RADIANT

INSTALLATION, USE AND MAINTENANCE MANUAL FOR GAS-FIRED, WALL-HUNG BOILERS

COMFORT Self-Diagnostic

Model **RCM • R**

"TYPE B" OPEN ROOM WITH FLUE DUCT

Model **RSF • RS**

"TYPE C" WITH ROOM SEALED COMBUSTION CHAMBER

CE 0063

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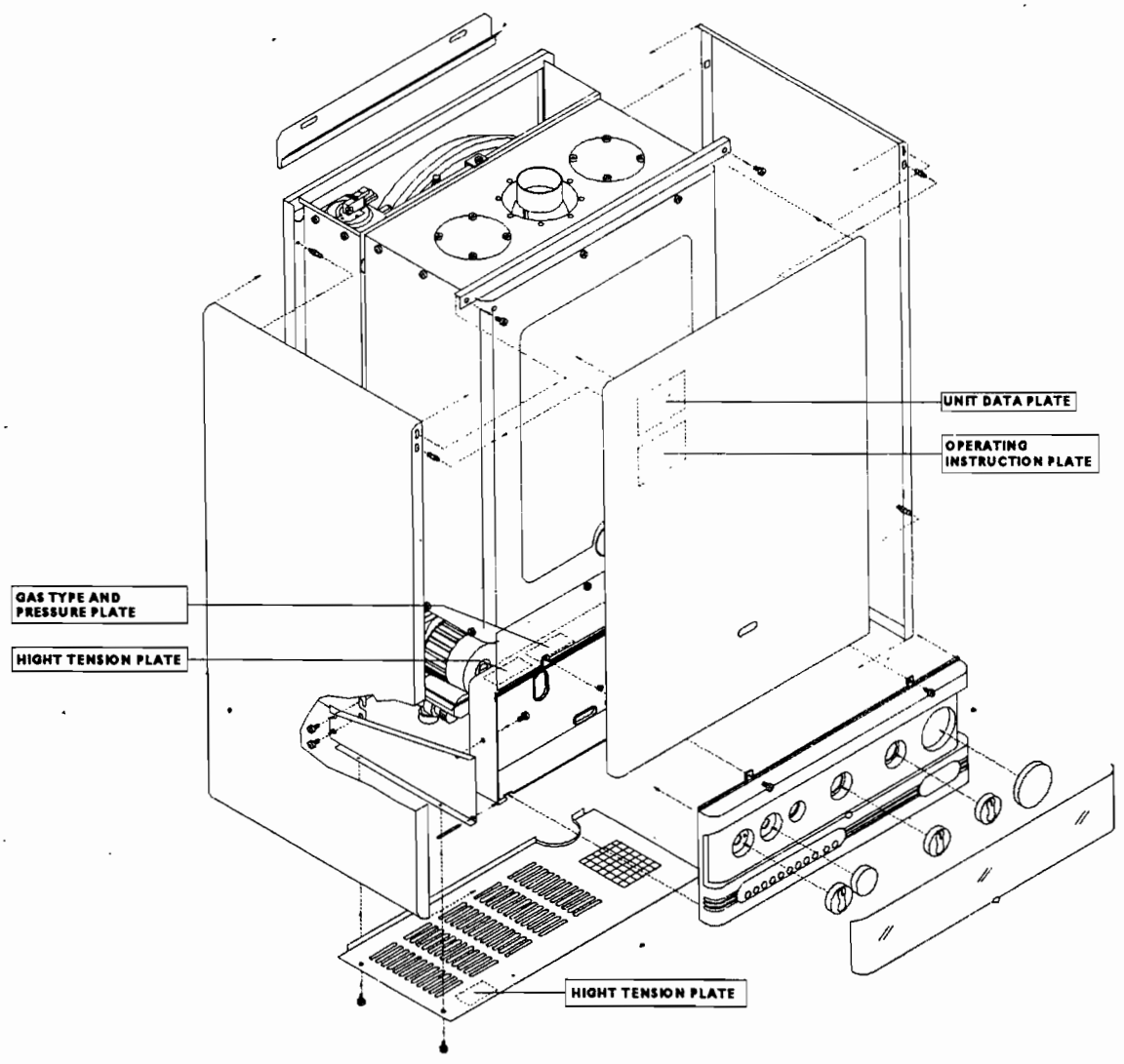
THE FRIENDLY POWER OF HEAT
At your service for 35 years in the heating sector.
Thank you for choosing RADIANT

re: declaration for purposes of Art. 7 of Law 46 of 5 April 1990.
RADIANT BRUCIATORI s.r.l. 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. 447/91).

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-hung 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 **near the boiler**.

RADIANT BRUCIATORI s.r.l. declines any and all responsibility for misinterpretations of this booklet deriving from any translations of same.
RADIANT BRUCIATORI s.r.l. 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.
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).

- **ATTENTION**: 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 element, refer to **authorised technicians only and use original spare parts only**. Wall-hung 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 gas is smelled 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 counter) or the tank 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 constantly ventilated by means of an air intake having a section of at least 6 cm² for each 1000 Kcal/h, with a minimum of 100 cm².
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. 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 hood. 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 children or inexpert persons to use the device.

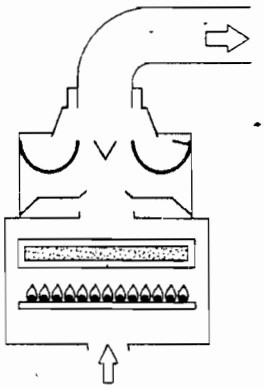
- The power cable must not be replaced by the user.
If the cable becomes damaged, turn off the device and have the cable replaced by professionally qualified personnel only.

- 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 FOR INSTALLATION OF BOILER

TYPE B DEVICE:

Type B boilers are open room boilers, and must be connected to a flue duct to convey combustion exhaust out of the room. Air for combustion is taken directly from the room in which the boilers are installed.



WARNING
This device may be installed and operated only in rooms that are permanently ventilated as per UNI 7129 standard.

IMPORTANT
These devices must bear a message in indelible characters permanently installed as illustrated below.

APPROVAL NUMBER - CE - 063AR6415

Series R **HEATING ONLY**
open combustion chamber

R 20 P - PILOT FLAME IGNITION

R 20 E - ELECTRONIC IGNITION

Series RCM **HEATING - DOMESTIC HOT WATER**
open combustion chamber

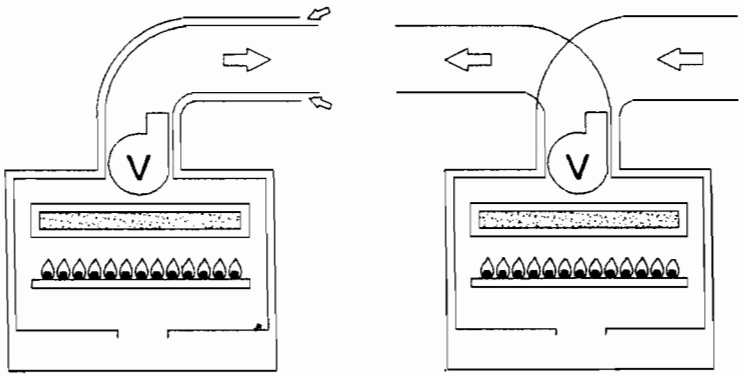
RCM 20 P - PILOT FLAME IGNITION

RCM 20 E - ELECTRONIC IGNITION

TECHNICAL DATA					
MODELS		R 20 P	R 20 E	RCM 20 P	RCM 20 E
Maximum rated input	Kw BTU/hr	26.6 90740	26.6 90740	26.6 90740	26.6 90740
Minimum rated input	Kw BTU/hr	12.8 43664	12.8 43664	12.8 43664	12.8 43648
Maximum rated output	Kw BTU/hr	23.9 82534	23.9 82534	23.9 82534	23.9 82534
Minimum rated output	Kw BTU/hr	10.9 37183	10.9 37183	10.9 37183	10.9 37183
Hot water flow rate Δt 25°	Litres	NO	NO	13	13
Max. working pressure (heating)	bar	3	3	3	3
Max. working pressure (water)	bar	NO	NO	6	6
Min. working pressure (heating)	bar	0.3	0.3	0.3	0.3
Max. heating temperature	°C	80	80	80	80
Expansion vessel capacity (initial pressure 1 bar)	Litres	8	8	8	8
Width	mm.	490	490	490	490
Height	mm.	800	800	800	800
Depth	mm.	380	380	380	380
Weight	Kg.	42	42	44	44
Flue diameter	Ø	130	130	130	130
Flow/return connections	Ø	3/4"	3/4"	3/4"	3/4"
Cold water connections	Ø	1/2"	1/2"	1/2"	1/2"
Hot water connections	Ø	NO	NO	1/2"	1/2"
Gas connections	Ø	1/2"	1/2"	1/2"	1/2"
Electrical connection 50 Hz	V	230	230	230	230
Power supply	W	120	120	120	120
Max. pressure to burner G 20	mbar	11	11	11	11
Min. pressure to burner G 20	mbar	2.6	2.6	2.6	2.6
Pilot nozzle G20	Ø	0.27	NO	0.27	NO
Pilot nozzle G30	Ø	0.22	NO	0.22	NO
Burner nozzles NP 13 G20	Ø	1.25	1.25	1.25	1.25
Burner nozzles NP 13 G30	Ø	0.75	0.75	0.75	0.75
Gas category: IT II2H3+ GAS SUPPLY PRESSURE		G20 20 mbar		G30/31 29-30/37 mbar	
FORCED CIRCULATION					

TYPE C DEVICE:

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



C32 KIT C C12 KIT A C52 KIT B

APPROVAL NUMBER - CE- 063AR6415

Series RS **HEATING ONLY**
room sealed combustion chamber

mod. **RS 20 P - PILOT FLAME IGNITION**
RS 20 E - ELECTRONIC IGNITION
RS 24 P - PILOT FLAME IGNITION
RS 24 E - ELECTRONIC IGNITION

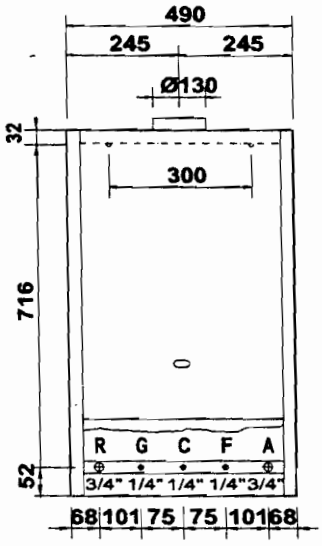
Series RSF **HEATING - DOMESTIC HOT WATER**
room sealed combustion chamber

mod. **RSF 20 P - PILOT FLAME IGNITION**
RSF 20 E - ELECTRONIC IGNITION
RSF 24 P - PILOT FLAME IGNITION
RSF 24 E - ELECTRONIC IGNITION

TECHNICAL DATA

MODELS		RS 20 P	RS 20 E	RS 24 P	RS 24 E	RSF 20 P	RSF 20 E	RSF 24 P	RSF 24 E
Maximum rated input	Kw BTU/hr	26.6 90740	26.6 90740	29.8 101691	29.8 101691	26.6 90740	26.6 90740	29.8 101691	29.8 101691
Minimum rated input	Kw BTU/hr	12.8 43648	12.8 43648	17.5 59520	17.5 59520	12.8 43648	12.8 43648	17.5 59520	17.5 59520
Maximum rated output	Kw BTU/hr	24.34 83030	24.34 83030	26.8 91422	26.8 91422	24.34 83030	24.34 83030	26.8 91422	26.8 91422
Minimum rated output	Kw BTU/hr	11 37524	11 37524	15 51169	15 51169	11 37524	11 37524	15 51169	15 51169
Hot water flow rate Δt 25°	Litres	NO	NO	NO	NO	13	13	15	15
Max. working pressure (heating)	bar	3	3	3	3	3	3	3	3
Max. working pressure (water)	bar	NO	NO	NO	NO	6	6	6	6
Min. working pressure (heating)	bar	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Max. heating temperature	°C	80	80	80	80	80	80	80	80
Expansion vessel capacity	Litres	8	8	8	8	8	8	8	8
Width	mm.	490	490	490	490	490	490	490	490
Height	mm.	800	800	800	800	800	800	800	800
Depth	mm.	380	380	380	380	380	380	380	380
Weight	Kg.	46	46	46	46	49	49	49	49
Flue diameter	Ø	100/60- 80/80	100/60- 80/80	100/60- 80/80	100/60- 80/80	100/60- 80/80	100/60- 80/80	100/60- 80/80	100/60- 80/80
Flow/return connections	Ø	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
Cold water connections	Ø	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Hot water connections	Ø	NO	NO	NO	NO	1/2"	1/2"	1/2"	1/2"
Gas connections	Ø	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Electrical connection 50 Hz	V	230	230	230	230	230	230	230	230
Power supply	W	170	170	170	170	170	170	170	170
Max. pressure to burner G 20	mbar	10.5	10.5	13.7	13.7	10.5	10.5	13.7	13.7
Min. pressure to G 20	mbar	1.5	1.5	4.2	4.2	1.5	1.5	4.2	4.2
Pilot nozzle G20	Ø	0.27	NO	0.27	NO	0.27	NO	0.27	NO
Pilot nozzle G30	Ø	0.22	NO	0.22	NO	0.22	NO	0.22	NO
Burner nozzles NP 13 G20	Ø	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Burner nozzles NP 13 G30	Ø	0.75	0.75	0.77	0.77	0.75	0.75	0.77	0.77
Gas category: IT II2H3+ GAS SUPPLY		G 20 20 mbar / G30/31 29-30/37 mbar							
FORCED CIRCULATION									

OVERALL DIMENSIONS



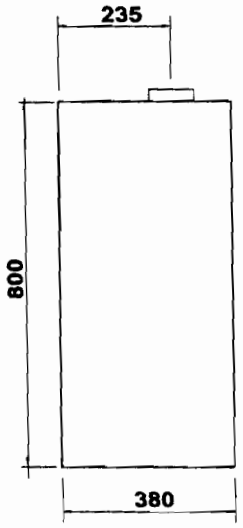


Fig. 1

TYPE B WALL-HUNG BOILERS:

TYPE C WALL-HUNG BOILERS:

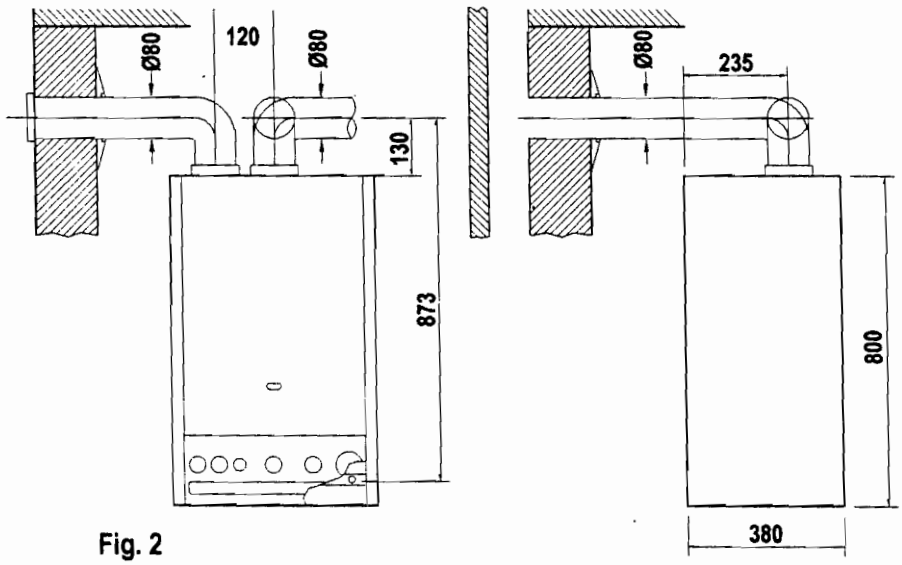


Fig. 2

Kit. B.
Double system, revolves 360°: twin-tube system for exhaust of fumes into flue duct and emission of air from outside.
N.B.: *To insert a flue bend, reduce total length of flue by 0.5 m.*

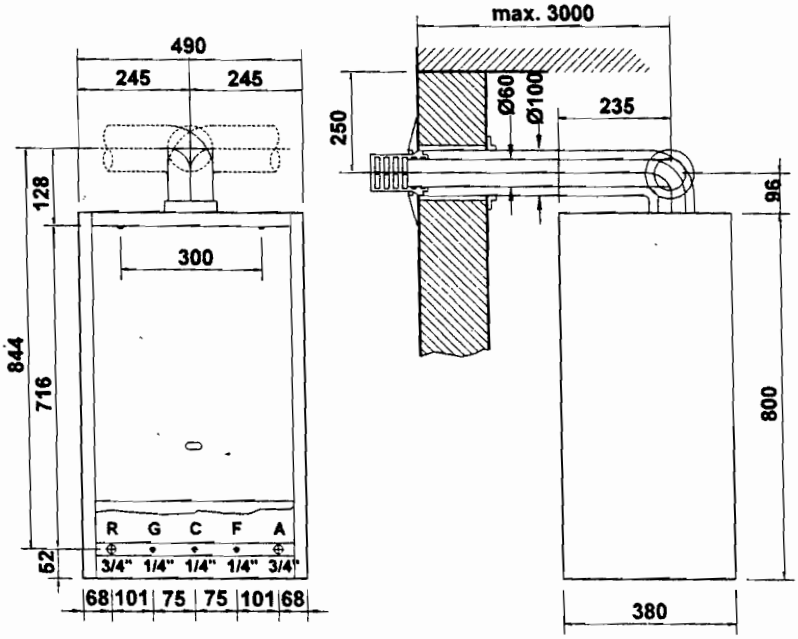


Fig. 3

Kit. A.
Horizontal coaxial exhaust system, revolves 360°: for flue exhaust and inlet of air from external wall.
N.B.: *To insert a flue bend, reduce total length of exhaust 0.8 m.*

GENERAL INSTALLATION REQUIREMENTS

GAS SAFETY

It is the law that all gas appliances are installed by a CORGI registered installer 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 byelaws 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 ft/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 from the meter to the boiler must be 22mm copper tube. 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

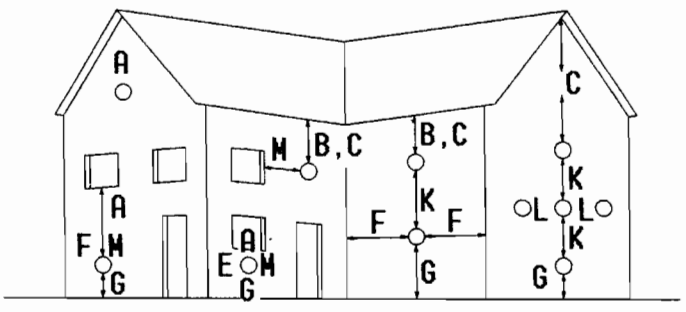
In siting the combination boiler, the following limitations MUST be observed:
The position selected for installation should be within the building, and MUST allow adequate space for installation, servicing and operation of the combination boiler, and for air circulation around it. The boiler is not suitable 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 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 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 Section 4.5.10, Fig 1 and stipulated in Section 4.5.10, Fig 2. 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. See Section 5.4.
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 1500mm (59in) 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



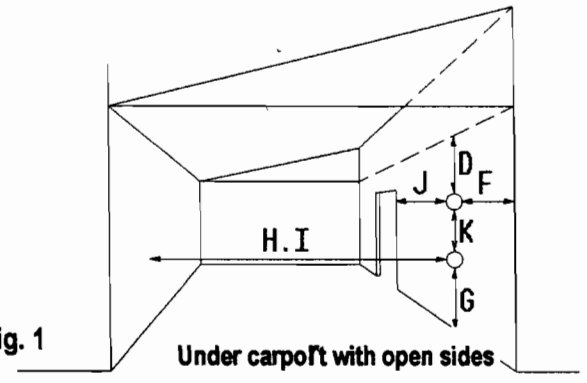


Fig. 1 **Under carport with open sides**

A	Directly below an openable window, air vent or any other ventilation opening	300mm (12in)
B	Below guttering, drain pipes or soil pipes	75mm (3in)
C/D	Below eaves, balconies or carport roof	200mm (8in)
E	From vertical drain pipes or soil pipes	75mm (3in)
F	From internal or external corners	300mm (12in)
G	Above adjacent ground, roof or balcony level	300mm (12in)
H	From a surface facing the terminal	600mm (24in)
I	From a terminal facing the terminal	1200mm (48in)
J	From an opening in the carport (eg door, window) into the dwelling	1200mm (48in)
K	Vertically from a terminal on the same wall	1500mm (60in)
L	Horizontally from a terminal on the same wall	300mm (12in)
M	Adjacent to opening	300mm (12in)

MINIMUM DISTANCES FOR FIXING TO WALL

To allow access in the boiler for maintenance operations, the minimum distances shown below must be respected:

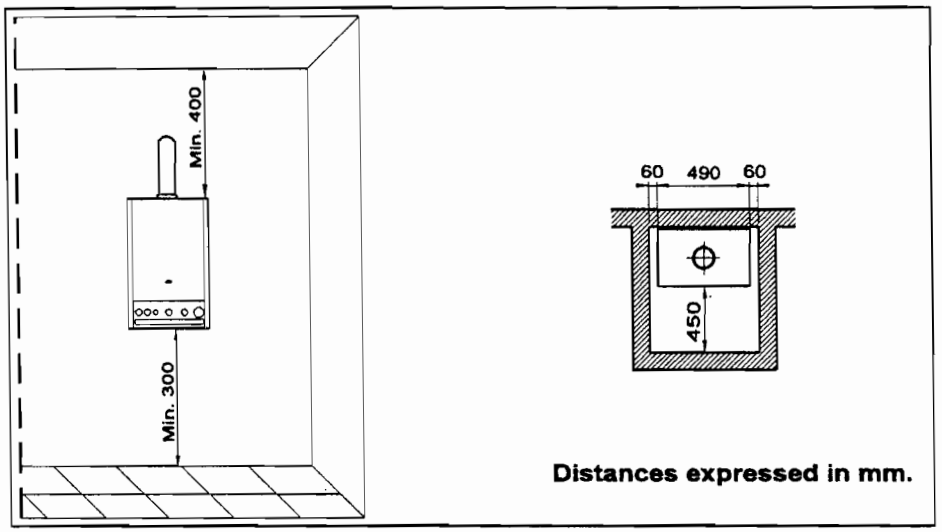


Fig. 1

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.

