



INSTALLATION, AND MAINTENANCE MANUAL FOR GAS FIRED, WALL - HUNG BOILERS WITH DOMESTIC HOT WATER STORAGE CYLINDER Low NO_x

Model

RMAS 21 E

TYPE C

ROOM SEALED



*The code of practice for the installation,
commissioning & servicing of gas fires and wall heaters*

CE 0694

ENGLISH

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THE FRIENDLY POWER OF HEAT

Thank you for choosing RADIANT

Declaration for purposes of Art. 7 of Law 46 of 5 April 1990.

RADIANT BRUCIATORI S.p.A. hereby declares that all of its products are constructed to industry standards as required by the Article in question and by Article 5 of the law in effect (D.P.R. no. 447/97).

RADIANT BRUCIATORI S.p.A. products are type tested EC.

All RADIANT boilers are constructed according to UNI - CIG (EC) norms. The materials used, such as copper, brass, and stainless steel form a compact, homogeneous, highly functional unit that is easy to install and simple to operate. The wall-mounted boiler is equipped with all of the approved accessories required to make it a true, independent heating plant for home heating and for the production of hot water for domestic needs. All boilers are fully inspected, and come with a certificate of quality signed by the inspector and with a warranty certificate. This booklet must be read carefully and stored in a safe place, accompanying the boiler at all times.

RADIANT BRUCIATORI S.p.A. declines any and all responsibility for misinterpretations of this booklet deriving from any translations of same.
RADIANT BRUCIATORI S.p.A. will not be responsible for non-observance of the instructions contained in this booklet or for the consequences of any action not specifically described herein.

INSTALLATION INSTRUCTIONS - WARNINGS

THIS INSTALLATION, USE, AND MAINTENANCE MANUAL IS AN ESSENTIAL AND INTEGRAL PART OF THE PRODUCT, AND MUST ALWAYS BE KEPT NEAR THE DEVICE. THE WARNINGS CONTAINED IN THIS SECTION ARE ADDRESSED BOTH TO THE USER AND TO INSTALLATION AND MAINTENANCE PERSONNEL. THE USER WILL FIND INFORMATION ON OPERATION AND LIMITS OF USE IN THE ACCOMPANYING MANUAL, WHICH SHOULD BE READ VERY CAREFULLY. STORE THE MANUAL CAREFULLY FOR FUTURE REFERENCE.

1) GENERAL WARNINGS

INSTALLATION MUST BE PERFORMED IN OBSERVANCE OF CURRENT NORMS, ACCORDING TO THE CONSTRUCTOR'S INSTRUCTIONS, AND BY PROFESSIONALLY QUALIFIED PERSONNEL.

THE INSTALLATION INSTRUCTIONS MANUAL MUST BE ALWAYS ACCOMPANY THE BOILER.

PROFESSIONALLY QUALIFIED PERSONNEL ARE THOSE HAVING TECHNICAL COMPETENCE IN THE SECTOR OF APPLICATION OF THE DEVICE (CIVIL OR INDUSTRIAL), AND, IN PARTICULAR, THE CONSTRUCTOR'S AUTHORISED SERVICE CENTRES.

INCORRECT INSTALLATION MAY CAUSE DAMAGE TO PERSONS, ANIMALS, OR PROPERTY, FOR WHICH THE CONSTRUCTOR ASSUMES NO LIABILITY.

- After completely removing the packing, make sure that the contents are in perfect condition.
- In case of doubt, do not use the equipment. Consult the supplier.
- Packing materials (cardboard carton, wooden crate, nails, clips, plastic bags, polystyrene, etc.) are potentially dangerous and must be kept away from children.
- Before performing any cleaning or maintenance operation, turn off the unit by means of the mains switch and/or by means of the appropriate cut-off devices.
- Do not block the air intake or heat dissipation grates.
- In the event of breakdown and/or poor functioning of the device, turn it off and do not attempt to repair it or take any direct action. Refer to professionally qualified personnel only.
- Any repairs must be performed exclusively by a service centre authorised by the constructor, and with original spare parts only.
- Non-observance of the above instruction may compromise the safety of the device. To guarantee efficient and correct operation, the device should undergo period maintenance by professionally qualified personnel according to the constructor's instructions.
- Whenever the device is to be put out of service, secure all potentially hazardous parts to prevent accidents or damage.
- If the device is sold or transferred to another owner, or if you move and leave the boiler, make sure that this booklet stays with the boiler so that it may be consulted by the new owner and/or by the installer.
- Use only original spare parts for all devices with optionals or kits (including electrical ones).

WARNING: this device must be used for its intended purpose, i.e., heating and production of domestic hot water. Any other use is improper and therefore dangerous. The constructor will have no contractual or extracontractual liability for damage caused by incorrect installation and/or use or by non-observance of instructions supplied by the constructor.

This device must be used exclusively with a sealed central heating system equipped with an expansion vessel.

2) WARNINGS REGARDING INSTALLATION

Warranty expires 12 months from date of installation and in all cases no later than 18 months from date of construction. First start-up must be performed by authorised personnel only. For any operation on the hydraulic, gas, or electrical circuit regarding the heating unit, refer to authorised technicians only and use original spare parts only. Wall-mounted boilers are not to be installed in damp rooms, and must be protected against sprays or jets of water or other liquids to prevent malfunctions of the electrical and heating devices. They must not be exposed to direct steam from cookers, and nothing must be placed on top of them. This heating unit has been constructed to heat the home and to produce hot water. The constructor declines all responsibility for incorrect installation and/or use of the device. Do not leave the device on when it is not being used: close the gas cock and turn off the mains switch. If you smell gas in the room in which the device is installed, do not operate any electrical switches, telephones, or any other device that might cause a spark. Immediately open doors and windows to create an air current to clear the room. Close the main gas cock (at the meter) or the cylinder cock, and request immediate technical service. Do not tamper with the device.

SYSTEMS WITH THERMOSTATS

A by-pass must be installed in heating systems with radiators thermostats.

As required by current norms, these devices must be installed by qualified personnel only, who must respect norms UNI-CIG 7129 and 7131 and revisions, fire department regulations, and requirements of the local gas company. Before installing the boiler, make sure that the water and heating systems are compatible with its output. The room must be properly ventilated by means of an air intake (see UNI 7129/92 and UNI 7129/95 FA).

The air intake must be at floor level open flue only, at a point where it cannot be obstructed, and protected by a grate that does not reduce the useful section of flow.

The use of air flows from adjacent rooms is permitted as long as such rooms are in depression with respect to the outside and as long as there are no wood-burning fireplaces or fans installed there. If the boiler is to be installed externally (for example, on balconies or terraces), make sure that it is protected against atmospheric agents to prevent damage to components and voiding of the warranty. In such cases we recommend building a heat compartment to protect the boiler against inclement weather.

Check the technical data on the packing and on the plate located inside the front casing. Check that the burner is suitable for use with the type of gas available.

Make sure that all pipes and connections are perfectly sealed and that there are no gas leaks.

All pipework should be chemically flushed to remove any residues that might have negative effect the operation of the boiler.

3) GENERAL WARNINGS BASED ON TYPE OF POWER SUPPLY

POWER SUPPLY

Electrical safety is achieved only when the device is correctly and efficiently earthed as per current safety norms (IEC 64-8 Electrical Part).

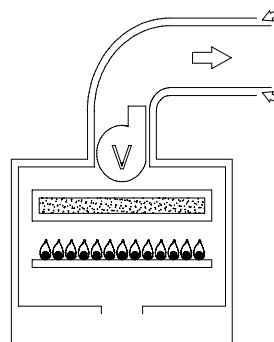
- This fundamental safety requirement must be checked. In case of doubt, request a check of the electrical system by professionally qualified personnel. The constructor will not be liable for any damage caused by lack of or improper earthing of the system.
- Have professionally qualified personnel check that the electrical system is adequate for the maximum absorbed power of the device (indicated on the plate). In particular, make sure that the section of the system wires is suitable for the maximum absorbed power of the device.
- Do not use adapters, multiple sockets, and/or extension cords to power the device from the electrical mains.
- Provide a unipolar switch as required by current safety regulations to connect the device to the mains.
- The use of any electrical device requires the observance of some fundamental rules, such as:
 - do not touch the device with wet or damp parts of the body and/or with bare feet
 - do not pull on electrical cables
 - do not expose the device to atmospheric agents (rain, sun, etc.) unless specifically provided for
 - do not allow the device to be used by children or anyone unfamiliar with its operation
 - The power cable must not be replaced by the user.
- If the cable becomes damaged, turn off the device and have the cable replaced by professionally qualified personnel only.
- If you decide not to use the device for an extended length of time, turn off the mains switch that feeds all components of the system using electrical energy (pumps, burner, etc.).

TECHNICAL DATA

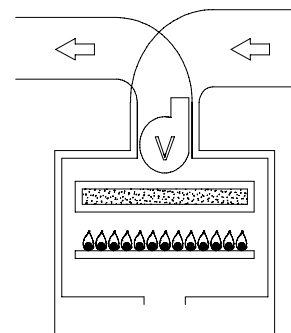
Type C devices are devices in which the combustion circuit (air intake, combustion chamber, exchanger, combustion exhaust) is sealed off from the place where they are installed.

CENTRAL HEATING - DOMESTIC HOT WATER *sealed combustion circuit type*

RMAS 21 E - electronic ignition



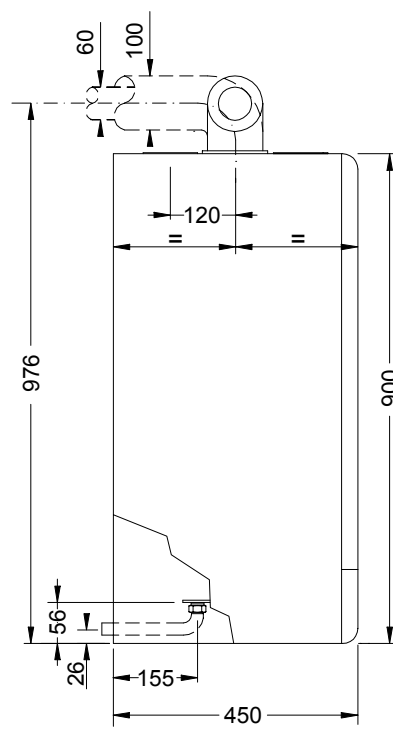
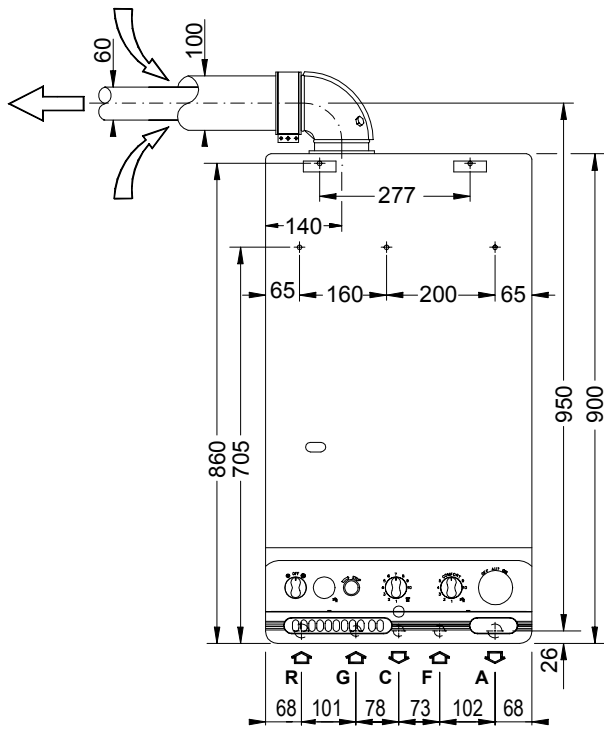
C32 Coaxial vertical
C12 Coaxial horizontal



