



Heat technology since 1959

INSTALLATION, AND MAINTENANCE MANUAL FOR GAS FIRED, ONLY HEATING WALL-HUNG BOILERS (SYSTEM BOILERS)

model **RS 20 E / 40 - 60**

TYPE C ROOM SEALED



model **RS 24 E / 70 - 90**

TYPE C ROOM SEALED

SEDBUK BAND D



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

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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 - AND 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. 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 optional 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 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.

- 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.

We recommend that the pipes be cleaned out to remove any residues that might negatively affect the operation of the boiler.

3) GENERAL WARNINGS BASED ON TYPE OF POWER SUPPLY

3a) 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)

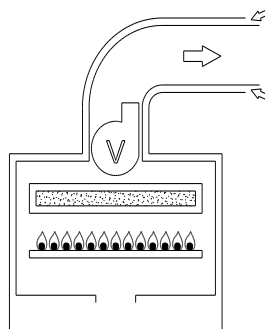
Model RS • TECHNICAL DATA

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.

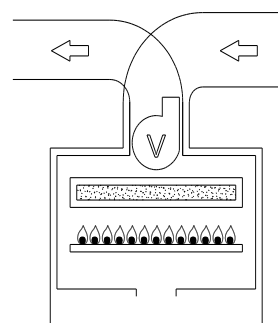
CENTRAL HEATING ONLY *sealed combustion circuit type*

RS 20 E 40 / 60 – Electronic ignition

RS 24 E 70 / 90 – Electronic ignition



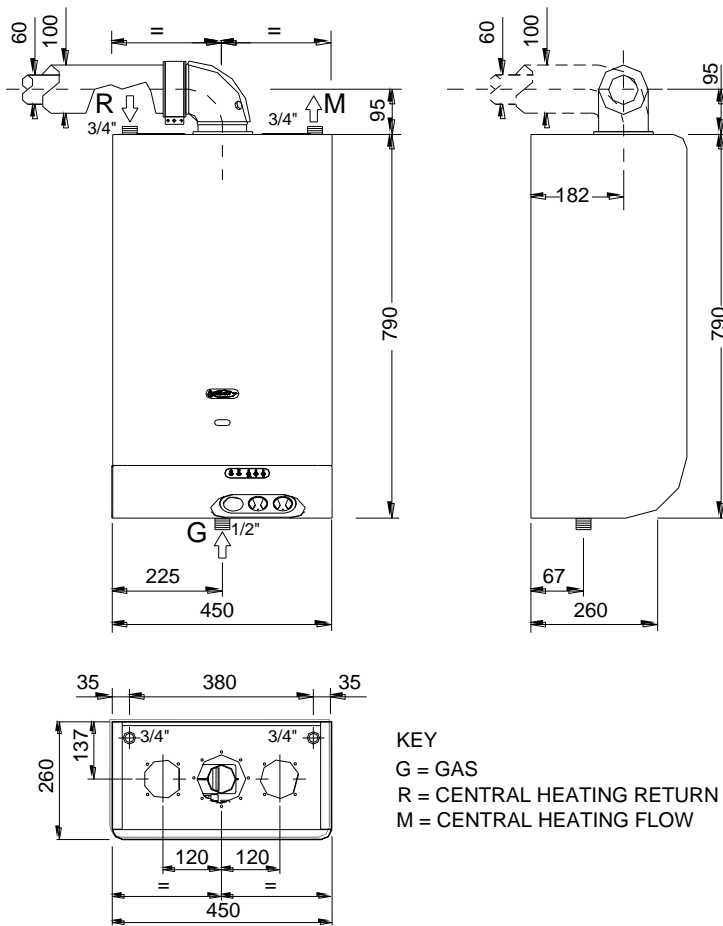
C32 Coaxial vertical
C12 Coaxial horizontal



C52 Double

Technical data

		RS 20 E 40 – 60	RS 24 E 70 – 90
Minimum rated output	kW	11	20,5
	BTU/hr	37537	70000
Maximum rated output	kW	17.5	26.8
	BTU/hr	60000	91621
Max. working pressure (heating)	bar	3	3
Min. working pressure (heating)	bar	0.3	0.3
Max. heating temperature	°C	80	80
Width	mm.	440	440
Height	mm.	660	660
Depth	mm.	260	260
Weight	Kg.	29	29
Coaxial exhaust flue diameter	Ø	100/60	100/60
Double exhaust flue diameter	Ø	80/80	80/80
Flow/return connections	Ø	3/4"	3/4"
Gas connections	Ø	1/2"	1/2"
Electrical connection 50 Hz	V	230	230
Power supply	W	70	70
Burner jets NP 13 G20	Ø	1.25	1.25
Burner jets NP 13 G30-G31	Ø	0.75	0.77



OVERALL DIMENSIONS

TYPE C WALL-MOUNTED BOILERS SEALED COMBUSTION CIRCUIT:

Kit A

Horizontal coaxial exhaust flue system with 360° rotation.

Allows fumes exhaust and air intake from external wall.

N.B.: To insert a bend in the flue, reduce total flue length by 0.8 m.

Kit A with vertical coaxial collar.

Horizontal coaxial exhaust flue system with 360° rotation.

Allows fumes exhaust and air intake from external wall.

Example of horizontal – coaxial flue KIT A with insertion of a vertical coaxial collar.

N.B.: To insert a bend in the flue, reduce total flue length by 0.8 m.

If either flow or return pipe needs to be sided across top of the boiler the additional part number 37015LP packed separately needs to be fitted on top of boiler flue outlet before fitting elbow, this will allow pipework to run under flue pipe. (See. Fig.1)

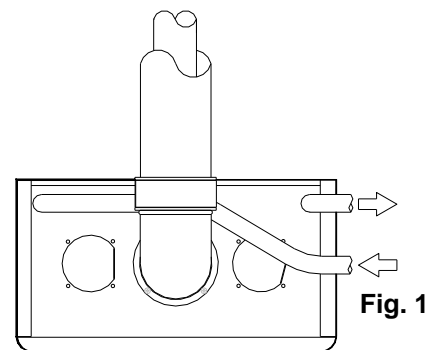
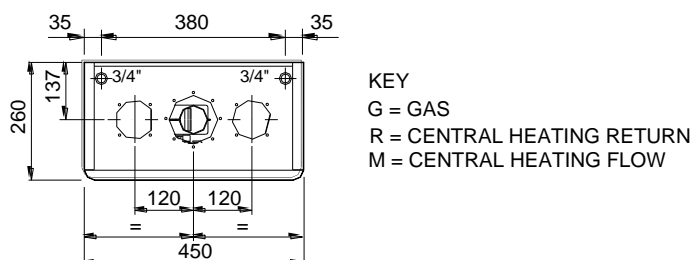
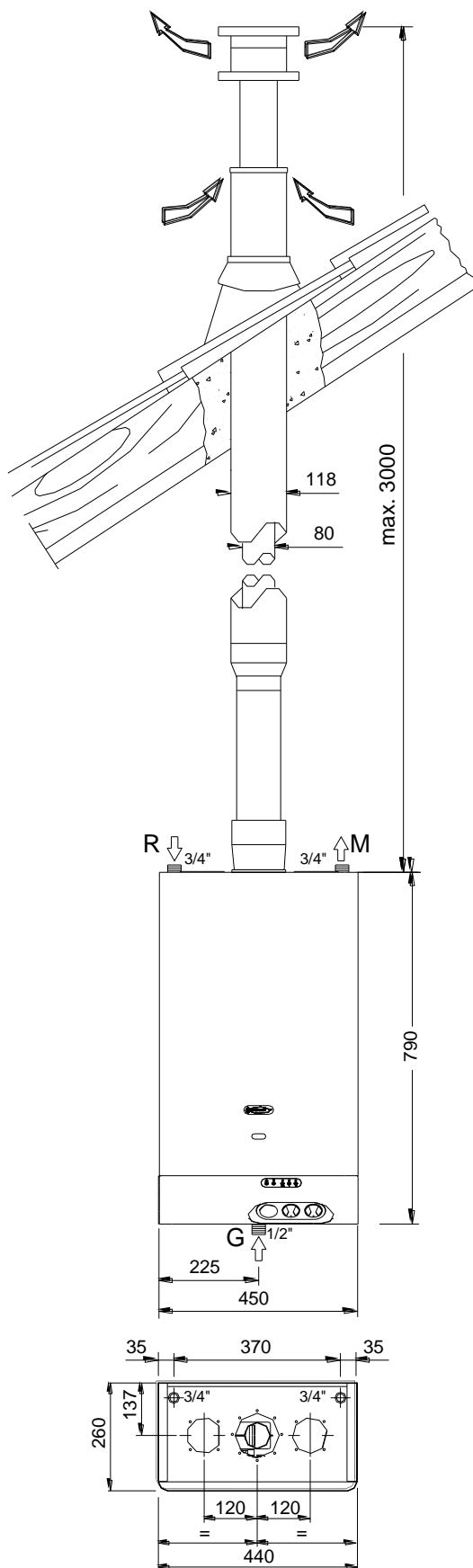
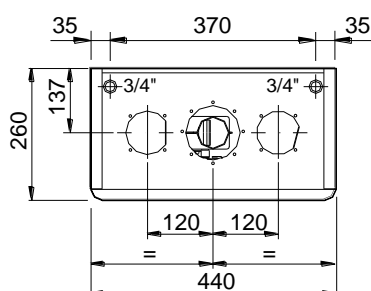
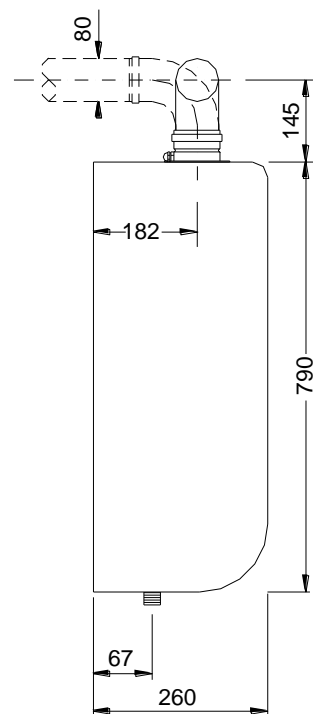
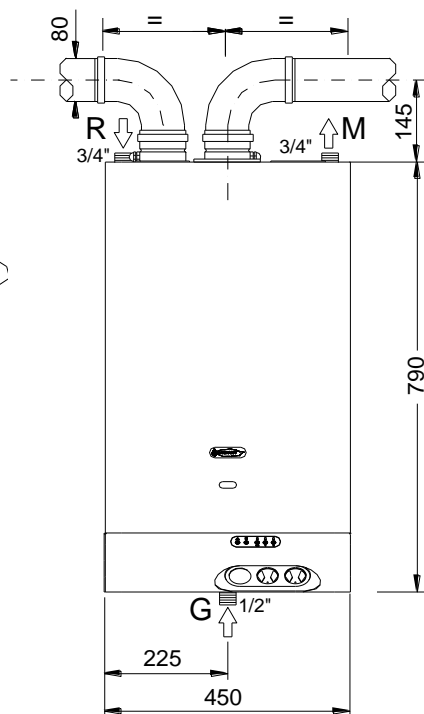