1 - With a spirit level (min. length 25 cm.), draw a line on the wall on which the boiler will be installed.
2 - Position the top of the template on the line drawn with the spirit level (respecting the distances (see fig. 2 pos. 1), then mark the two points for insertion of the two screw anchors or wall anchors. Next, mark the water and gas starting points (see fig. 2 pos. 2).
3 - Remove the template and make connections to the hot and cold water supply, to the gas pipes, and to the heating system with the fittings supplied with the boiler (see fig. 2 pos. 3).
4 - Hang the boiler on the screw anchors or wall anchors and make connections (see fig. 2 pos. 4).

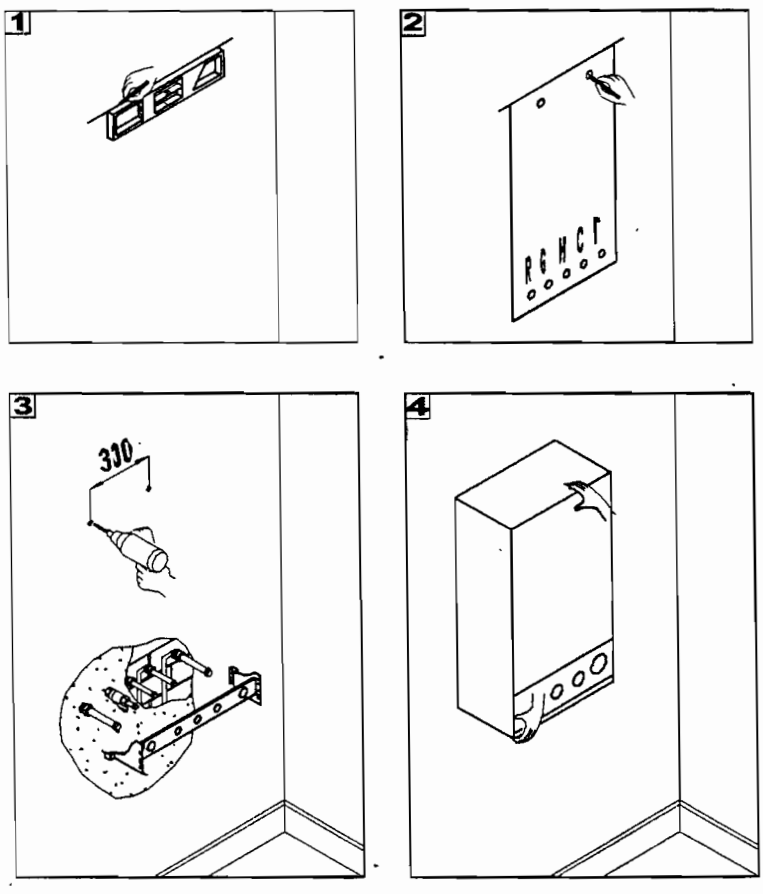


Fig. 2

WATER CONNECTIONS

To facilitate installation, the boiler is equipped with a fittings kit.

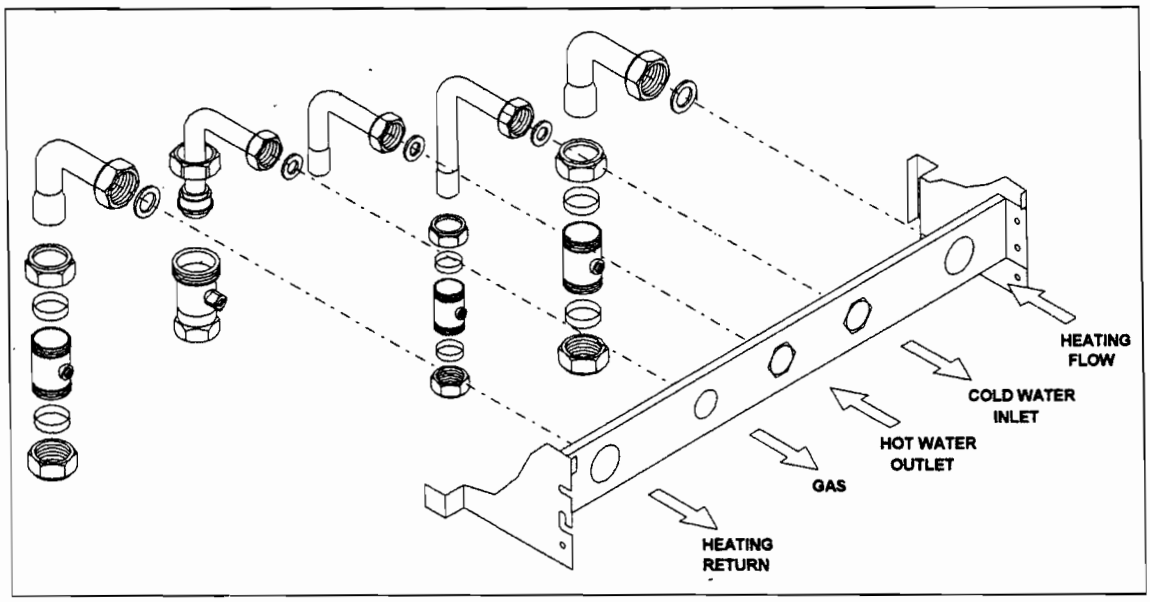


Fig. 1

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. No safety valve is needed for the domestic water circuit, but be sure that pressure does not exceed 6 bar. It is necessary to install a cock on the gas supply pipe near the boiler. This cock must have a section equal to that of the gas supply pipe. The pipes must have adequate section for the flow rate required and for its length. Once you are sure that the gas supplied is the correct type for the boiler, you may begin to connect the device.

CONNECTION OF FLUE PIPE

All boilers must be connected to a pipe for exhaust of combustion products. This pipe must never have a diameter inferior to that of the boiler discharge top pipe and must be hermetically sealed to prevent leaking of any exhaust fumes. When installing this pipe, avoid long horizontal tracts and sharp turns (see p. 12 figs. 1 - 2).

- For open room boilers RCM type B

connect the boiler to the flue with a union having a 130 external Ø

- For room sealed boilers RSF type C12:

KIT A - COAXIAL EXHAUST (see p. 5) connect with double bend Ø 100 - 60 and 2 coaxial pipes; Ø 60 for EXHAUST of gas fumes - Ø 100 for *INTAKE* of air for combustion.

- For room sealed boilers RSF type C32:

KIT B - DOUBLE EXHAUST (see p. 5) connect 2 stub pipes with bend Ø 80 for *EXHAUST* of gas fumes - Ø 80 for *INTAKE* of air for combustion.

N.B: *the exhaust flue kits are in a separate box.*

For installation of the various types of exhaust and intake pipes for TYPE C devices (room sealed), see the enclosed FLUE KITS MANUAL.

ANTI-FROST SYSTEM

The boiler is equipped with an anti-frost system which comes into operation when the temperature reaches 5° and protects the boiler and the heating system down to -2° degrees Centigrade.

***N.B**: The system only comes into operation if the boiler is in **"ON"** position (with 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.

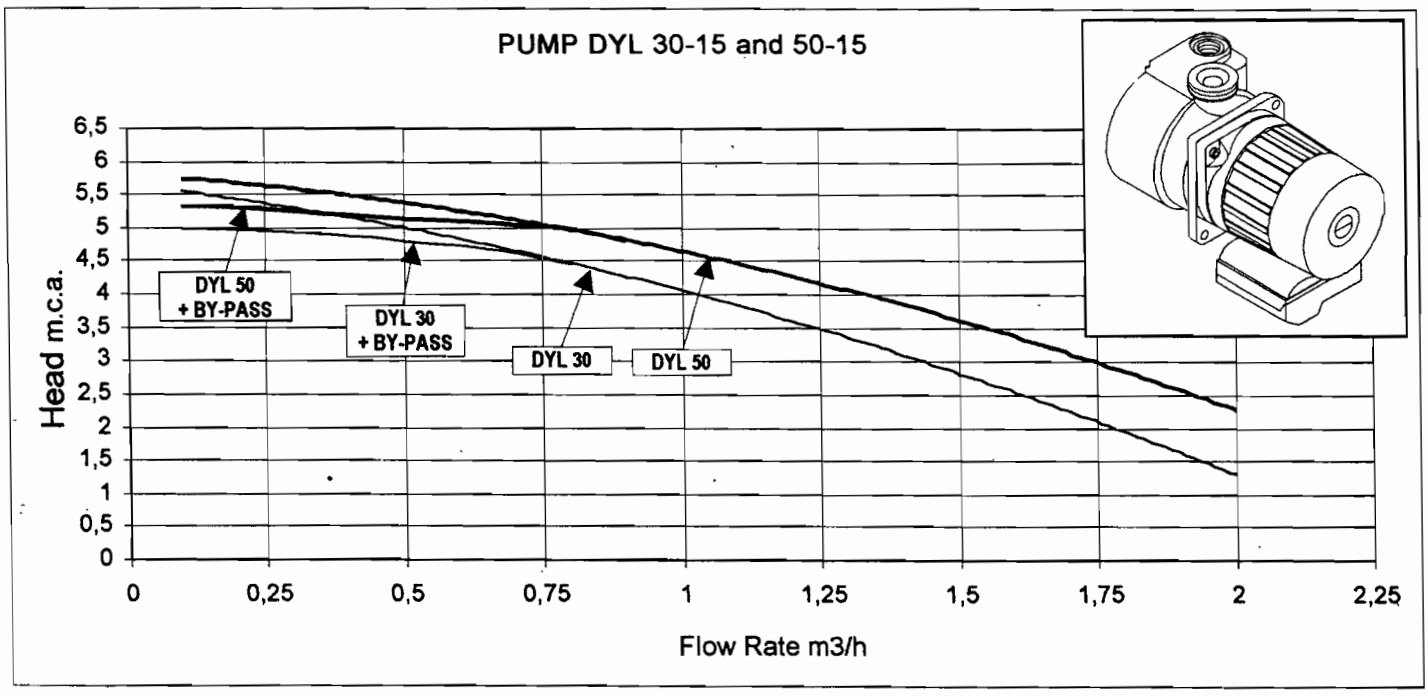
ADVICE FOR THE SERVICE TECHNICIAN

If the boiler is out of service because of ice, 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.

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

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 that the connection of the line and neutral conforms 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) 3x1.5 with maximum external diameter 9 mm.). Connect to the terminal block located in the instrument panel as follows (see figs. B - B1):

A. Remove the front panel in the direction of the arrows.

B. Remove the two screws from the instrument panel and turn the front panel in the direction of the arrows (see fig. A).

C. Connect the yellow/green wire to the terminal marked with the earth symbol "⏚".

D. Connect the blue wire to the terminal marked with the letter "N".

E. Connect the brown wire to the terminal marked with the letter "L".

Note: see electrical connections.

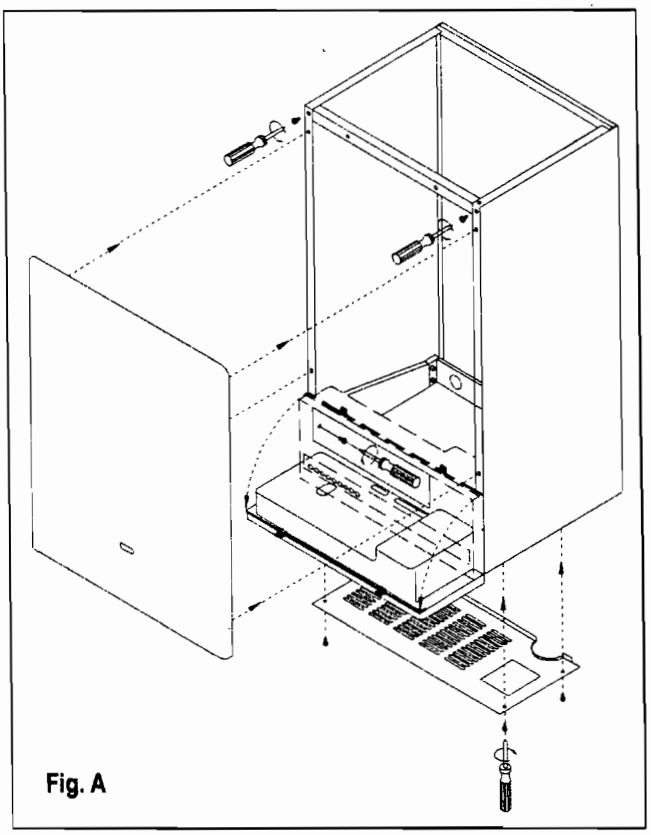


Fig. A

CONNECTION OF ROOM THERMOSTAT

NOTE: use class II room thermostats only.

The thermostat wire must not be placed in the channel containing high tension wires, but must have its own line.

The maximum length of the thermostat wire is 50 m.; minimum section is 0.5 mm.

Connect as follows:

A. Loosen the screw 1 at fair lead (see fig. C).

B. Insert the thermostat wire in the lead (see fig. D).

C. Remove the link from terminal block TA (see fig. D) and insert it in the free nearby terminal (see fig. D1).

D. Connect the thermostat (see fig. D2) and tighten the screws on terminal block M.

E. Tighten the screw at the fairlead.

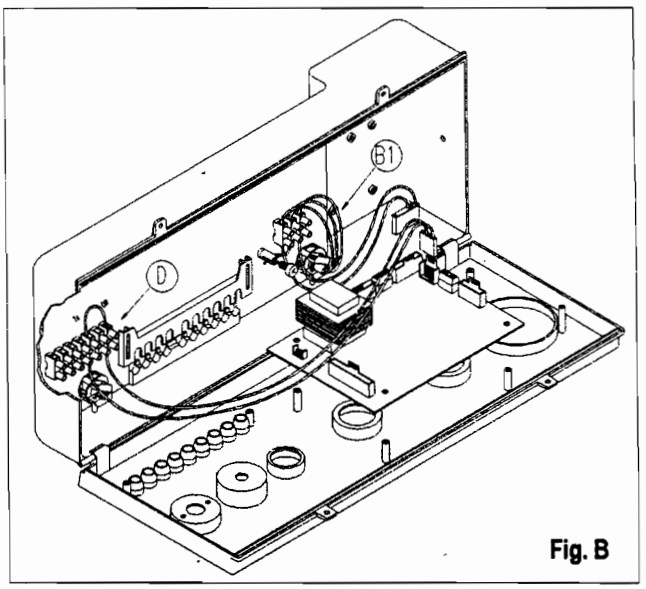
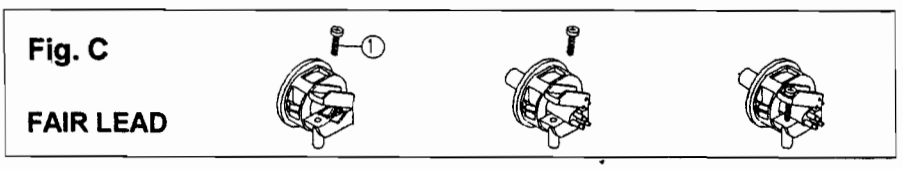
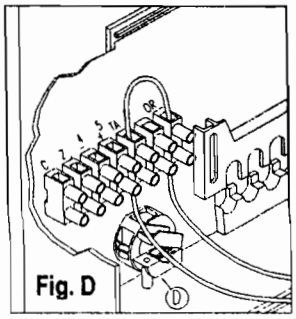
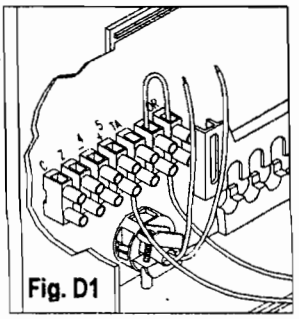
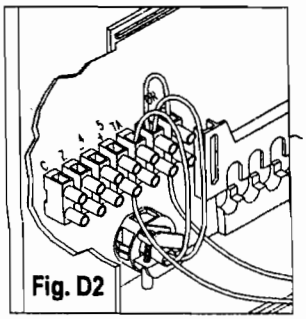


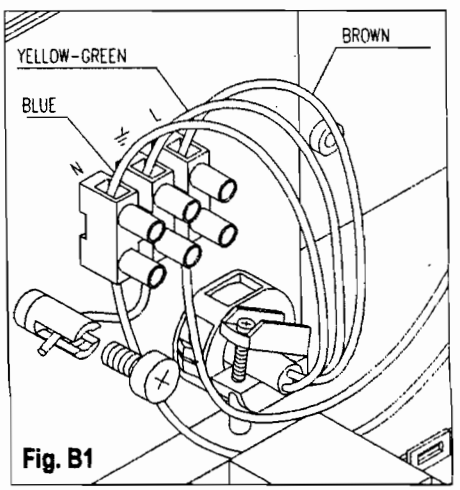
Fig. B











PILOT FLAME INSTRUMENT PANEL

Mod. R - RS

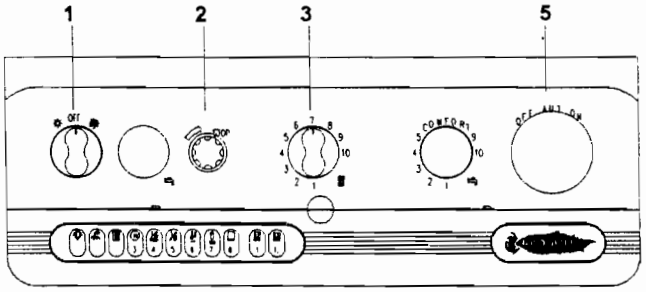


Fig. 1

Mod. RCM - RSF

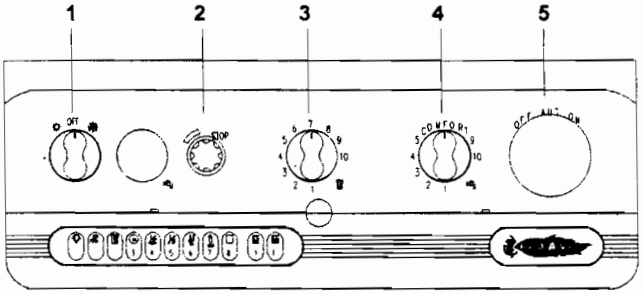


Fig. 2

LEGEND

1. Summer-winter ON-OFF switch
2. Pilot light ignition button
3. Heating temperature adjustment knob
4. Water temperature adjustment knob
5. Optional time clock

