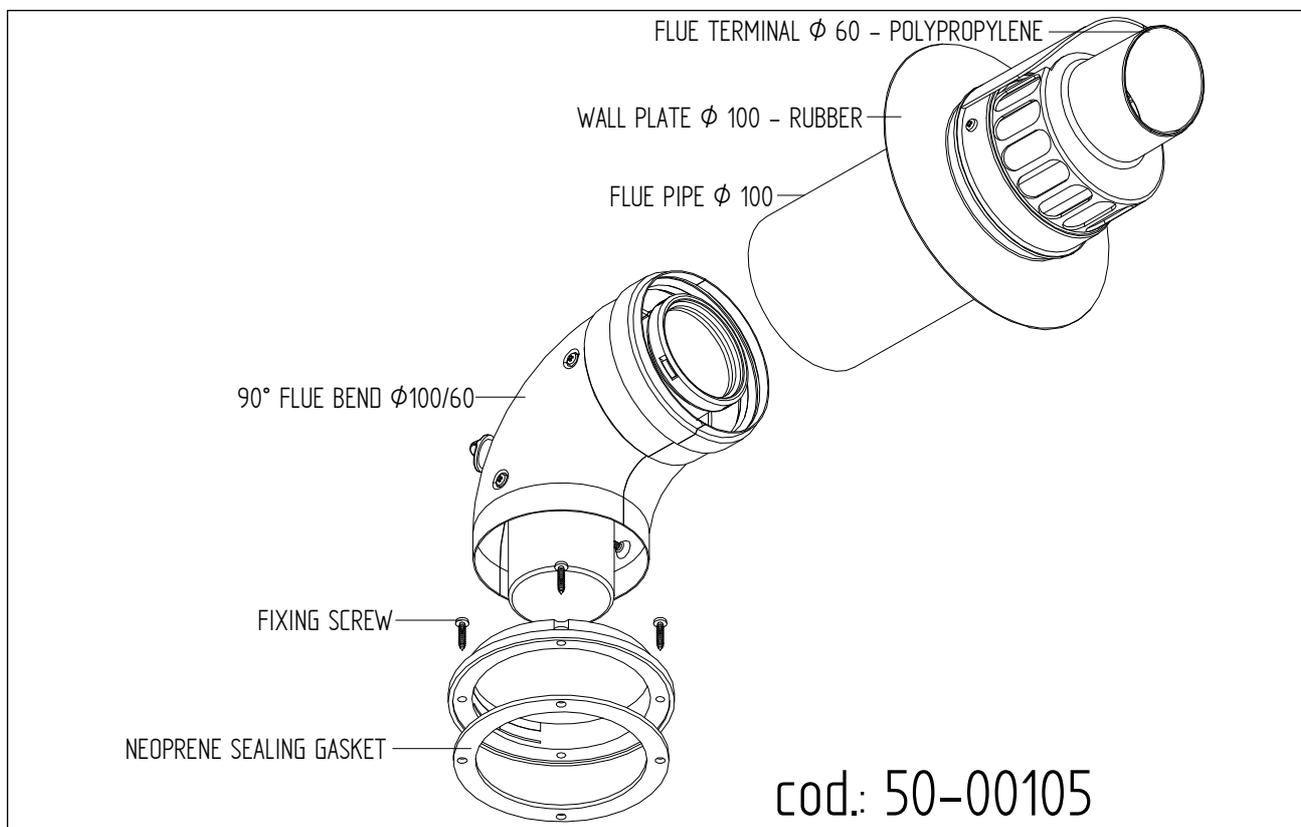
⚠ Traditional flue components cannot be used for conveying exhaust fumes from condensing boilers, nor vice versa.

- In order to make the choice of which flue to install easier, in addition to being drawn differently, the above-mentioned system is also differentiated in the flue catalogue and general price list by the insertion of the words "...in polypropylene..." .
- It is recommended that:
 - o for the exhaust discharge duct, the entire length of the flue slopes upwards towards the exterior in order to facilitate the flow of condensate back to the combustion chamber, which has been specifically designed to collect and drain the acidic condensate;
 - o for the air intake, the entire length of the duct slopes upwards towards the boiler to prevent the entry of rainwater, dust or foreign bodies into the pipe;

ONLY for use with Horizontal concentric flue kit Ø60/100 mm polypropylene as per manufacturer's kit No 50-00105.

Discharges exhaust gases and draws combustion air by means of two concentric ducts. The external Ø100 duct draws the combustion air while the Ø60 duct discharges the exhaust fumes. The discharge duct must be connected directly to the outside.

MAXIMUM FLUE LENGTH: 1000 mm.



4. COMMISSIONING THE APPLIANCE

4.1 General warnings

-  The following operations must be carried out by professionally qualified authorised, registered in accordance with current legislation.
-  The boiler leaves the factory pre-set and tested for burning either natural Gas or LPG. Nevertheless, when starting the boiler for the first time, make sure that the information on the rating plate corresponds to the type of gas being supplied to the boiler.
-  Once the system has been filled and the necessary adjustments made, remember to tighten the screws of the gas valve test point and make sure that there are no gas leaks from the test point and from any pipe fittings upstream of the gas valve.

Preliminary operations

Switching the boiler on for the first time means checking that the installation, regulation and operation of the appliance are correct :

- If the gas supply system is newly installed, then the air present in the pipes can cause the boiler not to light at the first attempt. A number of attempts may be required in order to light the boiler;
- Check that the data on the data plate corresponds to that of the mains supply networks (gas, electricity, water);
- Check that the power supply voltage to the boiler complies with the data plate (230 V – 50 Hz) and that the live, neutral and earth wires are connected properly. Also make sure that the earth connection is sound;
- Check the seals on the gas supply pipe from the mains, and make sure that the meter does not register any flow of gas;
- Turn the gas supply on and purge.
- Test for gas soundness.
- Check that the gas supply is correctly sized for the flow rate required by the boiler and that it is fitted with all the safety and control devices as lay down by current regulations
- Check that the supply of combustion air and exhaust and condensate discharge systems are functioning correctly and in line with current law and national and local standards;
- Check for the presence of permanent aeration/ventilation openings as required by current law for the type of appliances installed.
- Check that the flue duct and its connections to the terminal/chimney comply with the requirements of current law and national and local standards for the type of appliances installed.
- Make sure that any central heating shut-off valves are open.
- Check that the condensate drain system, including outside the boiler (flue system condensate collection devices), allows the condensate to flow freely to the collection devices. If the condensate is discharged to the domestic drainage system, install an inspection trap in the condensate system prior to it entering the drainage system to interrupt the continuity between the two systems.
- Check that there are no exhaust fumes discharged into the system itself.
- Check that there are no flammable materials, chemicals or liquids in the immediate vicinity of the boiler;
- *Flush out both primary circuit (see 4.3 "Flushing the system").*

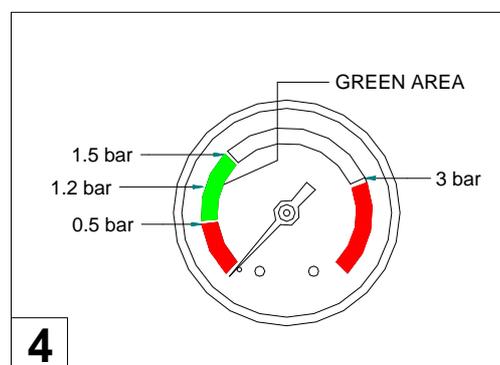
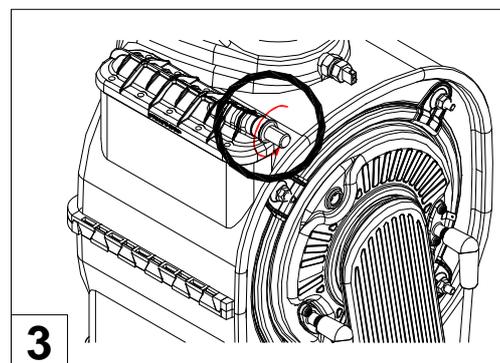
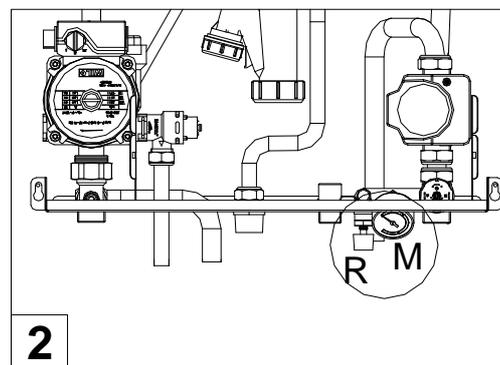
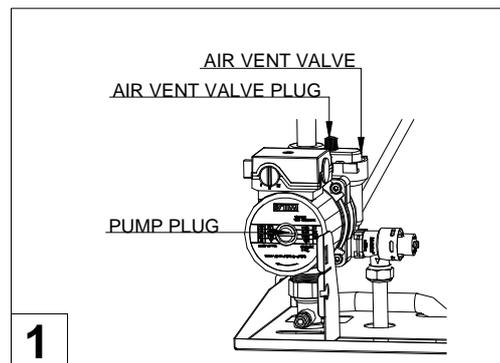
4.2 Filling the system

⚠ Check the properties of the water supply and install the appropriate treatment devices if the mains water has a hardness rating more than 17.5 °Ck in order to prevent scaling and eventual damage to the D.H.W heat exchanger.

⚠ Use only clean tap water to fill the system.

Once the water pipes have been connected, close the gas feed valve and fill the system as follows:

- Check that the circulation pump runs freely;
- Check that the plug of the air vent valve has been slackened slightly to allow air to escape from the system (fig.1);
- Open the main domestic water supply valve;
- Open the filling tap **R** (fig. 2);
- Unscrew the plug on the pump to remove any trapped air, check that the pump is free then re-tighten it when water starts to flow out (fig.1);
- **Before switching on the boiler, purge air completely from the air vent valve positioned on the top of the condensing exchanger (fig.3)**
- Open the air vents on the radiators and monitor the air evacuation process. When water starts to flow out of the radiators, close the air vents;
- Use the pressure gauge **M** (fig. 2), to check that the systems pressure reaches the middle of the green area (equal to 1,2 bar, see fig. 4).
- **On completion, make sure that the filling tap R is perfectly closed.**



4.3 Flushing the system

Failure to flush and add inhibitor to the system will invalidate the appliance working.

All systems must be thoroughly drained and flushed out using additives – corrosion inhibitors and flushing agents/descalers.

To flush out the primary side of this unit.

- a. Fill the boiler as per the filling instructions.
- b. Using a drain off cock on the lowest point of the system allow the water to drain from the system and boiler.
- c. In order to flush the system correctly turn off all radiators open the filling loop and drain cock simultaneously and allow the water to flow through the boiler.
- d. Open each individual radiator allowing water to flow through then turn that radiator off and repeat for all radiators on the system.
- e. Turn off the filling loop and close the drain cock open all radiators and open the filling to fill the system.
- f. Continue to fill the system until the pressure gauge reaches 1 bar.

To flush out domestic hot water circuit.

- a. Ensure that the DHW expansion vessel has been fitted in line with the instructions on page 14 of the manual.
- b. Open all hot water outlets.
- c. Turn on inlet group supply so water enters the boiler; leave to fill until water is released from the hot water outlets. Turn off all hot water outlets.
- d. Connect a hosepipe to the cylinder drain cock and open the drain cock.
- e. Allow water to flow through the boiler and out of the drain cock.
- f. Turn off water supply, disconnect the hosepipe, close the drain cock and refill the boiler.

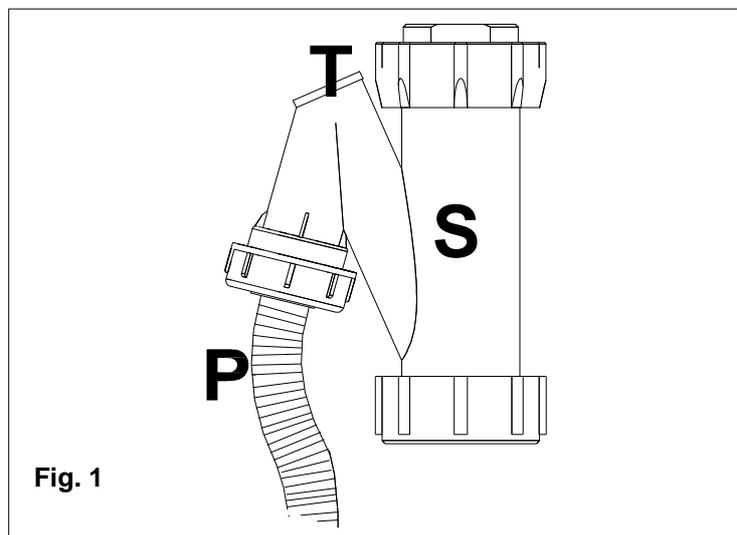
4.4 Filling the condensate trap

The condensation trap must be pre-filled when starting the boiler for the first time in order to prevent flue gases from flowing back through the trap.

The filling operation is carried out as follows (see fig. 1):

- Remove plug **T** and fill the trap **S** three quarters full with water;
- Replace plug **T** and connect the drainpipe **P** into a condensate discharge trap conforming to current legislation;

Attention! It is recommended to clean the condensate trap, after a few months of boiler operation, to remove deposits/residuals left after the first condensate passage within the boiler new components that may interfere with the correct operation of the trap itself.