Fig. 1



KEY
G = GAS
R = CENTRAL HEATING RETURN
M = CENTRAL HEATING FLOW



KEY
G = GAS
R = CENTRAL HEATING RETURN
M = CENTRAL HEATING FLOW

↑ Kit B.

Double exhaust/intake flue system with 360° rotation.
The twin tube system allows fumes exhaust into a flue duct
and air intake from outside.

N.B.:

To insert a 90° bend in the flue, reduce total flue length by 1.5 m.
To insert a 45° bend in the flue, reduce total flue length by 1.2 m.

⇐ TYPE C WALL-MOUNTED BOILERS SEALED COMBUSTION CIRCUIT:

Kit C.

Vertical – coaxial flue kit system with intake / exhaust pipes
Ø 118/80

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 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 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 Vboiler, 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 DM2". 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 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

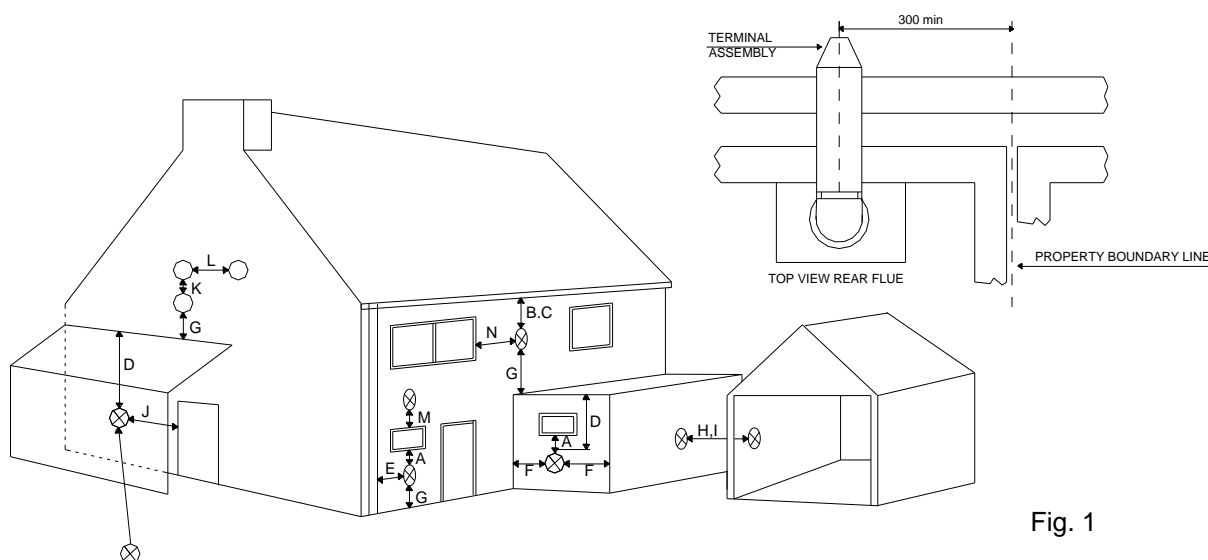


Fig. 1

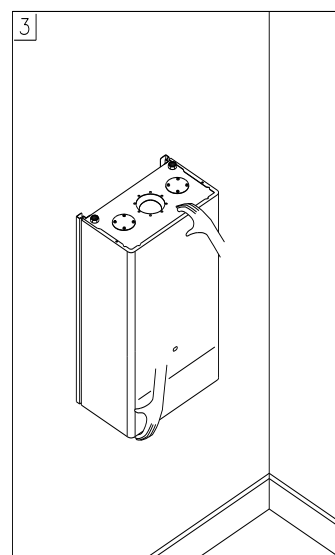
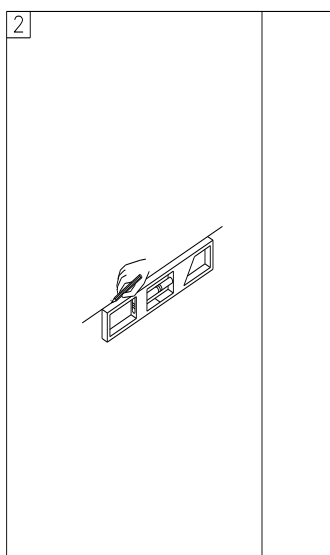
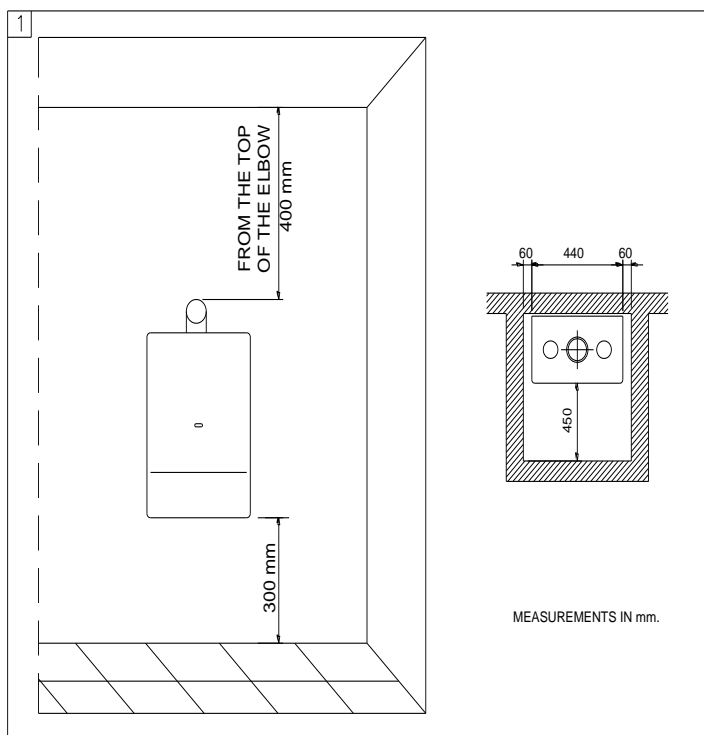
A	Directly below an openable window, air vent or any other ventilation opening.	300 mm
B	Below gutter, drain pipes or soil pipes.	25 mm
C	Below eaves.	25 mm
D	Below balcony or carport roof.	25 mm
E	From vertical drain pipes or soil pipes.	25 mm
F	From internal or external corners.	25 mm
G	Above adjacent 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):

Installation Instruction

1. With a spirit level, draw a line on the wall on which the boiler will be installed (fig. 2).
2. On the line drawn with the spirit level (respecting the distances – see fig. 1), mark the two points for insertion of the 2 screw anchors or wall anchors for fixing the boiler. (Choose proper anchors according to the type of wall).
3. Hang the boiler (fig. 3) and make connections to the gas pipe and to the heating system.



GAS CONNECTIONS

The gas supply must be connected up by qualified person.

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 diameter 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, a gas shutter cock must be fitted which has the same diameter as the gas inlet pipe;
- 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 .