C52 Double

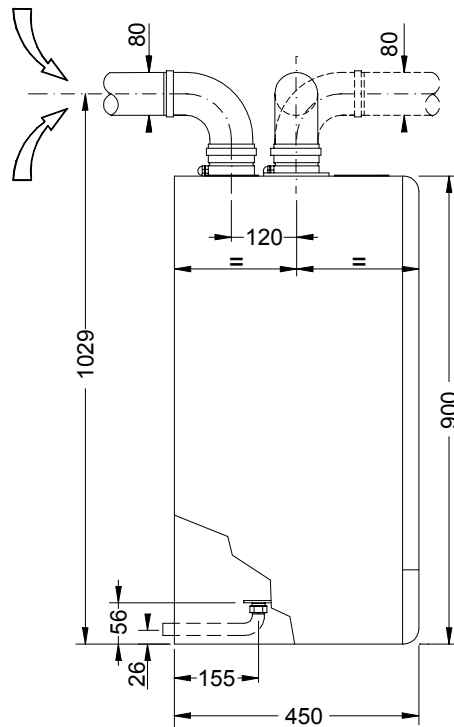
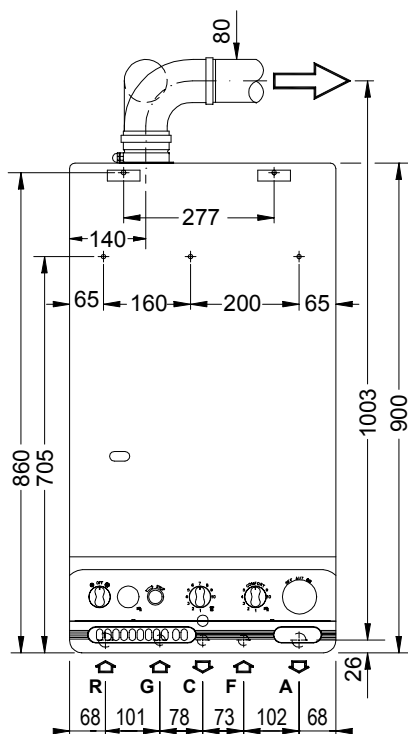
Technical data

MODEL		RMAS 21 E
Maximum rated input	KCal/h	22900
	Kw	26.6
	BTU/h	90867
Minimum rated input	KCal/h	11438
	Kw	13.3
	BTU/h	45386
Maximum rated output	KCal/h	21000
	Kw	24.42
	BTU/h	83328
Minimum rated output	KCal/h	10100
	Kw	11.74
	BTU/h	40061
Heting temperature adjustment	°C	30-80
Max. working pressure (heating)	bar	3
Min. working pressure (heating)	bar	0.3
Expansion vessel capacity (initial pressure 1 bar)	Litres	8
Hot stored water max. temperature	°C	60
Continuous hot water drawing with Δt 30°	Litres/h	720
Maximum continuous mixed drawing with Δt 30°, first 10 minutes	Litres	140
Time to heat water in storage tank from 10°C to 60°C	min.	5
Hot water flow rate Δt 25°	Litri	13.5
Max. working pressure (water)	bar	6
Min. working pressure (water)	bar	0.5
Width	mm.	490
Height	mm.	900
Depth	mm.	450
Weight	Kg.	65
Flue diameter	Ø	100/60 80/80
Flow/return connections		3/4" - 3/4"
Cold water connections	Ø	1/2"
Hot water connections	Ø	1/2"
Gas connections	Ø	1/2"
Electrical connection 50 Hz	V	230
Power supply	W	170
Burner jets NP 24 G20	Ø	0.89
Burner jets NP 24 G30	Ø	0.60
Gas category: IT II2H3	Gas supply pressure: G20 20 mbar / G30/31 29-30/37 mbar	
FORCED CIRCULATION		



**TYPE C WALL-MOUNTED BOILERS
SEALED COMBUSTION
CIRCUIT:**

Kit A
Horizontal coaxial exhaust flue system with 360° rotation.
It allows the flue exhaust and the air intake directly to an external wall.
To insert a bend, reduce total flue length by 0.8 m.



Kit B
Double exhaust/emission twin flue system with 360° rotation.
It allows the flue exhaust into a flue duct and the air intake directly from an external wall.
To insert a bend, reduce total flue length by 1.5 m.

R RETURN 3/4"
G GAS 1/2"
C HOT WATER OUTLET 1/2"
F COLD WATER INLET 1/2"
A HEATING FLOW 3/4"

NOTE: USE ORIGINAL RADIANT APPROVED FLUE KIT SYSTEMS, FLUE ACCESSORIES AND FLUE DIAPHRAGMS ONLY. APPROVED RADIANT FLUE DIAPHRAGMS AND ADJUSTMENT TABLES ARE SUPPLIED WITH RADIANT ORIGINAL FLUE KIT SYSTEMS.

GENERAL INSTALLATION REQUIREMENTS

GAS SAFETY

It is the law that all gas appliances are installed by a CORGI registered installer (you can check this by contacting corgi on 01256.372200) in accordance with the regulations listed below. Failure to install appliances correctly could lead to prosecution. It is in your own interest and that of safety to ensure that the law is complied with. Failure to have your appliance installed to comply with the installation instructions and the requirements listed below could invalidate your guarantee.

RELATED DOCUMENTS

The installation of the boiler must be in accordance with the relevant requirements of the Gas Safety regulations, Building regulations, I.E.E. regulations and the bylaws of the local water authority.

It should be in accordance also with any relevant requirements of the local authority and the relevant recommendations of the following British Standard Codes of Practice:

B.S 6400:	1985 & B.S. 6891 : 1988.
BS 5376:	Selection and Installation of Gas Space Heating (1 and 2 family gases) Part 2: Boilers of rated input not exceeding 60 Kw
BS 5449:	Central Heating for domestic premises Part 1: Forced circulation Hot Water System
CP 342:	Centralised Hot Water Supply BS 6700 : 1987 Part 2: Buildings other than individual
BS 5440:	Flues and air supply for Gas Appliances of rated input not exceeding 60 Kw (1 and 2 family gases) Part 1: Flues Part 2: Air Supply
BS 5446:	1990: Installation of Gas Hot Water supplies for domestic purposes

GAS SUPPLY

Service Pipes: The local gas region should be consulted at the installation planning stage in order to establish the availability of supply of gas. An existing service pipe must not be used without prior consultation with the local gas region.

Meters: A gas meter is connected to the service pipe by the local gas region or local gas region contractor. An existing meter should be checked to ensure that it is capable of passing an additional 3.4 m³/hr (125 ft³/hr) before the appliance is installed. The meter outlet governor should ensure a nominal dynamic pressure of 20m Bar, (8 in wg) at the boiler. Installation pipes should be fitted in accordance with BS6891.1988. **Pipework that supplies the boiler must be a 22 mm. uninterrupted supply from meter to the isolation cock of the boiler.** The complete installation must be tested for soundness as described in the above code, BS 6400: 1985 & BS6891.

IMPORTANT: BOTH THE USER AND THE MANUFACTURER RELY UPON THE INSTALLER, WHOSE JOB IS TO INSTALL THE BOILER AND CONNECT IT TO A CORRECTLY DESIGNED HEATING SYSTEM. THE INSTALLER SHOULD ACQUAINT HIMSELF WITH THE CONTENTS OF THIS PUBLICATION AND THE RELEVANT BRITISH STANDARDS CONCERNING INSTALLATION REQUIREMENTS.

LOCATION OF BOILER

In siting the combination boiler, the following limitations **MUST** be observed:

The position selected for installation should be within the building, and **MUST** allow

adequate space for installation, servicing and operation of the combination boiler, and for air circulation around it. The boiler is not suitable for external installation.

This position **MUST** also allow for a suitable flue termination to be made. The boiler must be installed on a flat vertical wall which is capable of supporting the weight of the combination boiler, and any ancillary equipment.

If the boiler is to be fitted in a timber framed building it should be fitted in accordance with the British Gas publication "Guide for Gas Installations in Timber Frame Housing, Reference IGE/UP/6. If in doubt, advice must be sought from the local region of British Gas.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations, and in Scotland the electrical provisions of the Building Regulations applicable in Scotland, with respect to the installation of the boiler in a room or internal space containing a bath or shower.

Where a room-sealed appliance is installed in a room containing a bath or shower, any electrical switch or appliance control utilising mains electricity must be so situated that it cannot be touched by a person using the bath or shower.

A compartment used to enclose the combination boiler **MUST** be designed and constructed specifically for this purpose. An existing cupboard, or compartment, may be used provided it is modified accordingly.

Where installation will be in an unusual location, special procedures may be necessary. BS 6798 gives detailed guidance on this aspect.

For clearances to be made available for installation and servicing, see Sections 5.2.2. to 5.2.4.

FLUE POSITION

IMPORTANT: THE FLUE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN BS 5440:1.

The boiler **MUST** be installed so that the terminal is exposed to the external air.

It is important that the position of the terminal allows free passage of air across it at all times.

If the terminal discharges into a pathway or passageway check that combustion products will not cause nuisance and that the terminal will not obstruct the passageway.

In certain weather conditions a terminal may emit a plume of steam. Positions where this would cause a nuisance should be avoided.

IMPORTANT REQUIREMENT: The correct dimensional relationship between the terminal and any obstruction, openable window or ventilator as shown in Fig 1 pag.7 It is **ESSENTIAL TO ENSURE**, in practice, that products of combustion discharging from the terminal cannot re-enter the building, or any other adjacent building, through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation/air conditioning systems. If this should occur, the appliance **MUST BE TURNED OFF IMMEDIATELY** and the local gas region consulted.

Where the lowest part of the terminal is fitted less than 2m (6.6ft) above a balcony, above ground, or above a flat roof to which people have access, the terminal **MUST** be protected by a purpose designed guard.

Where the terminal is fitted within 850mm (34in) of a plastic or painted gutter, or 450mm (18in) of painted eaves, an aluminium shield of at least 1000 mm (40in) long should be fitted to the underside of the gutter painted surface.

The air inlet/products outlet duct and the terminal of the boiler **MUST NOT** be closer than 25mm (1in) to combustible material.

TERMINAL POSITION

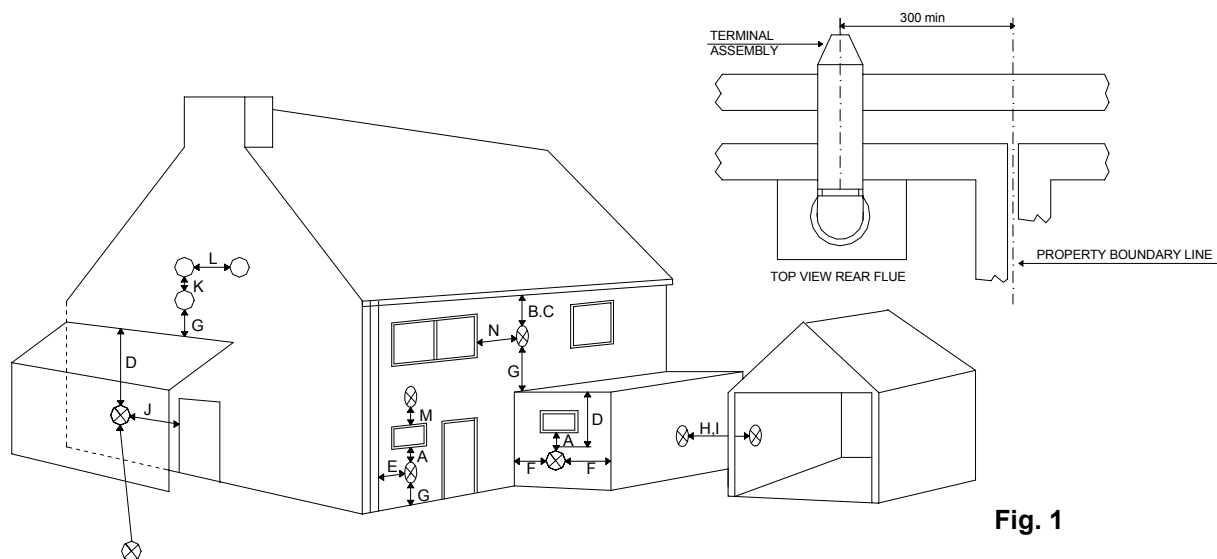
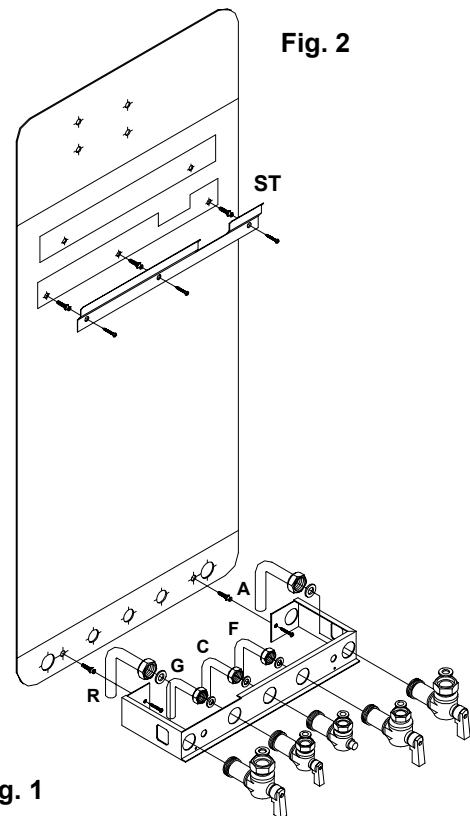
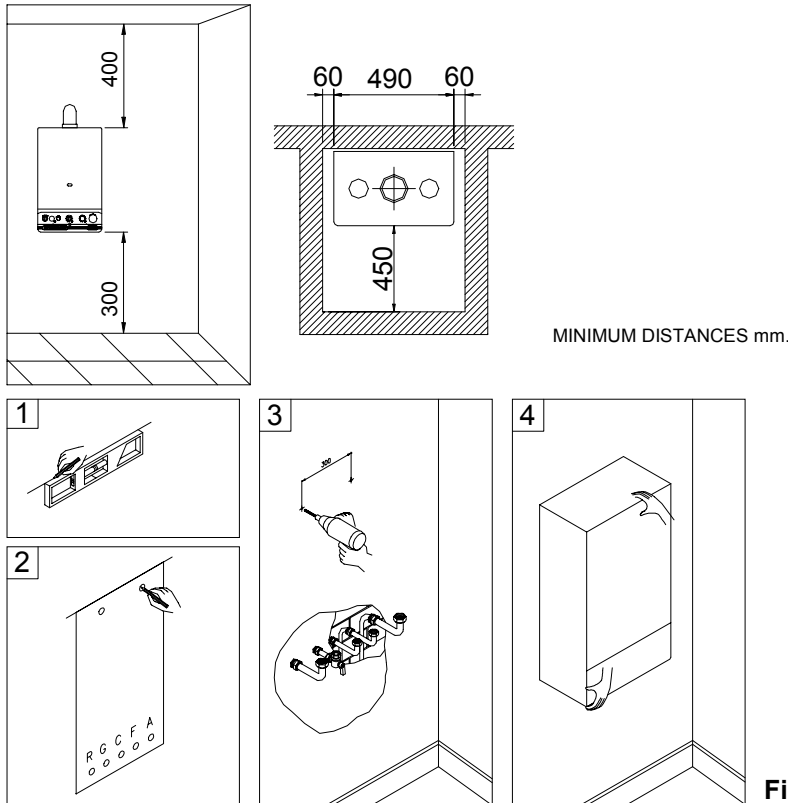