4.5 Frost protection

The appliance printed circuit board has a built-in frost protection with functions that protect the boiler providing to start the burner and heat the interested parts + components when the temperature goes below minimum set values.

The device comes into operation in the following cases:

- The heating water temperature goes below 5°C, the burner starts automatically until the water temperature reaches the 30°C;
- The room temperature where the REMOTE is fitted goes below 5°C, the burner starts automatically until the room temperature reaches the 5.6°C;

 ***The frost protection function intervenes only if the power supply is on, the gas is opened and the display remains illuminated or appears the word "OFF".***

4.6 Starting up the boiler

Once the system has been filled, proceed as follows:

- Check that the exhaust flue is free of obstructions and correctly connected to the boiler;
- Switch on the power supply to the boiler;
- Open the gas isolation valve;
- Place switch **1** in the ON **position** (see 2.7 "Control Panel"), after a few seconds the circulating pump will start to run;
- Use button **6** to set the SUMMER, WINTER or SUMMER/WINTER function. The symbols   will light up (fixed light) to indicate that the boiler is working;
- The automatic ignition system will then light the burner. This operation is repeated for 2 times. It may however be necessary to repeat the operation in order to eliminate all the air from the pipes. To repeat the operation, wait approximately three minutes before re-attempting to light the boiler. To reset the boiler Switch off switch **1** (see 2.7 "Control Panel") and switch it back on again and repeat the lighting procedure;
- With the boiler ignited, if the system still emits noises, the operations must be repeated until all the air has been removed;
- Check the pressure in the system. If the pressure has fallen, re-open the filling tap until the code H2O disappears on the display and the pressure reaches the middle of the green area (1,2 bar). **On completion, close the filling tap.**
- Unscrew the aluminium plug and insert an analyser in the exhaust sampling point **PF** (see fig. 1) to check the CO₂ value. Make sure that the value complies with that reported in table 1;
- If the CO₂ value does not correspond to the specified value, adjust screw **V** (see fig. 1) on the venturi clockwise to reduce the CO₂ value or anticlockwise to increase it;

Table n°1

Gas type	CO ₂ %
Natural Gas	9.18
Universal LPG	10.3

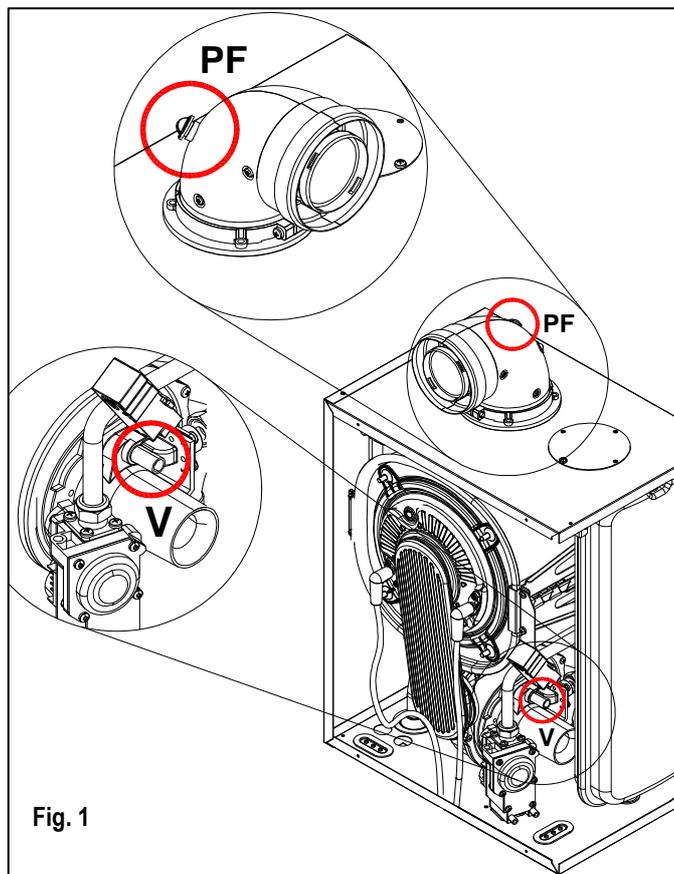


Fig. 1

5. REGULATING THE APPLIANCE

5.1 Parameters table

PARAMETER N°	TYPE OF OPERATION	PARAMETER VALUE	FUNCTION
P00	Selects the model of boiler	00 01(default) 02 03 04	00 = 18Kw 01 = 25Kw 02 = 29Kw 03 = 34 Kw 04 = 50 Kw
P01	Selects the type of boiler	00 01 02	00 = Instantaneous 01 = Boiler with storage tank 02 = B. w/storage tank Comfort (+7°C)
P02	Selects the type of gas	00 01	00 = Natural gas 01 = Lpg
P03	Sets the central heating temperature	00 01	00 = Standard (30-80°C) 01 = Reduced (25-40°C)
P04	Heating output rising time	00 01(default) 02 03 04	00 = 0sec 01 = 50 sec 02=100 sec 03=200 sec 04=400 sec
P05	Water hammer prevention function	00 01	00 = Off 01 = On
P06	D.H.W priority function	00 01	00 = Off 01 = On
P07	Central heating timer	00-90 (default = 36)	Delays the heating restart to prevent frequent On/Offs, Expressed in steps of 5 sec (factory set at 36 x 5 = 180")
P08	Central heating pump overrun timer	00-90 (default = 36)	The overrun timer can be modified. Expressed in steps of 5 sec (factory set at 36 x 5 = 180")
P09	D.H.W pump overrun timer	00-90 (default = 18)	The overrun timer can be modified. Expressed in steps of 5 sec (factory set at 18 x 5 = 90")
P10	Minimum fan speed setting	Preset	To set the minimum frequency value (Hz) for the fan operation
P11	Maximum fan speed setting	Preset	To set the maximum frequency value (Hz) for the fan operation
P12	Minimum fan speed setting (Central Heating)	Preset	To set the minimum frequency value (Hz) for the fan operation in heating mode
P13	Maximum fan speed setting (Central Heating)	Adjustable	To set the maximum frequency value (Hz) for the fan operation in heating mode
P14	Ignition sequence setting	33-203	To set the fan frequency value (Hz) at the ignition
P15	Zone management board activation	00 01	00 = Off 01 = On
P16	Telephone control activation	00 01	00 = Off 01 = On
P17	Fan frequency value display	00 01	00 = Off 01 = On

NOTES:

P04 – This parameter allows to change the time of the boiler to reach the maximum heating load.

P10, P11, P12 – These parameters are automatically adjusted according to the value set in parameter P00.

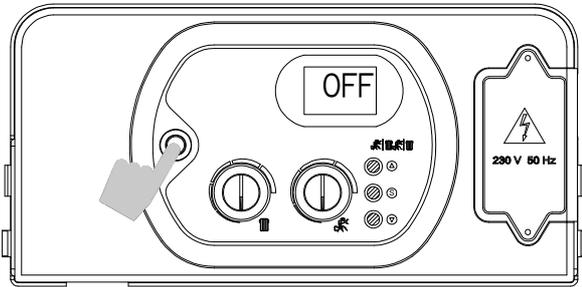
P13 – It's possible to adjust the boiler's maximum heating load according to the paragraph "Heating power (Kw) – Fan frequency (Hz)" diagram.

P15 - If the heating system has more than one zone, an additional interface board (optional extra) must be installed on the circuit board and parameter 15 set at 01.

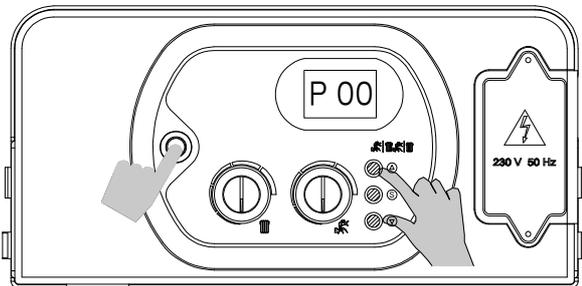
P16 - To install the telephone control, use non-polarised conductors connected to contact TA of the terminal board in parallel with the remote control if fitted. Set the parameter 16 at 01.

5.2 Setting the parameters

To modify the preset values of the parameters reported in the previous table, open the parameter settings menu as follows:

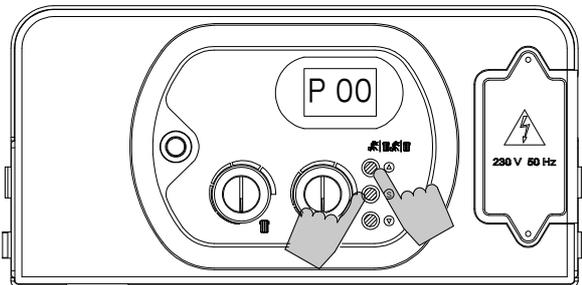


1. Place the On/Off switch in the OFF position.

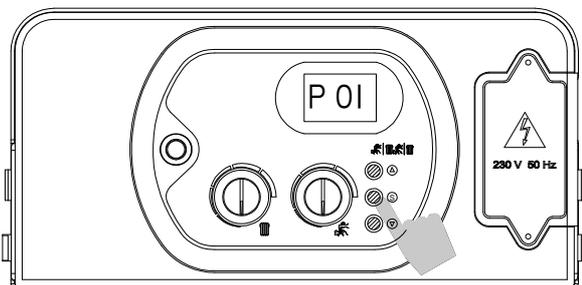


2. Activate the On/Off switch while keeping buttons '+' and '-' pressed. Wait for "P 00" to appear on the display.

3. Release buttons '+' and '-'.



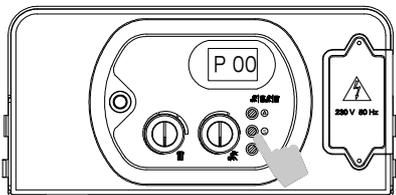
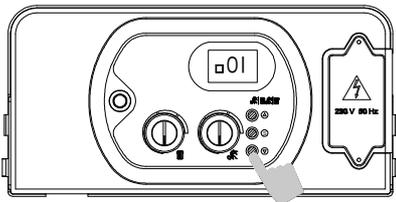
4. Keep button 'S' pressed and use button '+' to select the parameter to modify.



5. Release button 'S', then re-press and release it. The display will indicate the value of the parameter to modify.

Adjust the value of the parameter using the procedure described in the following pages.

To enter the parameters menu, follow the previously described procedure (steps 1-5).



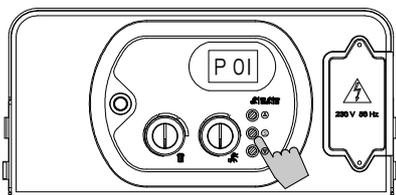
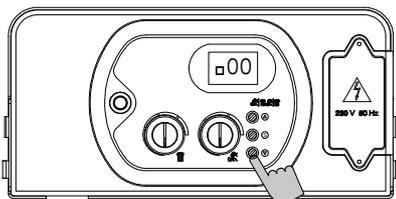
PARAMETER P00 – SELECTS THE MODEL OF BOILER

6. Use buttons '+' and '-' to modify the value of the parameter:

- 00 = 18 Kw
- 01 = 25 Kw (default)
- 02 = 29 Kw
- 03 = 34 Kw
- 04 = 50 Kw

7. Press and release button 'S' to confirm. The parameter number (P00) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



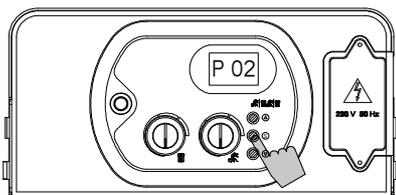
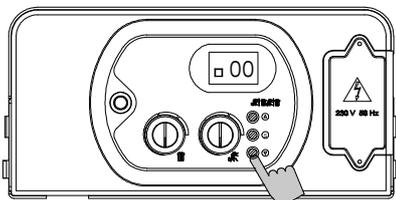
PARAMETER P01 – SELECTS THE TYPE OF BOILER

6. Use buttons '+' and '-' to modify the value of the parameter:

- 00 = instantaneous boiler
- 01 = storage boiler
- 02 = boiler with storage tank Comfort (+7°C)

7. Press and release button 'S' to confirm. The parameter number (P01) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



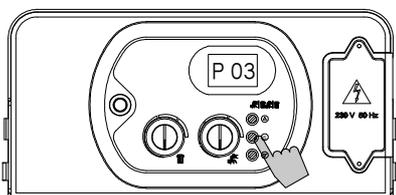
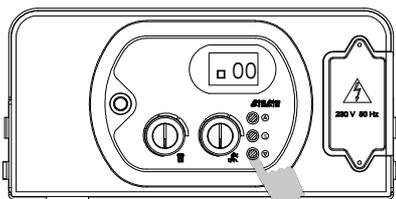
PARAMETER P02 – SELECTS THE TYPE OF GAS

6. Use buttons '+' and '-' to modify the value of the parameter:

- 00 = Natural Gas
- 01 = LPG

7. Press and release button 'S' to confirm. The parameter number (P02) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



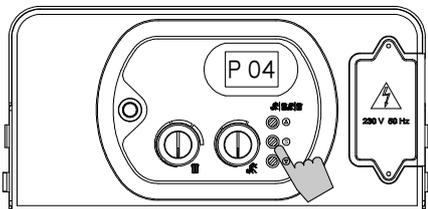
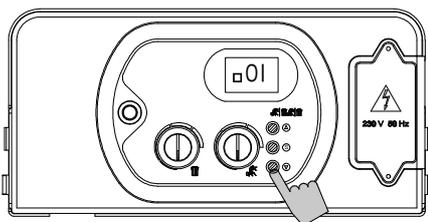
PARAMETER P03 – SETS THE CENTRAL HEATING TEMPERATURE

6. Use buttons '+' and '-' to modify the value of the parameter:

- 00 = standard (30-80°C)
- 01 = reduced (25-40°C) for under-floor heating.