WATER CONNECTIONS

To facilitate installation, the boiler is equipped with htg flow and return connecting pipes

IMPORTANT:

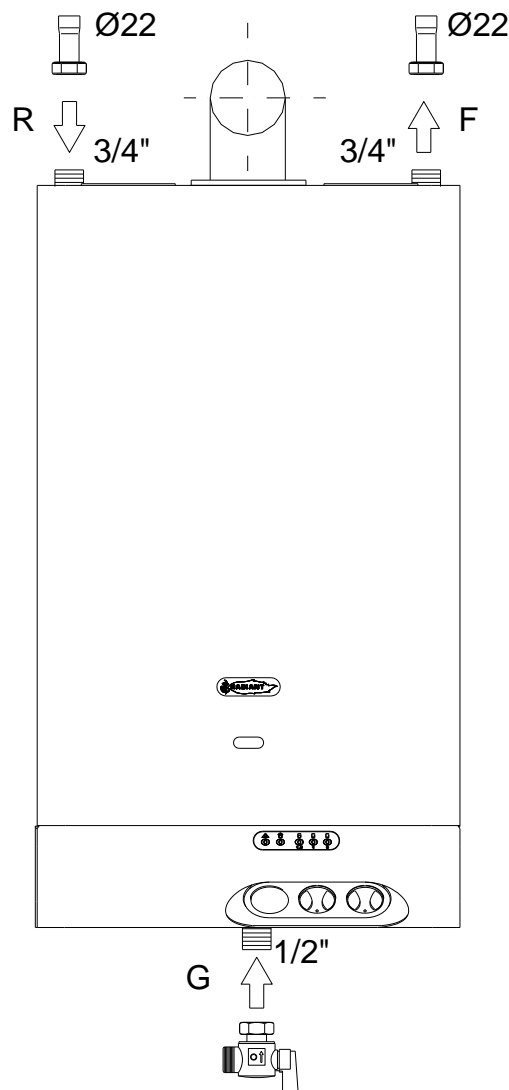
Before connecting the heating system pipes, carefully clean the system with a flushing agent to prevent residual dirt from entering into circulation and negatively affecting boiler function.

ADVICE AND SUGGESTIONS FOR DEALING WITH VIBRATIONS AND NOISE FROM THE SYSTEM

- 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 heating pipes are not used as earth connections for electrical apparatus.

They are in no way suitable for such purposes



ANTI-FREEZE SYSTEM

Antifreeze	Temperature	
	freezing point (°C)	boiling point (°C)
Ethylene glycol (%) volume		
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.

STARTING UP THE BOILER

Before turning on the boiler read the following warnings carefully .

Make sure that the warranty booklet carries the stamp of the authorised technician responsible for installing the boiler. Installation, starting up for the first time, adjustments and maintenance operations must all be carried out solely by qualified technicians. Incorrect installation may cause damage to persons, animals or property for which the manufacturer cannot be held liable.

WARNING!

- ⇒ **Do not start the boiler unless you are sure it has been thoroughly tested by an authorised technician.**
- ⇒ **If the boiler should freeze up, under no circumstances attempt to turn it on but call the RADIANT HELP LINE (01329.828555) immediately.**

LEGEND (see fig. 1)

1. ON-OFF SWITCH
2. BOILER THERMOSTAT KNOB
3. WARNING: LOCK-OUT INDICATOR
4. OPERATING/ POWER INDICATOR

TO FILL SYSTEM

Turn ON service valve to vent and feed tank.
Fill system and vent all radiators.
Ensure system is fully filled before starting boiler.

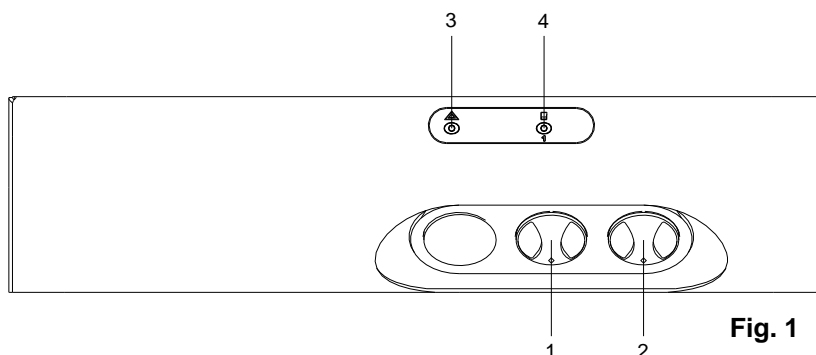


Fig. 1

BOILER IGNITION AND REGULATION

- a) Turn on the gas cock situated under the boiler
- b) Turn ON/OFF switch to ON position (make sure power light comes on) (see fig. 1)
- c) set the central heating temperature
- d) the automatic ignition system will turn the burner ON

It may be necessary to repeat the procedure a few times to purge air from pipes.

Wait 10 seconds and then, to reset the boiler, turn ON/OFF switch to OFF and then ON to reset and try the ignition procedure once again.

If locking-out persists, turn boiler OFF and call the RADIANT HELP LINE - 01329.828555.

TURNING OFF THE BOILER

Turn ON/OFF switch to OFF position.

If the boiler will not be used for long periods it is recommended that the gas cock under the boiler be shut off.

TO DRAIN HEATING SYSTEM

Turn OFF service valve to vent and feed tank.

Attach Hose pipe to drain cock at lowest point on system.

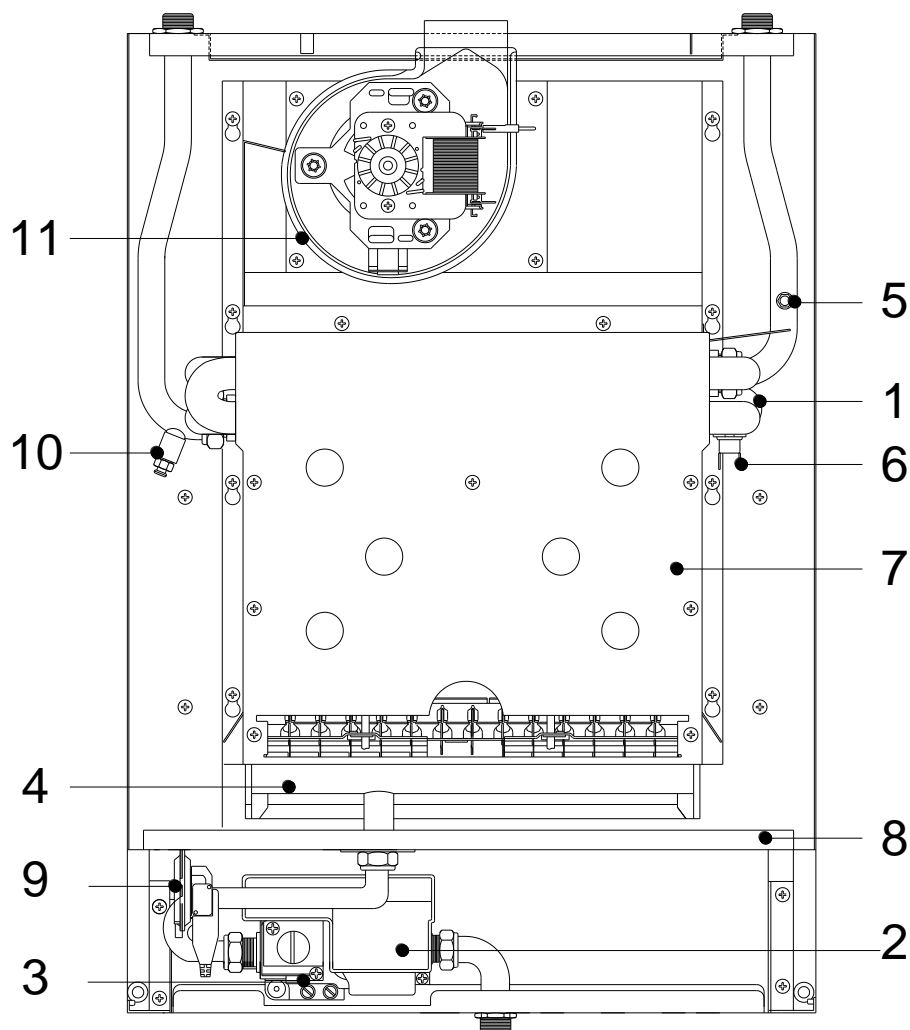
Ensure hose is sited into drain, drain system.

WARNINGS

To keep the boiler in efficient and safe operating condition, carefully follow the instructions listed below:

- Have normal maintenance performed at least once a year by one of our authorised service centres (a fee will be charged), combustion tests are necessary every years and should again be carried out by a qualified Radiant technician (in accordance with D.P.R. 412 regulations, 26-08-93).
- Do not clean the casing or internal parts of the boiler with reducing agents or solvents. Clean only with soap and water.
- Never leave flammable materials in the immediate vicinity of the boiler.
- Please ensure that the boiler is commissioned in line with all BENCHMARK BOOKLET REQUIREMENTS. Failure to do this may invalidate the guarantee.