Fig. 1

A	Directly below an openable window, air vent or any other ventilation opening.	300 mm
B	Below gutter, drain pipes or soil pipes.	25 mm
C	Below eaves.	25 mm
D	Below balcony or carport roof.	25 mm
E	From vertical drain pipes or soil pipes.	25 mm
F	From internal or external corners.	25 mm
G	Above adjacent ground, roof or balcony level.	300 mm
H	From a surface facing the terminal.	600 mm
I	Facing the terminals.	1200 mm
J	From opening (door, window) in the carport into dwelling.	1200 mm
K	Vertically from a terminal on the same wall	1500 mm
L	Horizontally from a terminal on the same wall	300 mm
M	Above an opening, air brick, opening window etc.	300 mm
N	Horizontally to an opening, air brick, opening window etc.	300 mm

MINIMUM DISTANCES FOR FIXING TO WALL



To allow access in the boiler for maintenance operations, the minimum distances shown below must be respected (fig. 1):

To facilitate installation, the boiler is supplied with a template for advance location of connections to pipes. In this way, you may simply hook up the boiler when wall work is completed (fig. 2).

Installation Instruction

- 1) With a spirit level, draw a line on the wall on which the boiler will be installed (fig. 1).
- 2) Position the top of the template on the line drawn with the spirit level (respecting the distances – see fig. 1) than mark the three points for insertion of the 3 screw anchors or wall anchors for fixing the boiler hanging bracket. (choose proper anchors according to the wall type). Next, mark the two points for insertion of the two screw anchors for fixing the JIG to wall.
- 3) Fix the hanging bracket and the JIG.
- 4) Make connections to the hot and cold water supply, to the gas pipe and to the heating system with the fittings supplied with the boiler JIG. Connect pipes and valves as shown in the picture
- 5) Position the boiler paying attention to hang it to the hanging bracket (do not lean the boiler on the JIG) and make final connections.

WATER CONNECTIONS

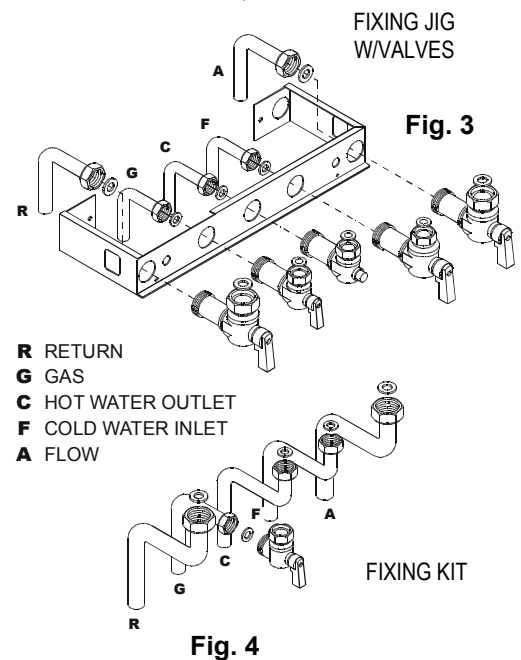
To facilitate installation, the boiler is equipped with a fittings kit (see fig. 3 and 4).

IMPORTANT:

Before connecting the heating system pipes, carefully clean the system to prevent residual dirt from entering into circulation and negatively affecting boiler function. Install a funnel with discharge under the safety valve (calibrated to 3 bar) to collect water in case of leaking due to overpressure.

- avoid using pipelines of reduced diameter;
- avoid the use of tight bends and adapters in important sections;
- clean out the system thoroughly before connecting up the boiler in order to eliminate any residue left in the pipes and radiators.

N.B.: Make sure that the water and heating pipes are not used as earth connections for electrical apparatus.



GAS CONNECTIONS

The gas supply must be connected up by a corgi registered fitter.

The following standards must be complied with: UNICIG 7131/72 and UNICIG 7129/92 (of 21/04/93)

Before installing the boiler, make sure of the following:

- the pipeline must be of an adequate section and length to carry the flow required and must be fitted with all safety devices and measures prescribed by current norms;
- before turning on the boiler make sure the type of gas which it is designed to run on is available
- the gas supply pressure must lie within the values shown on the plate it is recommended that the gas supply pipeline should be checked for residual obstructions before installing the boiler;
- where the internal gas supply pipe meets the boiler, the gas isolation cock supplied with the boiler must be fitted;
- check thoroughly that the gas inlets and outlets are properly sealed.
- conversion to allow the boiler to run on LPG to natural gas or vice versa must be carried out by a qualified gas fitter in accordance with law no.46 of 5th March '90.

ANTI-FROST SYSTEM

Radiant boilers are equipped with an Anti-Freeze system which comes into operation when the temperature falls to 5° C (Heating sensor) and 4° C (Hot water sensor) and protects the boiler down to -2°C external temperature.

To protect the internal Radiators, a room thermostat or remote control must be fitted.

NOTE: The frost system will only come into operation if the boiler is filled with water, and connected to a live gas supply, with electrical supply and boiler controls in the "ON" position (With the Main switch turned to Summer or Winter position) *and the gas supply turned on.*

FOR THE INSTALLER

For boilers installed outdoors, where the temperature may drop below -2° degrees Centigrade, the system should be filled with antifreeze liquid by an authorised technician and a set of electrical heating elements should be fitted to protect the domestic hot water heat exchanger.

Table n°1

Antifreeze Ethylene glycol (%) volume	Temperature freezing point (°C)	boiling point (°C)
10	- 4	101
20	-10	102
30	- 17	104
40	- 27	106
50	- 40	109
60	- 47	114

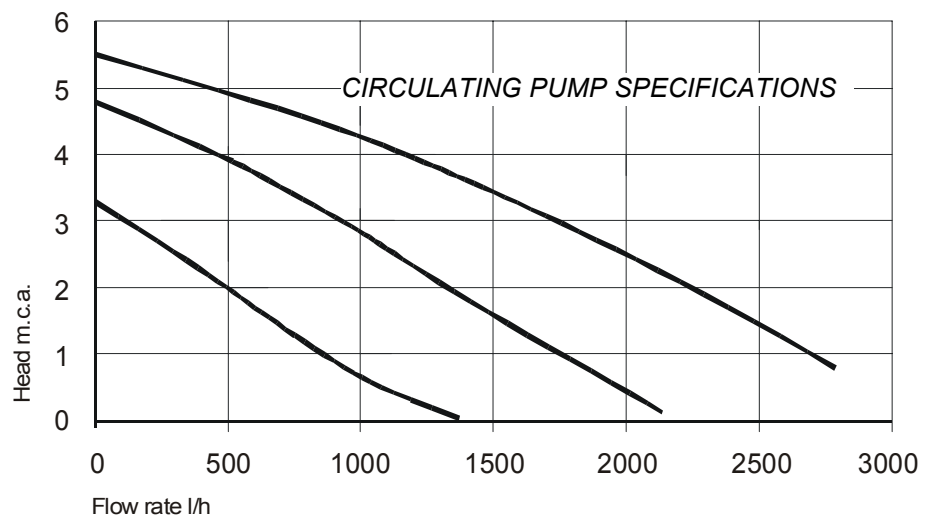
ADVICE FOR THE SERVICE

TECHNICIAN

If the boiler is out of service because it is frozen, check that no parts have been locked in position by ice before putting it into operation.

It is advisable to empty the boiler and the system in case of no operation for a long period.

Recommended percentage of glycol for temperatures down to - 8°C is 20%. The antifreeze liquid used must be of a good make and in a solution which has already been diluted to avoid the risk of uncontrolled dilution.



ELECTRICAL CONNECTIONS

The boiler works with 230 V 50 Hz AC current and has maximum input of 170 W. Connection to the electrical mains must be performed with a device having an omnipolar opening of at least 3 mm. Make sure the live and neutral connections conform to the diagram. A secure earth connection is compulsory.

IMPORTANT

- If you need to replace the power supply cable, use cable having the same characteristics: (HO5 W-F) 3x1 with maximum external diameter 8 mm.). Connect to the terminal block located in the instrument panel as follows:
- Turn off the electrical power supply at the mains.
 - Remove the boiler front casing in the direction of the arrows (see fig.1).
 - Undo the two side screws on the instrument panel using the phillips screwdriver CV and pull down the cover (see fig.2).
 - Make the following connections:
 - connect the yellow/green wire to the terminal marked with the earth symbol " \perp " (see fig.3).
 - connect the blue wire to the terminal marked with the letter "N".
 - connect the brown wire to the terminal marked with the letter "L".

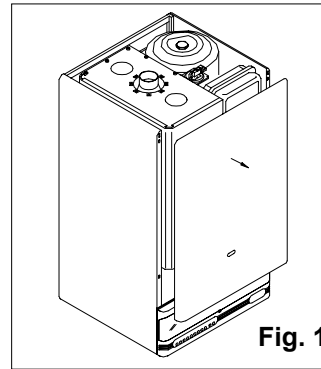


Fig. 1

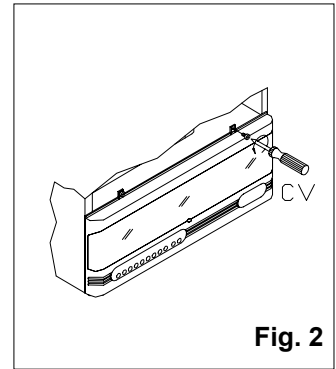


Fig. 2

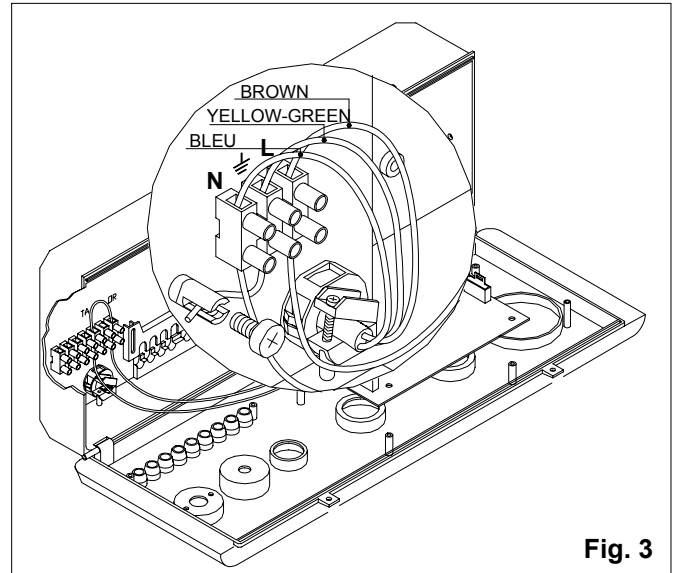


Fig. 3

CONNECTION OF ROOM THERMOSTAT

NOTE: use low voltage room thermostats only.