7. Press and release button 'S' to confirm. The parameter number (P03) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



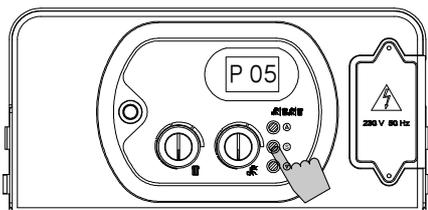
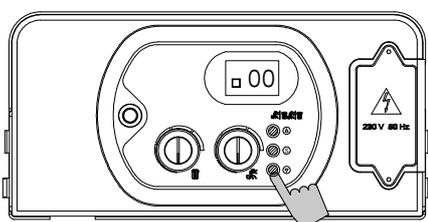
PARAMETER P04 – HEATING OUTPUT RISING TIME

6. Use buttons '+' and '-' to modify the value of the parameter:

- 00 = 0 seconds
- 01 = 50 seconds (default)
- 02 = 100 seconds
- 03 = 200 seconds
- 04 = 400 seconds

7. Press and release button 'S' to confirm. The parameter number (P04) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



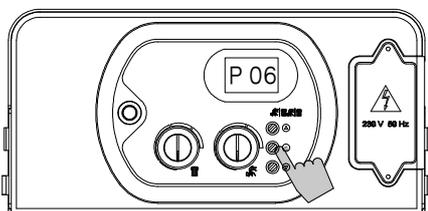
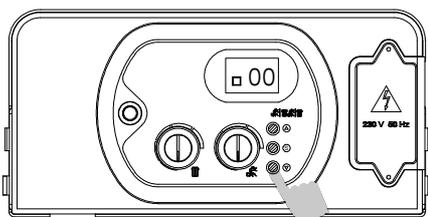
PARAMETER P05 – WATER HAMMER PREVENTION FUNCTION

6. Use buttons '+' and '-' to modify the value of the parameter:

- 00 = off
- 01 = on (default = 2")

7. Press and release button 'S' to confirm. The parameter number (P05) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



PARAMETER P06 – D.H.W PRIORITY FUNCTION

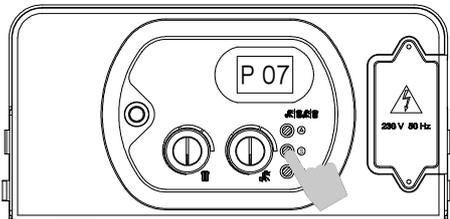
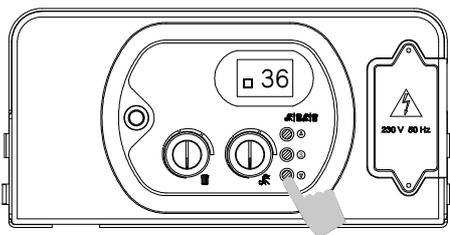
It keeps 3 way valve in D.H.W. production position, for a period equals to D.H.W. pump overrun, so that plate exchanger is kept hot.

6. Use buttons '+' and '-' to modify the value of the parameter:

- 00 = off
- 01 = on (default = 120");

7. Press and release button 'S' to confirm. The parameter number (P06) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



PARAMETER P07 – CENTRAL HEATING TIMER

6. Use buttons '+' and '-' to modify the value of the parameter within the prescribed limits:

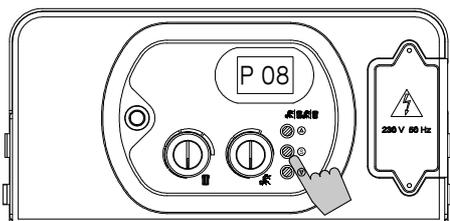
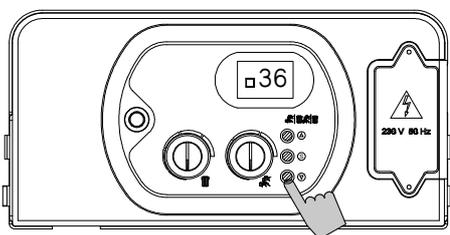
$$00 = 0 \times 5'' = 0''$$

$$90 = 90 \times 5'' = 450'' (7,5 \text{ min})$$

The default value is $36 = 180'' = 3 \text{ min}$

7. Press and release button 'S' to confirm. The parameter number (P07) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



PARAMETER P08 – CENTRAL HEATING PUMP OVERRUN TIMER

6. Use buttons '+' and '-' to modify the value of the parameter within the prescribed limits:

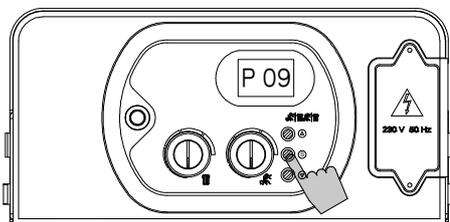
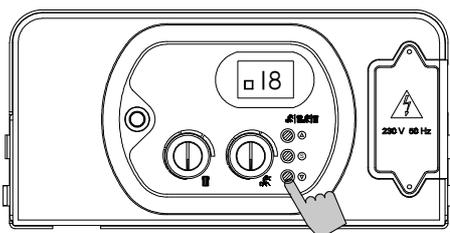
$$00 = 0 \times 5'' = 0''$$

$$90 = 90 \times 5'' = 450'' (7,5 \text{ min})$$

The default value is $36 = 180'' = 3 \text{ min}$

7. Press and release button 'S' to confirm. The parameter number (P08) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



PARAMETER P09 – D.H.W PUMP OVERRUN TIMER

6. Use buttons '+' and '-' to modify the value of the parameter within the prescribed limits:

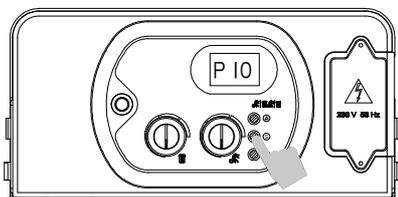
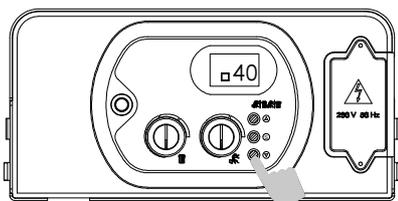
$$00 = 0 \times 5'' = 0''$$

$$90 = 90 \times 5'' = 450'' (7,5 \text{ min})$$

The default value is $18 = 90'' = 1.5 \text{ min}$

7. Press and release button 'S' to confirm. The parameter number (P09) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



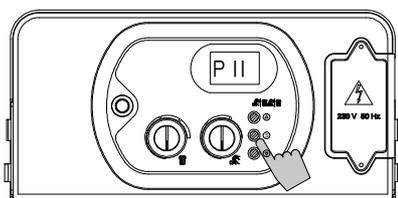
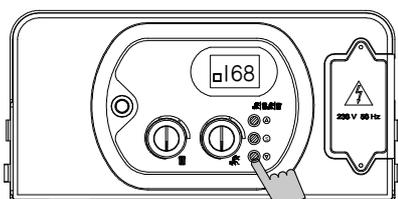
PARAMETER P10 – MINIMUM FAN SPEED SETTING

6. Use buttons '+' and '-' to modify the value of the parameter between: min = 33 Hz ; max = 133 Hz.

The default value is adjusted according to the output set in parameter P00.

7. Press and release button 'S' to confirm. The parameter number (P10) will appear on the display .

8. Switch off the appliance and switch it back on again to render the new parameter operative.



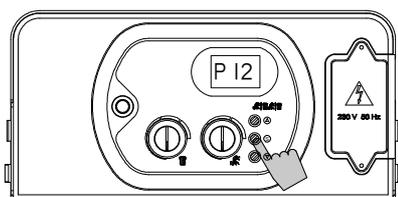
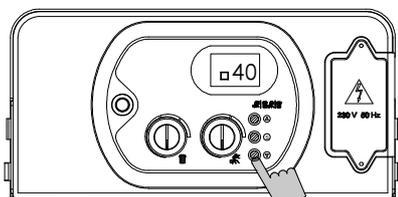
PARAMETER P11 – MAXIMUM FAN SPEED SETTING

6. Use buttons '+' and '-' to modify the value of the parameter between: min = value of parameter P10; max = 203 Hz.

The default value is adjusted according to the output set in parameter P00.

7. Press and release button 'S' to confirm. The parameter number (P11) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



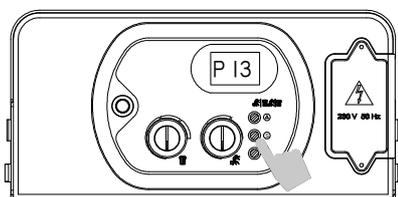
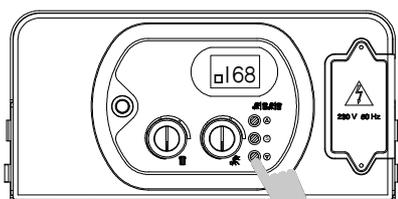
PARAMETER P12 – MINIMUM FAN SPEED SETTING (CENTRAL HEATING)

6. Use buttons '+' and '-' to modify the value of the parameter between: min = 33 Hz ; max = 133 Hz.

The default value is adjusted according to the output set in parameter P00.

7. Press and release button 'S' to confirm. The parameter number (P12) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



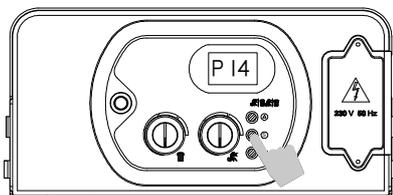
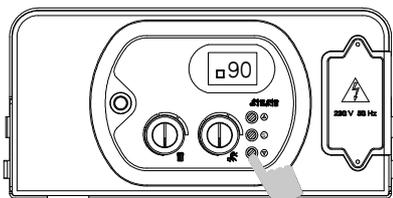
PARAMETER P13 – MAXIMUM FAN SPEED SETTING (CENTRAL HEATING)

6. Use buttons '+' and '-' to modify the value of the parameter between: min = value of parameter P12 ; max = 203 Hz.

The default value is adjusted according to the output set in parameter P00.

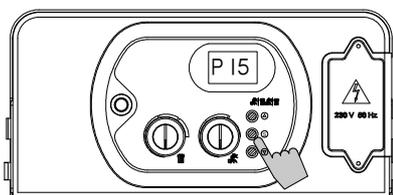
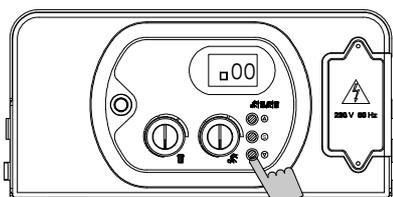
7. Press and release button 'S' to confirm. The parameter number (P13) will appear on the display.

8. Switch off the appliance and switch it back on again to render the new parameter operative.



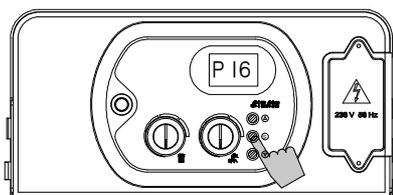
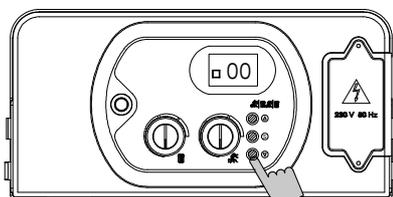
PARAMETER P14 – IGNITION SEQUENCE SETTING

6. Use buttons '+' and '-' to modify the value of the parameter between: min = 33 Hz; max = 203 Hz. The default value is adjusted according to the output set in parameter P00.
7. Press and release button 'S' to confirm. The parameter number (P14) will appear on the display.
8. Switch off the appliance and switch it back on again to render the new parameter operative.



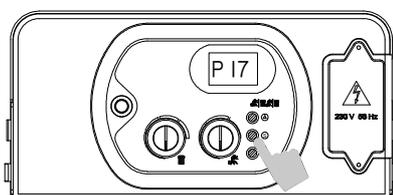
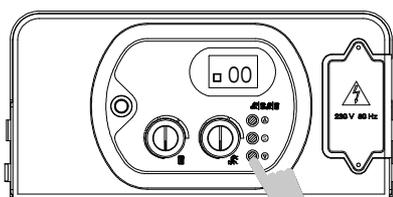
PARAMETER P15 – ZONE MANAGEMENT BOARD ACTIVATION

6. If the system is fitted with zone valves, set the parameter at '01'. If a remote control is installed, an extra interface board must be installed to control the zone valves. Then set the parameter at '01'.
7. Press and release button 'S' to confirm. The parameter number (P15) will appear on the display.
8. Switch off the appliance and switch it back on again to render the new parameter operative.