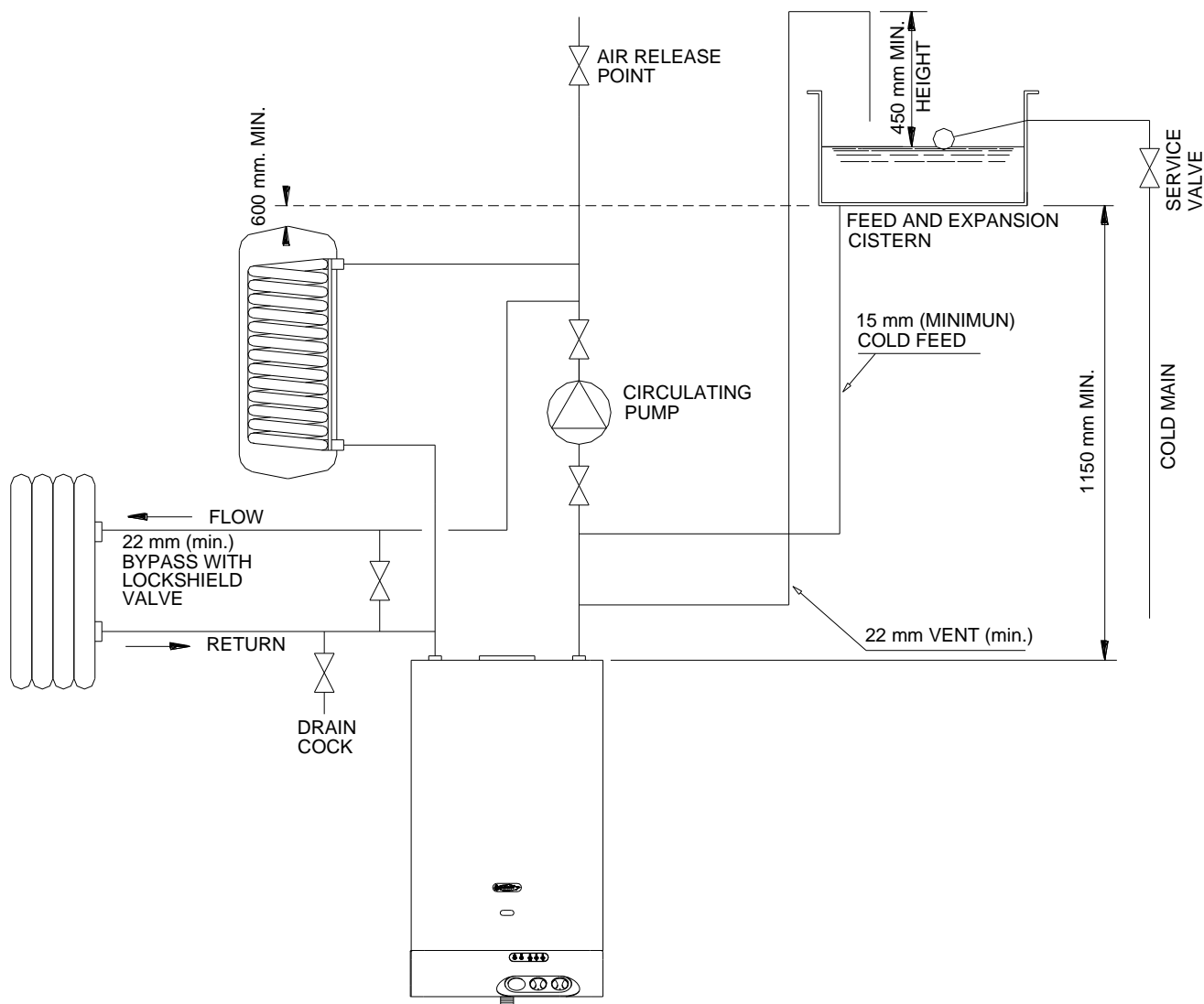
MAIN COMPONENTS



KEY

1. MAIN HEAT EXCHANGER
2. ELECTRONIC IGNITION BOARD S4565QM1012
3. GAS VALVE VK4105
4. BURNER 13 R.
5. HEATING SENSOR 1/8"
6. LIMIT THERMOSTAT 90°C
7. FLUE HOOD ROOM SEALED
8. ROOM-SEALED CHAMBER COVER
9. AIR PRESSURE SWITCH
10. DRAIN TAP
11. EXHAUST FAN

OPEN (VENTED) WATER SYSTEM



Open vented water system

The appliance is suitable for open vented pumped systems, sealed systems where additional control protection is required.

The following conditions should be observed:

- The static head must not exceed 30 m (100ft) of water
- The boiler must be used with an indirect cylinder
- The boiler is fitted with a pump overrun thermostat and a 22 mm by-pass loop fitted with a lockshield valve must be fitted.
- Drain cocks should be fitted to system low points
- All gas and water pipes and wiring must be installed in a way which would not restrict servicing of the boiler.
- Position isolating valves close to circulating pump.
- System additives – where used, corrosion inhibitors and flushing agents / descalers should be suitable for all system metals. They should be acceptable to British Gas and Water Council approved. Non acidity or alkalinity is desirable.

Pipework

The size of flow and return pipes from the boiler should be determined according to the requirements of the system. It is recommended that the system is designed for an 11°C (20°F) drop in temperature across the system.

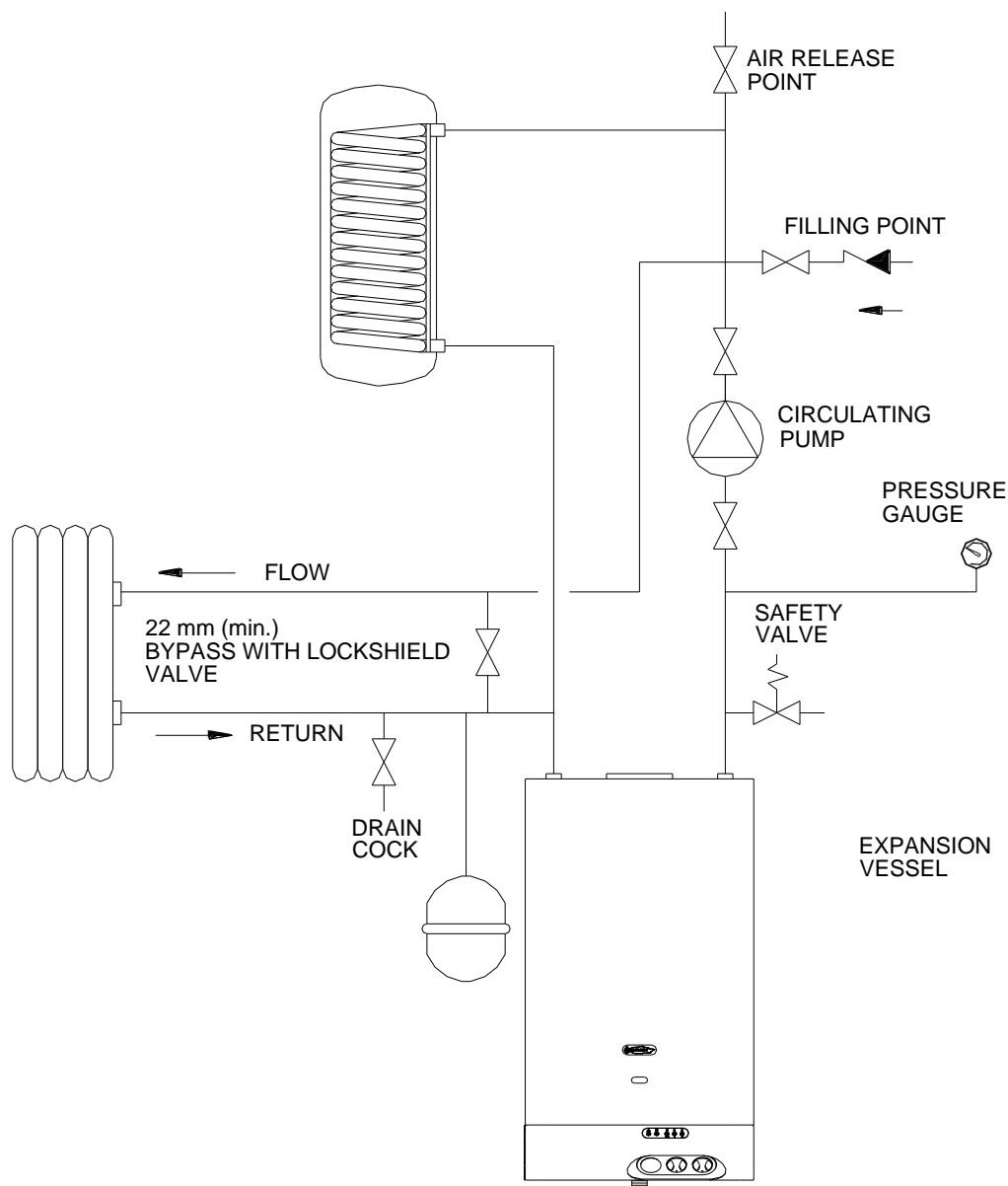
System Controls

For optimum operating conditions, it is recommended that a “y” plan or “s” plan control system be used incorporating a time switch or programmer room thermostat and cylinder thermostat.

Where necessary a frost thermostat should be fitted to protect the boiler and if necessary the system.