The thermostat wire must not be placed in the channel containing high tension wires, but must have its own line. The room thermostat lead must not exceed 50m length; minimum section 0.5 mm.

Connection: after carrying out the operations described on page 15, proceed as follows:

- Insert the room thermostat lead into the entry point on the electrical control box along with all the other leads on the boiler.
- Move the bridge PT (see fig.4) from terminal TA to the free one next to it.
- Insert the thermostat wires (fig.5) one in terminal TA and the other in the one next to it occupied by bridge PT which you have just moved.

If a timer is fitted as well as a room thermostat, carry out the electrical connections for the timer according to the indications in figures 6-7.

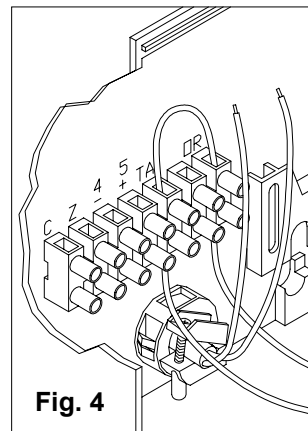


Fig. 4

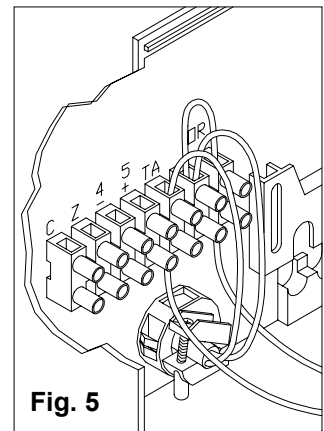


Fig. 5

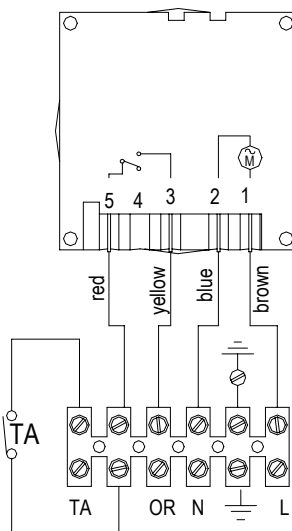


Fig. 6

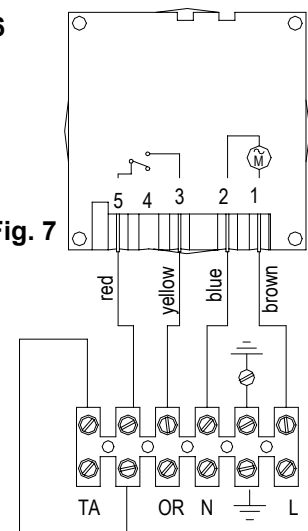


Fig. 7

CONTROL PANEL

LEGEND (see fig. 1)

1. SUMMER-WINTER ON-OFF SWITCH
2. LOCK-OUT INDICATOR
3. HEATING TEMPERATURE ADJUSTMENT KNOB
4. WATER TEMPERATURE ADJUSTMENT KNOB
5. SPACE FOR ADDING AN OPTIONAL TIMER

SELF- DIAGNOSTIC LEGEND (see fig. 2)

6. OPERATING/ POWER INDICATOR
7. DOMESTIC HOT WATER OPERATION
8. HEATING OPERATION
9. FLASHING LIGHT DENOTING AIR PRESSURE SWITCH FAILURE
10. FLASHING LIGHT DENOTING DOMESTIC WATER SENSOR FAILURE
11. FLASHING LIGHT DENOTING HEATING SENSOR FAILURE
12. FLASHING LIGHT DENOTING 90° C MAX TEMPERATURE SENSOR FAILURE
13. FLASHING LIGHT DENOTING LACK OF WATER IN SYSTEM
14. WATER PRESSURE LEVEL 1 BAR
15. WATER PRESSURE LEVEL 1.5 BAR
16. ELECTRONIC TEMPERATURE INDICATOR

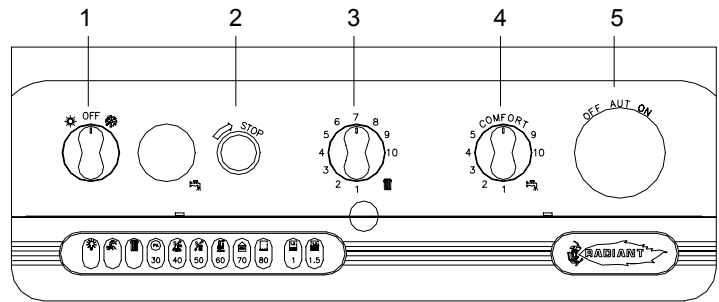


Fig. 1

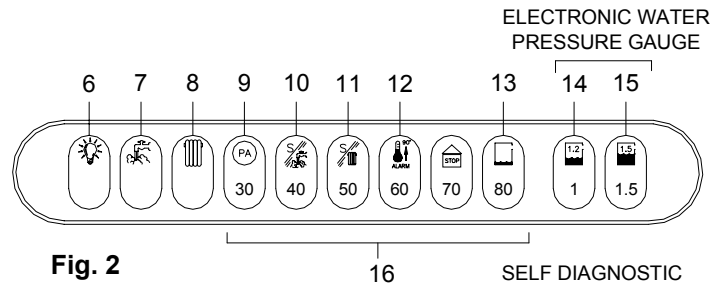


Fig. 2

STARTING UP THE BOILER

After connecting up the water supply, before starting up the boiler, carry out the following procedures:

Preliminary procedure

- Do as follows:
- make sure the power supply for the boiler is the same as that stated on the plate (230V - 50Hz) and that the live, neutral and earth connections have been properly connected;
- make sure the type of gas being supplied is the same as the type for which the boiler has been tested and approved (see plate data);
- make sure the unit is properly earthed;
- make sure there are no flammable liquids or materials in the immediate vicinity of the boiler;
- make sure that any shut-off valves in the heating circuit are open;
- open the gas cock and check the gas seals, making sure the counter shows no sign of leaks; in any case, double check by using a soapy solution and eliminate all eventual leaks. The checking procedure for the gas burner attachment is carried out with the boiler working;
- make sure the electrical mains switch is OFF;
- remove the front cover by pulling it forwards;
- undo the side screws and rotate the panel downwards

Filling the system

After making sure the gas cock is closed, fill the heating system as follows;

- fill the system until a pressure of 1.5 bar has been reached (light no. 15 ON; see fig. 2) and then close the tap on the filling loop;
- make sure the cap on the auto air vent valve is slightly loose to allow air to escape from the system (see fig. 3);
- undo the cap on the circulation pump to eliminate any eventual air locks (see fig. 3). It is a good idea to purge all radiators of air at this point too;
- before starting up the boiler the water pressure must be checked again; if this is seen to be below 0.5 bar (light no. 13 flashes; see fig. 2), bring it back up to 1.5 bar (light no. 15 ON; see fig. 2) and close the tap on the filling loop
- switch on the electrical power supply to the boiler;
- turn selector switch 1 to the WINTER ❄ position (see fig. 1), after a few seconds the pump will come into action;
- once the boiler is working, if any noises are heard in the system, repeat the above air purging procedures until there is no air left in the system;

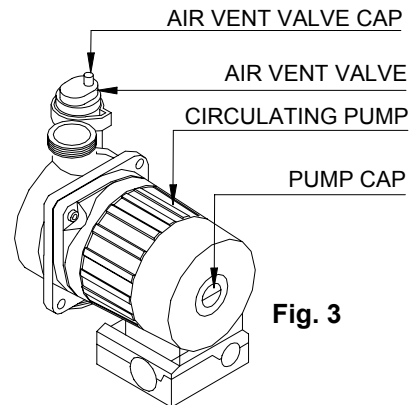


Fig. 3

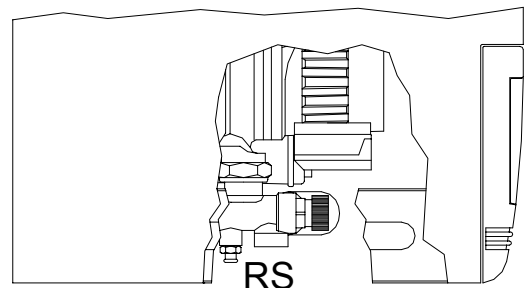


Fig. 4

- check there are no obstructions in the exhaust duct;
- check the pressure in the system: if this has gone down and LED 13 (see fig. 2 pag. 9) comes on restore pressure;
- close the tap on the filling loop once this operation is completed;

Starting up the boiler

- open the gas cock;
- turn on the boiler;
- set selector switch 1 to either the ☀ summer or ❄ winter symbols (see fig.1 pag. 9); make sure that no. 6 light is ON (see fig. 2 pag. 9). The automatic ignition system will turn the burner on. It may be necessary to repeat the procedure a few times to purge air from the pipes. To repeat the ignition procedure press release button 2 (see fig.1 pag. 9) and then try the ignition procedure once again. If the boiler does not start, press the reset button 2 (see fig. 1 pag. 9). **IMPORTANT** should the boiler fail to ignite wait 3 minutes before pressing button again.
- turn selector switch 1 to the «off» position (see fig. 1 pag. 9), insert a gauge into the pressure point (see fig. 4 pag. 12; pos. no. 4), turn on the boiler and check the minimum and maximum calibration pressures of the modulator in accordance with those stated on the gas plate; (to check the maximum modulation pressure of the modulator, turn on a hot water tap and check that the maximum pressure is equal to that stated on the plate; to check the minimum, undo one wire from the modulator coil and check on the gauge that the minimum pressure is equal to that stated on the plate; if the maximum pressure is not the same as stated on the plate, calibrate the modulator again;
- once the calibration procedure has been completed, unplug the mains lead or turn off the mains switch, close the gas cock and remove the gauge from the pressure point; tighten the screw making sure there are no gas leaks;
- after carrying out this operation, return the panel to its correct position and put the front casing back.

CHECK the maximum heating power.

For procedure regarding regulation of the heating system thermal capacity see «BOILER ADJUSTMENTS».