PARAMETER P16 – TELEPHONE CONTROL ACTIVATION

6. If a telephone interface is installed, enable the board by setting parameter P16 at '01'.
 7. Press and release button 'S' to confirm. The parameter number (P16) will appear on the display.
 8. Switch off the appliance and switch it back on again to render the new parameter operative.
- N.B.: The connection of the telephone interface to contact TA of the terminal board must be wired in parallel with the remote control using two non-polarised conductors.*



PARAMETER P17 – FAN FREQUENCY VALUE DISPLAY

6. Use buttons '+' and '-' to modify the value of the parameter between:
 - 00 = Off;
 - 01 = On.
 If parameter value 01 is selected, during the boiler operation, the display will show the fan frequency value for 10 min.
7. Press and release button 'S' to confirm. The parameter number (P17) will appear on the display.
8. Switch off the appliance and switch it back on again to render the new parameter operative.

5.3 Gas data

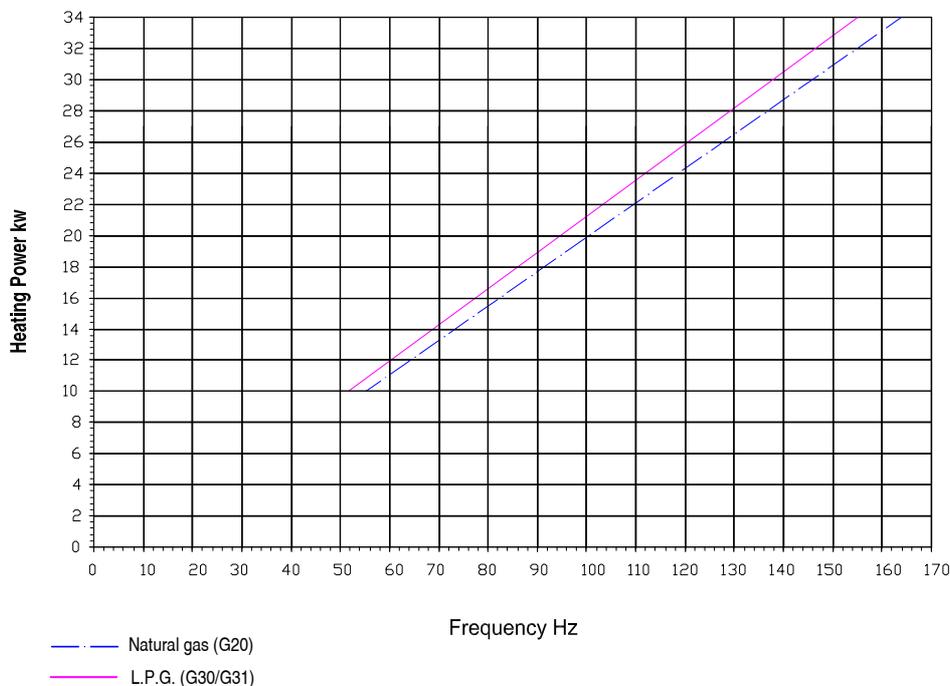
Technical data tables

CO ₂ Values	
Gas type	CO ₂ %
Natural gas	9.18
Universal LPG	10.3

Frequency		
Gas type	Minimum (Hz)	Maximum (Hz)
Natural gas	55	164
Universal LPG	52	155

Gas data table				
		NATURAL GAS	Universal LPG	
Nominal Supply pressure	kPa	1.13	2.75	
Consumption	MJ/h	130.5	130.5	

Heating Power (kW) – Fan frequency (Hz) diagram



5.4 Converting the boiler to a different gas type

-  **The conversion of a boiler from burning natural gas to LPG, or vice versa, must be carried out exclusively by professionally qualified authorised personnel, registered in accordance with current legislation and authorized by Radiant Bruciatori Spa.**
-  **Check that the gas supply pipe is suitable for the new fuel type.**

Conversion is performed as follows:

- Select the new gas type by changing parameter no.P02 (see 'Parameters table' 5.2);
- Unscrew the aluminium plug and insert the analyser in the exhaust sampling point PF (see fig.1 paragraph 4.5) to check the CO value. Make sure that the value complies with that reported in table 1 (paragraph 4.5);
- If the CO₂ value does not correspond to the specified value, adjust screw V (see fig. 1 paragraph 4.5) on the venturi clockwise to reduce the CO₂ value or anticlockwise to increase it;

6. MAINTENANCE *(authorised personnel)*

6.1 General Warnings

-  All maintenance operations must be carried out by professionally qualified personnel, authorised by Radiant Bruciatori Spa. For servicing within Australia refer to contact details on page 2 of this manual.
-  The frequency of boiler maintenance must comply with current law and, nevertheless, should be carried out once a year.
-  In order to guarantee the long life of the appliance and in accordance with the current gas safety regulations, only use original spare parts
-  Before carrying out any type of maintenance operation, disconnect the appliance from the mains electricity supply and close the gas valve.

6.2 Boiler inspection

In order to ensure that the boiler operates efficiently and safely, it is recommended that the appliance is inspected by a suitably competent technician at least once a year.
The following operations should be carried out annually

- Check the condition of the gas seals and replace where necessary.
- Check the condition of the water seals and replace where necessary.
- Visually inspect the condition of the combustion chamber and flame.
- When required, check that the combustion is correctly regulated and if necessary proceed in line with section "Commissioning the boiler".
- Remove and clean any oxidation from the burner.
- Check that the seal of the room-sealed chamber is undamaged and positioned correctly.
- Check the primary heat exchanger and clean if necessary.
- Check the maximum and minimum modulation pressures and the modulation itself.
- Check the condition and operation of the ignition and gas safety systems. If necessary, remove and clean the scaling from the ignition and flame detection electrodes, paying particular attention to replace them at the correct distance from the burner.
- Check the heating safety systems: temperature limit safety thermostat, pressure limit safety device.
- Check the pre-fill pressure of the expansion vessel (see expansion vessel data plate).
- Check the presence of air intake/permanent ventilation openings correctly sized according to the boiler installed and in respect with current law.
- For safety reasons, periodically check the integrity and operation of the flue gas exhaust system.
- Check that the connection to the mains electricity supply complies with that reported in the boiler's instruction manual.
- Check the electrical connections inside the control panel.

6.3 Accessing the boiler

To access the control panel proceed as follows:

- open the control panel bottom cover using the provided key
- rotate it downwards (see fig.1)

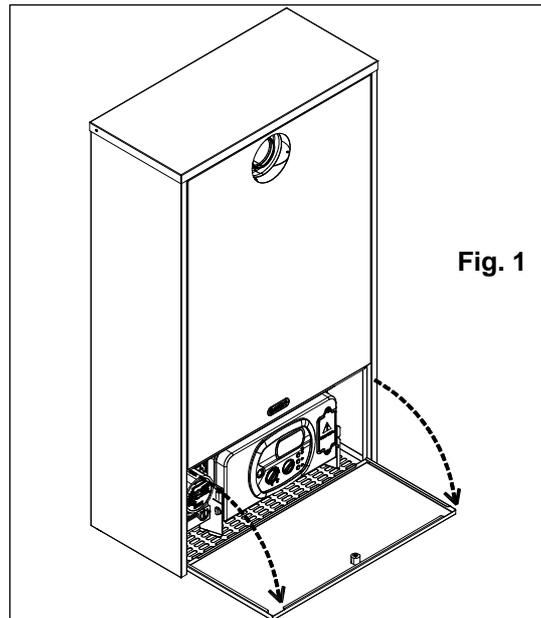


Fig. 1

To access the electrical connections of the control panel, proceed as follows:

- Grasp the left and right control panel support brackets (see fig. 2) and pull them outwards, at the same time rotating the panel downwards.
- Unscrew the four fixing screws and remove the panel back piece.

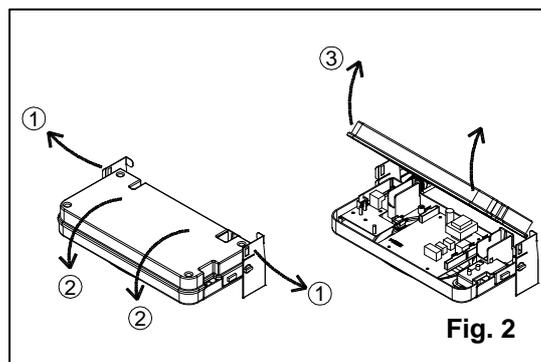


Fig. 2

All maintenance operations require one or more of the boiler casing panels to be removed.

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

Front panel (① fig. 3):

- Remove the fixing screws at the lower edge of the front panel.
- Grasp the lower part of the panel and pull it outwards and then down.

Left and right side panel (④ and ⑤ fig. 3):

- Unscrew the top panel ② (fig. 3) fixing screws and lift it upwards.
- Remove the fixing screws at lower edge of the side panel to remove.
- Grasp the bottom of the panel, move it sideways and then upwards to remove it.

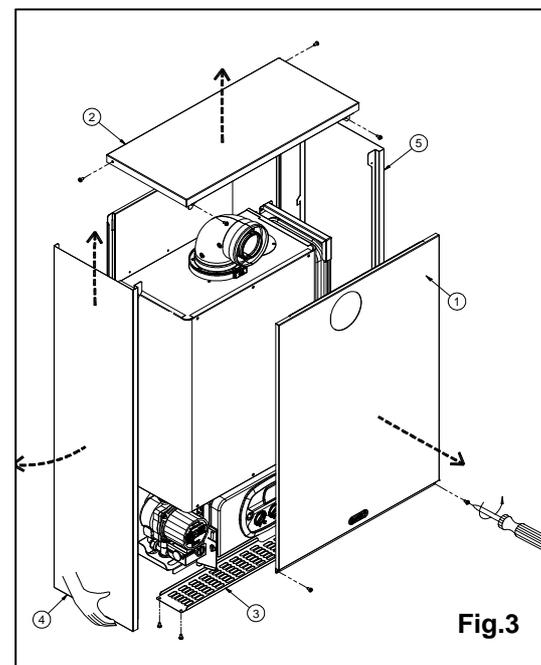
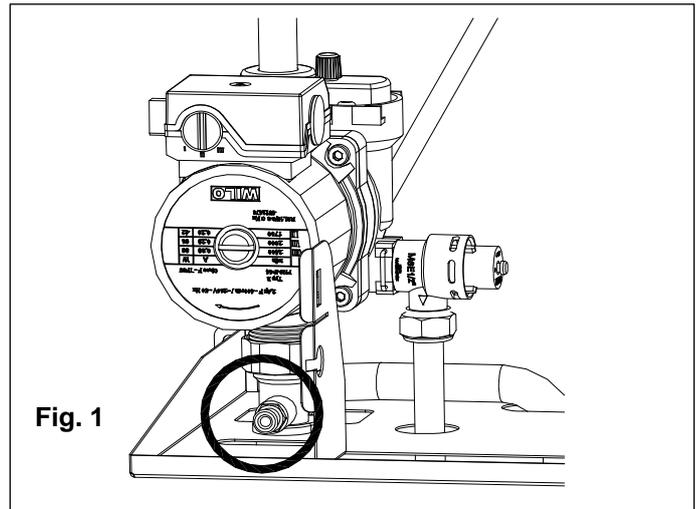


Fig.3

6.4 Draining the central heating system

If the need arises to drain the system, this can be done as follows:

- Switch the system to “WINTER” mode and ignite the boiler.
- Switch off the power supply to the boiler.
- Wait for the boiler to cool down.
- Connect a hosepipe to the system drain point and locate the other end of the hose in a suitable drainage system.
- Open the system drain valve (see fig. 1).
- Open the air vents on the radiators, starting with the highest and moving down the system to the lowest.
- When the system has been drained, close the radiator breather valves and the drain valve.
- **If only the boiler needs to be drained, close the flow/return isolating valves on the heating circuit and open the drain valve located at the bottom of the boiler on the pump manifold (see fig. 1);**



■ Draining the domestic hot water system

If there is a danger of freezing, the domestic hot water system should be drained. This can be done as follows:

- Close the mains water supply valve.
- Open all the hot and cold water taps.
- **On completion, close all the previously opened taps.**

6.5 Maintenance operations

⚠ Before carrying out any cleaning or part replacement operations, **ALWAYS** turn off the **ELECTRICITY**, **WATER** and **GAS** supplies to the boiler.

Radiant Bruciatori S.p.a. will not be held responsible for damage to any of the boiler's components caused by non-compliance with this instruction.

For all maintenance operations requiring removal of the boiler casing, refer to the procedures described in paragraph 6.3 "Accessing the boiler".

Cleaning the main exchanger module and combustion unit (see fig. 1)

- Disconnect the electrical connections of the electric fan.
- Disconnect the joint and remove the pipe linking the gas valve to the injector unit (venturi).
- Disconnect the joint and remove the gas feed pipe from the gas valve.
- Un-plug the ignition electrode and flame detection wires from the ignition control unit.
- Unscrew the ring-nut at the bottom of the room-sealed chamber and remove the gas valve.
- Unscrew the nuts securing the burner unit (consisting of a fan, manifold and burner) to the primary heat exchanger.
- Remove the burner unit, paying particular attention not to remove the ceramic fibre protection from the bottom of the heat exchanger.
- Check that the burner is not affected by deposits, scaling or excessive oxidation. Check that all the holes in the burner are free;
- Clean the electrodes carefully without altering their positions with respect to the burner;
- Clean the burner cylinder using a non-metal brush and without damaging the ceramic fibre;
- Check the integrity of the washer on the cover of the burner;
- Clean the heat exchanger (see fig. 2) using a household detergent for stainless steel, distributing the product on the spirals of the exchanger using a brush. Do not wet the ceramic fibre coating. Wait a few minutes then remove the deposits using a non-metal brush. Then remove the residues under running water;
- Remove the pipe clip, remove the condensate drainpipe and clean under running water.
- Unscrew the joint to the condensate trap, remove the trap and wash under running water.
- With the cleaning completed, re-assemble the components following the above procedure in reverse order.
- Finally, check the boiler to make sure that all gas and exhaust joints are tight.