Reference should be made to the control equipment manufacturer’s literature for information e.g. wiring diagrams, etc.

SEALED WATER SYSTEM



Safety valve: a safety valve complying with BS 6750 Part 1 must be fitted close to the boiler on the flow pipe by means of a horizontal or vertically upward connection with no intervening valve or restrictions and should be positioned to facilitate testing. The valve should be pre-set and non-adjustable to operate at a pressure of 3 bar. It must be arranged to discharge any water or steam through a pipe to a safe outlet position.

Pressure Gauge: a pressure gauge of minimum range 0-4 bar with a fill pressure indicator must be fitted to the system at the same point as the expansion vessel in an easily visible position.

Expansion Vessel: An expansion vessel complying with BS 4814 must be fitted to the system by means of a connection close to the inlet side of the circulating pump in accordance with the manufacturers instructions, the connecting pipe being unrestricted and not less than 15mm (1/2 in) nominal size. The volume of the vessel should be suitable for the system water content and the air charge pressure should not be less than the system static head. Further details of sealed system design can be obtained from BS 5449:Part 1 and the British Gas publication 'Specification for Domestic W. Central Heating systems'.

Filling Point: A filling point and an approved stop valve to BS 1010 must be fitted at low level and the method used for filling the system should be approved by the local water undertaking. For further details see BS 6798.

Make Up System: A method of replacing water lost from the system should be provided.

ELECTRICAL CONNECTIONS

The boiler works with 230 V 50 Hz AC current and has maximum input of 70 W. Connection to the electrical mains must be performed with a switch having an dual polar opening of at least 3 mm. Make sure the live and neutral connections conform to the diagram. **A secure earth connection is compulsory.**

IMPORTANT

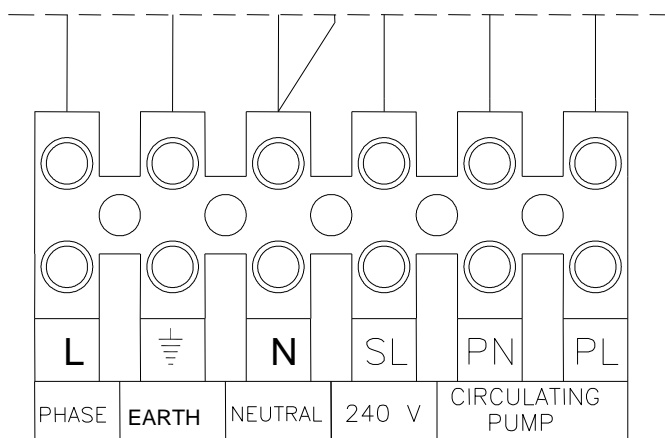
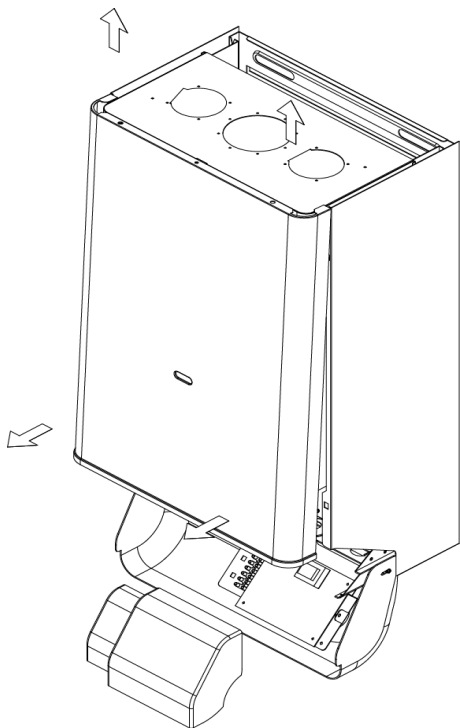
If you need to replace the power supply cable, use cable having the same characteristics of the original one. Connect to the terminal block located in the instrument panel as follows (see fig. 1):

- Unscrew the 2 panel fixing screws under the boiler
- Undo the 2 panel side screws using a cross-point screwdriver
- Pull the plastic panel downwards and rotate it as shown in fig.1
- Remove the protection housing and proceed with electric connections

With the electrical control box now open make the following connections (see fig. 2) :

- Connect the yellow/green wire to the terminal marked with the earth symbol “ \perp ” (see fig.1).
- Connect the blue wire to the terminal marked with the letter “N”.

Connect the brown wire to the terminal marked with the letter “L”.

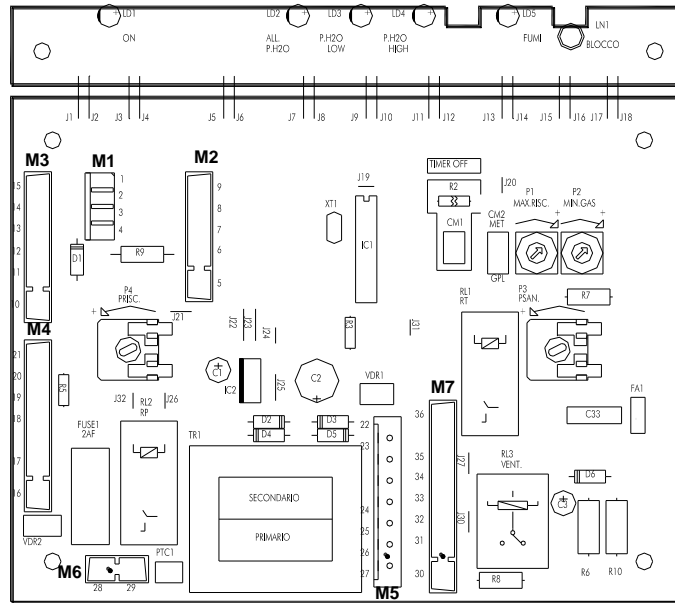


SUPPLY TERMINAL BLOCK

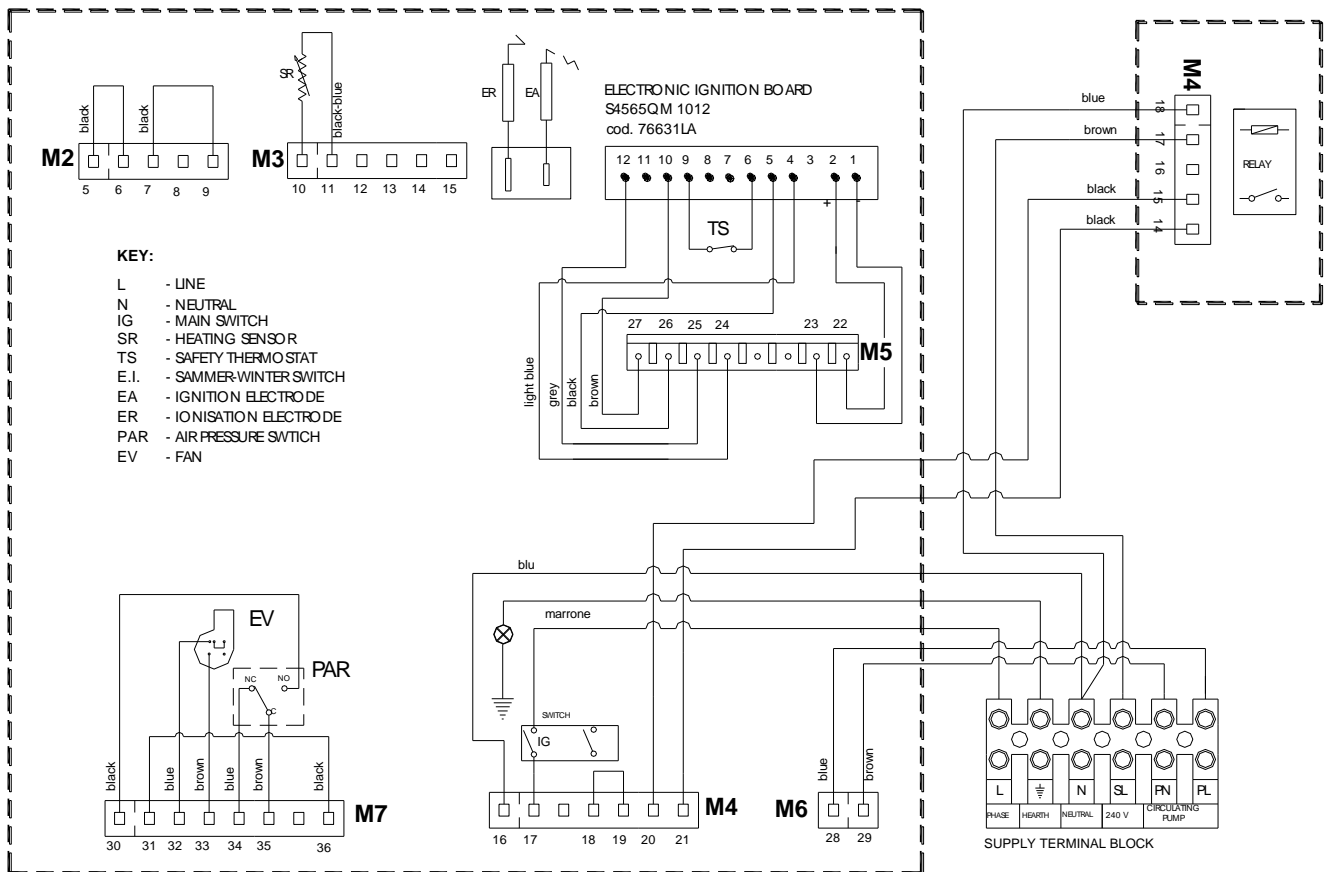
LEGENDA

L	PERMANENT LIVE
\perp	PERMANENT HEARTH
N	PERMANENT NEUTRAL
SL	SWITCHED LIVE FROM EXTERNAL CONTROLS
PN	PUMP NEUTRAL
PL	PUMP LIVE

ELECTRICAL CONNECTIONS



PRINTED CIRCUIT BOARD
SM 20013
cod. 76646LA



LEGENDA

- L PERMANENT LIVE
- PERMANENT HEARTH
- N PERMANENT NEUTRAL
- SL SWITCHED LIVE FROM EXTERNAL CONTROLS
- PN PUMP NEUTRAL
- PL PUMP LIVE

EXTERNAL CONNECTIONS TO BOILER WIRING CENTRE.