SELF- DIAGNOSTIC LEGEND (see fig. 5)

6. Operating/ Power indicator
7. Domestic hot water operation
8. Heating operation
9. Air pressure switch failure
10. Light-Flashing domestic water sensor failure
11. Light-Flashing heating sensor failure
12. Light-Flashing 90° C max temperature sensor failure
13. Light-Flashing flue safety - thermostat failure
14. Light-Flashing water deficiency in system
15. Water pressure level 1 bar
16. Water pressure level 1.5 bar
17. Electronic temperature indicator

ELECTRONIC IGNITION INSTRUMENT PANEL

Mod. R - RS

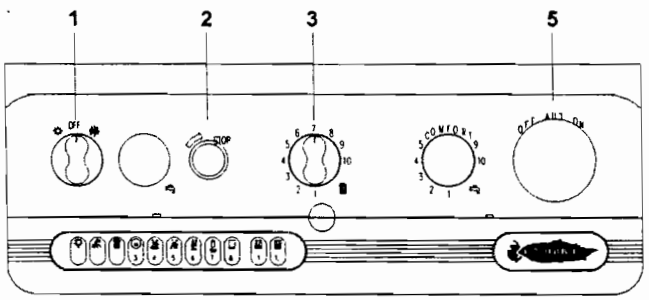


Fig. 3

Mod. RCM - RSF

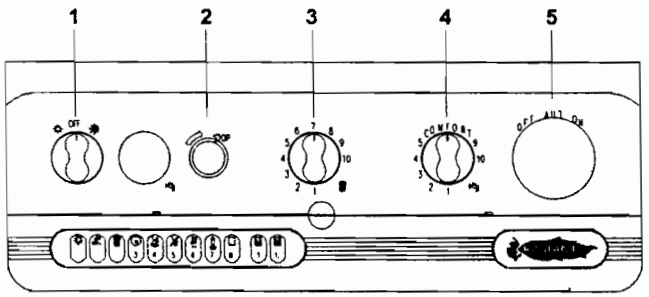


Fig. 4

LEGEND

1. Summer-winter ON-OFF switch
2. Lock-out indicator
3. Heating temperature adjustment knob
4. Water temperature adjustment knob
5. Optional time clock

SELF- DIAGNOSTIC LEGEND (see fig. 5)

6. Operating/ Power indicator
7. Domestic hot water operation
8. Heating operation
9. Air pressure switch failure
10. Light-Flashing domestic water sensor failure
11. Light-Flashing heating sensor failure
12. Light-Flashing 90° C max temperature sensor failure
13. Light-Flashing flue safety - thermostat failure
14. Light-Flashing water deficiency in system
15. Water pressure level 1 bar
16. Water pressure level 1.5 bar
17. Electronic temperature indicator

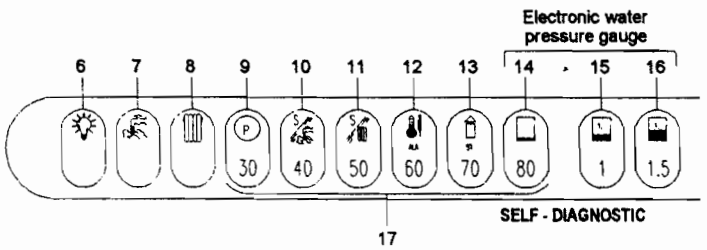


Fig. 5

FILLING THE SYSTEM

After connecting the water supply, fill the heating system as follows:

a - Filling the system until reaching a pressure of about 1 - 1.5 bar;

b - Check that the cap on the air vent valve is slightly loose so that air may purge from the system (see fig. 1).

c - Unscrew the pump cap to eliminate any air bubbles. Loosen the D.H. Water Exchanger valve and close it as soon as water comes out; purge air from all radiators as well (see fig. 1).

d - Before lighting the flame, it is important to recheck water pressure. If it is below 0.5 bar, open the tap and return it to approximately 1.5 bar.

e - Once the boiler is turned on, if the system is still noisy, repeat the above operation to eliminate air completely.

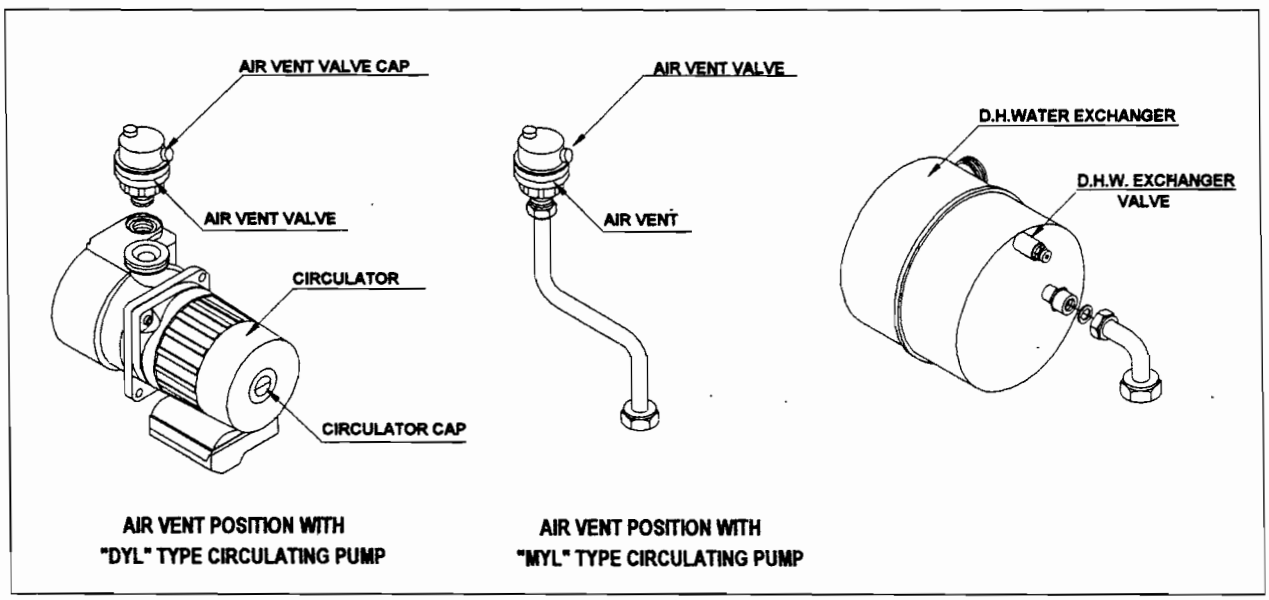


Fig. 1

STARTING UP THE BOILER

Before performing the following operations, you must remove the boiler front casing and rotate the instrument panel. To do this:

a - Unscrew the screw from the boiler front casing, only for **RCM-R** open room models (see p. 13 fig. A).

b - Pull the front of the panel casing towards you.

c - Unscrew the two screws from the instrument panel and turn it.

d - Unscrew the two side screws on the inside of the instrument panel.

e - Tighten the two screws on the front of the panel so that the panel is completely closed.

f - Make sure that the electrical connection has been made correctly and that the earth wire is adequately connected .

FIRST IGNITION

The first ignition of the boiler must be performed by qualified personnel only.

Perform the following checks:

- Make sure the gas tap is closed.
- Check that the cap on the air vent valve has been loosened (see fig. 1).
- Fill the system until a pressure of about 1 - 1.5 bar is reached, once the correct pressure has been reached, close the tap.
- Turn on electrical power to the boiler.
- Set switch 1 to WINTER ❄ position (see page 14). The circulating pump will start after a few seconds.
- Loosen the cap at the top of the pump so that any air may purge and to be sure that the pump isn't locked (see fig. 1).
- Loosen the D.H. Water Exchanger valve (see fig. 1) and close it as soon as water comes out.
- Purge air from the radiators and from any bleed tubes.
- Open the hot water tap for a few minutes.
- Check pressure in the system. If it has dropped, open the filling tap again until pressure returns to approximately 1-1.5 bar.
- Make sure that any valves are open.
- Check that the exhaust duct is free.
- Check that there are no inflammable liquids or materials in the immediate vicinity of the boiler.

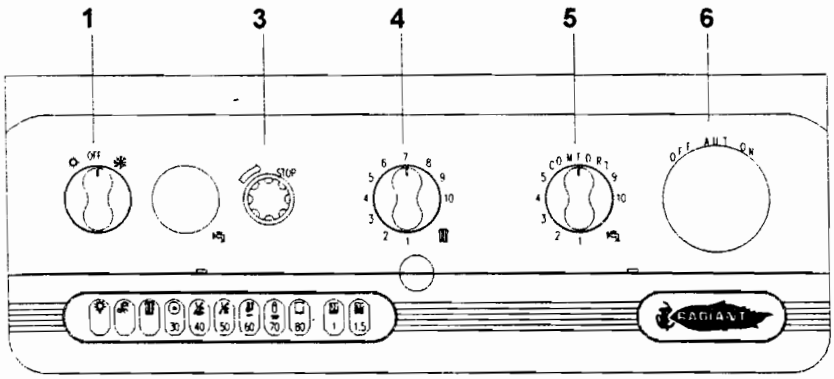


Fig. 1

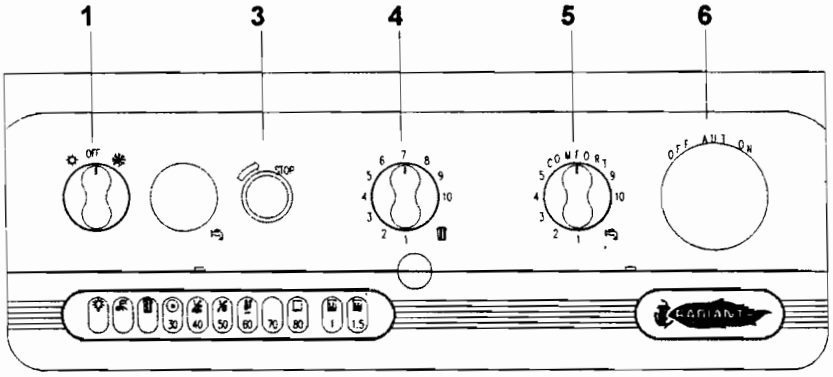


Fig. 2

- Open the gas tap and check the seal of all gas connections. Check that the gas meter does not indicate any passage of gas.
- Check all seals with soapy water and eliminate any leaks. The gas burner connection check is to be made with the boiler in operation.
- Check minimum and maximum gas pressure to the burner by inserting a pressure gauge at pressure tube **4** on the gas valve (see p. 19 fig. 1-2).

Reference data are stated on the gas pressure plate. After adjustment, remove the pressure gauge from the pressure tube and tighten the screw. Make sure there is no gas leak.

- Adjust maximum heating output (see adjustment of trimmer M. RIS on circuit board RAMIRE2, p. 17).

IGNITION (Pilot Flame)

a) Open the gas tap.

b) Set switch **1** to one of the two symbols **summer ☼ winter ❄** (see fig. 1).

c) Push the gas valve button **2** in completely . This will cause the ignition spark and simultaneous flow of gas to the pilot burner. For the first ignition, you have to keep the botton pushed in for a few minutes to eliminate all of the air from the pipes. When the pilot light is on, keep the button pushed in for about 20 seconds more; when released, the flame should stay on. If the pilot light goes out, wait 3 minutes before repeating the pilot burner ignition procedure.

IGNITION (ionisation)

a) Open the gas tap.

b) Set switch 1 on one of the two symbols summer ☼ winter ❄ (see fig. 1).

Check that operating light **7** has turned on (see p. 14 - fig. 5). The automatic ignition system will turn on the burner. It may be necessary to repeat the operation several times to eliminate air from the pipes. To repeat the ignition operation, push button **2** (see fig. 1) and then repeat the ignition procedure.

ADJUST maximum heating output *(2).

**(1) See the procedure for adjustment of minimum and maximum heating output of the boiler.*

**(2) See the procedure for adjustment of minimum and maximum useful output for heating.*

- See TRIMMER adjustment located on the cicuit board (see p. 17).

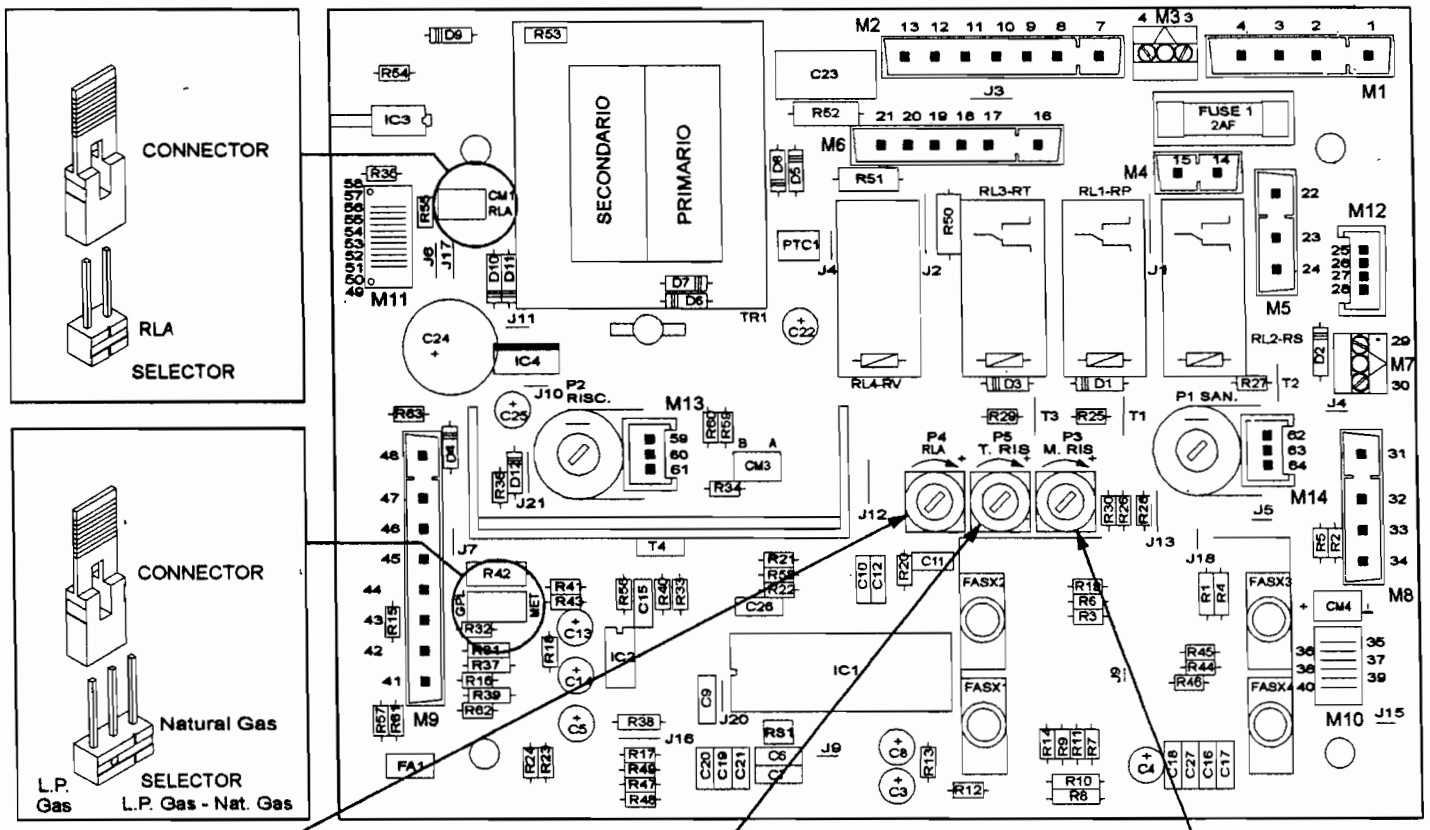
DRAINING THE HEATING SYSTEM

- turn off the boiler
- drain from the lowest points of the system (where provided). If the system is to remain unused, as an alternative to repeated drainings, it is advisable to add ethylene glycol-based antifreeze to the water in the heating system in areas in which ambient temperature may drop below 0°C during the winter.

DRAINING THE DOMESTIC WATER SYSTEM

Whenever there is danger of freezing, the domestic water system must be drained as follows:

- close the main tap of the water network
- open all hot and cold water taps
- drain from the lowest points (where provided).



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 adjustmens. Turn clockwise to increase gas pressure to the burner at start-up (by setting the trimmer to maximum, pressure at start-up will correspond to maximum calibration pressure of modulator -see page 21-). Turn anti-clockwise to decrease gas pressure to the burner at start-up (by setting the trimmer to minimum, pressure at start-up will correspond to minimum calibration pressure of modulator -see page 21-).
Through the RLA connector you can verify the minimum gas pressure adjusted to the modulator. Remove the connector 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 connector and insert it on the MET-GPL selector.

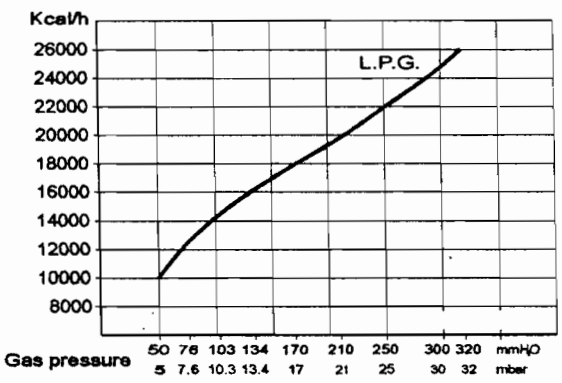
HEATING TIMER

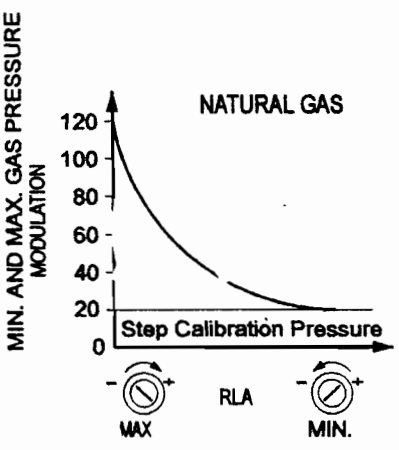
Delays start-up times of the various ignitions once the boiler has reached optimum temperature (the adjusting range is from 0 minutes value set during testing at the factory, to max 5 minutes).
Use a screwdriver to adjust the delay time. Turn clockwise to increase time and anti-clockwise to decrease time down to zero.

MAXIMUM HEATING TRIMMER

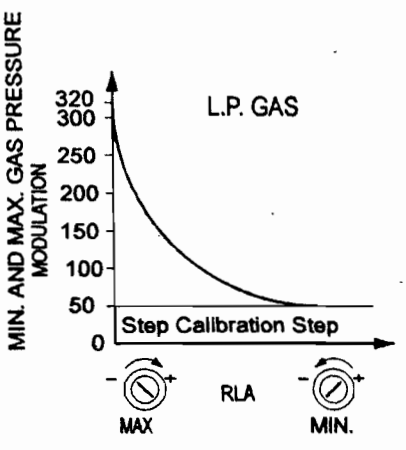
The trimmer is calibrated at 60% of the max. rated output during factory testing.
For the first ignition of the boiler, adjust according to heating power of the system.
Use a screwdriver to adjust it. Turn clockwise to increase anti-clockwise to decrease.