EMPTYING THE CENTRAL HEATING SYSTEM

Whenever it is necessary to empty the system, proceed as follows:

- turn off the main power supply switch;
- wait for the boiler to cool down;
- turn the system drain tap RS (see fig. 4 pag. 9) and use a container to collect the water that runs out;

EMPTYING THE DOMESTIC HOT WATER SYSTEM

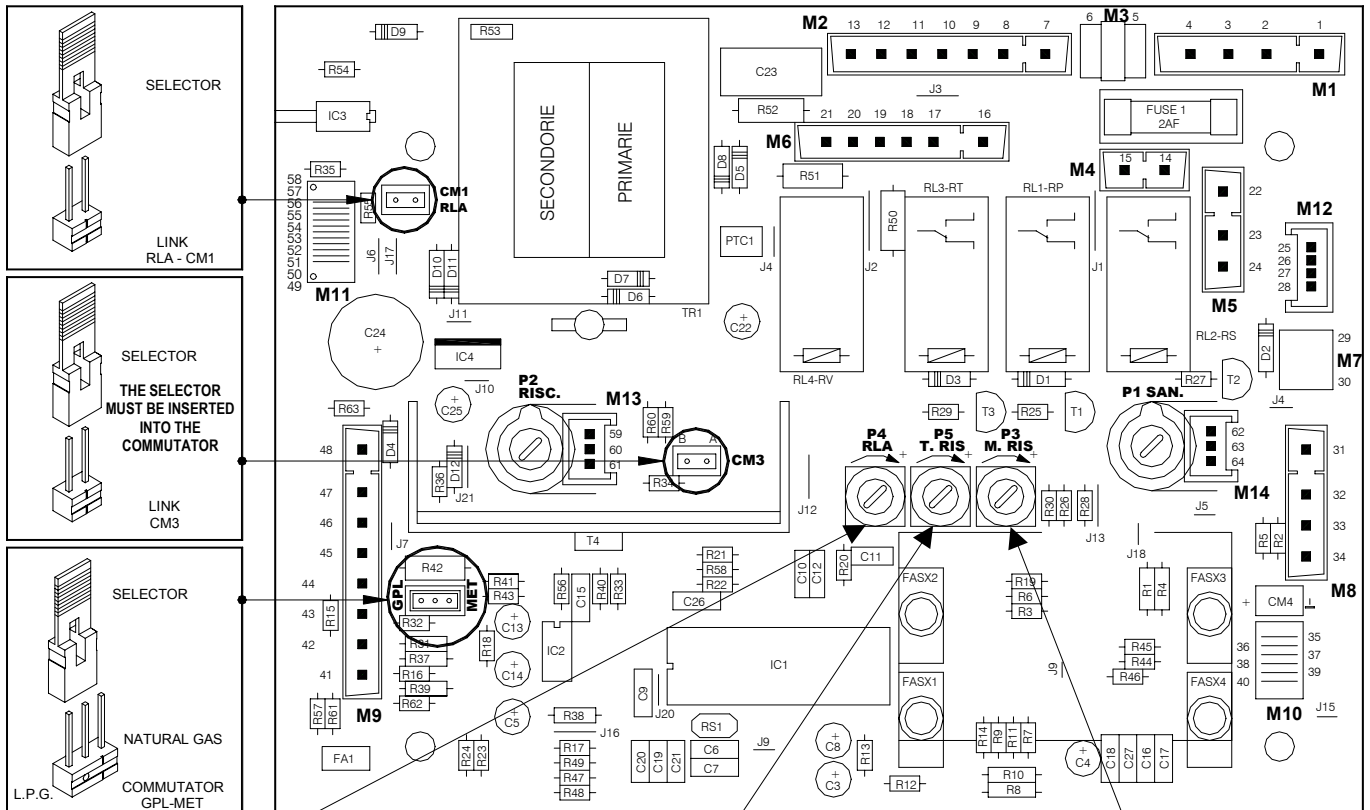
Whenever there is danger of freezing, the hot water system should be emptied in the following way:

- shut off the water at the mains;
- open all hot and cold water taps;
- empty from the lowest point (where possible).

WARNING

Please ensure that the boiler is commissioned in line with all BENCHMARK BOOKLET REQUIREMENTS. Failure to do this may invalidate the guarantee.

BOILER ADJUSTMENTS

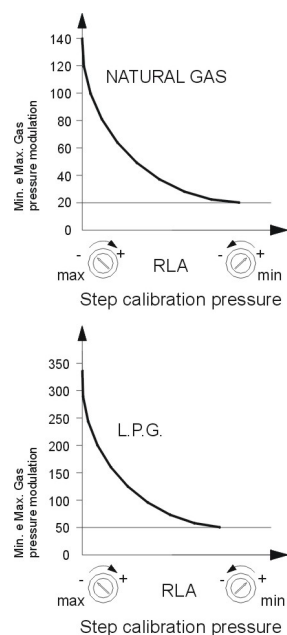


STARTING STEP RLA P4

This trimmer is a slow ignition regulator and it is calibrated at minimum during factory test. Use a small screwdriver for any adjustments. Turn clockwise to increase gas pressure to the burner at start-up (by setting the trimmer to maximum calibration pressure of modulator – see page 16). Turn counter-clockwise to decrease gas pressure to the burner at start-up (by setting the trimmer to the minimum pressure at start-up will correspond to minimum calibration pressure of modulator – see page 16). Through the RLA commutator you can verify the minimum gas pressure adjusted to the modulator. Remove the commutator from the MET-GPL selector located on the RAMIRE 2 circuit board and insert it on the RLA CM1 selector located on the same circuit board. Once pressure on the gauge has been checked, remove the commutator and insert it on the MET-GPL selector.

HEATING TIMER

Delays start-up times of the various ignitions once the boiler has reached optimum temperature (the range of adjustment is from 0 to 6 minutes, the value set during testing at the factory, to 2.5 min.) Use a screwdriver to adjust the delay time. Turn clockwise to increase time and counter-clockwise to decrease time down to zero.

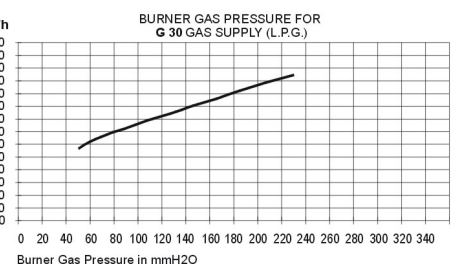
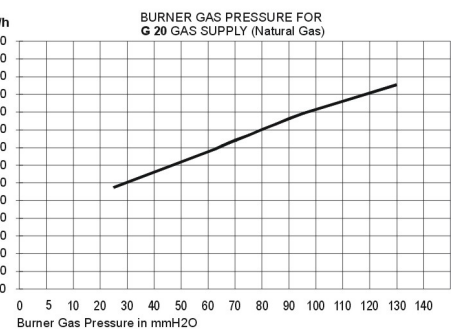


	BTU/h	KW	kCal/h
	111104	32.56	28000
	103168	30.23	26000
	95232	27.91	24000
	87296	25.58	22000
	79360	23.25	20000
	71424	20.93	18000
	63488	18.60	16000
	55552	16.28	14000
	47616	13.95	12000
	39680	11.63	10000
	31744	9.30	8000
	23808	6.98	6000
	15872	4.65	4000
	7936	2.32	2000
0	0	0	0

	BTU/h	kW	kCal/h
	111104	32.56	28000
	103168	30.23	26000
	95232	27.91	24000
	87296	25.58	22000
	79360	23.25	20000
	71424	20.93	18000
	63488	18.60	16000
	55552	16.28	14000
	47616	13.95	12000
	39680	11.63	10000
	31744	9.30	8000
	23808	6.98	6000
	15872	4.65	4000
	7936	2.32	2000
Thermal Capacity kCal/h	0	0	0

MAXIMUM HEATING TRIMMER.

The trimmer is calibrated at 80% of the max. rated output during factory testing. For the first ignition of the boiler, adjust according to heating power of the system. Use a screwdriver to adjust it. Turn clockwise to increase, counter-clockwise to decrease.



REGULATING THE GAS PRESSURE

Maximum and minimum modulation pressures.

N.B. The following operations must only be carried out by authorised personnel and are necessary when the boiler is converted to run on one type of gas or another or also in cases where the maximum pressure is not the same as that shown on the plate.

Calibration pressure.

BOILER POWER RATING		Metano		G30		G31	
		Min.	Max.	Min.	Max.	Min.	Max.
Room sealed combustion chamber model	mbar	2.5	13.5	6.4	27.8	9	35.8

KEY: (see fig. A)

- 1) Modulating coil
- 2) Fastening clips
- 3) Min. gas pressure adjustment screw
- 4) Max gas pressure adjustment core
- 5) Core lock nut
- 6) Calibrator spring
- 7) Modulator core
- 8) Gas valve stabiliser

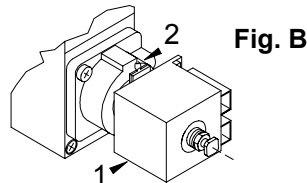
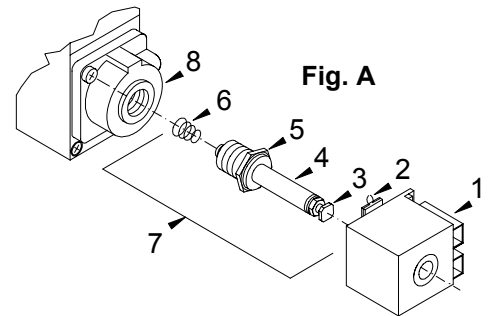
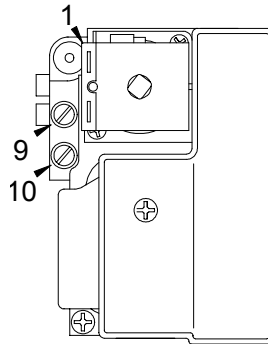


Fig. B) Widen locking clips (2);

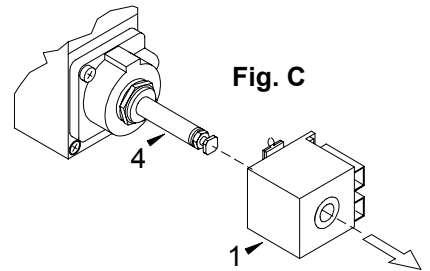


Fig. C) Slide out the coil (1) located above the gas valve;

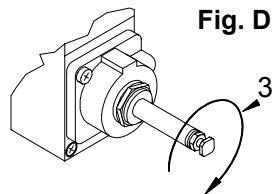


Fig. D) Tighten plastic screw (3) by turning it clockwise, be careful not to break it.

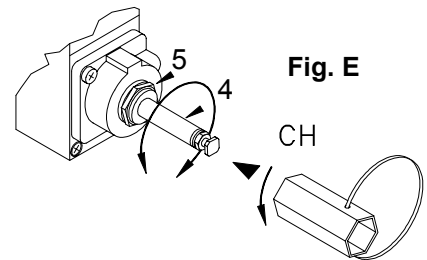


Fig. E) Use a no.17 spanner to undo the lock nut (5) which holds the core (4) of the coil in place; undo the screw and insert a pressure gauge;

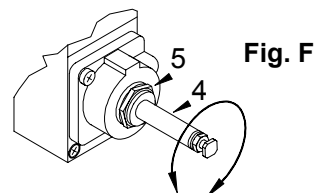


Fig. F) Turn on the boiler, regulate the maximum pressure by turning the core (4) (clockwise to increase pressure, counter clockwise to decrease). Once maximum pressure has been set, tighten the lock nut (5);

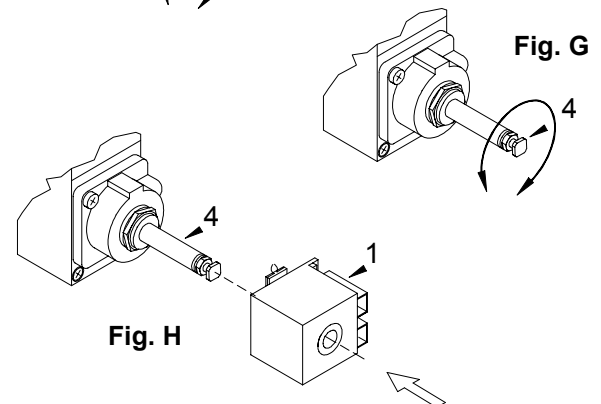


Fig. G) Adjust minimum modulation pressure with the coil disengaged: slowly unscrew plastic screw (3) until the pressure gauge shows the minimum pressure required.

Fig. H) Once these operations are completed, seal the plastic screw with paint or enamel; reassemble the coil (1) by pressing it back into place; remove the gauge, tighten the screw and use a soapy solution to check for any eventual leaks.

TECHNICAL DATA

DIFFERENTIAL AIR PRESSURE SWITCH FOR FAN CONTROL

To guarantee maximum safety in flue exhaust, a differential pressure switch is installed on room-sealed boilers and on forced draught boilers. This pressure switch automatically controls perfect functioning of the fan and the passage of both external air and exhaust flue pipes.

DIVERTER VALVE VC 6012MG6000

The diverter valve is the device which controls the boiler switching from central heating to d.h. water circuit and vice versa. The diverter valve is fitted with a manual command lever C (fig. 3) which, when set on the top position, towards the valve head, allows the boiler operating on the domestic hot water circuit while, when set on the low position, the boiler operates on the central heating circuit.

When the C lever is set on the central position, it allows the actuator on midway.

In this position, *to be used only in case of motor failure or damage*, both central heating and domestic hot water ports are open and both domestic hot water and central heating circuits are operating.

To restore the initial position, separate the actuator and the valve body following instructions from no.1 to no.4 (see fig.1).