REGULATING THE MAX. AND MIN. MODULATION GAS PRESSURE

To regulate the maximum gas pressure to the burner proceed as follows:

- insert a gauge into the pressure socket B (fig.1).
- remove the aluminium protective cap from screw A (fig.1) counter-clockwise;
- turn the boiler on with the selector turned to the ❄ winter position;
- once ignited, set the "P1 MAX. HEAT" trimmer (fig.2) to the maximum and turn screw A (fig.1) on the stabiliser clockwise to increase pressure or counter-clockwise to decrease pressure (see the table below for calibration pressures);
- on completion, screw in the aluminium cap, protecting screw A, previously removed from the gas valve;
- regulating the min. gas pressure: without removing the gauge and with the selector set to ❄ winter, set the "P1 MAX. HEAT" trimmer to the minimum heat by turning it counter-clockwise;
- regulate the minimum pressure by turning the "P2 MIN. GAS" trimmer (see the table below for calibration pressures);
- on completion, set the "P1 MAX. HEAT" trimmer to the required thermal output of the system;
- remove the gauge, tighten the pressure socket B and make sure there are no gas leaks.

N.B. The "P1 MAX. HEAT" trimmer is factory set to 80% of the maximum nominal output during the testing stage. When the boiler is started up for the first time it must be regulated according to the thermal power of the system. To make adjustments use a flat head screwdriver and turn clockwise to increase or counter-clockwise to decrease.

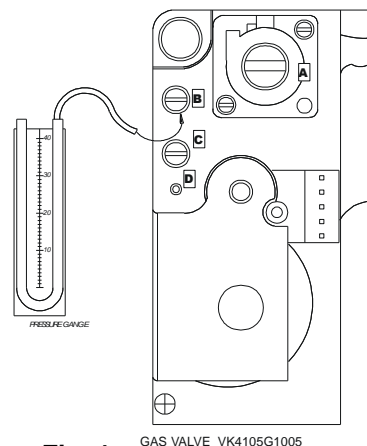


Fig. 1

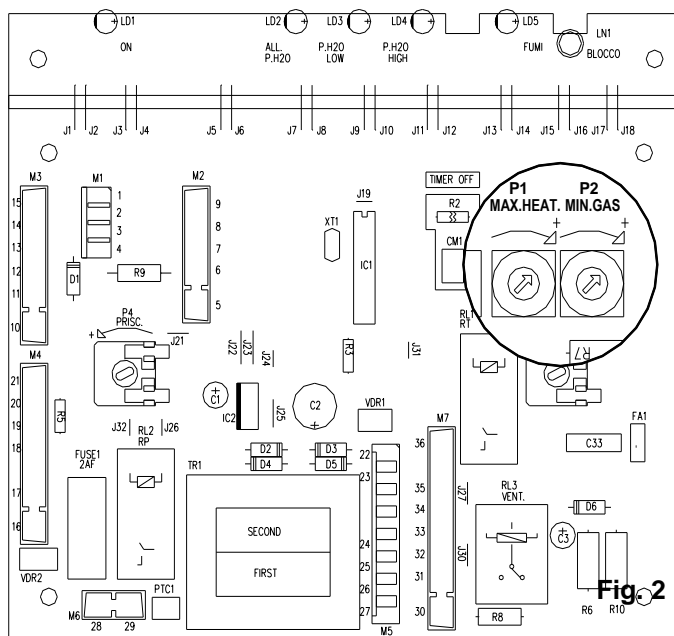


Fig. 2

MIN. AND MAX. GAS PRESSURES

Models:		NATURAL GAS G20 Min – Max	LIQUID BUTANE GAS G30 Min – Max	LIQUID PROPANE GAS G31 Min – Max
RS 20 E / 40-60	mbar	1.5 – 10.5	6.6 – 27.5	8 – 35.6
RS 24 E / 70-90	mbar	4.2 – 13.7	5 – 26.3	6 – 33.6

GAS TYPE CONVERSION

Conversion of the boiler from natural gas to LPG and vice versa must be performed by qualified personnel only. Conversion is performed as follows:

- a) turn off the main power switch;
- b) close the gas cock;
- c) substitute the jets on the main burner as follows:
 - undo the gas pipe 5 (fig.1) from the burner manifold using a size 24 spanner;
 - separate the burner manifold 2 from the burner ramps 1 by undoing the 4 screws 3 using a cross head screwdriver;
 - fit new jets 4 to the burner suitable for the type of gas the boiler will run on using a no. 7 spanner. The jets must be fitted with new gaskets;
 - reassemble the entire burner unit. Use a proprietary leak detector fluid to check for gas leaks each time gas connections are dismantled and reassembled;
- d) replace the gas setting plate that indicates the type of gas and nominal pressure for the boiler. When converting the boiler to work with a different type of gas, remove the existing plate and replace it with the new one supplied in the conversion kit.
- e) calibrate the new max. and min. settings for the gas pressure.

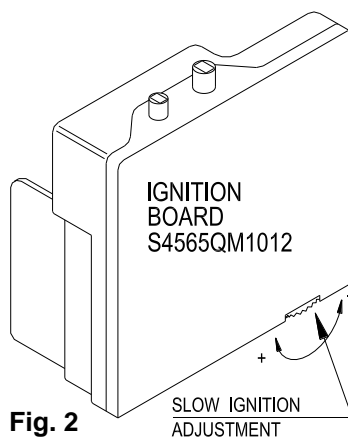


Fig. 2

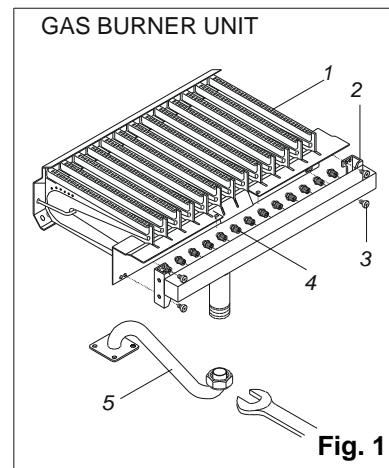


Fig. 1

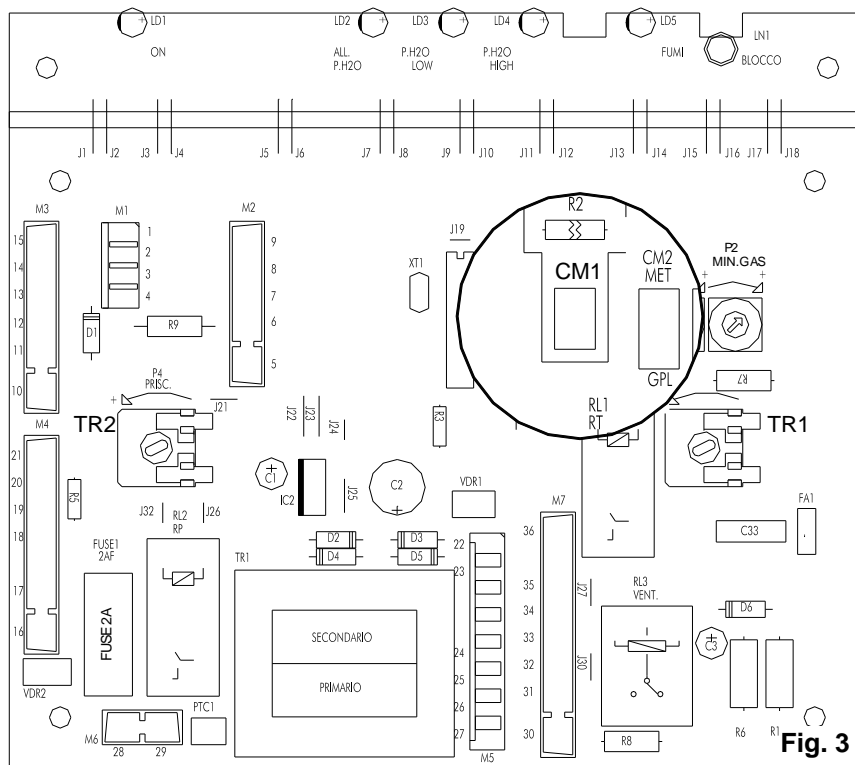


Fig. 3

Link inserted on CM1 selector.
Timing 0 min.