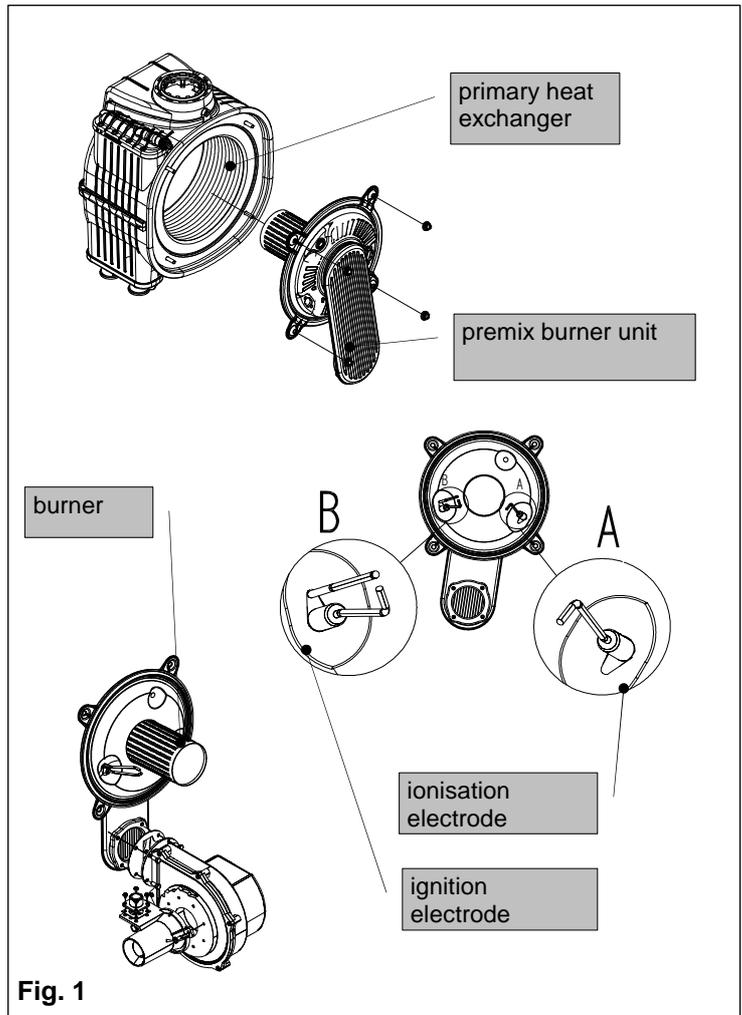


Fig. 1

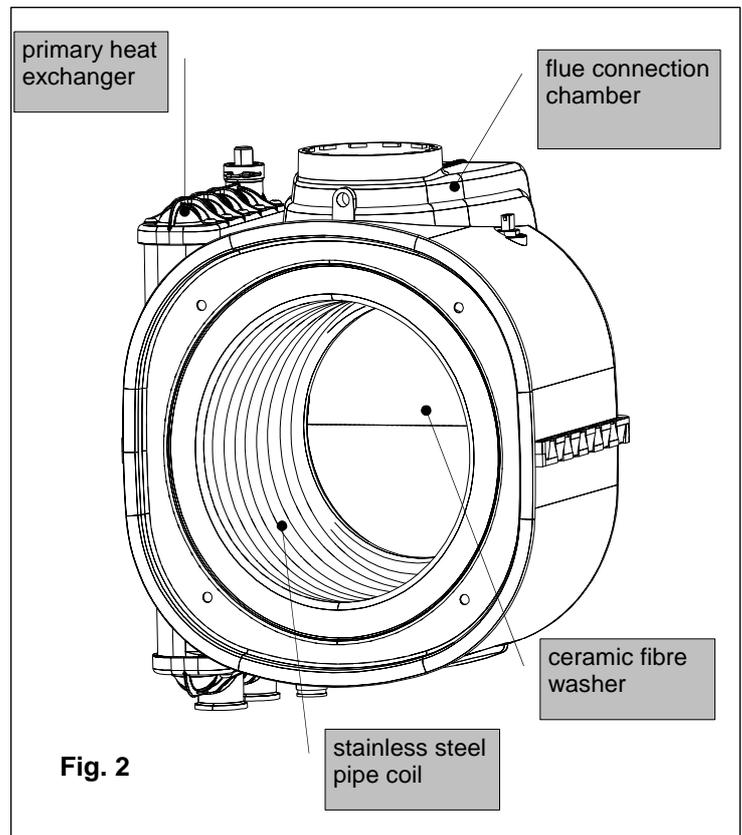


Fig. 2

Part replacement:

Ignition and/or flame detection electrodes (see fig. 1)

- Un-Plug the electrode wires;
- Slacken the fixing screws;
- Remove the electrodes. When fitting the new ones, check that the seals are not damaged. Replace if necessary;
- Reconnect the wires and re-assemble the components following the above procedure in reverse order;
- Switch on the power supply and restart the appliance;

! *If the boiler does not restart, check the positions of the electrodes (especially the ignition electrode). Make sure that original position and distances between the electrodes and the burner are respected to avoid a boiler malfunction).*

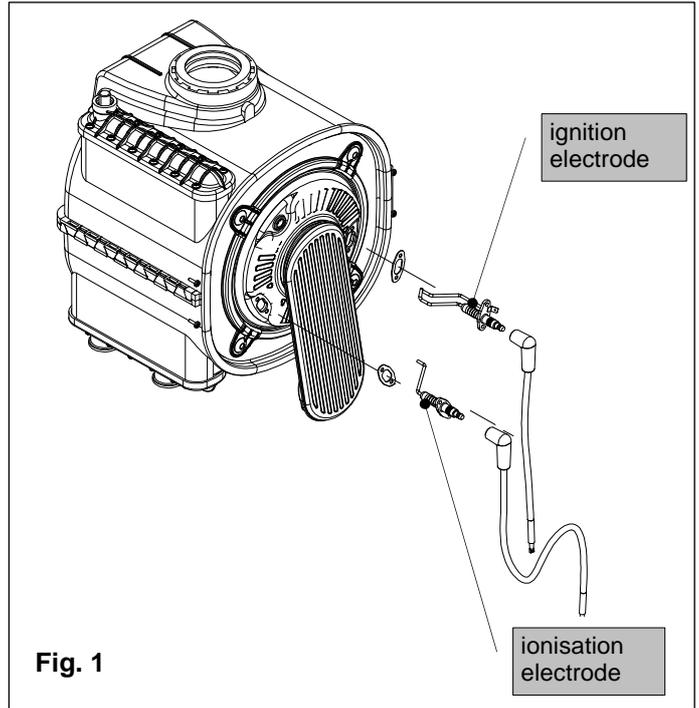
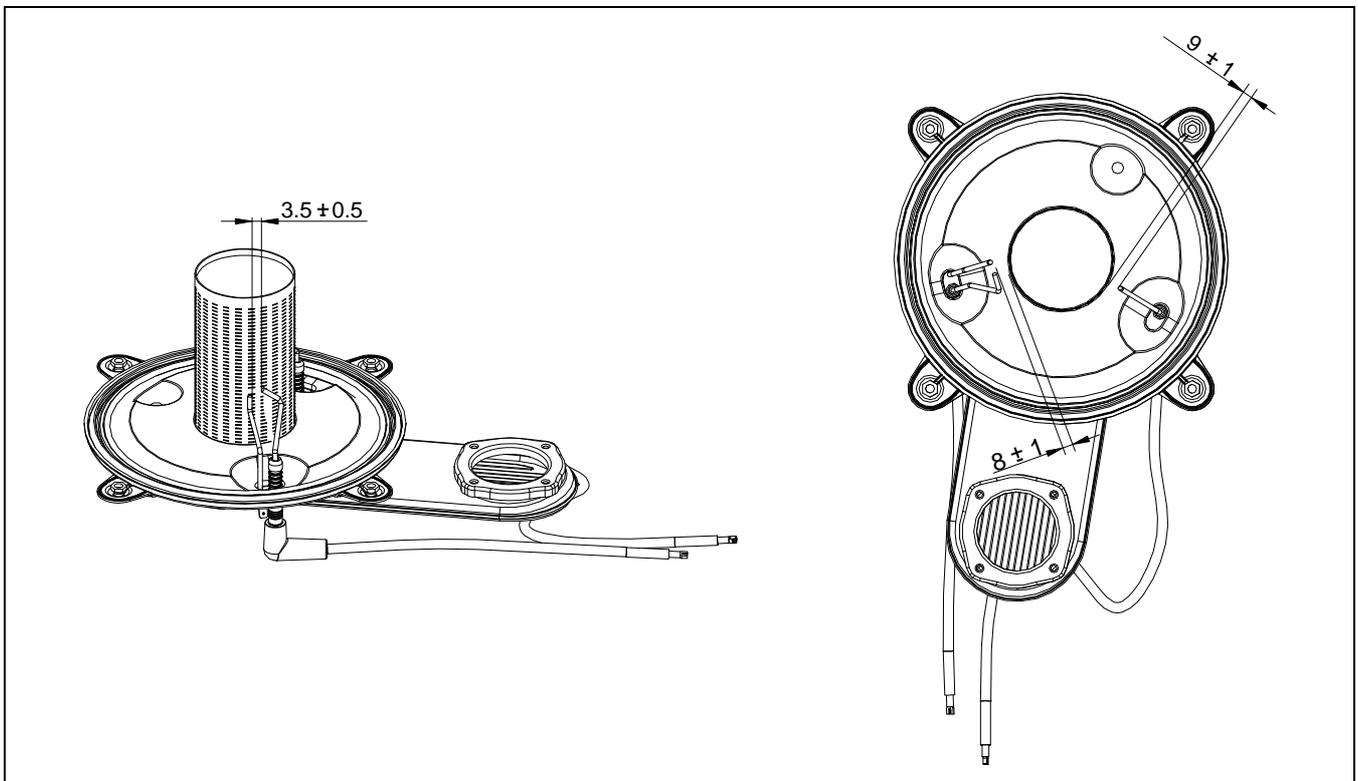


Fig. 1

POSITIONING THE IGNITION ELECTRODE AND THE IONISATION ELECTRODE

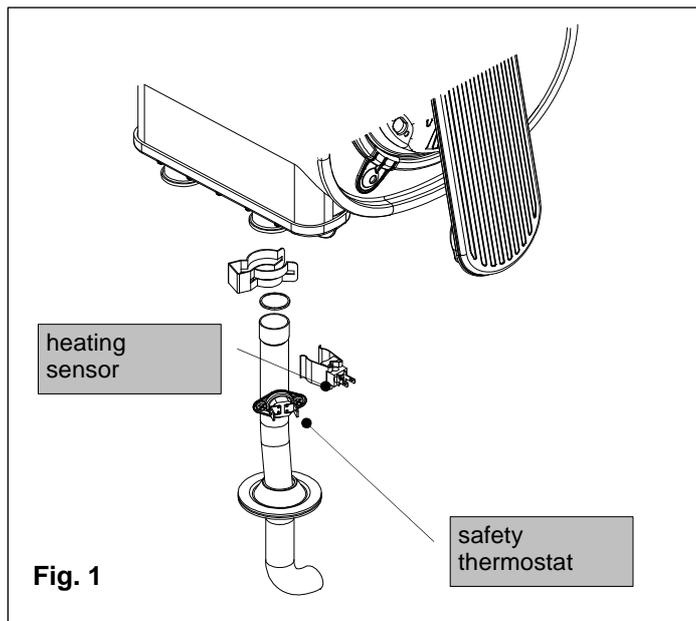


Safety thermostat (see fig. 1)

- Disconnect the connecting wire;
- Unscrew the fixing screws and remove the thermostat;
- Replace the thermostat and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies and restart the appliance.