To separate the motor from the valve body proceed as follows (fig.1):

1. Press button A under the motor.
2. Simultaneously keep the A button pressed and turn the actuator counter-clockwise;
3. Lift off the motor
4. To disconnect the power supply cable press the B tap located on the pin C.

See fig. 3 to perform the electrical wiring of the diverter valve to the main printed circuit board.

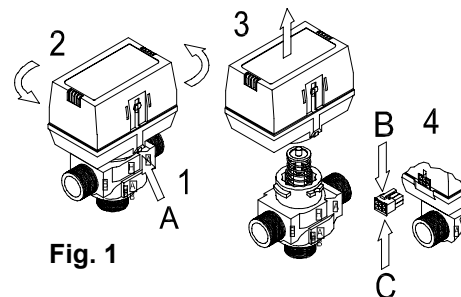


Fig. 1

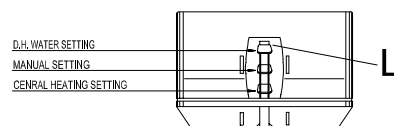
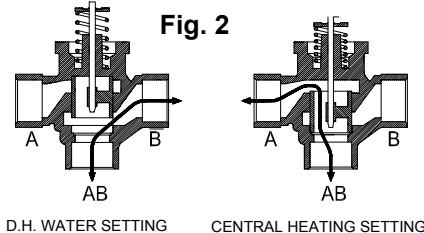
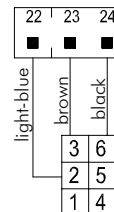


Fig. 2



RAMIRE P.C. BOARD

M5 TERMINAL



Light-blue - Common
Brown - D.H. Water
Black - Central Heating

Fig. 3

DOMESTIC HOT WATER PRODUCTION

The boilers are designed and built for the production of domestic hot water with a 25 lt. capacity storage tank. One advantage of this system is the amount of water immediately available, thanks to the large exchanger surface of the coil inside the boiler which allows different services to be used simultaneously.

As well as the use of a porcelain treated glass coating on both the coil and the internal boiler surface to guarantee high levels of hygiene, the inside of the boiler also has a magnesium anode which, in the event of galvanic currents, preserves it from corrosion to ensure it a longer working life.

BOILER MAINTENANCE

(carried out by Radiant Help Line)

Every 12 months, or more frequently if the quality and consumption of water demand it, check the condition of the magnesium anode and replace it if signs of wear are evident. To check the condition of the anode 3 (see fig. 4), open valve 4 on the top of the boiler, undoing the red knob in a clockwise direction. If water seeps out of the valve this means the anode is worn and must be replaced. If on the other hand there is no evidence of water leaking out, the anode can still be used. After carrying out the operation described here, remember to tighten the valve once more.

If the water pressure exceeds 6 bar, fit a 2 lt expansion tank to the boiler, proceeding as follows (see fig.1)

- a. empty the water content of the boiler
- b. undo the 1 / 2" cap (1) on top of the boiler;
- c. fit the expansion tank 2;
- d. fill the boiler once more.

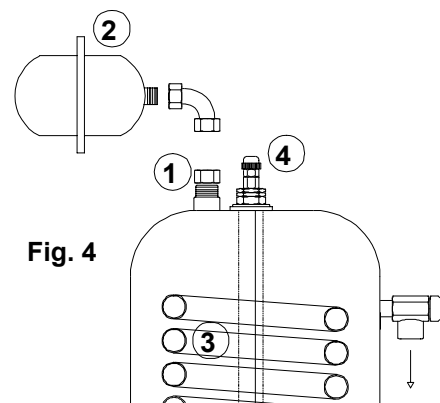


Fig. 4

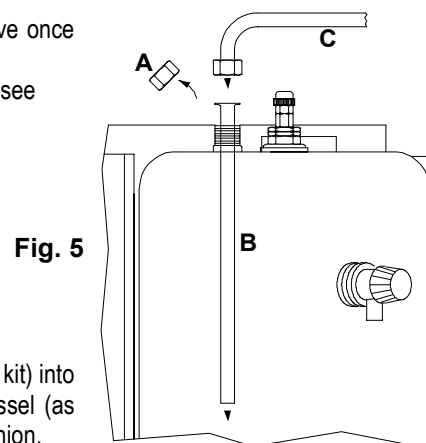
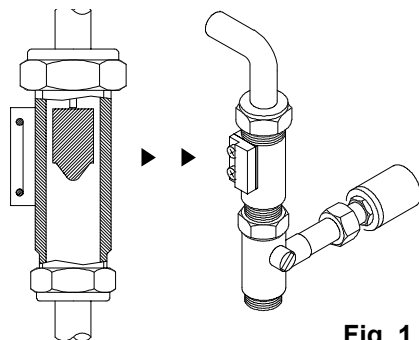
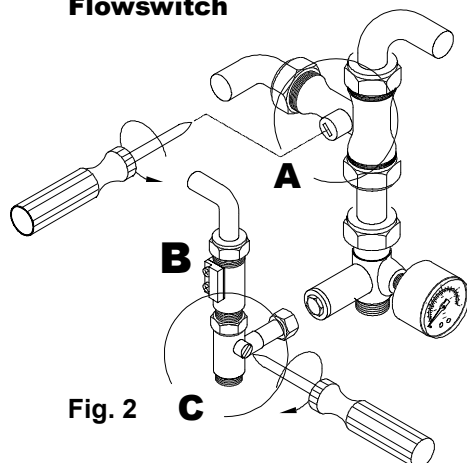


Fig. 5

D.H.W. CIRCULATING LOOP

It is possible to make a d.h.w. circulating loop. Please proceed as follows:

unscrew CAP A on the cylinder top, insert a copper PIPE B (supplied by the manufacturer with a kit) into the 1/2" union and connect here the circulating loop pipe C. If necessary, fit an expansion vessel (as shown in fig.5) inserting a "T" connection between the circulating loop pipe and the cylinder 1/2" union.

**Flowswitch****Fig. 1****Fig. 2****LIMITER**

The boiler is equipped with a variable flow limiter at the cold water inlet. The flow limiter can be adjusted by turning the screw (see fig.2 pos.C) in order to obtain the correct flow rate of domestic hot water for the specific boiler output.

FLWSWITCH

This device gives precedence to domestic hot water and is fitted to boilers which supply instantaneous hot water (see fig. 1, item B fig. 2). It allows conversion to hot water even with a minimum hot water demand (2 litres/min.), using an electromagnetic principle with electrical switching by means of a relay. The device is made of non-toxic, corrosion-proof ZYTEL 101 L plastic material which has type approval with non-toxic characteristics and is unaffected by hard water. In addition, a filter is fitted before the flowswitch and at the cold water inlet which eliminates any water impurities. These features guarantee that the flowswitch operation is highly efficient.

BY-PASS

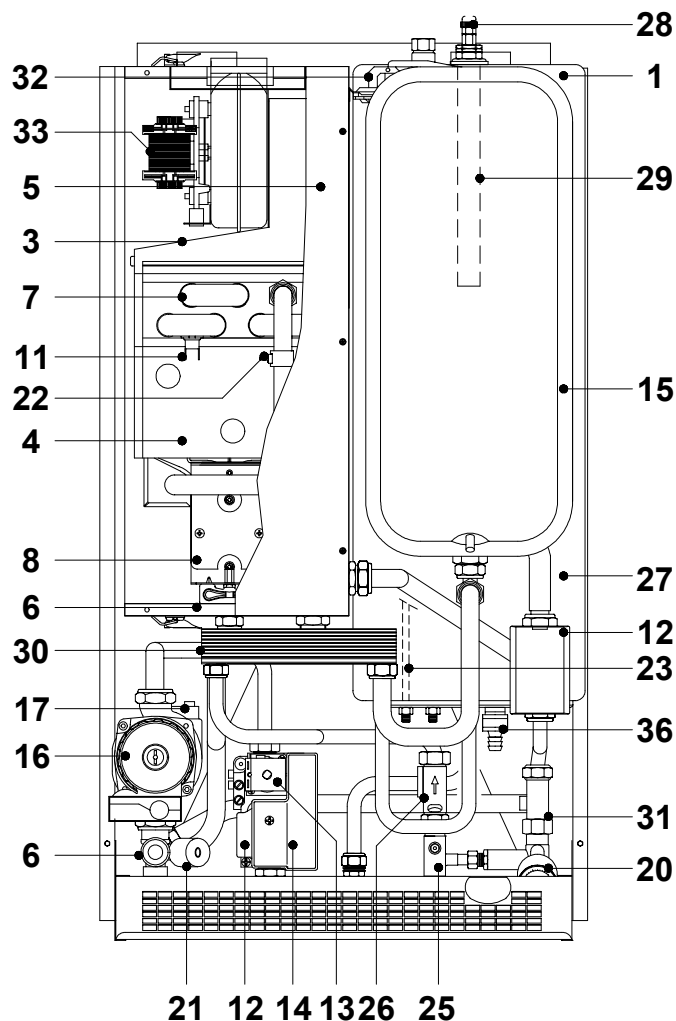
All boilers are fitted with a by-pass. This element is essential in the following cases:

- if a two-way zone valve is installed
- if thermostat valves are installed in the radiators.

To adjust the by-pass proceed as follows (see fig. 2 pos.A): fit the screwdriver to the plastic screw of the by-pass, bearing in mind that when the slot of the screw is horizontal the by-pass is totally open, allowing all the water to pass, while when it is vertical the by-pass is totally closed. For partial by-pass flows, use the adjuster screw.

KEY

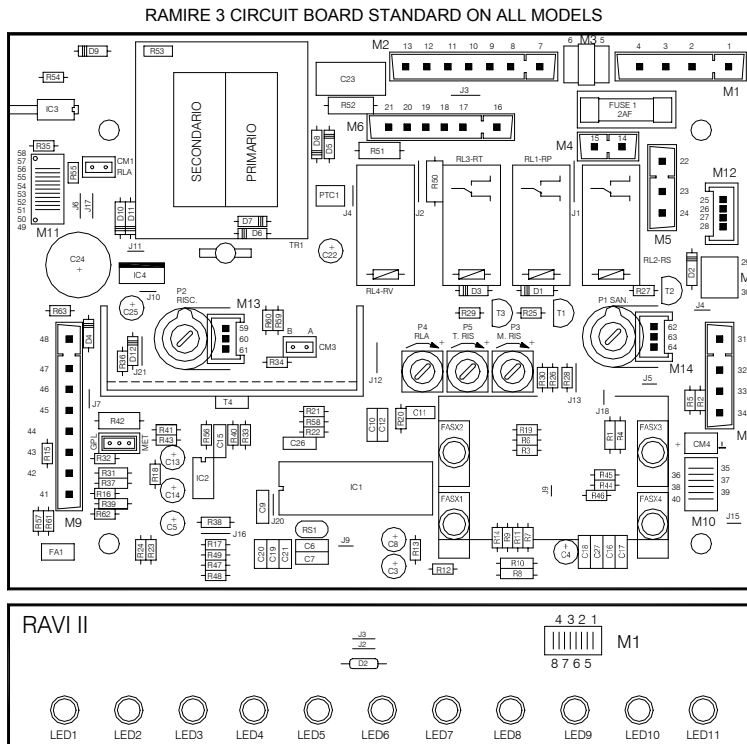
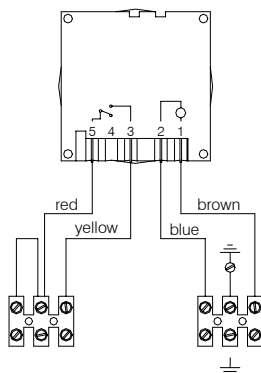
1. FRAME
2. -
3. FLUE HOOD – ROOM SEALED COMBUSTION CHAMBER
4. COMBUSTION CHAMBER
5. ROOM SEALED CHAMBER COVER
6. ROOM SEALED CHAMBER BACK
7. HEAT EXCHANGER Mod. 20.000
8. MULTIGAS BURNER WITH 24 RAMPS
9. IGNITION ELECTRODE
10. FLAME IONISATION ELECTRODE
11. HEATING SAFETY THERMOSTAT
12. ELECTRONIC GAS VALVE VK4105 A 1001
13. GAS PRESSURE MODULATOR
14. ELECTRONIC IGNITION BOARD
15. EXPANSION VESSEL
16. 3-SPEED CIRCULATION PUMP WITH AIR VENT
17. AUTOMATIC AIR VENT
18. HEATING CIRCUIT 3 bar PRESSURE RELIEF VALVE
19. DRAINING TAP
20. WATER PRESSURE GAUGE
21. WATER PRESSURE SWITCH
22. HEATING SENSOR
23. HOT WATER SENSOR
24. 3-WAY DIVERTER VALVE
25. FLOWSWITCH CONNECTION WITH FLOW LIMITER
26. ELECTRONIC FLOWSWITCH
27. 25 LITRE WATER STORAGE TANK
28. ANODE CONTROL VALVE
29. ANODE
30. PLATE TYPE EXCHANGER
31. BY-PASS
32. AIR PRESSURE SWITCH
33. FAN
34. FLUE SAFETY THERMOSTAT
35. -
36. BOILER DRAINING TAP