MIN. AND MAX. GAS PRESSURE MODULATION DIAGRAM

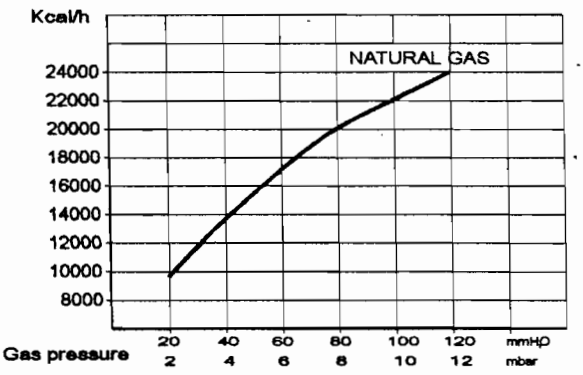




START-UP STEP



START-UP STEP



GAS CONVERSION PROCEDURE

Conversion of gas type.
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 - Replace the main burner injectors; unscrew the gas tube (5 fig. 1) with a size 24 hexagonal wrench. Separate the burner manifold (2 fig. 1) from the burner ramps (1 fig. 1) by unscrewing the 4 screws (3 fig. 1) with a cross-point screwdriver. Replace the injectors (4 fig. 1) on the manifold by using a size 6 hexagonal wrench. The injectors must be installed with new gaskets. Reassemble the entire burner unit. After every disassembly and reassembly of gas connections, check carefully with soap and water.

B - Replace the spring (6 fig. 2) according to the type of gas required. The spring is located in the stabiliser in the gas valve (8 fig. 2). Remove modulator (7 fig. 2) to replace the spring (6 fig. 2).

C - Move the link on the RAMIRE 2 circuit board according to the gas required (fig. 4).

D - For boilers with pilot flame ignition, replace the pilot flame jet (1 fig. 3) according to the gas required. Unscrew fastening nut (2 fig. 3) on aluminium gas tube (3 fig. 3).

E - Replace the gas setting plate indicating gas type and pressure. When converting the boiler to function with a different type of gas, remove the existing plate and replace it with the new one supplied in the conversion kit (see fig. 1 p. 2).

GAS BURNER UNIT

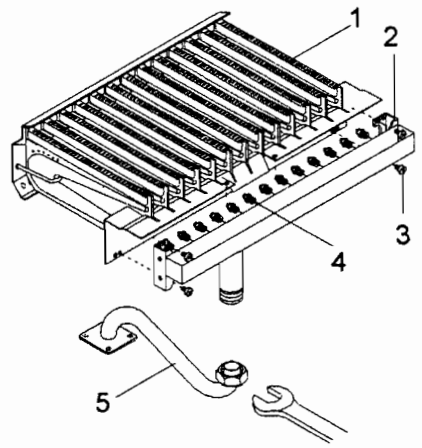
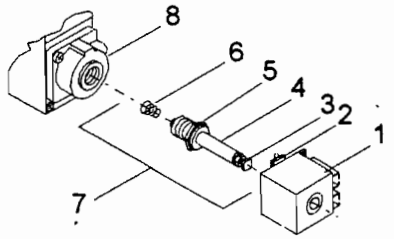


Fig. 1

PRESSURE MODULATOR



Legend:
1 - Modulating coil
2 - Fastening clips
3 - Min. gas prerssure adjustament screw
4 - Max. gas pressure adjustament core
5 - Core lock nut
6 - Calibrator spring (blue natural gas),(grey GPL)
7 - Pressure modulator
8 - Gas valve stabiliser

Fig. 2

GAS BURNER UNIT WITH PILOT FLAME IGNITION

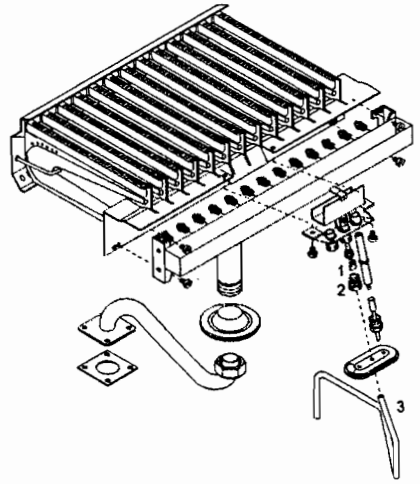


Fig. 3

Link Jumper on RAMIRE circuit board

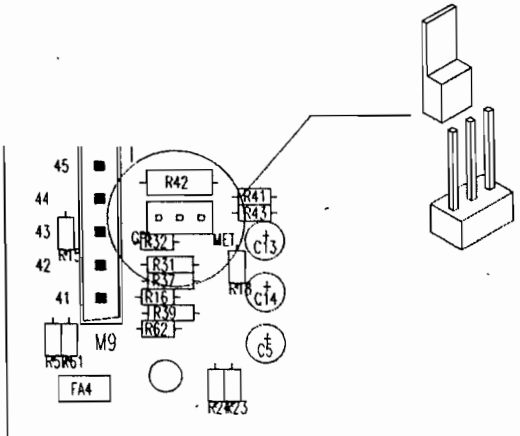
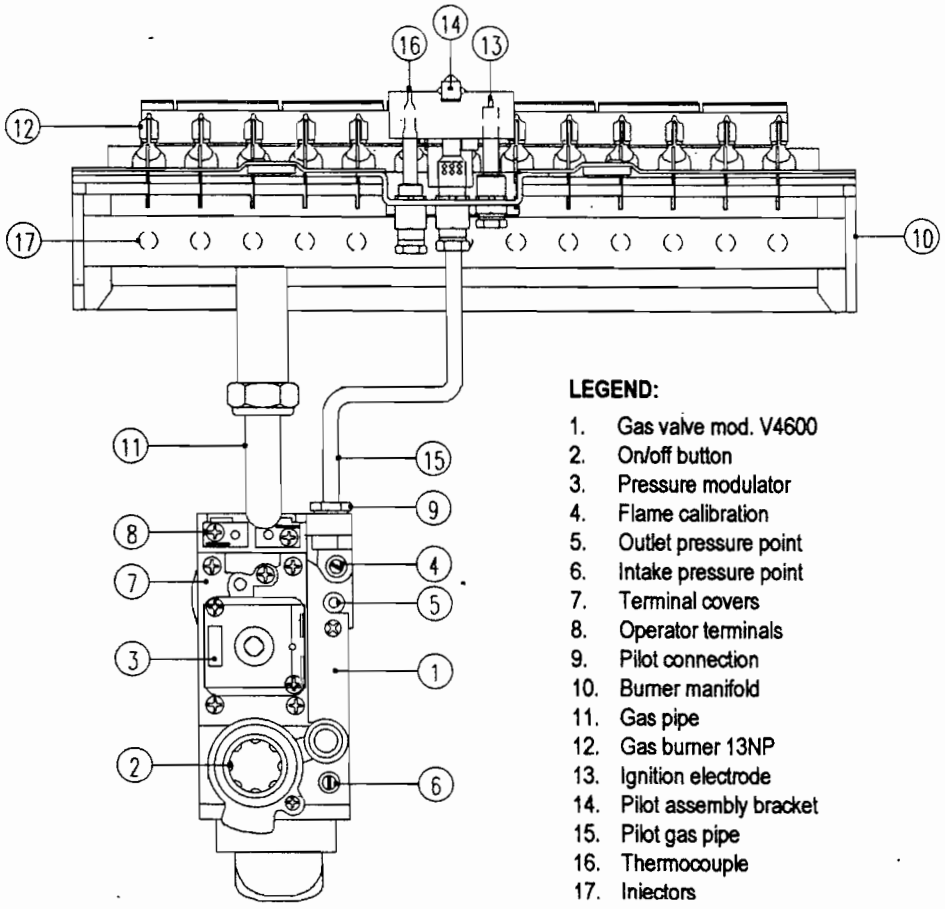


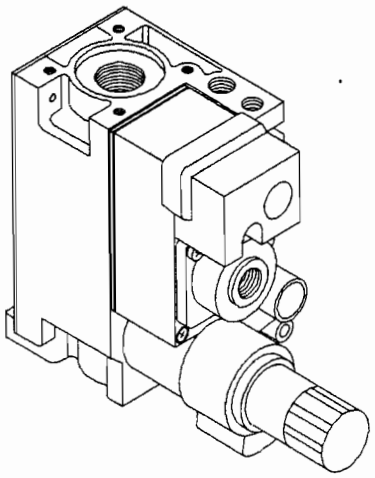
Fig. 4

UNIT WITH BURNER AND GAS VALVE MOD. V4600A PILOT FLAME IGNITION



LEGEND:

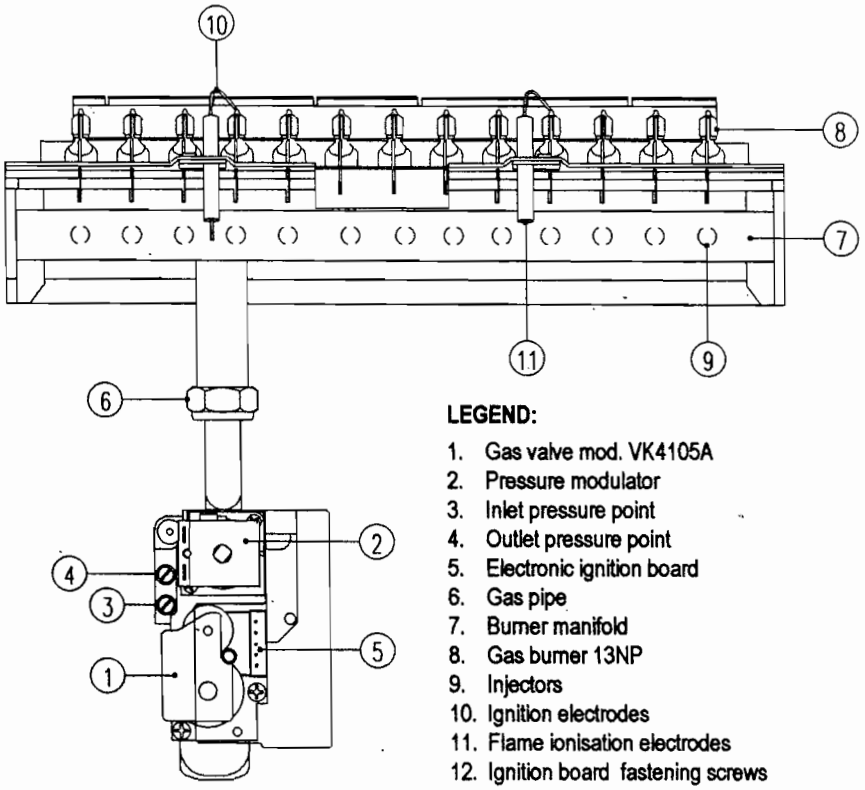
1. Gas valve mod. V4600
2. On/off button
3. Pressure modulator
4. Flame calibration
5. Outlet pressure point
6. Intake pressure point
7. Terminal covers
8. Operator terminals
9. Pilot connection
10. Burner manifold
11. Gas pipe
12. Gas burner 13NP
13. Ignition electrode
14. Pilot assembly bracket
15. Pilot gas pipe
16. Thermocouple
17. Iniectors



Gas valve mod. V4600A

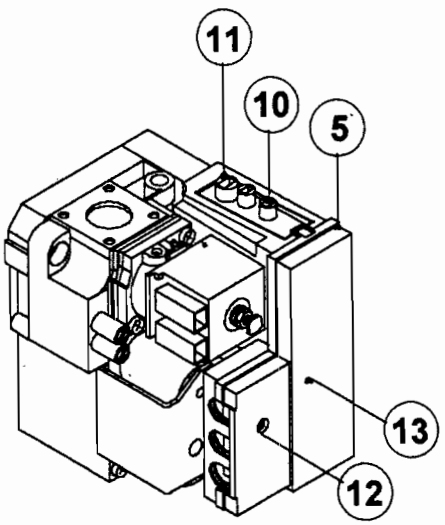
Fig. 1

UNIT WITH BURNER AND ELECTRONIC IGNITION GAS VALVE MOD. VK4105A



LEGEND:

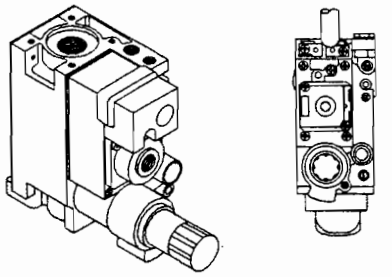
1. Gas valve mod. VK4105A
2. Pressure modulator
3. Inlet pressure point
4. Outlet pressure point
5. Electronic ignition board
6. Gas pipe
7. Burner manifold
8. Gas burner 13NP
9. Injectors
10. Ignition electrodes
11. Flame ionisation electrodes
12. Ignition board fastening screws
13. Ignition board cover



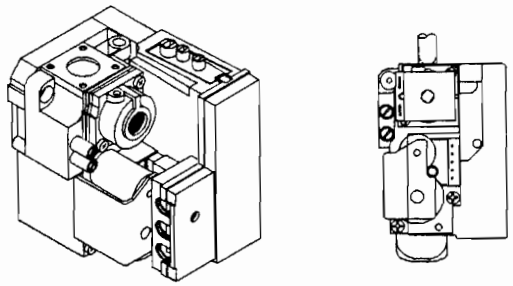
Gas valve mod. VK4105A

Fig. 2

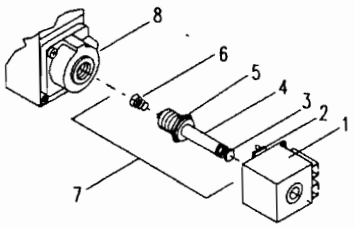
ADJUSTMENT OF GAS PRESSURE



PILOT FLAME GAS VALVE
mod. V 4600 A

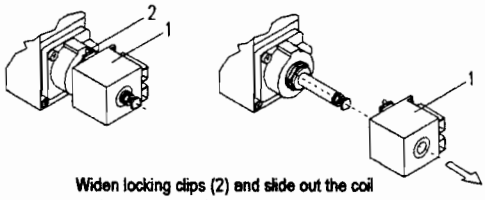


ELECTRONIC GAS VALVE
mod. VK4105A

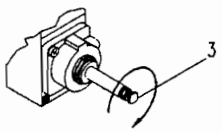


LEGEND:

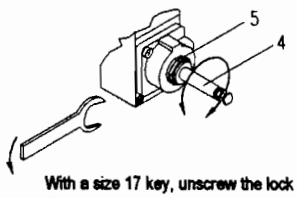
1. Modulator coil
2. Locking clips
3. Min. gas pressure adjustment screw
4. Max. gas pressure adjustment core
5. Core locknut
6. Calibration spring
7. Pressure modulator red-004
8. Gas valve stabiliser



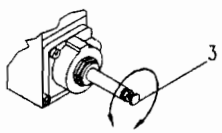
Widen locking clips (2) and slide out the coil (1) located above the gas valve.



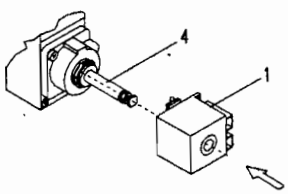
Tighten plastic screw (3) by turning it clockwise. Be careful not to break it.



With a size 17 key, unscrew the lock nut holding the coil core. Turn on boiler. Adjust maximum pressure by means of core (4): tighten to increase pressure. When adjusted to maximum pressure, tighten lock nut (5).



Adjust minimum modulation pressure with the coil turned off. Slowly unscrew plastic screw (3) until the pressure gauge shows the minimum pressure required.



After these operations are finished, reassemble coil (1) to lock pressure.

Models: RCM 20 - R20 - RSF20 - RS20	METHANE GAS G20	LIQUID BUTANE GAS G30	LIQUID PROPANE GAS G31
Lower Wobbe index (15°C; 1013 mbar) MJ/m3n	45.67	80.58	70.69
Rated feed pressure mbar(mm c.a.)	20(204)	30(306)	37(377)
Minimum feed pressure mbar(mm c.a.)	17(173.4)	20(204)	25(255)
Main burner: 13 nozzles -; Ø nozzle mm.	1.25	0.75	0.75
Pilot light burner; 1 nozzle Ø (2 holes) mm.	0.27	0.22	0.22
Consumption (15°C; 1013 mbar) mc/h.	2.8		
Consumption (15°C; 1013 mbar) Kg/h.		2.09	2.02
OUTFEED PRESSURE ON GAS VALVE			
Maximum mbar (mm c.a.)	12.3(125)		
Minimum mbar (mm c.a.)	2.0(20.5))	5.0(51)	5.0(51)

Models: RSF 24 - RS24	METHANE GAS G20	LIQUID BUTANE GAS G30	LIQUID PROPANE GAS G31
Lower Wobbe index (15°C; 1013 mbar) MJ/m3n	45.67	80.58	70.69
Rated feed pressure mbar(mm c.a.)	20(204)	30(306)	37(377)
Minimum feed pressure mbar(mm c.a.)	17(173.4)	20(204)	25(255)
Main burner: 13 nozzles -; Ø nozzle mm.	1.25	0.77	0.77
Pilot light burner; 1 nozzle Ø (2 holes) mm.	0.27	0.22	0.22
Consumption (15°C; 1013 mbar) mc/h.	3.15		
Consumption (15°C; 1013 mbar) Kg/h.		2.36	2.30
OUTFEED PRESSURE ON GAS VALVE			
Maximum mbar(mm c.a.)	12.3(125)		
Minim mbar(mm c.a.)	2.0(20.5))	5.0(51)	5.0(51)

DIFFERENTIAL PRESSURE SWITCH FOR FAN CONTROL

To guarantee maximum safety in flue exhaust, a differential pressure switch is installed on Model RSF-RS (wall-hung, 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.

FLUE SAFETY THERMOSTAT

Natural draught boilers model RMA are equipped with a device to control correct exhaust of combustion gases. This device guarantees maximum safety of operation if the flue should become partially or totally blocked, or if its section is not suitable for exhaust of combustion gases.