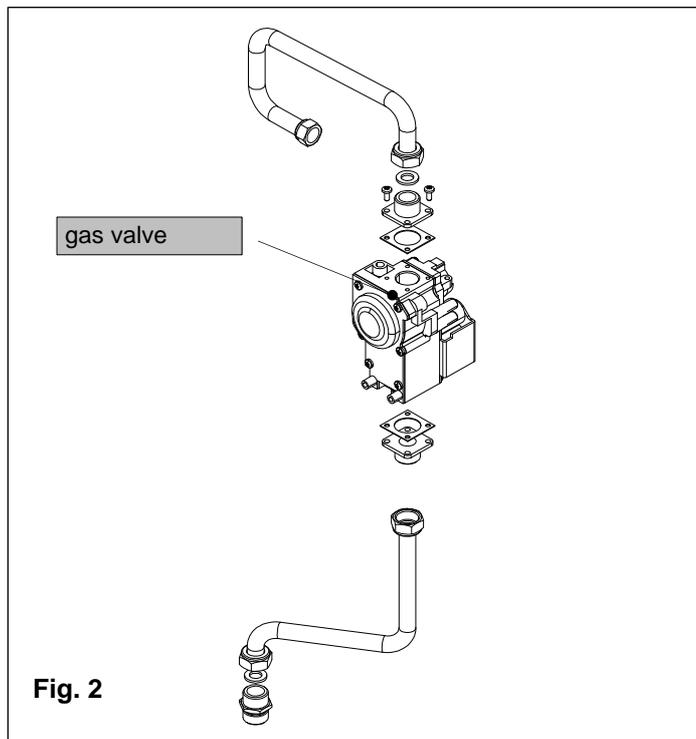
Heating sensor (see fig. 1)

- Un-Plug the connecting wire;
- Replace the sensor and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies, open the shut-off valves and fill the central heating circuit. Then restart the appliance, remembering to discharge any air that may be trapped in the system;



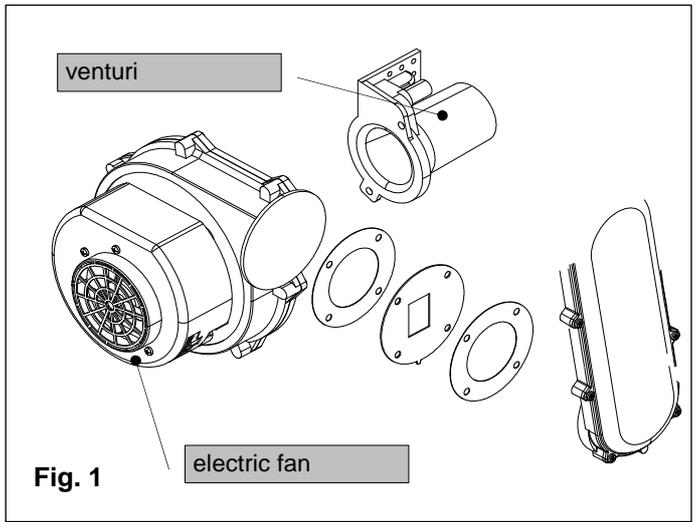
Gas valve (see fig. 2)

- Disconnect the joints and remove the gas pipe connecting the gas valve to the venturi.
- Disconnect the gas feed pipe and valve ring-nut at the bottom of the room-sealed chamber.
- Remove the flanged elbow coupling of the existing valve and fit it to the new valve; also fit a new cork washer.
- Replace the gas valve and re-assemble the components following the above procedure in reverse order.
- Replace all the gas seals.
- Fully tighten the gas connections.
- Switch on the electricity, water and gas supplies and check for any gas leaks using a soapy solution or leak detector spray;



Electric fan (see fig. 1)

- Remove and dismantle the entire burner unit (see 6.6.1 "Cleaning the burner unit").
- Use an 8 mm spanner to unscrew the four nuts securing the electric fan to the gas manifold and then remove the electric fan, noting the positions of the washer and diaphragm.
- Remove the air intake duct, unscrew the two fixing screws from the venturi and remove the electric fan, paying particular attention not to damage the cork gasket.
- Replace the electric fan and re-assemble the components following the above procedure in reverse order.
- Switch on the electricity, water and gas supplies and check the soundness of the joint by measuring the CO₂ levels;

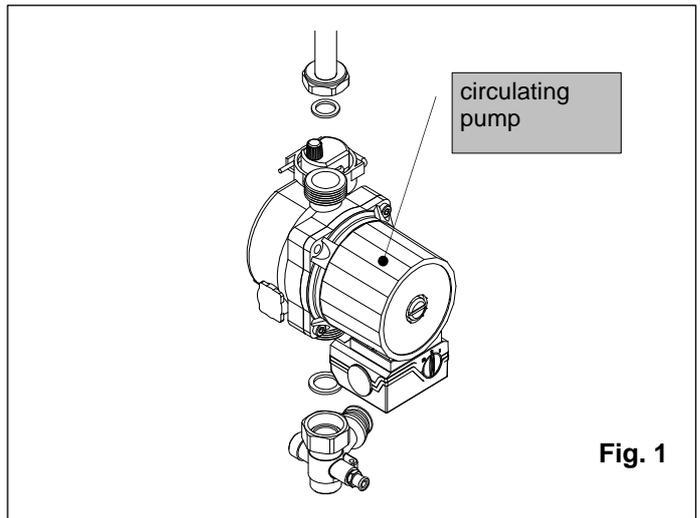


Expansion vessel (see fig. 2)

- Close the shut-off valves and drain the central heating circuit of the boiler.
- Use a 19 mm spanner to unscrew the pipe coupling to the vessel.
- Unscrew the fixing screws and remove the upper mounting bracket. Remove the expansion vessel from the front of the boiler.
- Replace the expansion vessel and re-assemble the components following the above procedure in reverse order.
- Switch on the electricity, water and gas supplies and fill the system with water. Check for any leaks from the joints and bleed off any air from the circuit;

Circulating pump (motor body) (see fig. 1)

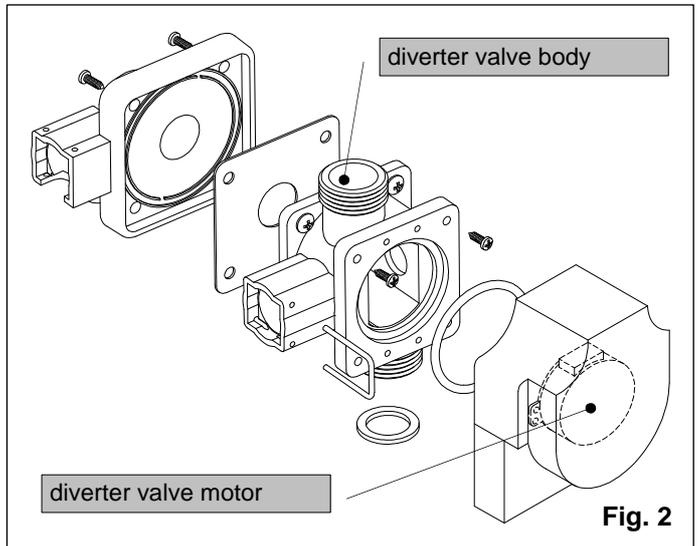
- Close the shut-off valves and drain the central heating circuit of the boiler;
- Use a 5 mm Allen key to unscrew the four screws securing the motor body to the impeller body;
- Remove the motor body and check the condition of the washer. If necessary, replace the washer;
- Replace the circulation pump and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies and fill the system with water. Check for any leaks from the joints and bleed off any air from the circuit. Restart the boiler.



Diverter valve (see fig. 2)

Replacing the diverter valve body

- Close the shut-off valves and drain the central heating circuit of the boiler;
- Unscrew the fixing screws securing the transparent cover of the diverter valve and remove the cover;
- Unscrew the four fixing screws and remove the diverter valve body and washer;
- Replace the valve body and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies and fill the system with water. Check for any leaks from the joints and bleed off any air from the circuit. Restart the boiler.

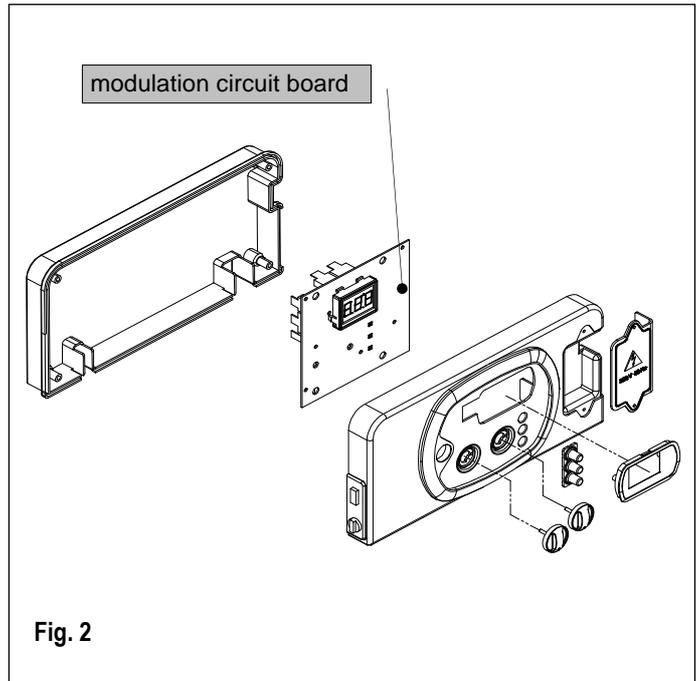
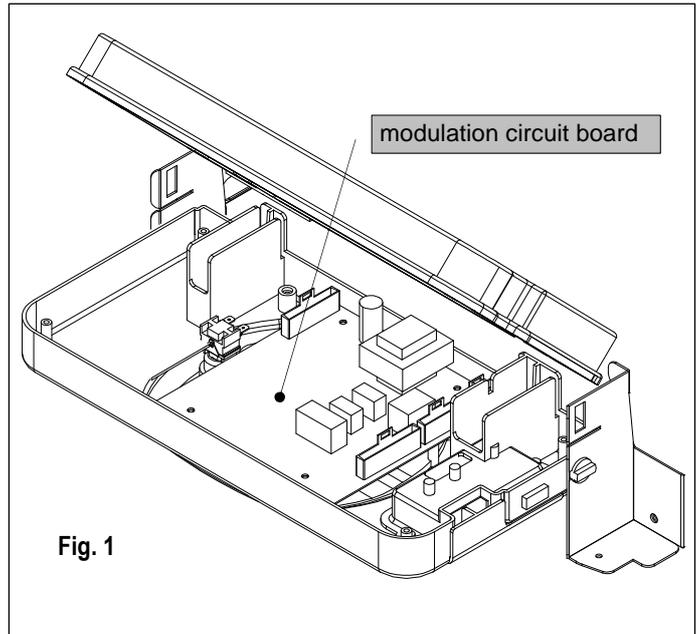


Modulation circuit board (see fig. 1-2)

- Open the control panel (see 6.3 “Accessing the boiler”);
- Disconnect all the connectors, remove the regulating knobs, unscrew the four fixing screws and remove the modulation circuit board;
- Replace the circuit board and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies and regulate the boiler (see 5.3 “Gas data”);

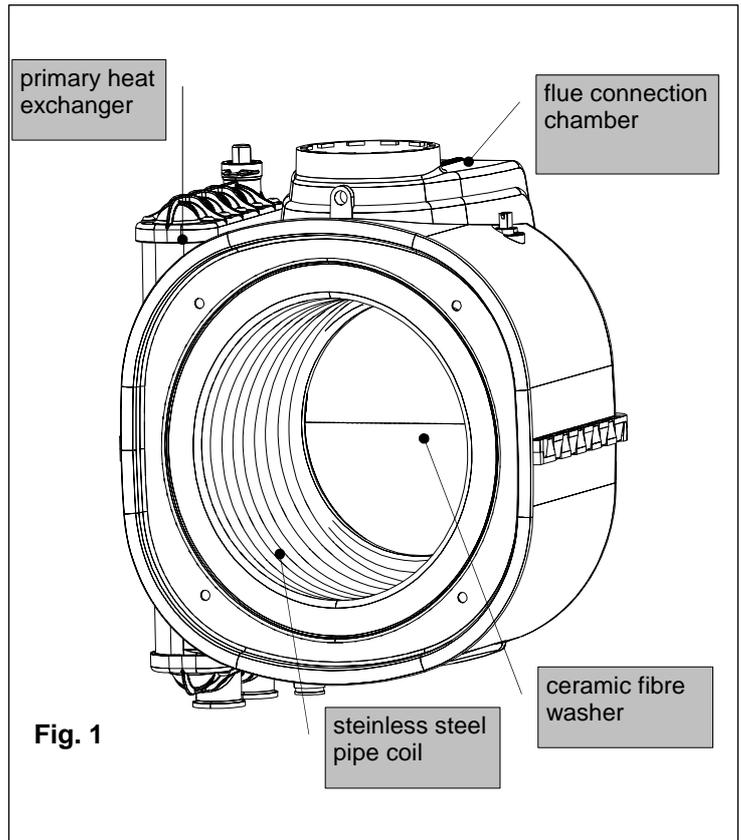
 *The preset parameters of the printed circuit board correspond to a 34 kw instantaneous condensing boiler fed by natural gas.*

When replacing the modulation circuit board, it's necessary to set parameter P00 according to the boiler model (18-25-29-34-50).