ELECTRICAL CONNECTION FOR ROOM SEALED COMBUSTION CHAMBER ELECTRONIC IGNITION BOILER

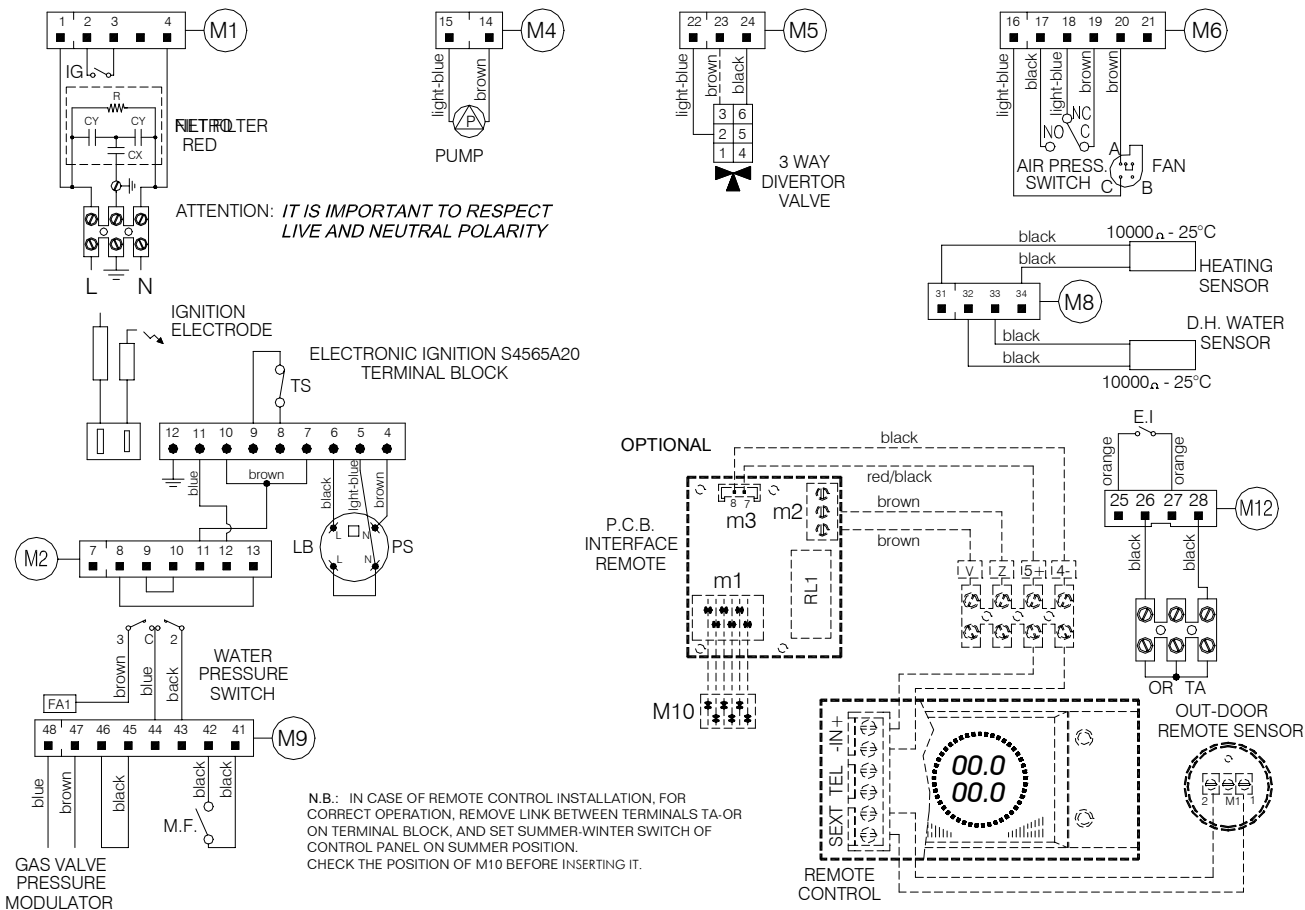
N.B. M1 CONNECTOR OF THE RAVI 2
CIRCUIT BOARD MUST BE CONNECTED TO
THE M11 CONNECTOR OF THE RAMIRE 3
CIRCUIT BOARD.

TIME CLOCK
Wiring diagram

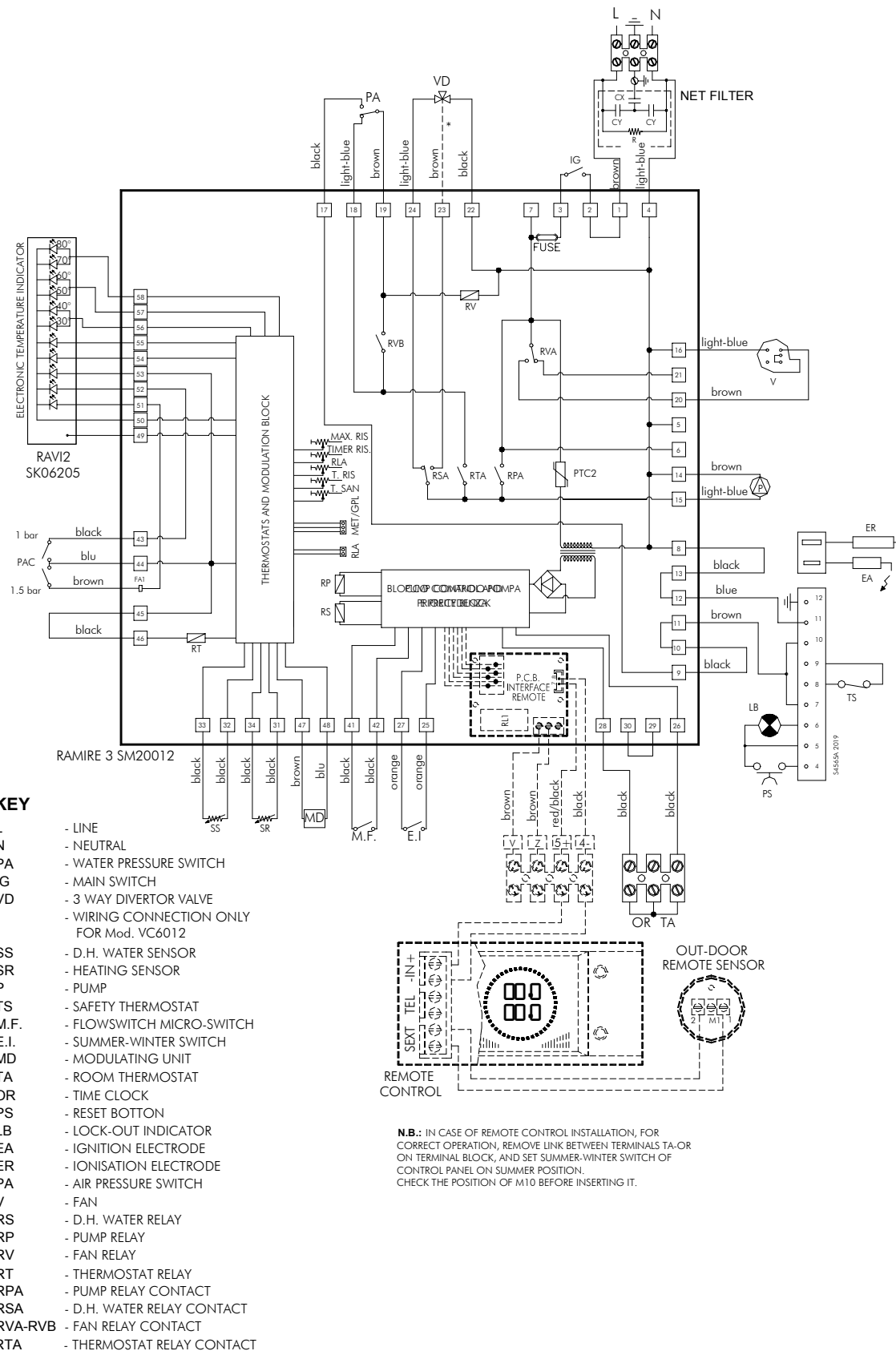


RAVI 2 CIRCUIT BOARD-ELECTRONIC TEMPERATURE INDICATOR WITH SELF-DIAGNOSTIC

WIRING OF COMPONENTS BY MEANS OF CONNECTORS



WIRING DIAGRAM FOR ROOM SEALED COMBUSTION CHAMBER ELECTRONIC IGNITION BOILER



MAINTENANCE

To keep the boiler in efficient and safe operating condition, we recommend you perform the following checks at least once a year:

- Check all seals on the gas side and replace gaskets to restore perfect seal as required.
- Check all seals on the water side and replace gaskets to restore perfect seal as required.
- Visually check combustion and the combustion chamber; dismantle and clean the chamber if necessary.
- Check the primary exchanger and clean it if necessary.
- Check functioning of gas safety systems: Insufficient gas safety device (flame detection sensor for electronic ignition boilers) thermocouple for pilot light boilers.
- Check functioning of heating safety systems: safety thermostat for temperature limit, safety sensor for pressure limit.
- Check the exhaust flue safety device
- Check the max. and min. modulation pressures and the modulation.
- Check that the electrical connection conforms to the description in the instruction manual for the boiler.
- Check the domestic hot water flow rate and temperature.

When dismantling the boiler casing, be careful when removing the side panels after having removed the front panel; the front panel is removed by undoing the lower and front fixing screws and then removing as shown in fig.1, lifting it and then pulling it away. The new side panels are connected to the frame by means of two hooks which correspond with two slots on the frame to ensure quick and efficient fixing.

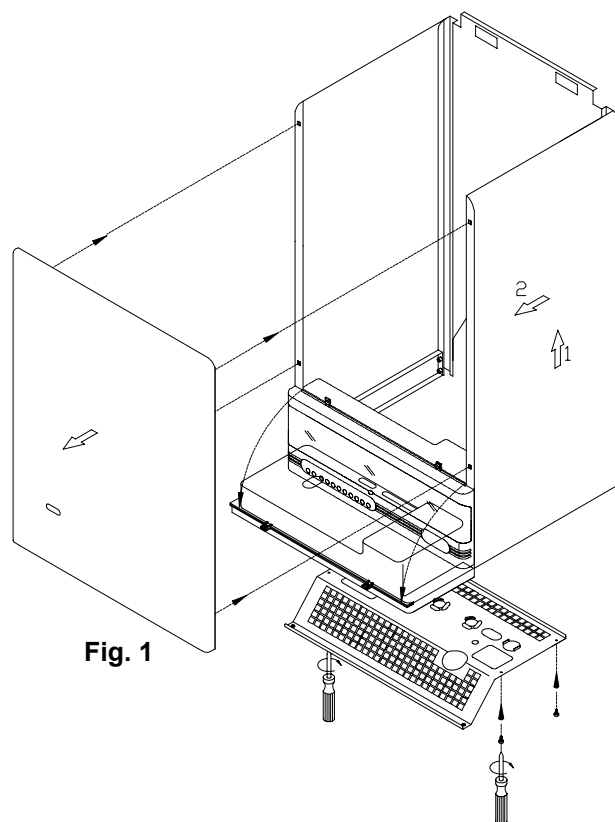


Fig. 1

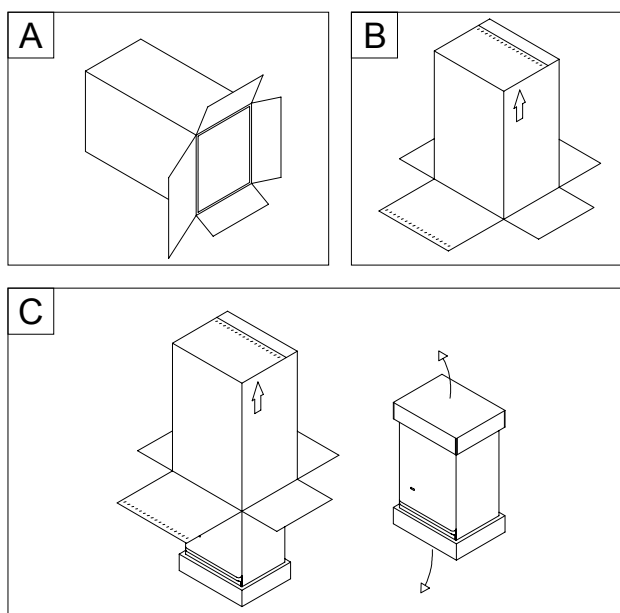


Fig. 2

UNPACKING

- Set the packed boiler (fig. 2) down on the floor making sure that the arrow is pointing upwards and remove the sticking tape. Open the 4 flaps outwards.
- Turn the boiler 180° supporting it by hand.
- Lift the boiler with the packing pieces positioning it vertically in order not to damage the lower corners of the casing. Remove the packing pieces. Lift the boiler by holding it at the back and proceed with installation.