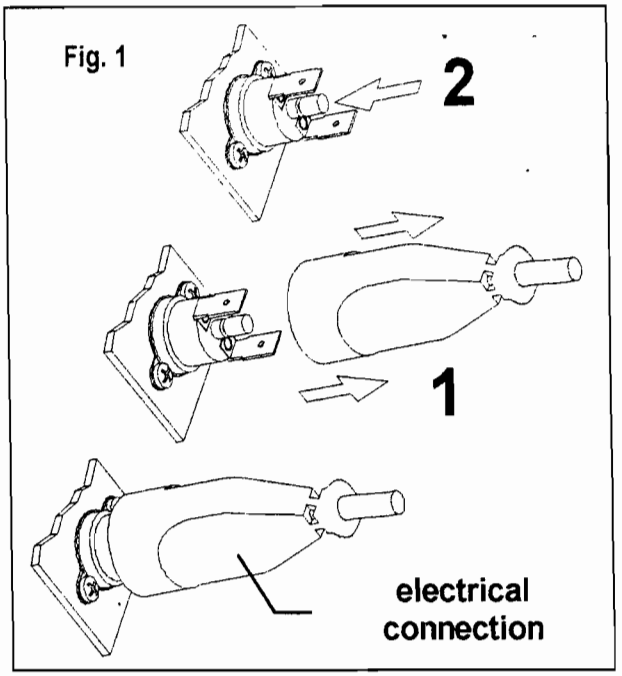
The thermostat acts by blocking the flow of gas to the main burner and to the pilot flame, thereby shutting down the boiler.
RESETTING: for pilor flame boilers, repeat the ignition phase by pushing the gas valve pilot ignition button located on the control panel. For electronic ignition boilers, set the summer-winter switch to OFF, remove flue safety thermostat electrical contacts, and then re-insert electrical connection **1** (see fig. 1), push button **2** located between the two electrical contacts, and then re-insert electrical connection **1**. Return the switch to its previous position. If other interruptions occur **contact authorised personnel only and close the gas cock valve to the unit. DO NOT tamper with the device in any way.**

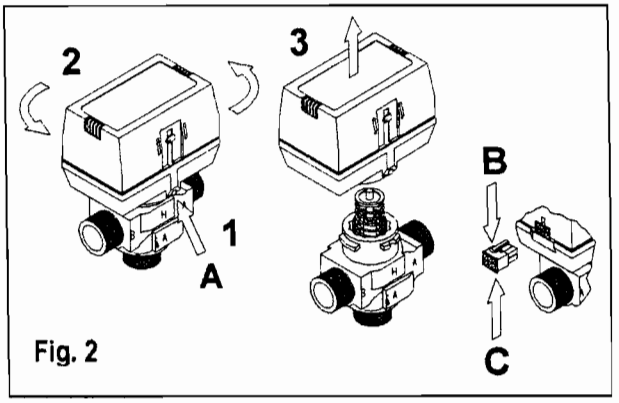
DIVERTER VALVE C3 VC6012MG6000

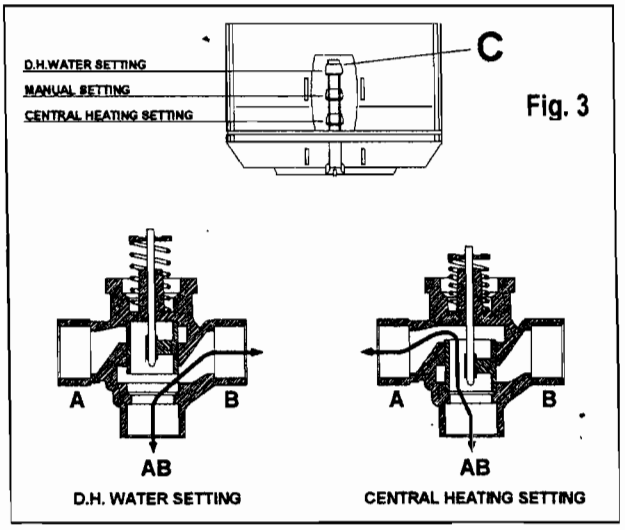
The diverter valve is the device which controls the boiler switching from central heating to d.h. water circuit and vice versa.
The diverter valve is fitted with a manual command lever **C** (fig.3 which, when set on the top position, towards the valve head, allows the boiler operating on the d.hot water 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 d.h. water ports are open and both d. 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.2).
(Disconnect power supply before servicing to avoid electrical shock or equipment damage)

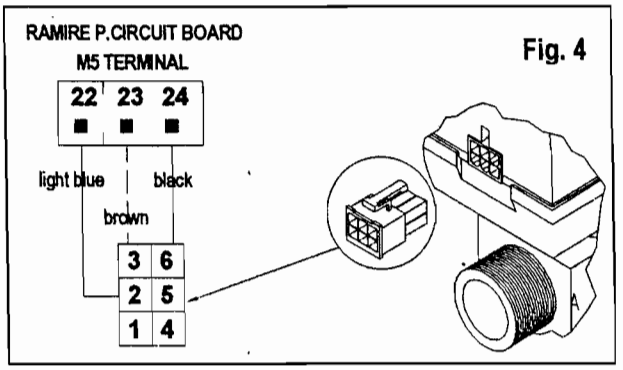
1. Press up the **A** button located directly below the red manual open lever;
2. Simultaneously keep the **A** button pressed and turn the actuator anticlockwise;
3. Lift the actuator off the valve body;
4. To disconnect the power supply cable press the **B** tap located on the pin **C**;

See fig.4to perform the electrical wiring of the diverter valve to the main printed circuit board









DIVERTER VALVE V4044 C1676

The diverter valve is fitted with a manual command lever which, when set on "manual", allows the shutter located in the valve body to go to an intermediate position (see. fig. 1)
With this manoeuvre, all outlet doors open simultaneously (A-B-C) and the heating and hot water exchanger are fed by the boiler (only if the flowswitch is obstructed by impurities).
Maintenance of diverter valves is limited to control of water leaks between the valve body and the motor.
In case of leaks, check of the O ring needs to be replaced.

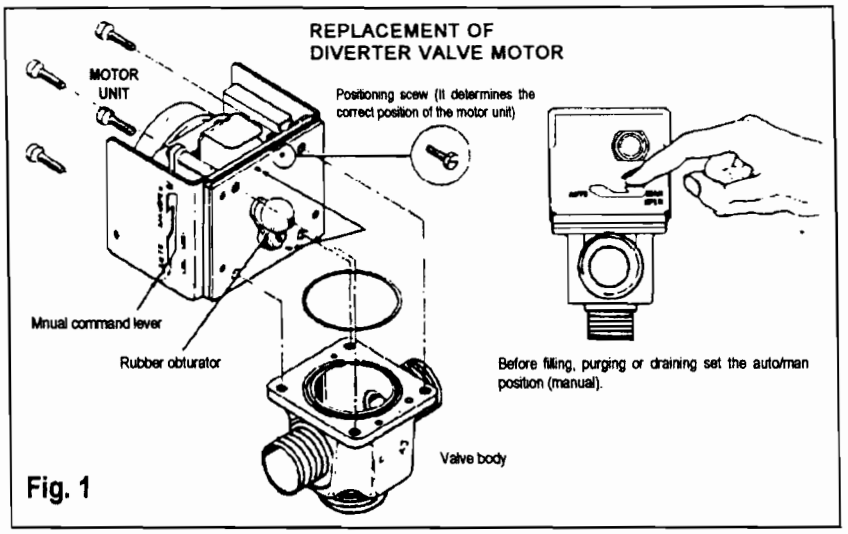


Fig. 1

LIMITER

A flow limiter is fitted on the boiler at the cold water inlet to the flowswitch. The flow limiter may be adjusted by turning screw (see pag. 24 pos. 21) in order to obtain the correct flow rate of domestic hot water based on boiler output (see diagram for domestic water flow rate and temperature).

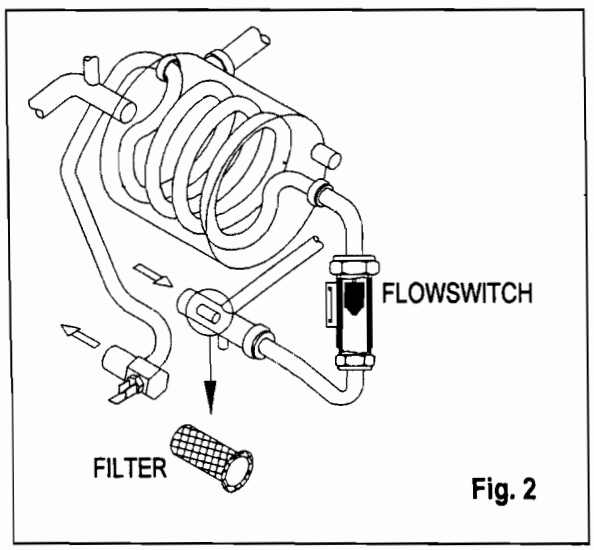


Fig. 2

FLOWSWITCH

This device gives precedence to domestic hot water. Allows conversion from domestic water phase with minimum request of 2 lt./min. using an electromagnetic principle with electric switching by means of a relay. The device is made of non-toxic, corrosion-proof ZYTEL 101 L plastic material and has a water filter at the water inlet to eliminate impurities. These features guarantee excellent efficiency of the flowswitch (see fig. 2)

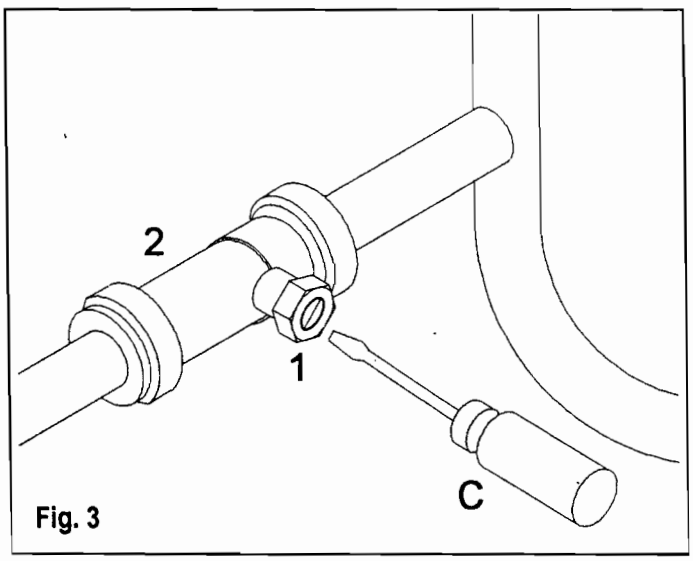


Fig. 3

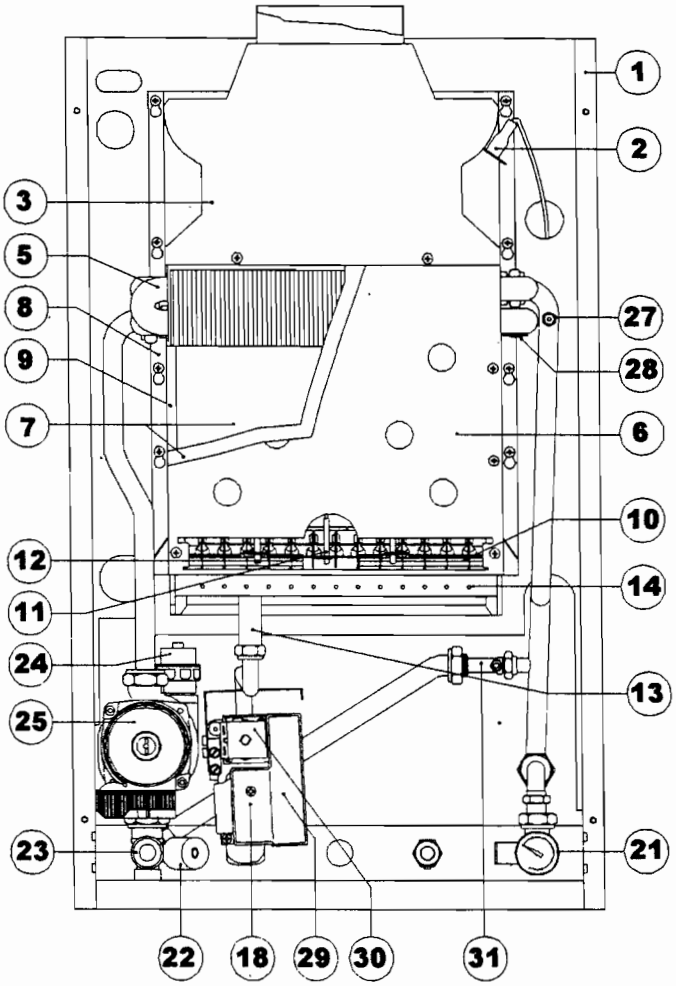
BY-PASS ADJUSTMENT

To adjust the by-pass proceed as follows (see fig.3): fit the screwdriver C to the plastic screw 1 of the by-pass 2, bearing in mind that when the slot of the screw 1 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.

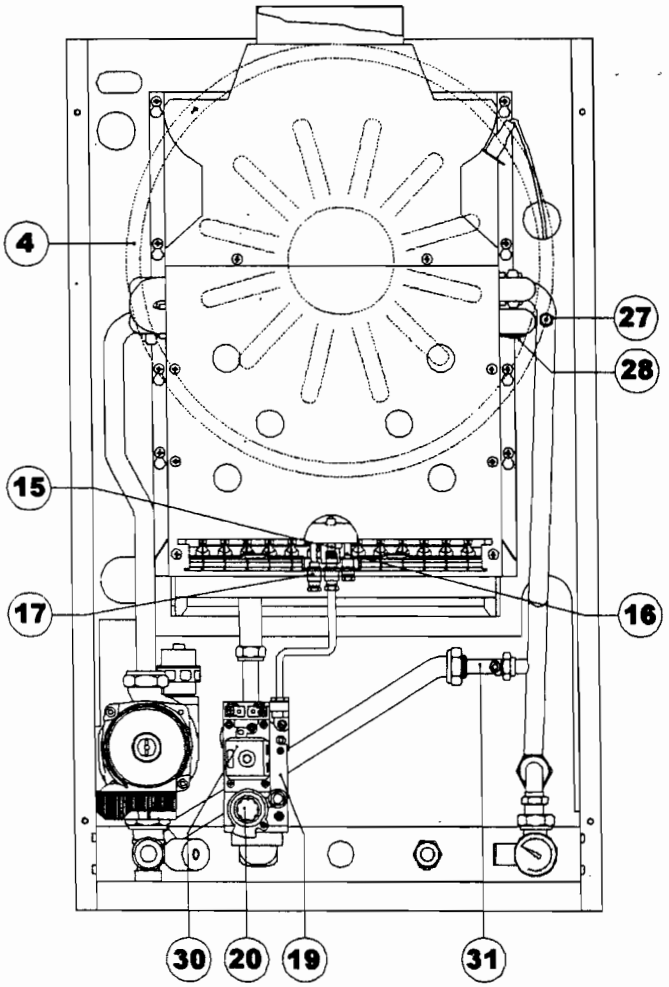
Installation of the by-pass is recommended in the following cases:

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

R 20 ELECTRONIC IGNITION



R 20 PILOT FLAME IGNITION



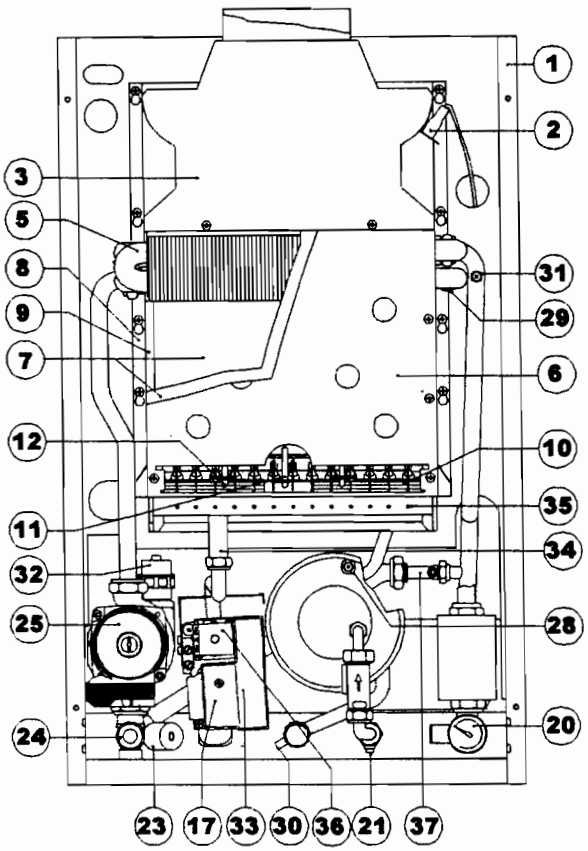
KEY:

1) FRAME
2) FLUE SAFETY THERMOSTAT
3) FLUE HOOD
4) EXPANSION VESSEL
5) HEAT EXCHANGER Mod. 20/66
6) COMBUSTION CHAMBER FRONT PANEL
7) COMBUSTION CHAMBER FRONT and BACK PANEL CERAMIC FIBRE
8) COMBUSTION CHAMBER SIDE PANEL
9) COMBUSTION CHAMBER SIDE PANEL CERAMIC FIBRE
10) MULTIGAS BURNER 13 NP
11) IGNITION ELECTRODE x ELECTR.
12) IONISATION ELECTRODE
13) GAS BURNER MANIFOLD
14) GAS BURNER INJECTORS
15) PILOT ASSEMBLY BRACKET
16) IGNITION ELECTRODE x PILOT
17) THERMOCOUPLE
18) ELECTRONIC GAS VALVE VK4105 A 1001
19) PILOT GAS VALVE V4600 A 1029
20) GAS VALVE PILOT IGNITION BUTTON
21) WATER PRESSURE GAUGE
22) WATER PRESSURE SWITCH
23) 3 bar PRESSURE RELIEF VALVE
24) AUTOMANTIC AIR VENT
25) 3 SPEED CIRCULATING PUMP
3 SPEED CIRCULATING PUMP W/ AIR VENT
26) —
27) HEATING SENSOR
28) HEATING SAFETY THERMOSTAT
29) ELECTRONIC IGNITION BOARD
30) GAS PRESSURE MODULATOR
31) BY-PASS

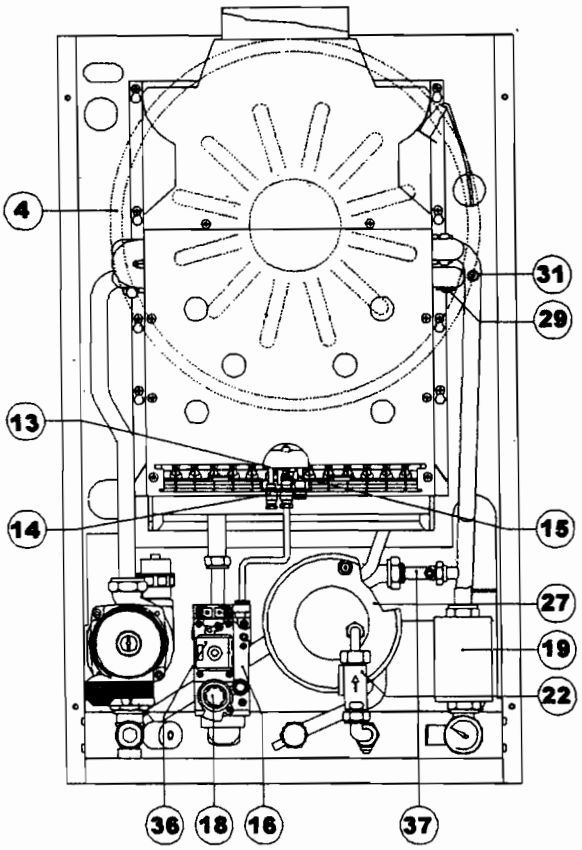
INSIDE PANEL COMPONENTS

32) PRINTED CIRCUIT BOARD
33) TEMP. INDICATOR P.C.B.