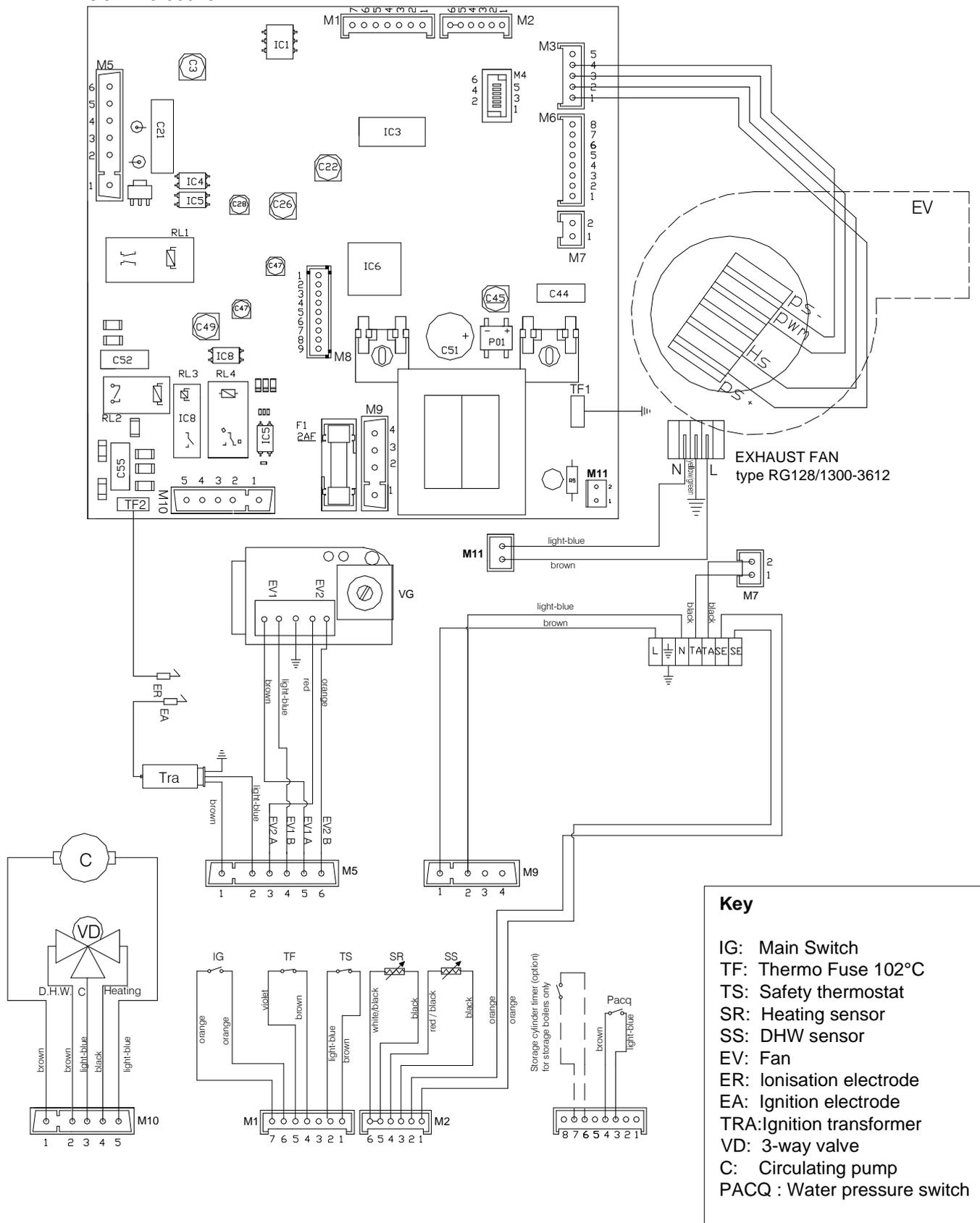
Primary heat exchanger (see fig. 1)

- Close the shut-off valves and drain the central heating circuit of the boiler;
- Switch off the power and gas supply to the boiler;
- Remove and dismantle the entire burner unit (see 6.6.1 "Cleaning the condensation module and burner unit");
- Remove the gas valve;
- Remove the spring and then the condensate drainpipe;
- Remove the fixing springs and then the delivery and return pipes;
- Remove the support brackets and pull out the heat exchanger;
- Remove the regulation sensor from the old heat exchanger and refit it together with the two condensate drainpipes to the new one;
- Replace the heat exchanger and re-assemble the components following the above procedure in reverse order;
- Switch on the electricity, water and gas supplies and fill the system with water. Check for any leaks from the joints and bleed off any air from the circuit. Restart the boiler, making sure that there are no gas leaks;



6.6 Wiring diagrams

PRINTED CIRCUIT BOARD DIGITECH 2 - SM30003
COD. 40-00016



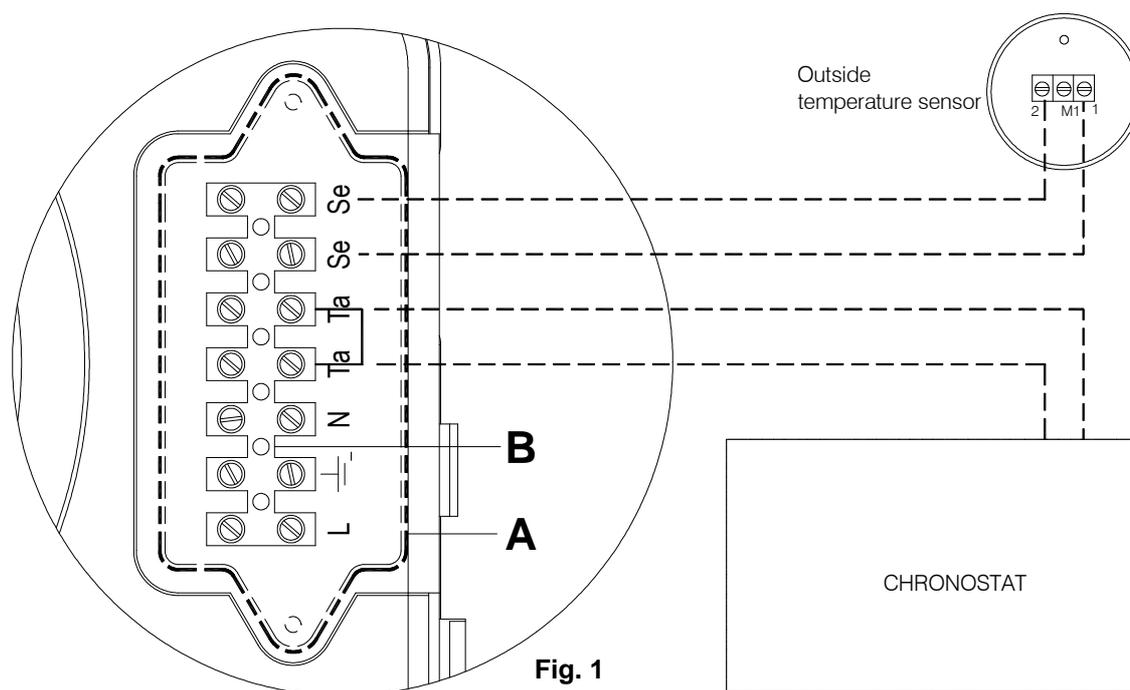
Connecting the room thermostat (Option)

Connect the wires to the terminal board inside the instrument panel as follows:

(Example with WEEK digital weekly chronostat):

- a. switch off the power supply at the main switch.
- b. remove the front case panel of the boiler.
- c. slacken the screws and remove plate A (see fig.1).
- d. remove jumper TA -TA from the terminal board B;
- e. connect the room thermostat/chronostat wires;

When the wires have been connected, place plate "A" back to position and then the front case panel.



Connecting the outside temperature sensor (Option)

Connect the wires to the terminal board inside the instrument panel as follows:

- a. switch off the power supply at the main switch.
- b. remove the front case panel of the boiler.
- c. slacken the screws and remove plate A (see fig.1).
- d. connect the outside temperature sensor on contacts marked as SE-SE on the terminal board B ;

When the wires have been connected, place plate "A" back to position and then the front case panel.

Connecting the remote controller the outside temperature sensor (option)

Connect the wires to the terminal board inside the instrument panel as follows:

- switch off the power supply at the main switch.
- remove the front case panel of the boiler.
- slacken the screws and remove plate A (see fig.1).
- remove jumper TA-TA from the terminal board B;
- connect the remote controller wires.

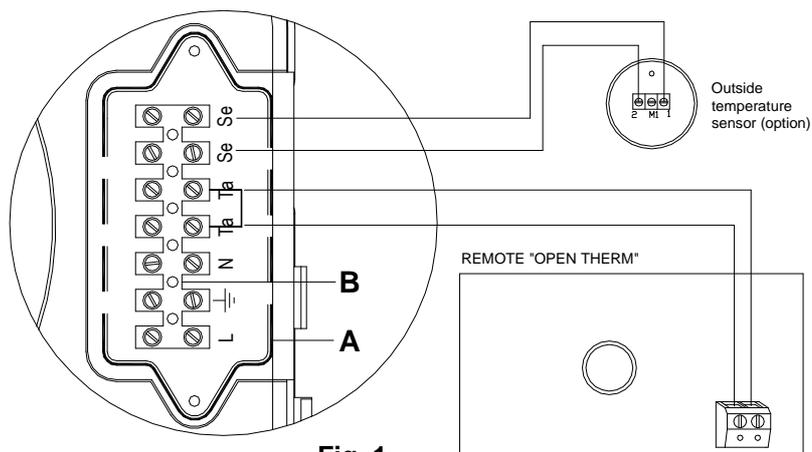


Fig. 1

When the wires have been connected, place plate "A" back to position and then the front case panel.



cod. 40-00017

Connecting the remote controller and the telephone control (option)

Connect the wires to the terminal board inside the instrument panel as follows:

- switch off the power supply at the main switch.
- remove the front case panel of the boiler.
- slacken the screws and remove plate A (see fig.1).
- remove jumper TA-TA from the terminal board B;
- connect the remote controller and the telephone control wires;
- Active the telephone control through the parameter no.16 (see 5.1 "Parameters Table")

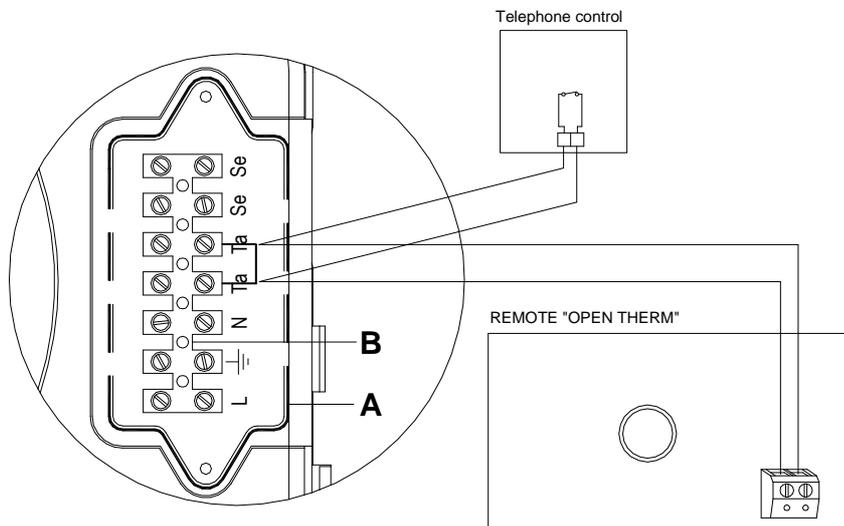


Fig. 2

When the wires have been connected, place plate "A" back to position and then the front case panel.



cod. 40-00017

Regulating the Flow temperature in accordance with the outdoor temperature

The outdoor sensor has to be connected directly to circuit board SM30003.

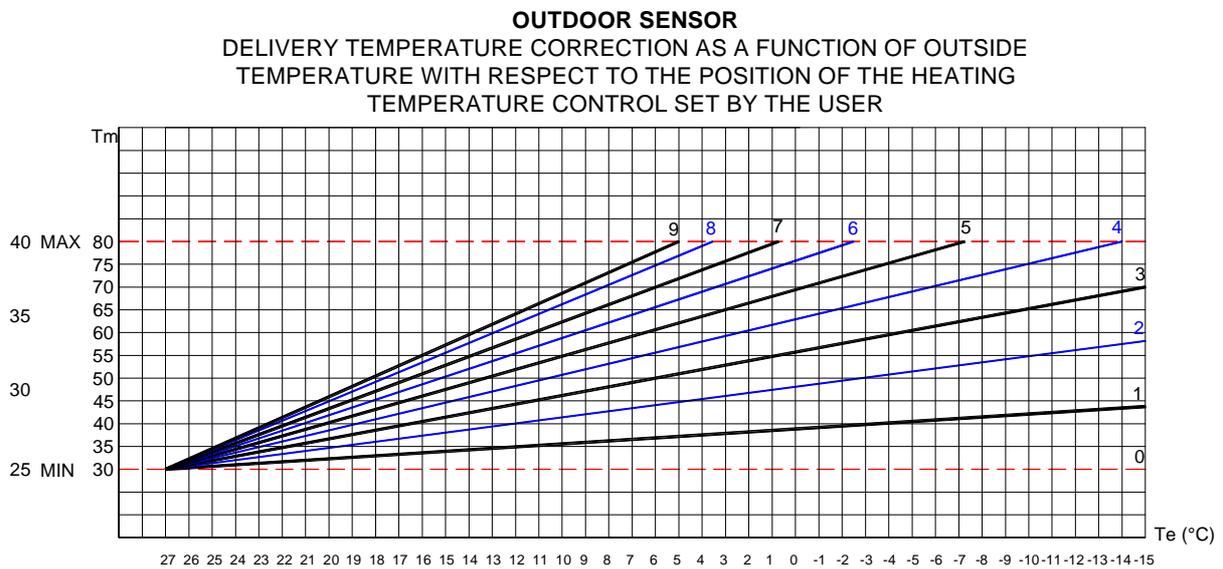
The sensor can thus be managed in one of two ways:

- In case of remote controller + outdoor temperature sensor installation, the climatic compensation curve is set by the remote itself (see remote control installation and operating manual).
- In case of outdoor temperature sensor only installation, the climatic compensation curve is set using the central heating control knob. As the knob (see fig. 2) is rotated, the numbers corresponding to the curve shown in figure 1 are displayed.