N.B. It is recommended that the boiler be unpacked before installation. The manufacturer cannot be held responsible for any damage caused to the boiler due to incorrect handling of the boiler.

IMPORTANT!

The packing materials (cardboard) are recyclable.

IMPORTANT!

The inner packing materials (plastic bags, polystyrene foam, nails etc.) are potentially dangerous and must not be left within reach of small children.

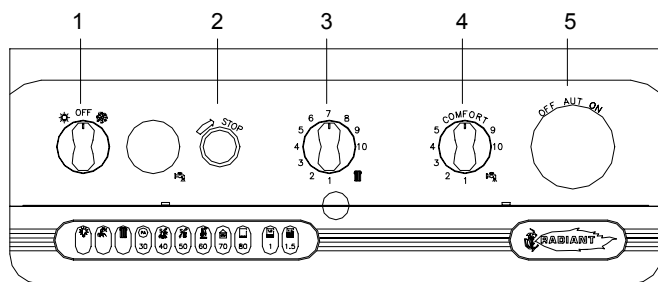


Fig. 1

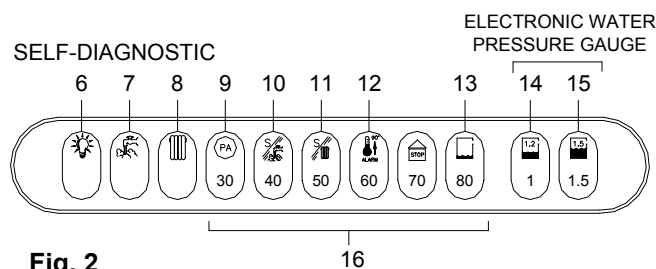
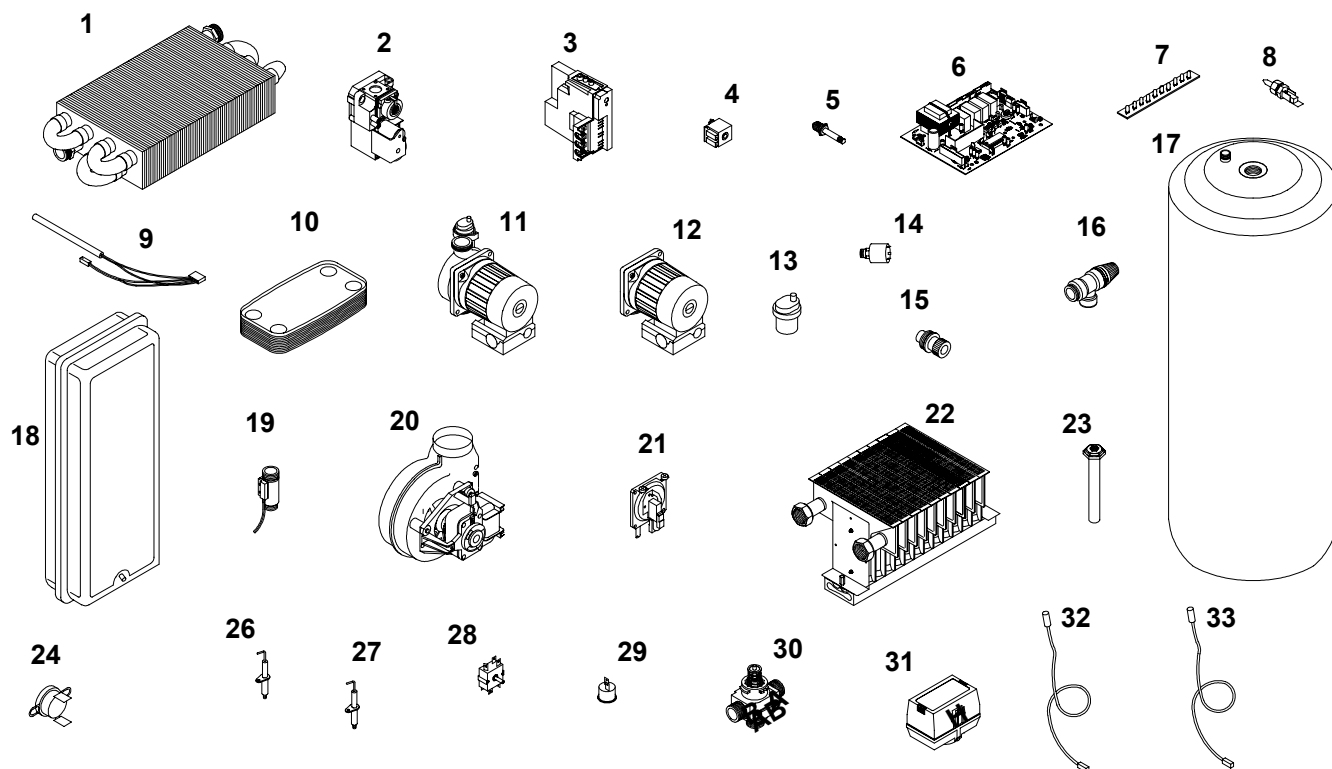


Fig. 2

MALFUNCTION	POSSIBLE CAUSE	SOLUTION
1 Light 6 (fig.2) is on but nothing works.	a. water pressure switch b. water pressure below 0.5 bar (light 14 fig. 2 flashing). c. RAMIRE circuit board damaged	a. replace it b. load water c. replace it
2 Light 6 (fig.2) is on, the circulation pump is running, but the flame does not ignite	d. RAMIRE circuit board malfunction e. broken sensors (lights 10 or 11 fig. 2 flashing) f. gas valve failure (light 2 fig.1 on) g. ignition unit broken (light 2 fig.1 on) h. electric fan does not work (light 9 fig. 2 on) i. air switch does not work j. gas turned off (light 2 fig. 1 on) k. modulator regulated to below minimum (light 2 fig.1 on) l. ignition electrode broken (light 2 fig.1 on) m. ignition electrode wire detached (light 2 fig.1 on) n. limit thermostat broken or wrongly calibrated (light 2 fig. 1 on)	d. replace it e. replace it f. replace it g. replace it h. replace it i. replace it j. open gas cock k. adjust it l. replace it m. re-connect it n. replace it
3 Light 6 (fig.2) is on, the circulation pump is running, the flame ignites but goes out after 10 seconds	o. flame ionisation electrode broken (light 2 fig.1 on) p. flame ionisation electrode wire detached, broken or damp (light 2 fig.1 on) q. ignition unit broken (light 2 fig.1 on) r. LIVE - NEUTRAL polarity inverted (light 2 fig.1 on) s. no earth connection (light 2 fig.1 on) t. power supply (LIVE - LIVE) (light 2 fig.1 on)	o. replace it p. re-connect or replace it q. replace it r. change over polarity s. make earth connection t. fit conversion kit
4 Boiler on, temperature rises rapidly and extinguishes flame (light 2 fig.1 on)	u. circulation pump burned out or blocked v. air in system w. flowswitch jammed open x. heating system turned off	u. unblock or replace it v. bleed system w. unblock or replace it x. open heating system cut-off valve
5 Noise as flame ignites	y. ignition electrode wrongly positioned z. RLA trimmer set too high aa. modulator minimum too high bb. dirty main burner	y. check the distance between burner and electrode is 2.5-3 mm. z. adjust it aa. adjust it bb. clean it
6 Boiler ignites but goes out when temperature is reached without modulating	cc. modulator tube blocked dd. modulator only calibrated at maximum ee. RAMIRE circuit board breakdown	cc. unblock or replace it dd. re-calibrate ee. replace it
7 Boiler on (light 6 fig.2 on), selector switch 1 (fig.1) set to Winter, but radiators do not heat up	ff. diverter valve blocked or broken gg. valve VC 6012 connecting wires wrongly positioned	ff. unblock or replace it gg. connect wires correctly
8 Boiler on (light 6 fig.2 on), but gas pressure at burner is always at minimum	hh. broken modulator coil ii. RAMIRE circuit board breakdown jj. MAX. HEATING trimmer at minimum (only on Winter setting)	hh. unblock or replace it ii. replace it jj. make adjustments
9 No hot water when tap is turned on	kk. cold water entry pressure below 0.3 bar ll. dirty cold water entry filter mm. microflowswitch broken or piston demagnetised	kk. increase pressure ll. clean filter mm. replace

SPARE PARTS SHORT LIST

n°	CODE	DESCRIPTION	RMAS 21 E
			Electronic Ignition
1	58006LP	MAIN HEAT EXCHANGER Mod. 20.000 - 63 A	✓
2	36064LA	ELECTRONIC GAS VALVE VK4105 A 1035B	✓
3	76624LA	ELECTRONIC IGNITION BOARD S4565 A 2019	✓
4	18003LA	MODULATING COIL	✓
5	97007LA	MODULATING UNIT	✓
6	76623LA	PRINTED CIRCUIT BOARD RAMIRE 3 SM 20012	✓
7	76622LA	INDICATORS P.C.B. RAVI 2 CE	✓
8	73507LA	D.H.WATER – HEATING 1/8" SENSOR	✓
9	31011LA	D.H.W. – HEATING SENSOR WIRE	✓
10	20028LA	FLAT PLATE TYPE EXCHANGER	✓
11	24027LA	CIRCULATING PUMP GOLD 50V1 SHUL CLF6 W/ AIR VENT	✓
12	24028LA	CIRCULATING PUMP MOTOR	✓
13	96030LA	AUTOMATIC AIR VENT VALVE 5020 3/8"	✓
14	59010LA	WATER PRESSURE SWITCH 1/8"	✓
15	96008LA	3 BAR PRESSURE RELIEF VALVE 1/2"	✓
16	96026LA	D.H.W. CYLINDER TEMPERATURE (90°)+PRESSURE (7BAR) SAFETY VALVE	✓
17	20030LA	INSULATED 25 LT. STORAGE CYLINDER	✓
18	95006LA	10 LT. EXPANSION TANK W/BACKET	✓
19	96007LA	ELECTRONIC FLOWSWITCH - 1/2" CONNECTIONS	✓
20	37008LA	EXHAUST FAN 230V	✓
21	59011LA	AIR PRESSURE SWITCH CE C6065AH1095	✓
22	21003LA	GAS BURNER 24 R. 0.89 NATURAL GAS	✓
	21029LA	GAS BURNER 24 R. 0.60 L.P.G.	✓
23	20025LA	ANODE	✓
24	86006LA	SAFETY THERMOSTAT 95°C WATER	✓
25	-		
26	35018LA	IGNITION ELECTRODE x ELECTRONIC	✓
27	35009LA	IONISATION ELECTRODE	✓
28	47021LA	3 POSITION COMMUTATOR SWITCH R11C2X401	✓
29	47014LA	LOCK-OUT INDICATOR 60118C00	✓
30	96023LA	DIVERTER VALVE BODY VCZMG6000E	✓
31	96022LA	DIVERTER VALVE VC6012 MOTOR	✓
32	31056LA	IGNITION ELECTRODE CABLE x ELECTRONIC	✓
33	31050LA	IONISATION ELECTRODE CABLE	✓





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***The code of practice for the installation,
commissioning & servicing of gas fires and wall heaters***

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