RCM 20 ELECTRONIC IGNITION



RCM 20 PILOT FLAME IGNITION



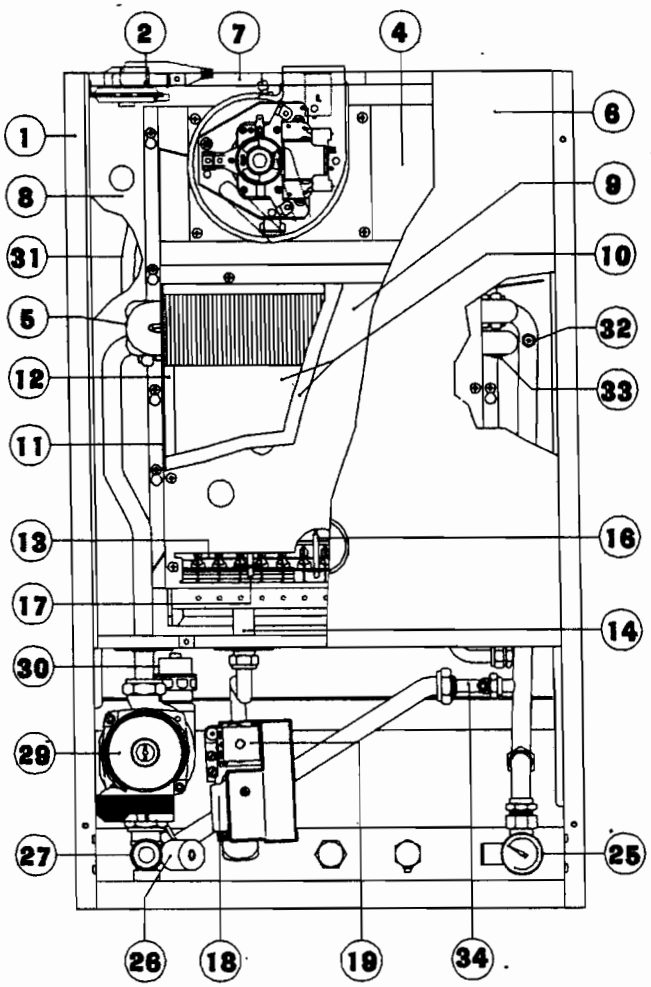
KEY:

1) FRAME
2) FLUE SAFETY THERMOSTAT
3) FLUE HOOD
4) EXPANSION VESSEL
5) HEAT EXCAHNGER 20/66
6) COMBUSTION CHAMBER FRONT PANEL
7) COMBUSTION CHAMBER FRONT AND BACK PANEL CERAMIC FIBRE.
8) COMBUSTION CHAMBER SIDE PANEL
9) COMBUSTION CHAMBER SIDE PANEL CERAMIC FIBRE
10) MULTIGAS BURNER 13 NP
11) IGNITION ELECTRODE x ELECT.
12) IONISATION ELECTRODE
13) PILOT ASSEMBLY BRACKET
14) THERMOCOUPLE 2 THERMOSTATS
15) IGNITION ELECTRODE x PILOT
16) PILOT GAS VALVE V4600 A 1029
17) ELECTRONIC GAS VALVE VK4105 A 1001
18) GAS VALVE PILOT IGNITION BUTTON
19) 3-WAY DIVERTER VALVE
20) WATER PRESSURE GAUGE
21) FLOW LIMITER
22) ELECTRONIC FLOWSWITCH
23) WATER PRESSURE SWITCH
24) 3 bar PRESSURE RELIEF VALVE
25) 3-SPEED CIRCULATING PUMP
3-SPEED CIRCULATING PUMP W/ AIR VENT
26) —
27) EXCHANGER PB 21-73
28) EXCHANGER AIR VENT VALVE
29) HEATING SAFETYTHERMOSTAT
30) D.H.W. SENSOR
31) HEATING SENSOR
32) AUTOMATIC AIR VENT VALVE
33) ELECTRONIC IGNITION BOARD
34) BURNER MANIFOLD
35) BURNER INJECTORS
36) GAS PRESSURE MODULATOR
37) BY-PASS

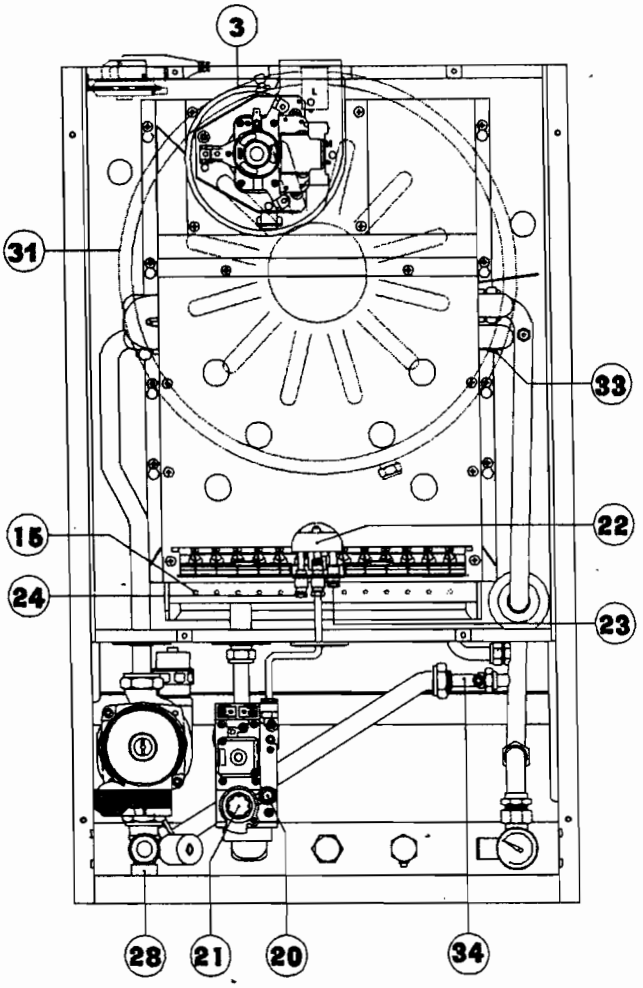
INSIDE PANEL COMPONENTS

38) PRINTED CIRCUIT BOARD
39) TEMP. INDICATOR P.C.B.

RS 20-24 ELECTRONIC IGNITION



RS 20-24 PILOT FLAME



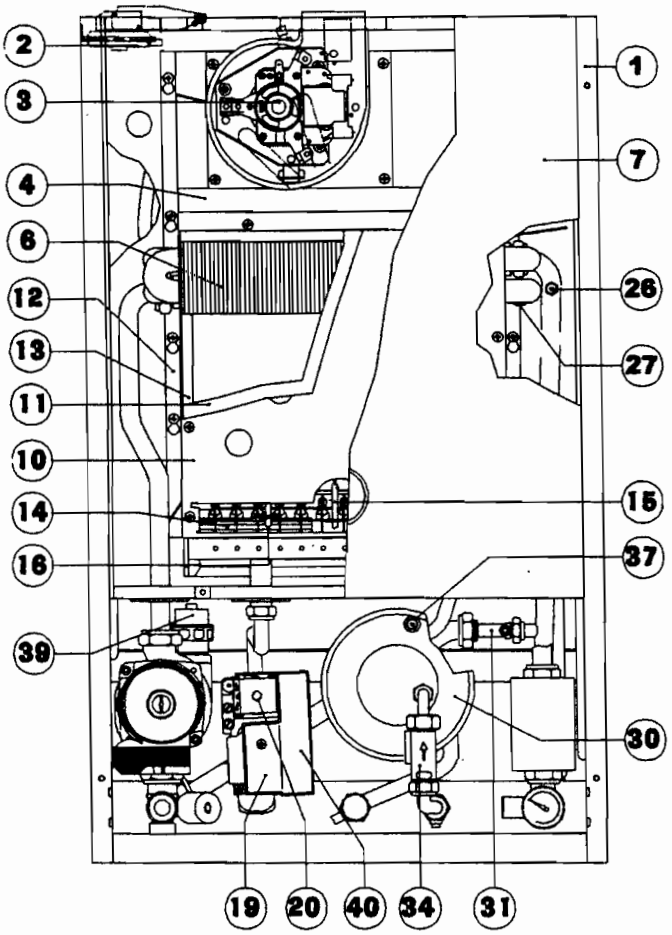
KEY:

1. FRAME
2. AIR PRESSURE SWITCH
3. EXHAUST FAN
4. FLUE HOOD
5. HEAT EXCHANGER 20/66 mod. RS 20
HEAT EXCHANGER 24/66 mod. RS 24
6. ROOM-SEAL CHAMBER FRONT
7. ROOM-SEAL CHAMBER TOP
8. ROOM-SEAL CHAMBER BACK
9. COMBUSTION CHAMBER FRONT PANEL
10. COMBUSTION CHAMBER FRONT AND BACK PANEL CERAMIC FIBRE
11. COMBUSTION CHAMBER SODE PANEL
12. COMBUSTION CHAMBER SIDE PANEL CERAMIC FIBRE
13. MULTIGAS BURNER 13 NP
14. GAS BURNER MANIFOLD
15. GAS BURNER INJECTORS
16. IGNITION ELECTRODE x ELECT.
17. IONISATION ELECTRODE
18. ELECTRONIC GAS VALVE VK 4105 A 1001
19. GAS VALVE PRESSURE MODULATOR
20. PILOT GAS VALVE V 4600 C 1029
21. GAS VALVE PILOT IGNITION BUTTON
22. PILOT ASSEMBLY BRACKET
23. IGNITION ELECTRODE x PILOT
24. THERMOCOUPLE
25. WATER PRESSURE GAUGE
26. WATER PRESSURE SWITCH
27. 3 bar PRESSURE RELIEF VALVE
28. —
29. 3-SPEED CIRCULATING PUMP
3-SPEED CIRCULATING PUMP W/AIR VENT
30. AUTOMATIC AIR VENT VALVE
31. EXPANSION VESSEL
32. HEATING SENSOR
33. HEATING SAFETY THERMOSTAT
34. BY-PASS

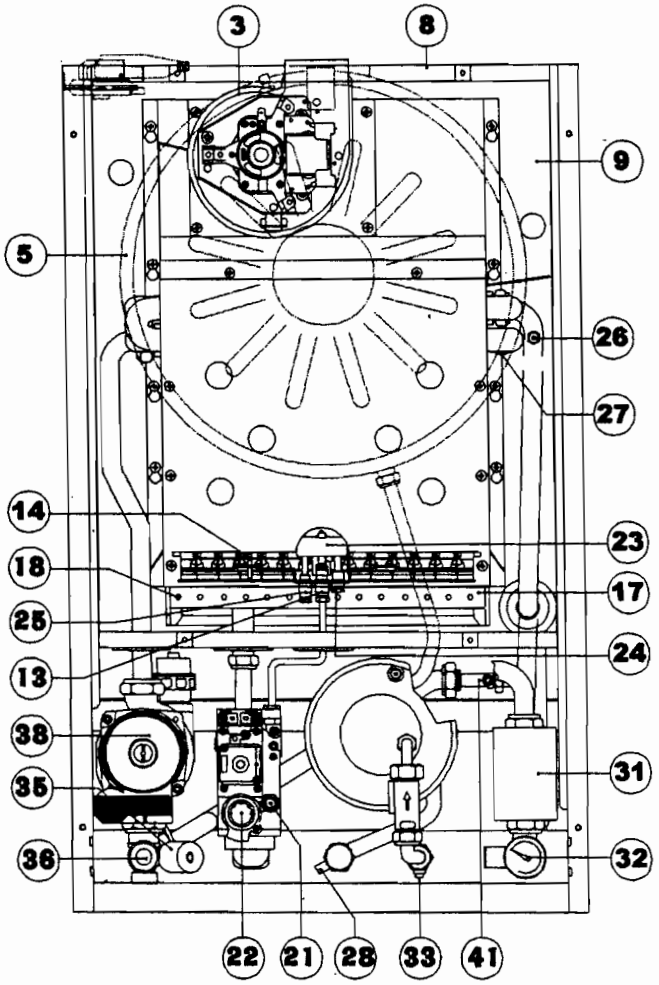
INSIDE PANEL COMPONENTS

35. PRINTED CIRCUIT BOARD
36. TEMP. INDICATOR P.B.C.

RSF 20-24 ELECTRONIC IGNITION



RSF 20-24 PILOT FLAME



KEY:

1) FRAME
2) AIR PRESSURE SWITCH
3) EXHAUST FAN
4) FLUE HOOD
5) EXPANSION VESSEL
6) HEAT EXCHANGER 20/66 mod. RSF 20
HEAT EXCHANGER 24/66 mod. RSF 24
7) ROOM-SEAL CHAMBER FRONT
8) ROOM-SEAL CHAMBER TOP
9) ROOM-SEAL CHAMBER BACK
10) COMBUSTION CHAMBER FRONT PANEL
11) COMBUSTION CHAMBER FRON AND BACK PANEL CERAMIC FIBRE
12) COMBUSTION CHAMBER SIDE PANEL
13) COMBUSTION CHAMBER SIDE PANEL CERAMIC FIBRE
14) MULTIGAS BURNER 13 NP
15) IGNITION ELECTRODE x ELECT.
16) IONISATION ELECTRODE
17) GAS BURNER MANIFOLD
18) GAS BURNER INJECTORS
19) ELECTRONIC GAS VALVE VK 4105 A 1001
20) GAS VALVE PRESSURE MODULATOR
21) PILOT GAS VALVE V 4600 A 1029
22) GAS VALVE PILOT IGNITION BUTTON
23) PILOT ASSEMBLY. BRACKET
24) THERMOCOUPLE W/ WASHER
25) IGNITION ELECTRODE x PILOT
26) HEATING SENSOR
27) HEATING SAFETY THERMOSTAT 105°
28) D.H.W. SENSOR
29) DRAINING TAP
30) EXCHANGER
31) 3-WAY DIVERTER VALVE
32) WATER PRESSURE GAUGE
33) FLOWSWITCH CONNECTION W/FLOW CONTROL
34) ELECTRONIC FLOWSWITCH
35) WATER PRESSURE SWITCH
36) 3-BAR PRESSURE RELIEF VALVE
37) EXCHANGER AIR VENT VALVE
38) 3-SPEED CIRCULATING PUMP
3-SPEED CIRCULATING PUMP W/AIR VENT
39) AUTOMATIC AIR VENT VALVE
40) ELECTRONIC IGNITION BOARD
41) BY-PASS

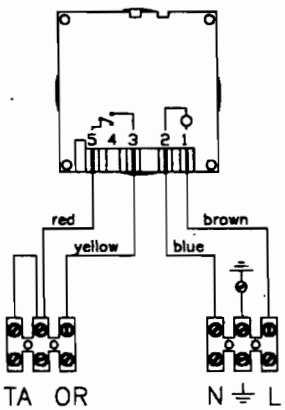
INSIDE PANEL COMPONENTS

42) PRINTED CIRCUIT BOARD
43) TEMP. INDICATOR P.C.B.

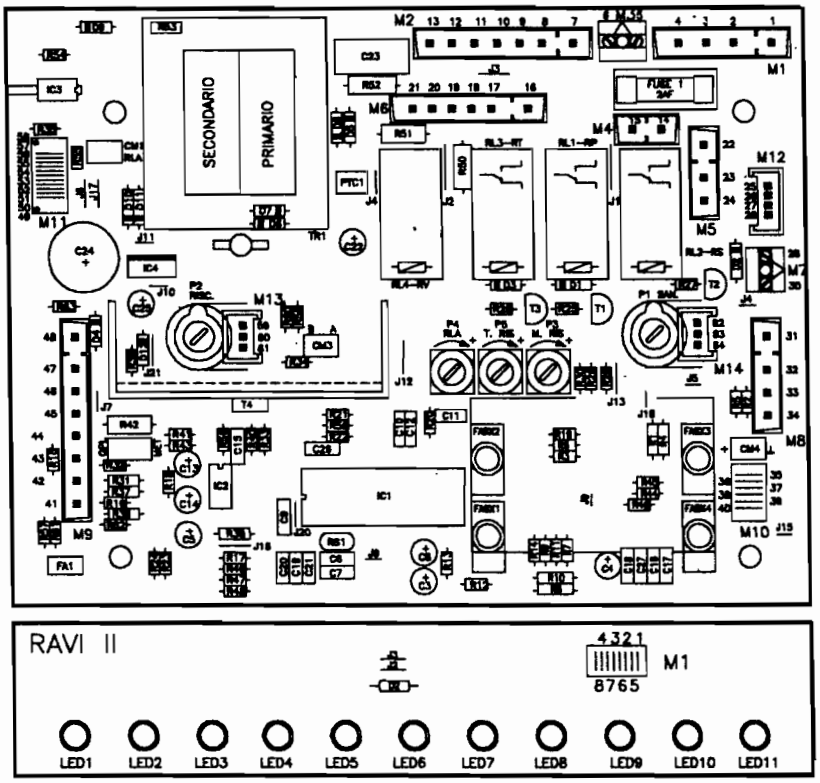
ELECTRICAL CONNECTIONS FOR MOD. R 20 P PILOT FLAME BOILER

N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

TIME CLOCK
Wiring diagram

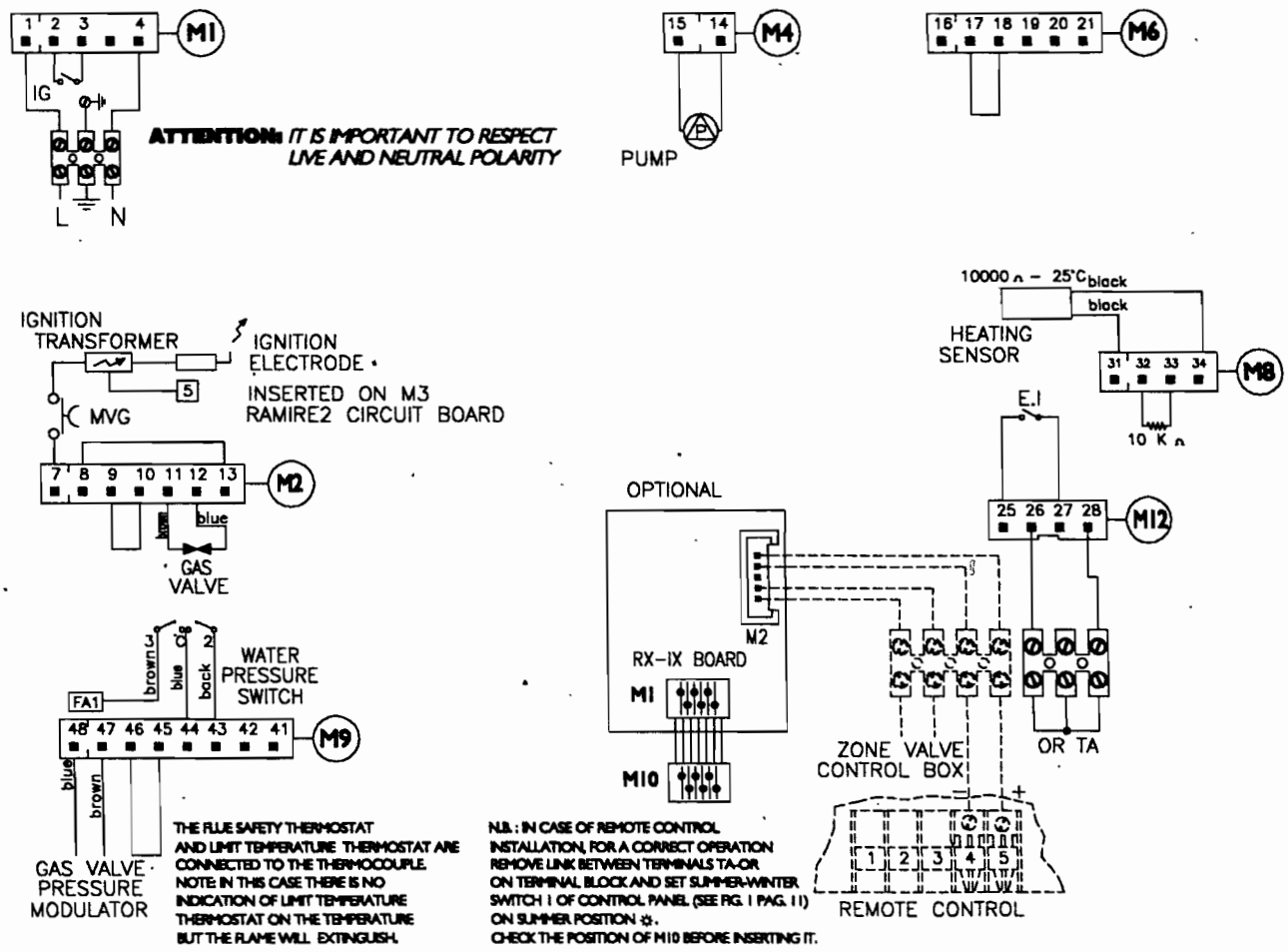


RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS



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

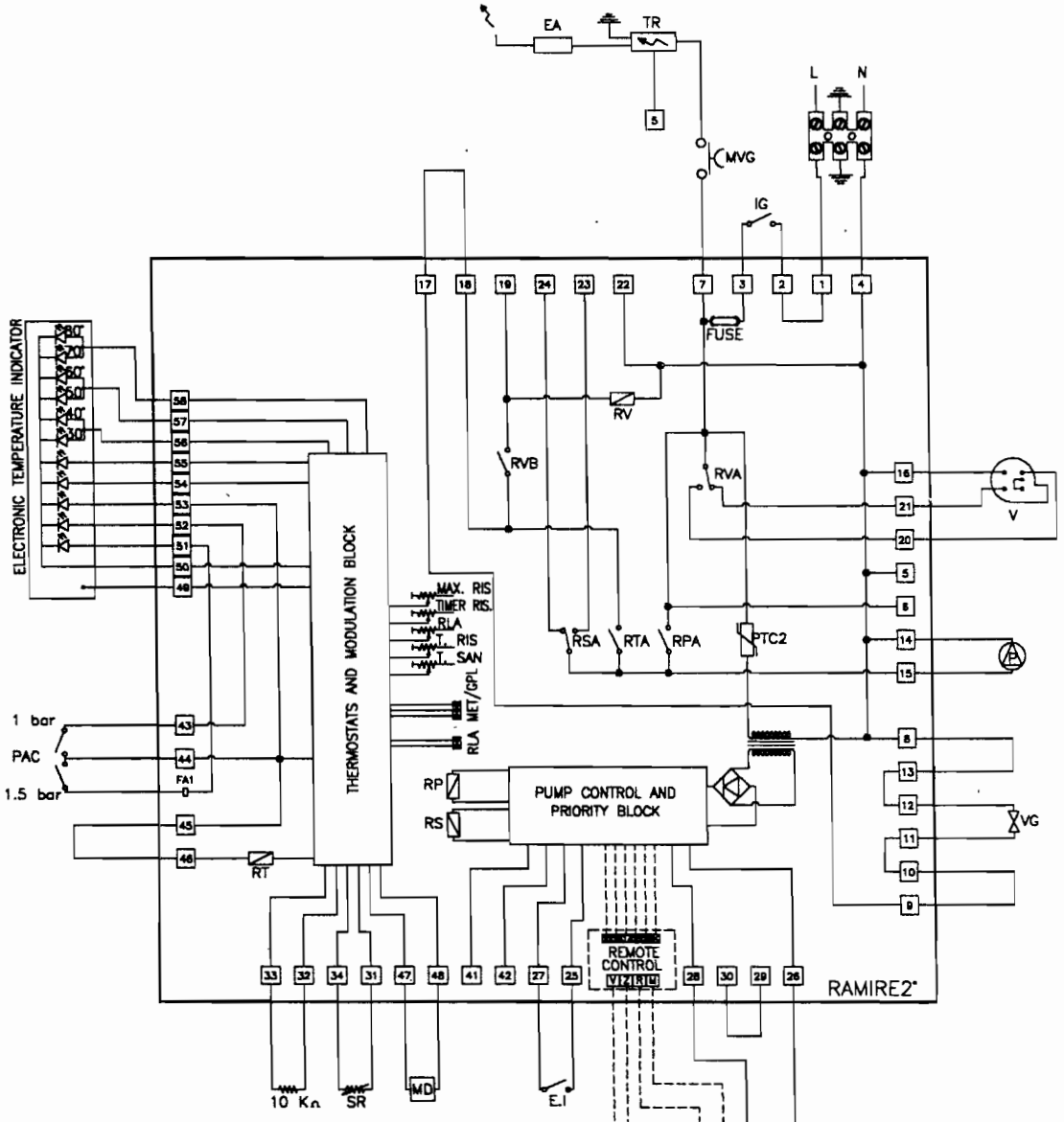
WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR R 20 P PILOT FLAME BOILER



THE FLUE SAFETY THERMOSTAT AND LIMIT TEMPERATURE THERMOSTAT ARE CONNECTED TO THE THERMOCOUPLE. NOTE: IN THIS CASE THERE IS NO INDICATION OF LIMIT TEMPERATURE THERMOSTAT ON THE TEMPERATURE BUT THE FLAME WILL EXTINGUISH.