The factors governing the correction is reported in figure 1.

The selection of the compensation curve is determined by the maximum delivery temperature T_m and the minimum outdoor temperature T_e .

N.B. The y-axis values of the delivery temperature T_m refer to standard 80-30 °C appliances or 40-25 °C floor-mounted appliances. The type of appliance can be programmed using parameter 3 (see 5.1 "Parameter programming").



T_m -MAX/MIN = delivery temperature range selected

T_e = Outdoor temperature

T_m = delivery temperature

Fig. 1

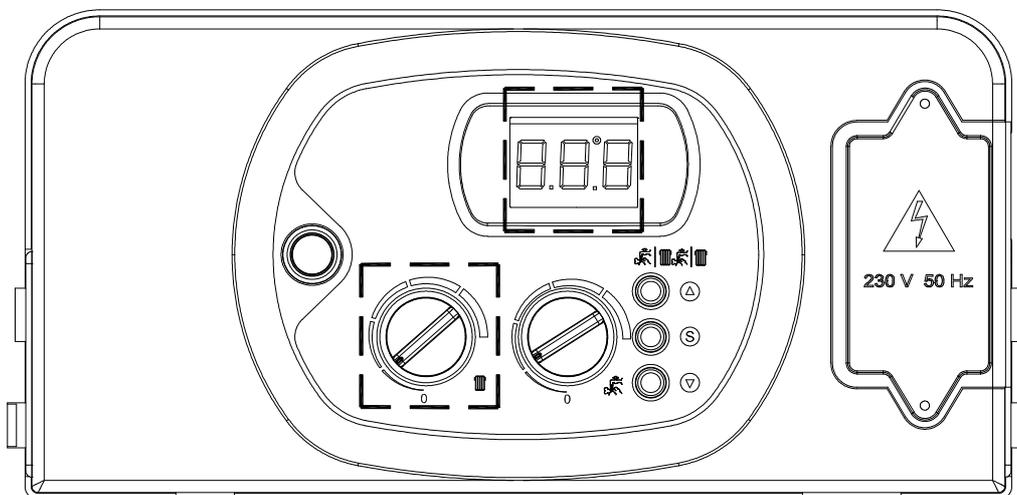
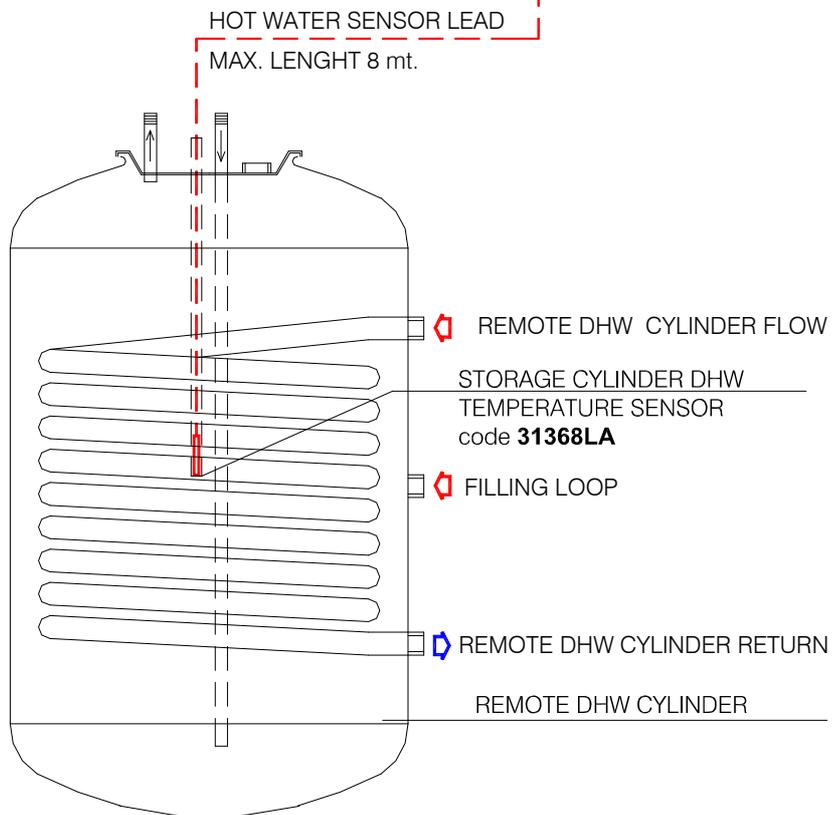
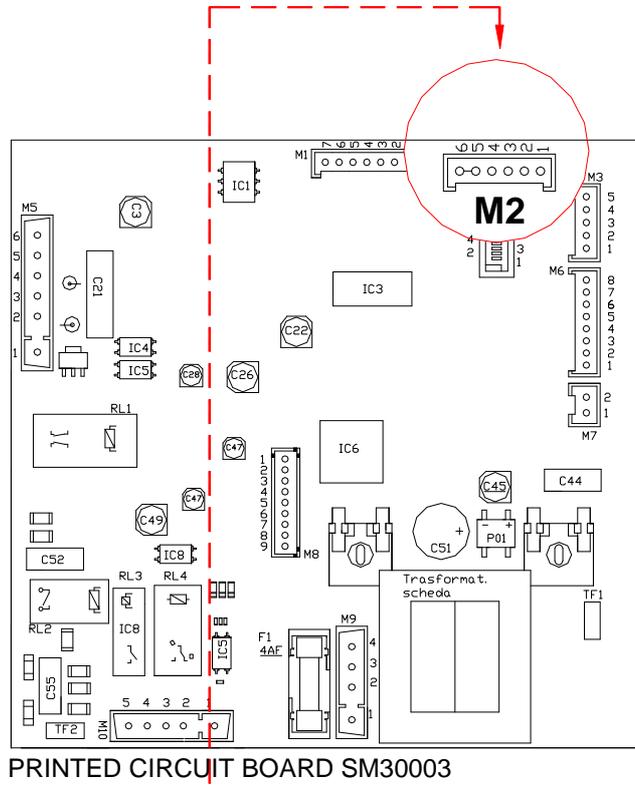


Fig. 2

D.H.W. sensor connection



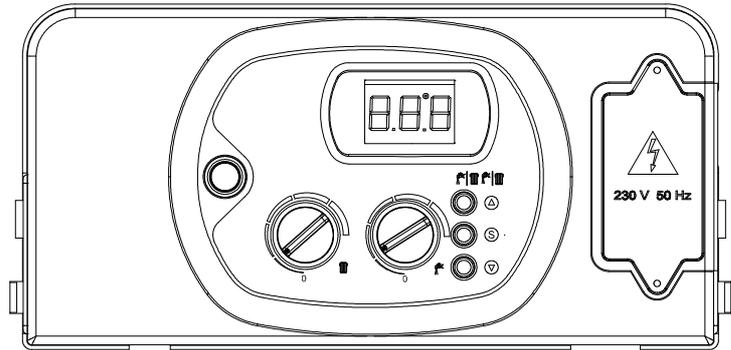
6.7 Troubleshooting

ERROR CODE	PROBLEM	POSSIBLE CAUSE	REMEDY
E01	NO FLAME	<p><i>WITH NO IGNITION</i></p> <p>a. NO GAS. b. IGNITION ELECTRODE BROKEN OR EARTHED. c. GAS VALVE MALFUNCTION d. MECHANICAL MINIMUM ADJUSTMENT (ON GAS VALVE) SET TOO LOW OR SLOW IGNITION ADJUSTMENT SET TOO LOW. e. GAS VALVE INLET PRESSURE TOO HIGH (FOR LPG BOILERS ONLY);</p> <p><i>WITH IGNITION</i></p> <p>f. POWER SUPPLY LIVE AND NEUTRAL WIRES INVERTED. g. IONISATION ELECTRODE MALFUNCTION. h. IONISATION ELECTRODE CABLE DISCONNECTED.</p>	<p>a. CHECK MAINS SUPPLY. b. REPLACE PART. c. REPLACE PART d. REGULATE MECHANICAL MINIMUM OR SLOW IGNITION. e. CHECK THE MAXIMUM PRESSURE SETTING. f. CONNECT THE POWER SUPPLY WIRES CORRECTLY. g. REPLACE PART. h. CONNECT THE IONISATION ELECTRODE WIRE.</p>
E02	SAFETY THERMOSTAT TRIPPED (95°C)	<p>i. THERMOSTAT MALFUNCTION OR OUT OF CALIBRATION. j. THERMOSTAT CABLE DISCONNECTED.</p>	<p>i. REPLACE PART. j. CHECK THE WIRING ;</p>
E03	102°C THERMO FUSE TRIPPED	<p>k. THERMOFUSE BROKEN; l. THERMOFUSE CABLE DISCONNECTED; m. THERMOFUSE LOCK OUT. (HIGH FLUE TEMPERATURE)</p>	<p>k. REPLACE PART THEN INTERRUPT AND RECONNECT ELECTRICAL SUPPLY; l. CHECK THE ELECTRICAL CONNECTION; m. RESTART AND CHECK THE THERMOSTAT</p>
H20	NO WATER IN THE SYSTEM	<p>n. INSUFFICIENT WATER PRESSURE IN THE SYSTEM (STOPS AT 0.3 BAR). o. WATER PRESSURE SWITCH CABLE DISCONNECTED. p. WATER PRESSURE SWITCH MALFUNCTION.</p>	<p>n. FILL THE SYSTEM; o. CHECK THE WIRING; p. REPLACE PART;</p>
E05	HEATING SENSOR	<p>q. SENSOR MALFUNCTION OR OUT OF CALIBRATION (RESISTANCE VALUE 10 kOhms AT 25 °C). r. SENSOR CABLE DISCONNECTED OR WET.</p>	<p>q. REPLACE PART; r. CHECK THE ELECTRICAL CONNECTION;</p>
E12	D.H.W STORAGE CYLINDER SENSOR	<p>s. SENSOR MALFUNCTION OR INCORRECT (RESISTANCE VALUE 10 kOhms AT 25 °C). t. SENSOR CABLE DISCONNECTED OR WET.</p>	<p>s. REPLACE PART; t. CHECK THE ELECTRICAL CONNECTION ;</p>
E16	FAN	<p>u. BURNT FAN</p>	<p>u. REPLACE PART</p>
E22	PARAMETER PROGRAMMING REQUEST	<p>v. LOSS OF MICROPROCESSOR MEMORY;</p>	<p>v. REPROGRAM PARAMETERS;</p>

6.8 Diagnostics

■ Error codes:

- E01 Ionisation Lock Out
- E02 Safety Thermostat Tripped
- E03 102°C Thermo fuse Tripped
- H2O Low Water Pressure Alarm
- E05 Heating Sensor Malfunction
- E12 D.H.W Storage Cylinder Sensor Malfunction
- E16 Electric Fan Malfunction
- E22 Parameter Programming Request



■ Function codes :

Code	Function	Description
07	Flue test function active (Chimney-Sweeper)	Pressing the “service” button for 7 seconds activates the Flue test function. Pressing the boiler off button deactivates the function. The Flue test function operates the boiler at the maximum heating pressure for 15 minutes without any modulation. The function is useful for combustion testing.
08	Frost Protection Central heating circuit	The function is activated when the heating sensor senses a temperature of 5 °C. The boiler operates at minimum gas pressure with the 3-way diverter valve in the winter position. The function is deactivated when the temperature detected by the sensor reaches 30°C.
13	Frost Protection D.H.W. circuit – for storage boilers	The function is activated when the sensor senses a temperature of 4°C. The boiler operates at minimum gas pressure. The 3-way diverter valve closes in the summer position and heats the D.H.W. circuit. The function is deactivated when the D.H.W. storage cylinder sensor detects a temperature of 8°C or when heating sensor detect a temperature in the heating circuit of 30°C.
28	Legionella Prevention Function	Function active for storage boilers only. It comes into operation every 7 days. It brings the hot water temperature of the storage cylinder up to 60°C whatever temperature value is set for hot water.
31	Incompatible Remote Control	Function active when the remote control connected is not compatible with the printed circuit board .

6.9 Parts List

Main components

CODE	DESCRIPTION
30-00043	CONDENSING EXCHANGER 5+1 CBD COMPLETE
24046LA	PUMP RSL 15/6
27044LA	CONDENSATE TRAP
36076LA	ELECTRONIC GAS VALVE
36072LA	VENTURI 57kW
37032LA	FAN
40-00016	PRINTED CIRCUIT BOARD DIGITECH 2 – SM30003
59015LA	WATER PRESSURE SWITCH
73516LA	HTG CLIP SENSOR FOR PIPE 17/18 mm BLUE
73517LA	THERMO FUSE 102 °C RED
86006LA	SAFETY THERMOSTAT 95 °C
25-00196	WATER PRESSURE GAUGE
88023LA	TRANSFORMER
95013LA	EXPANSION VESSEL LT.7 3/8"
96031LA	DIVERTER VALVE
25-00131	3 BAR PRESSURE RELIEF VALVE -HTG CIRCUIT



Heating technology since 1959

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