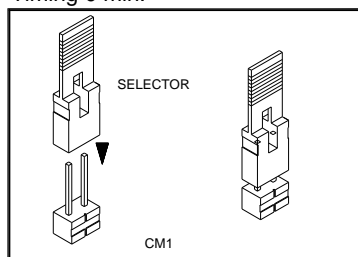


Fig. 4

Link disabled on CM1 selector.
Timing 3 min.

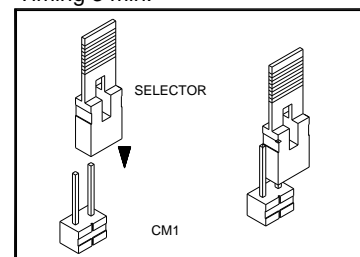


Fig. 5

SLOW IGNITION ADJUSTMENT (fig. 2)

This is a slow ignition regulator whose trimmer is factory set to the minimum. For adjustment proceed as follows: if turned clockwise the gas pressure at the burner increases on ignition while turning counter-clockwise decreases the gas pressure.

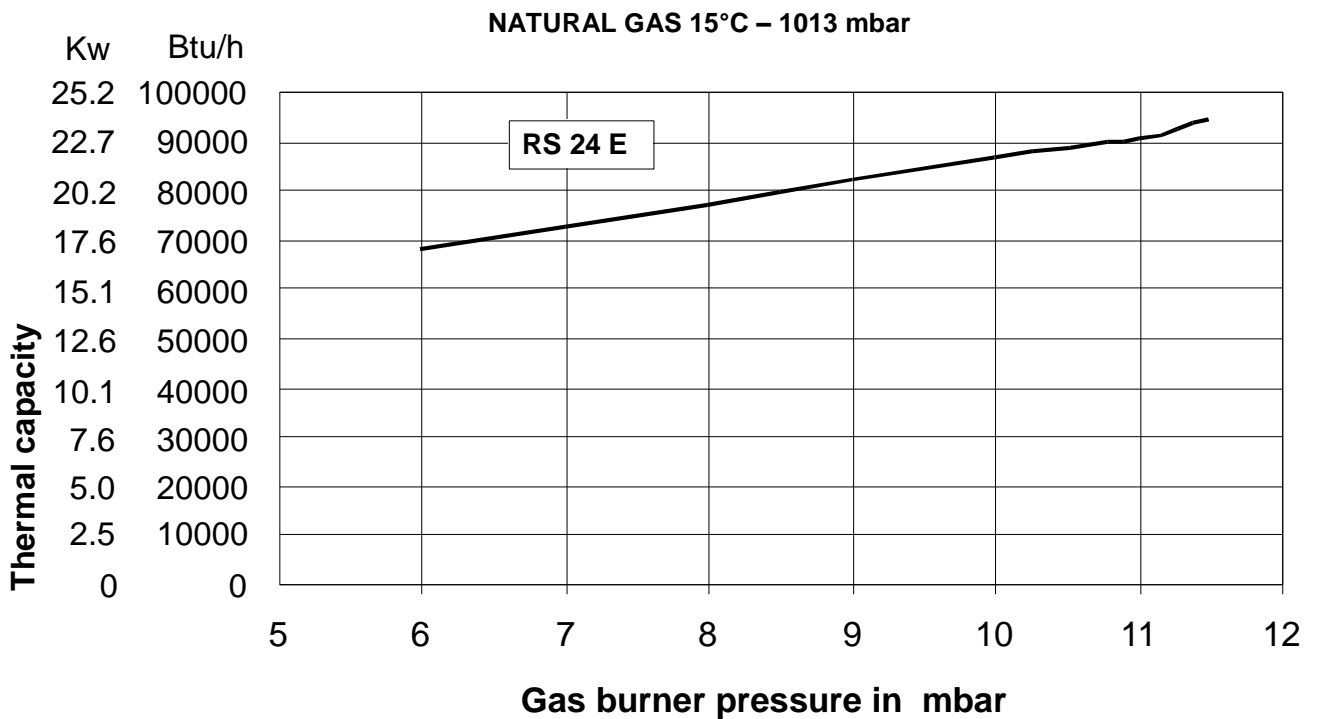
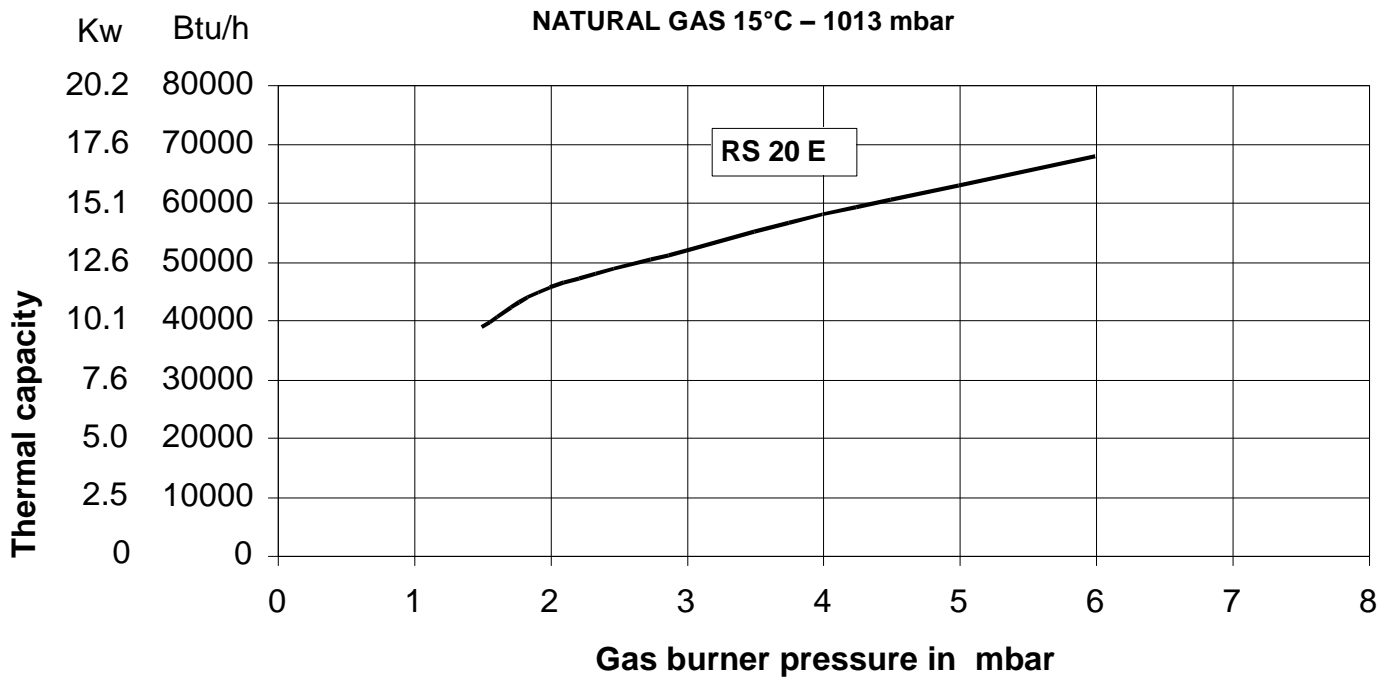
LINK TO ADJUST SHORT CYCLING

This allows the various ignitions to be delayed once the boiler has reached the optimum temperature.

CM1 link on main p.c.b. (fig.3)

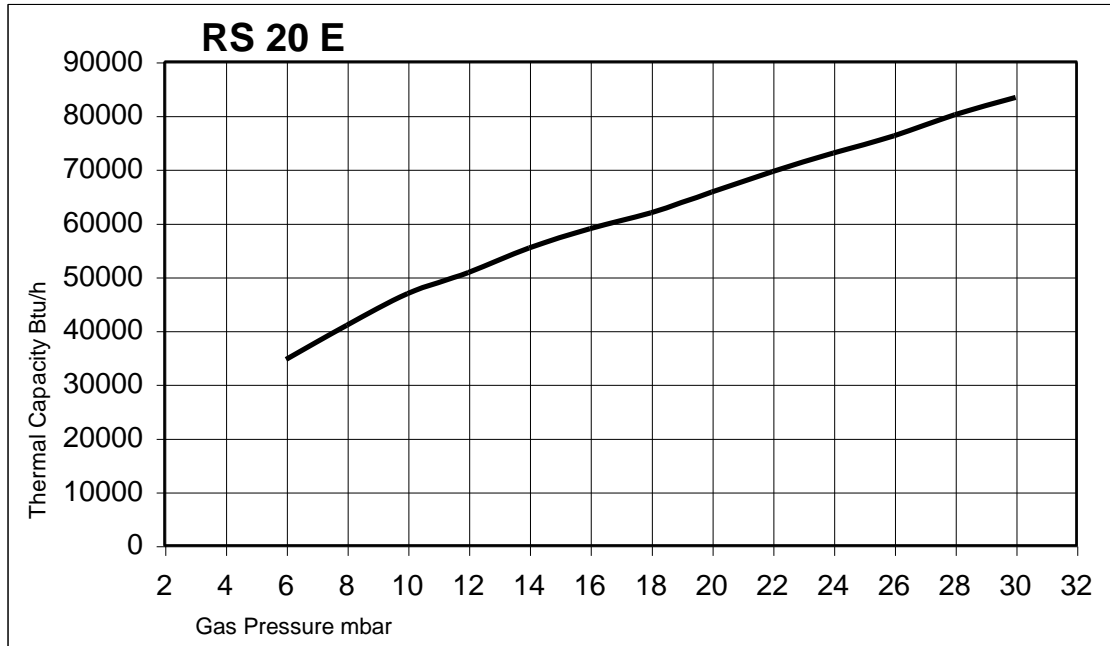
The timing range goes from 0 with the link inserted on CM1 selector (fig. 4), to 3 minutes with the link disabled on CM1 selector or eventually positioned on the side pin as shown in figure no. 5.

GAS BURNER PRESSURE

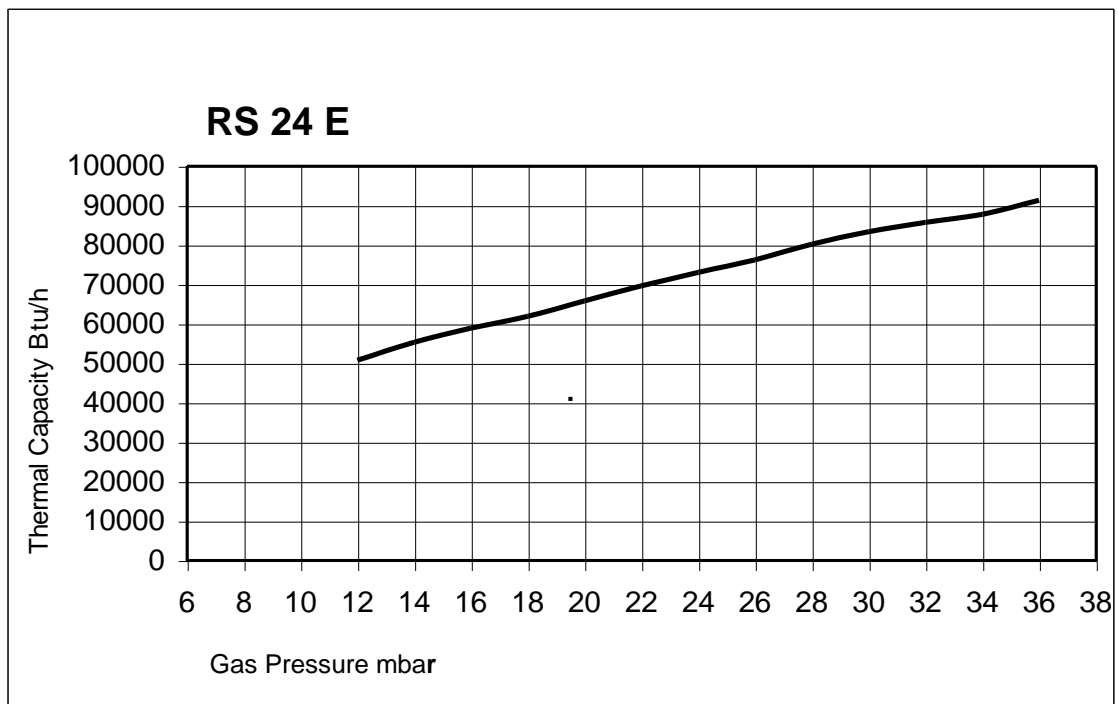


GAS BURNER PRESSURE

L.P.G. 15°C – 1013 mbar

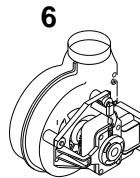
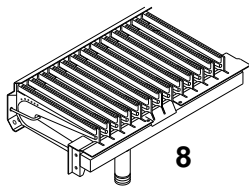
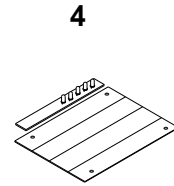
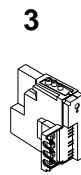
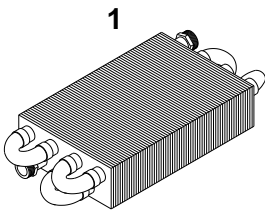


L.P.G. 15°C – 1013 mbar



SHORT LIST

n°	CODE	DESCRIPTION	RS 20 E / 40-60	RS 24 E / 70-90
			Electronic Ignition	Electronic Ignition
1	58006LA	MAIN HEAT EXCHANGER 20.000 kCal/h	✓	
	58007LA	MAIN HEAT EXCHANGER 24.000 kCal/h		✓
2	36066LA	ELECTRONIC GAS VALVE VK4105 G1112	✓	✓
3	76631LA	ELECTRONIC IGNITION BOARD S4565QM1012	✓	✓
4	76646LA	PRINTED CIRCUIT BOARD SM 20013	✓	✓
5	73507LA	HEATING SENSOR 1/8"	✓	✓
6	37012LA	EXHAUST FAN	✓	✓
7	59006LB	AIR PRESSURE SWITCH C6065AH1095	✓	✓
8	21001LA	BURNER 13 R. 1.25 NATURAL GAS	✓	✓
	21002LA	BURNER 13 R. 0.75 NATURAL GAS	✓	
	21004LA	BURNER 13 R. 0.70 NATURAL GAS		✓
9	86027LA	SAFETY THERMOSTAT 90°C	✓	✓
10	47021LA	2 POSITION COMMUTATOR SWITCH ON/OFF	✓	✓



FAULT FINDING CHART

FAULT	POSSIBLE CAUSE	REMEDY
1) the boiler electrical power is on and the fan runs but the flame doesn't ignite and the boiler does not lock-out.	a. air pressure switch	a. replace it
2) the fan runs but the flame does not ignite, there is no sparking and after 10 seconds the boiler locks-out.	b. limit thermostat 90°C	b. replace it
3) the boiler has stopped, everything is locked-out, only water pressure indicators 1-1.5 are on.	c. heating sensor damaged	c. replace it
4) the boiler ignites but only at the minimum power.	d. ignition board wires reserved (colour: grey-brown)	d. connect properly
5) the fan runs, the flame ignites but after 10 seconds stops and locks-out.	e. live-neutral wires inverted, f. ionisation electrode damaged g. ignition board damaged h. no earth, electrical supply live-live	e. connect properly f. replace it g. replace it h. make proper earth connection
6) the boiler is off, lights are off, everything is off.	i. no electrical power	i. check boiler power supply
7) the fan doesn't run, no lock-out.	j. exhaust fan broken k. air pressure switch faulty	j. replace it k. replace it

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 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)
- Check functioning of heating safety systems: safety thermostat for temperature limit,
- Check the exhaust flue safety device
- Check that the electrical connection conforms to the description in the instruction manual for the boiler.

UNPACKING

- Set the packed boiler 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 and 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.

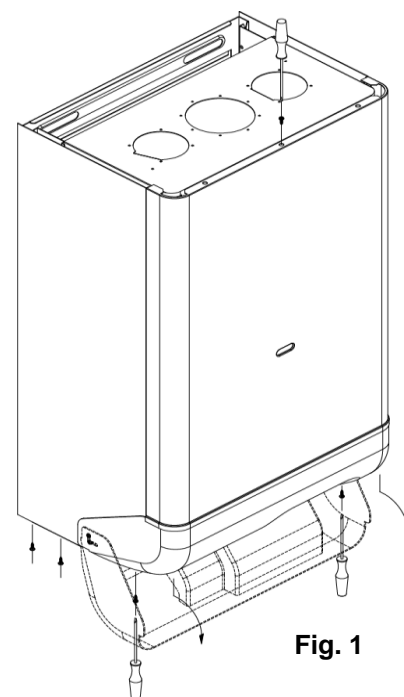


Fig. 1

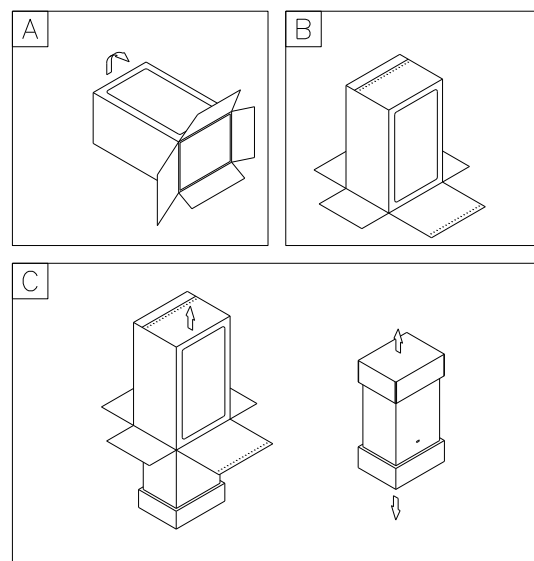


Fig. 2



Heat technology since 1959

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

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