N.B.: IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

WIRING DIAGRAM FOR R 20 P PILOT FLAME BOILER



KEY

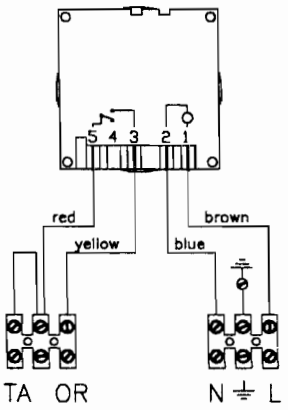
L	- LINE
N	- NEUTRAL
PAC	- WATER PRESSURE SWITCH
IG	- MAIN SWITCH
SR	- HEATING SENSOR
P	- PUMP
E.I.	- SUMMER-WINTER SWITCH
MVG	- PILOT IGNITION MICRO-SWITCH
TR	- IGNITION TRANSFORMER
EA	- IGNITION ELECTRODE
MD	- MODULATING UNIT
TA	- ROOM THERMOSTAT
OR	- TIME CLOCK
VG	- GAS VALVE
RS	- D.H. WATER RELAY
RP	- PUMP RELAY
RV	- FAN RELAY
RT	- THERMOSTAT RELAY
RPA	- PUMP RELAY CONTACT
RSA	- D.H. WATER RELAY CONTACT
RVA-RVB	- FAN RELAY CONTACT
RTA	- THERMOSTAT RELAY CONTACT

N.B. : IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

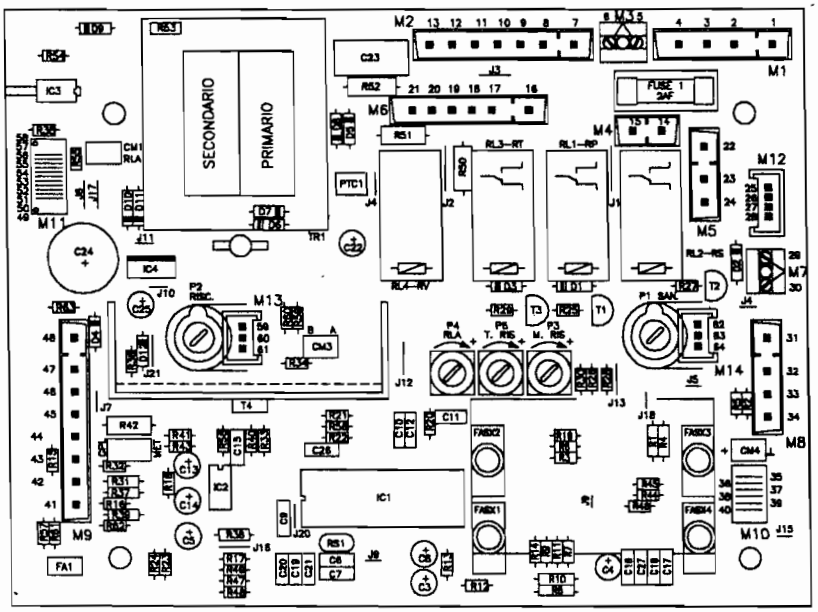
ELECTRICAL CONNECTIONS FOR R 20 E ELECTRONIC IGNITION BOILER

N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

TIME CLOCK
Wiring diagram

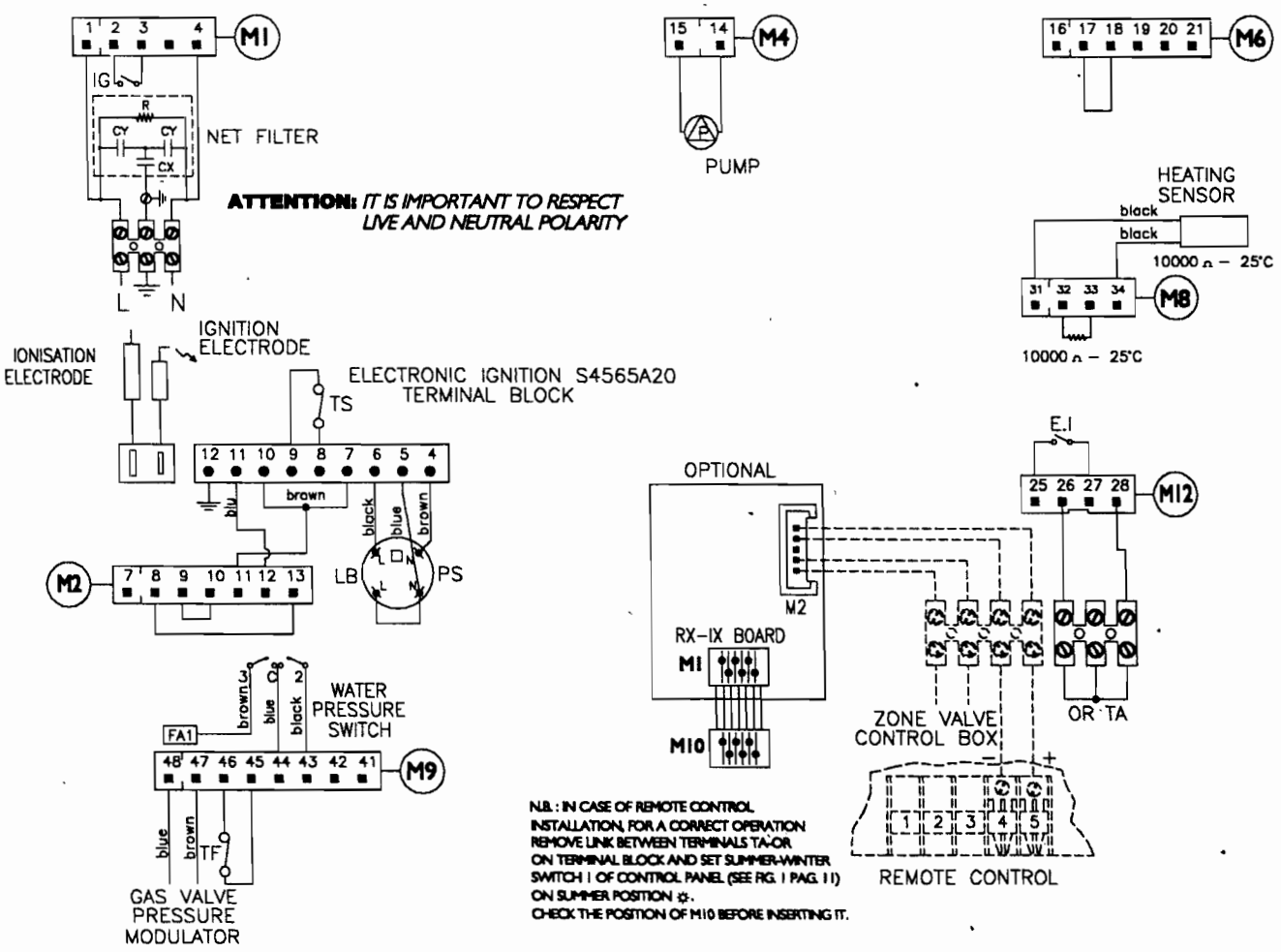


RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS

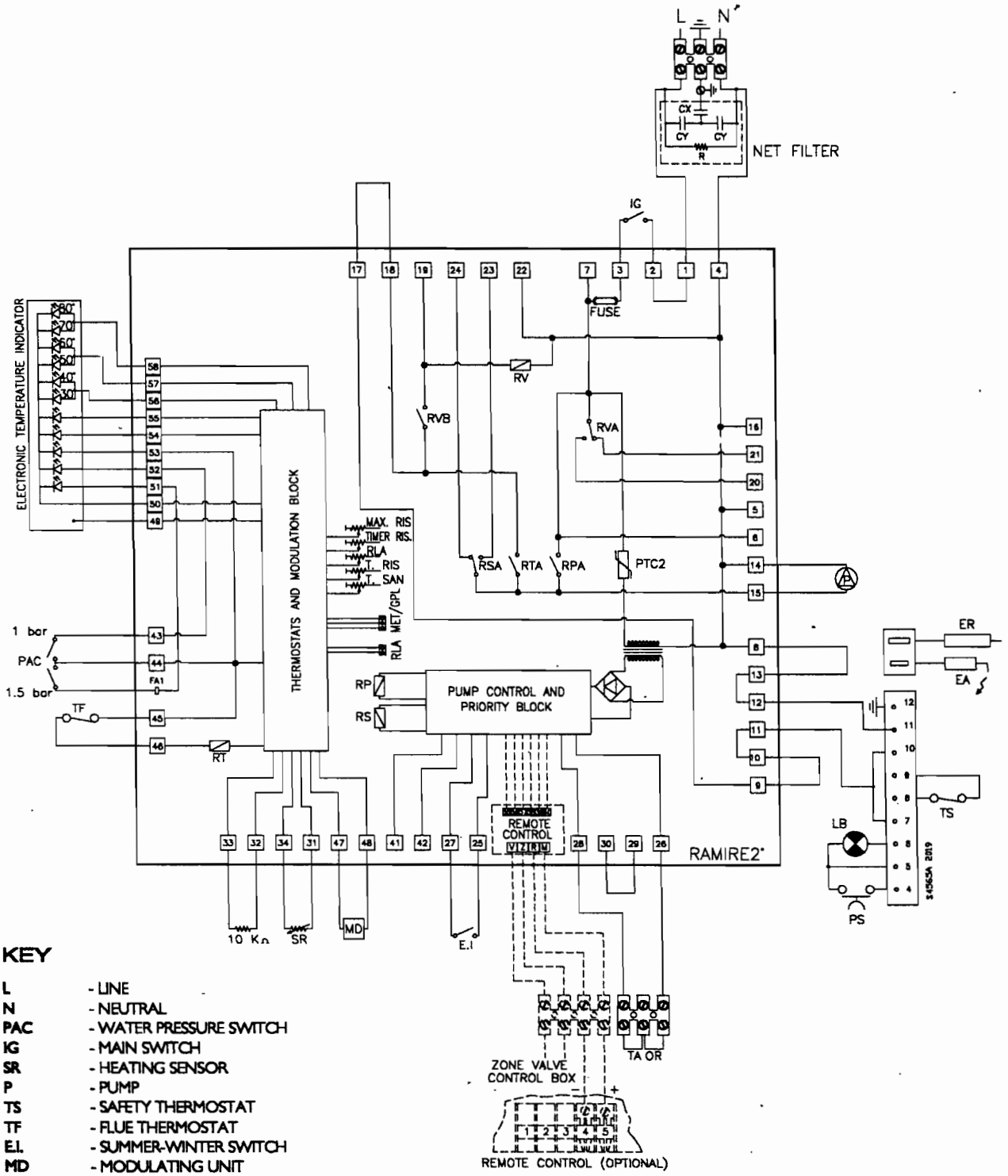


RAVI 2 CIRCUIT BOARD—ELECTRONIC TEMPERATURE INDICATOR WITH SELF-DIAGNOSTIC

WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR R 20 E ELECTRONIC IGNITION BOILER



WIRING DIAGRAM FOR R 20 E ELECTRONIC IGNITION BOILER



KEY

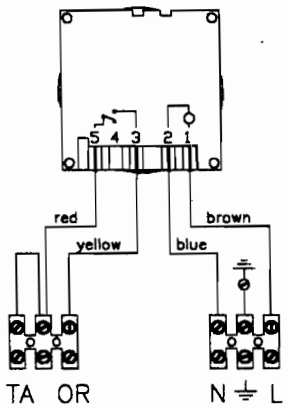
L	- LINE
N	- NEUTRAL
PAC	- WATER PRESSURE SWITCH
IG	- MAIN SWITCH
SR	- HEATING SENSOR
P	- PUMP
TS	- SAFETY THERMOSTAT
TF	- FLUE THERMOSTAT
E.I.	- SUMMER-WINTER SWITCH
MD	- MODULATING UNIT
TA	- ROOM THERMOSTAT
OR	- TIME CLOCK
PS	- RESET BOTTON
LB	- LOCK-OUT INDICATOR
EA	- IGNITION ELECTRODE
ER	- IONISATION ELECTRODE
RS	- D.H. WATER RELAY
RP	- PUMP RELAY
RV	- FAN RELAY
RT	- THERMOSTAT RELAY
RPA	- PUMP RELAY CONTACT
RSA	- D.H.W. RELAY CONTACT
RVA-RVB	- FAN RELAY CONTACT
RTA	- THERMOSTAT RELAY CONTACT

N.B. : IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼. CHECK THE POSITION OF M10 BEFORE INSERTING IT.

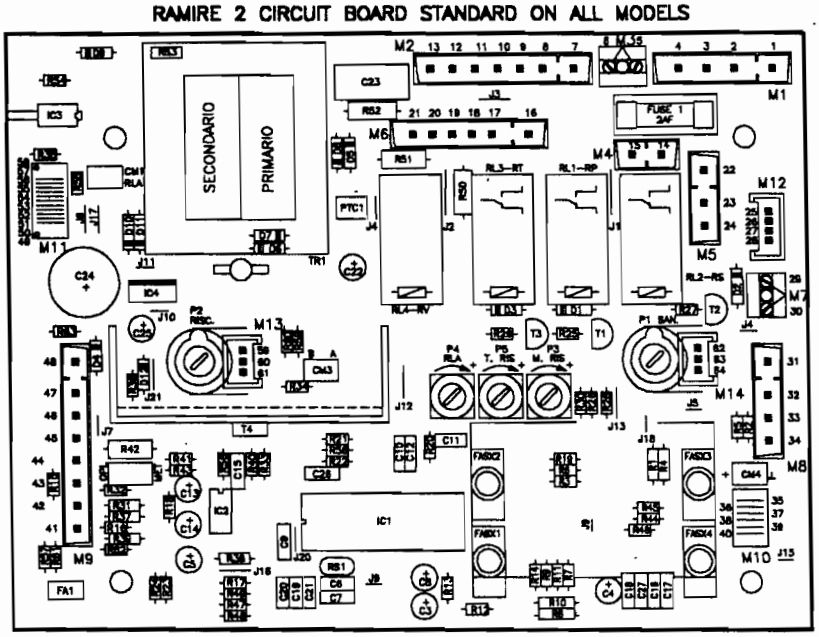
ELECTRICAL CONNECTIONS FOR MOD. RCM 20 P PILOT FLAME BOILER

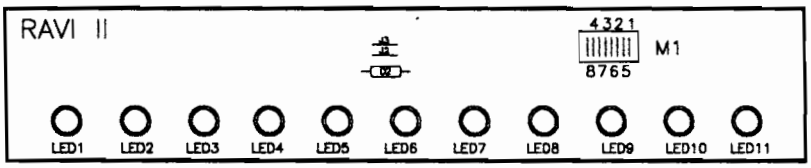
N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

TIME CLOCK
Wiring diagram



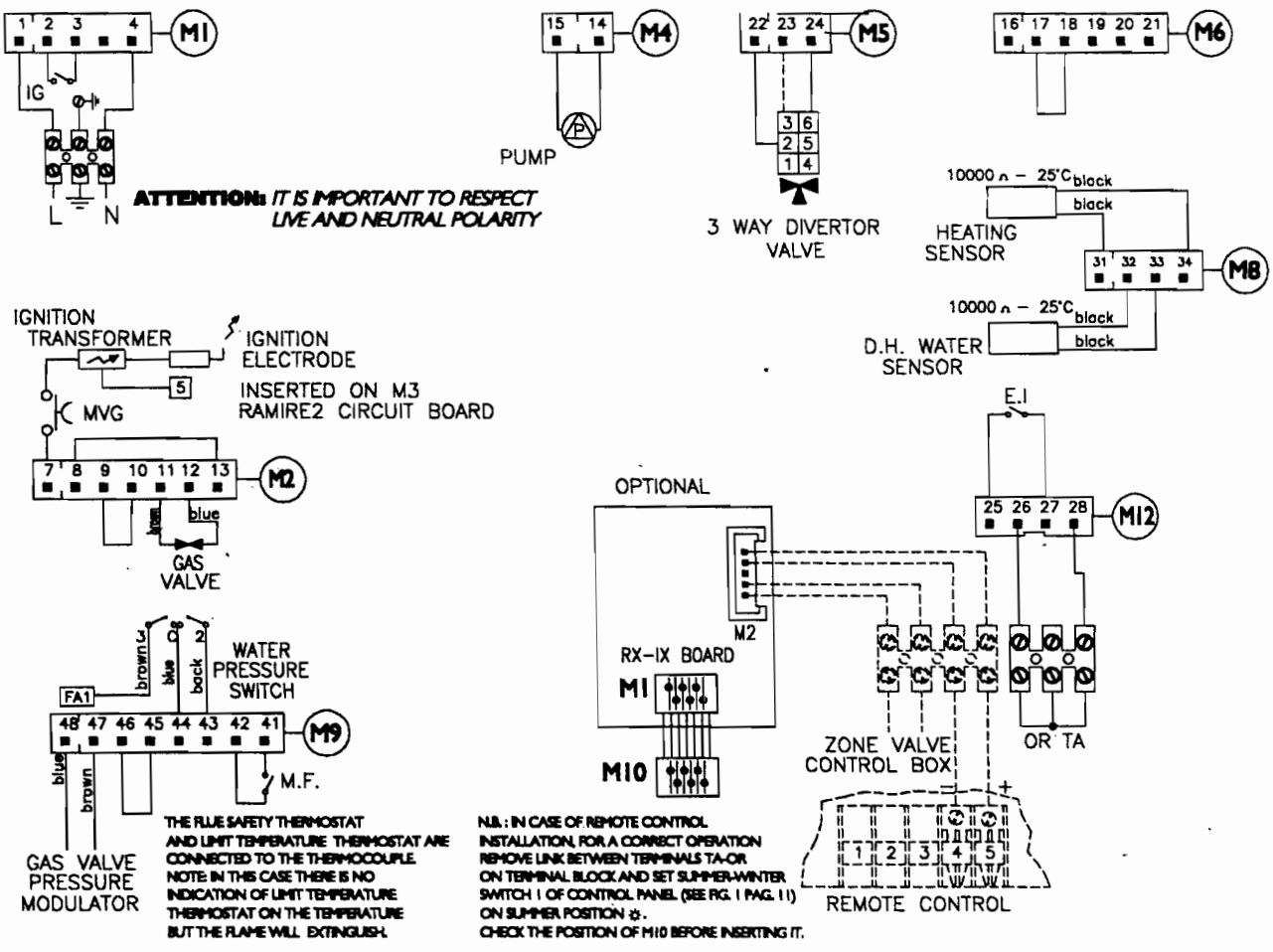
RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS





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

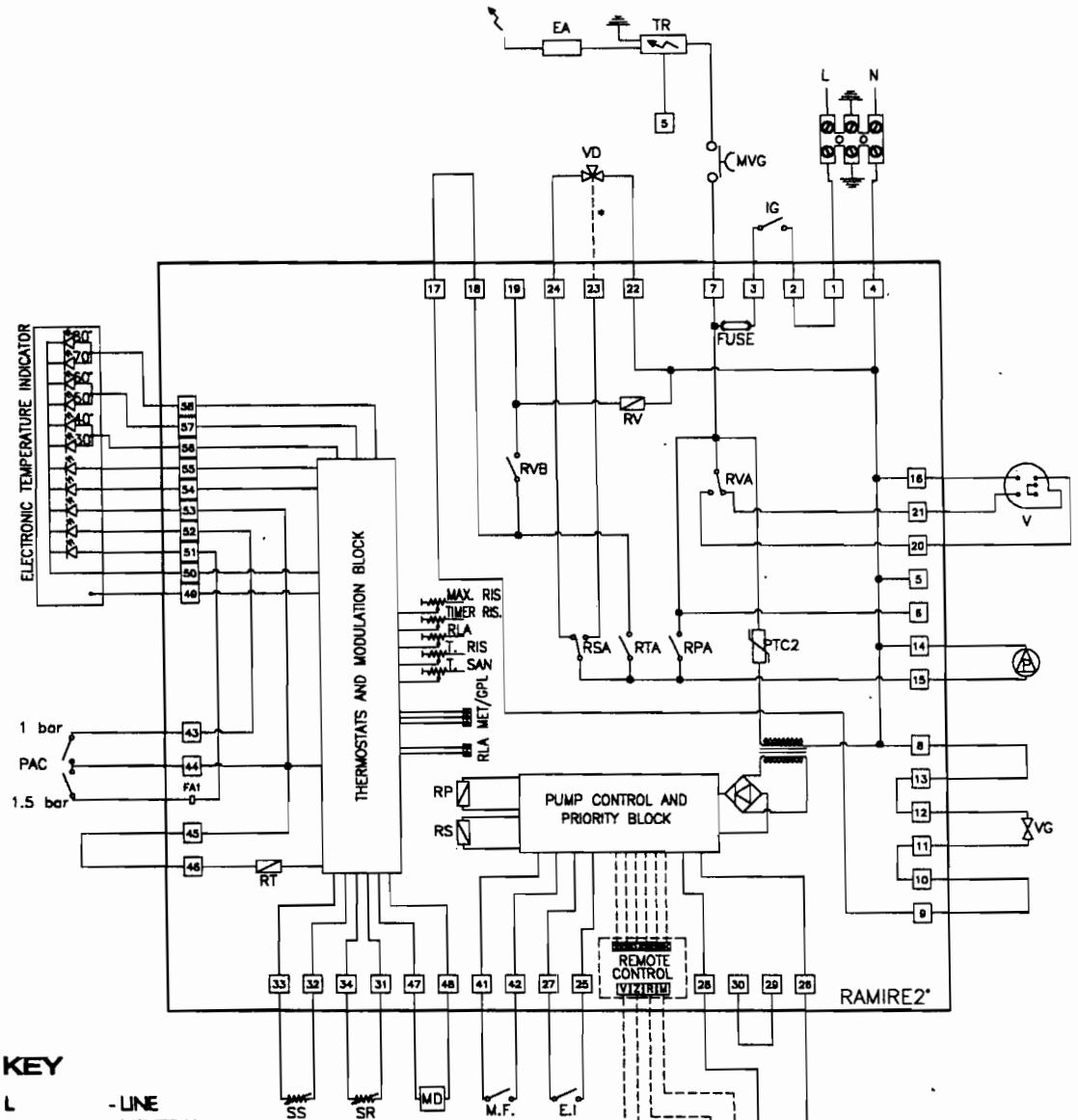
WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR RCM 20 P PILOT FLAME BOILER



THE FLUE SAFETY THERMOSTAT AND LIMIT TEMPERATURE THERMOSTAT ARE CONNECTED TO THE THERMOCOUPLE. NOTE: IN THIS CASE THERE IS NO INDICATION OF LIMIT TEMPERATURE THERMOSTAT ON THE TEMPERATURE BUT THE FLAME WILL EXTINGUISH.

N.B.: IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

WIRING DIAGRAM FOR RCM 20 P PILOT FLAME BOILER



KEY

L	- LINE
N	- NEUTRAL
PAC	- WATER PRESSURE SWITCH
IG	- MAIN SWITCH
VD	- 3 WAY DIVERTOR VALVE
*	- WIRING CONNECTION ONLY FOR Mod. VC6012
SS	- D.H. WATER SENSOR
SR	- HEATING SENSOR
P	- PUMP
M.F.	- FLOWSWITCH MICRO-SWITCH
E.I.	- SUMMER-WINTER SWITCH
MVG	- PILOT IGNITION MICRO-SWITCH
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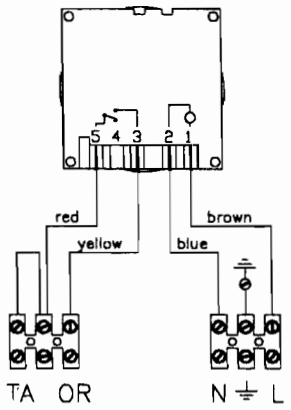
OR	- TIME CLOCK
VG	- GAS VALVE
RS	- D.H. WATER RELAY
RP	- PUMP RELAY
RV	- FAN RELAY
RT	- THERMOSTAT relay
RPA	- PUMP RELAY CONTACT
RSA	- D.H. WATER RELAY CONTACT
RVA-RVB	- FAN RELAY CONTACT
RTA	- THERMOSTAT RELAY CONTACT

N.B. : IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH I OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

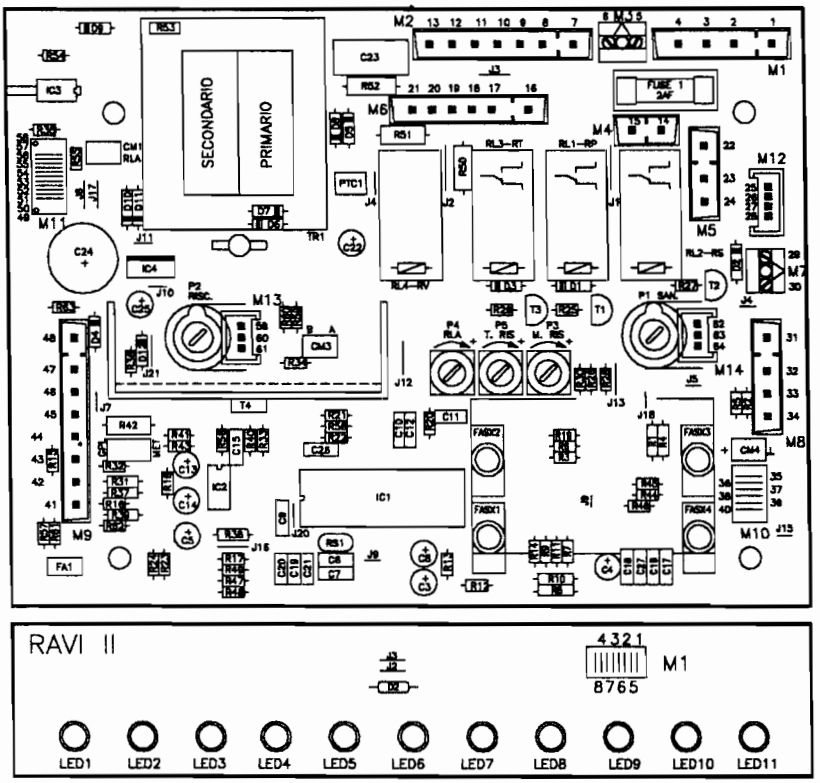
ELECTRICAL CONNECTIONS FOR RCM 20 E ELECTRONIC IGNITION BOILER

N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

TIME CLOCK
Wiring diagram

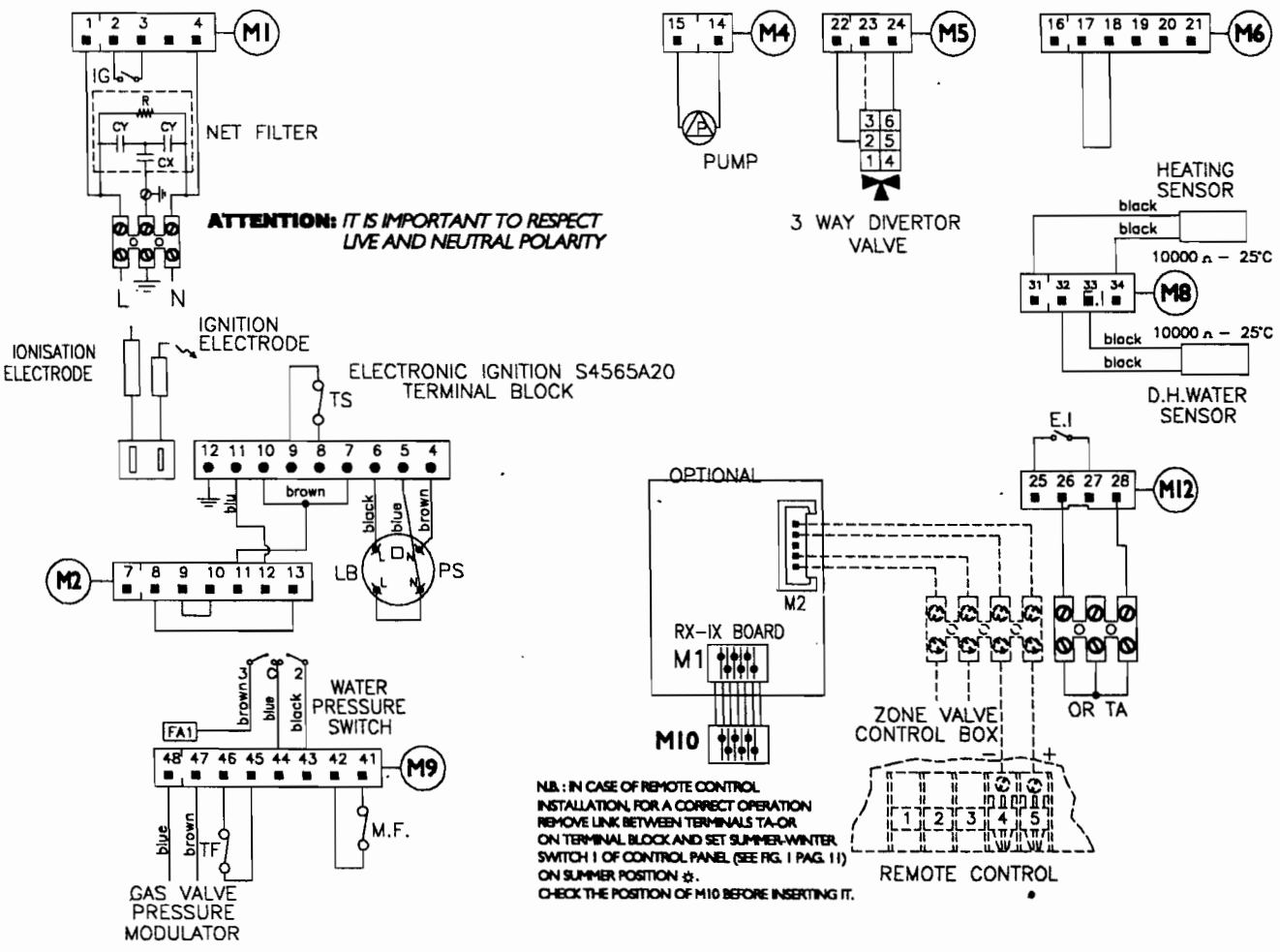


RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS



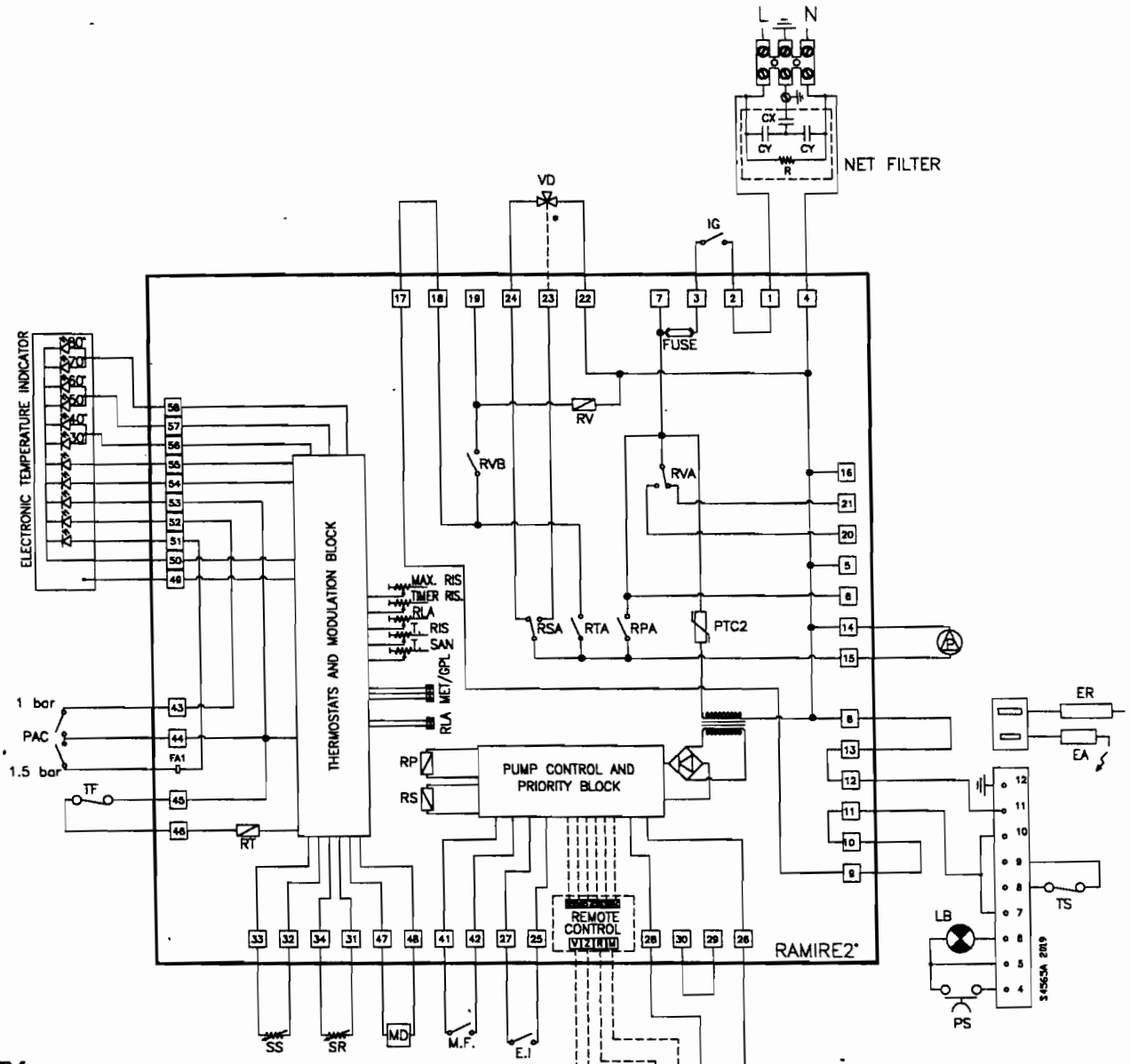
RAVI 2 CIRCUIT BOARD—ELECTRONIC TEMPERATURE INDICATOR WITH SELF-DIAGNOSTIC

WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR RCM 20 E ELECTRONIC IGNITION BOILER



N.B.: IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

WIRING DIAGRAM FOR RCM 20 E ELECTRONIC IGNITION BOILER



KEY

L	- LINE
N	- NEUTRAL
PAC	- WATER PRESSURE SWITCH
IG	- MAIN SWITCH
VD	- 3 WAY DIVERTOR VALVE
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SR	- HETING SENSOR
P	- PUMP
TS	- SAFETY THERMOSTAT
TF	- FLUE THERMOSTAT
M.F.	- FLOWSWITCH MICRO-SWITCH
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RPA	- PUMP RELAY CONTACT
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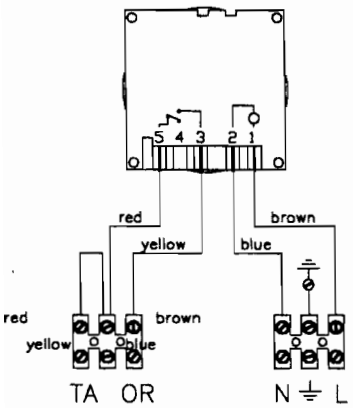
N.B. : IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

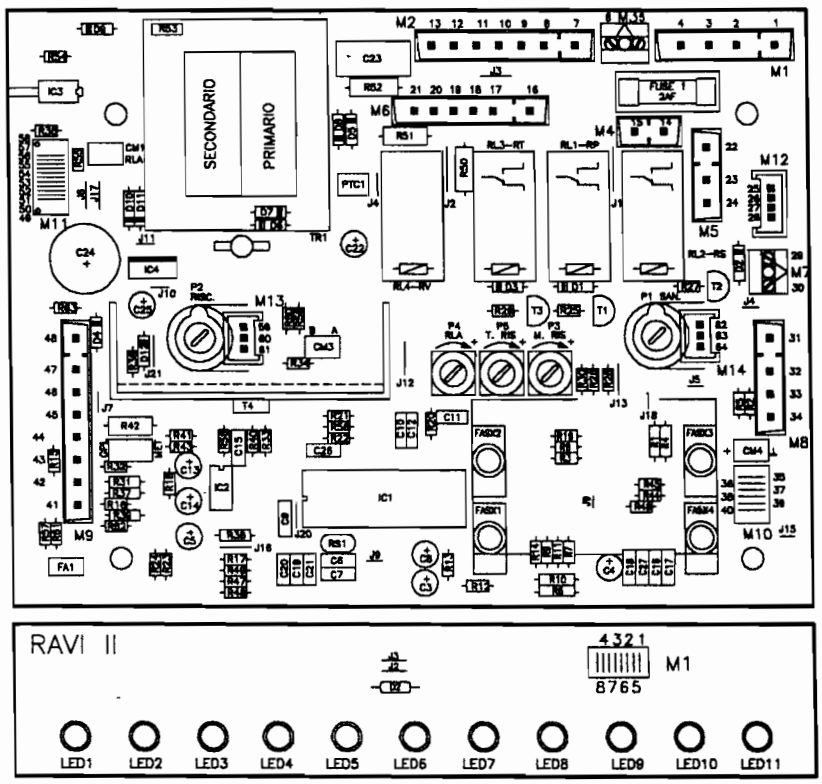
ELECTRICAL CONNECTIONS FOR MOD. RS 20-24 P PILOT FLAME BOILER

N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

TIME CLOCK
Wiring diagram

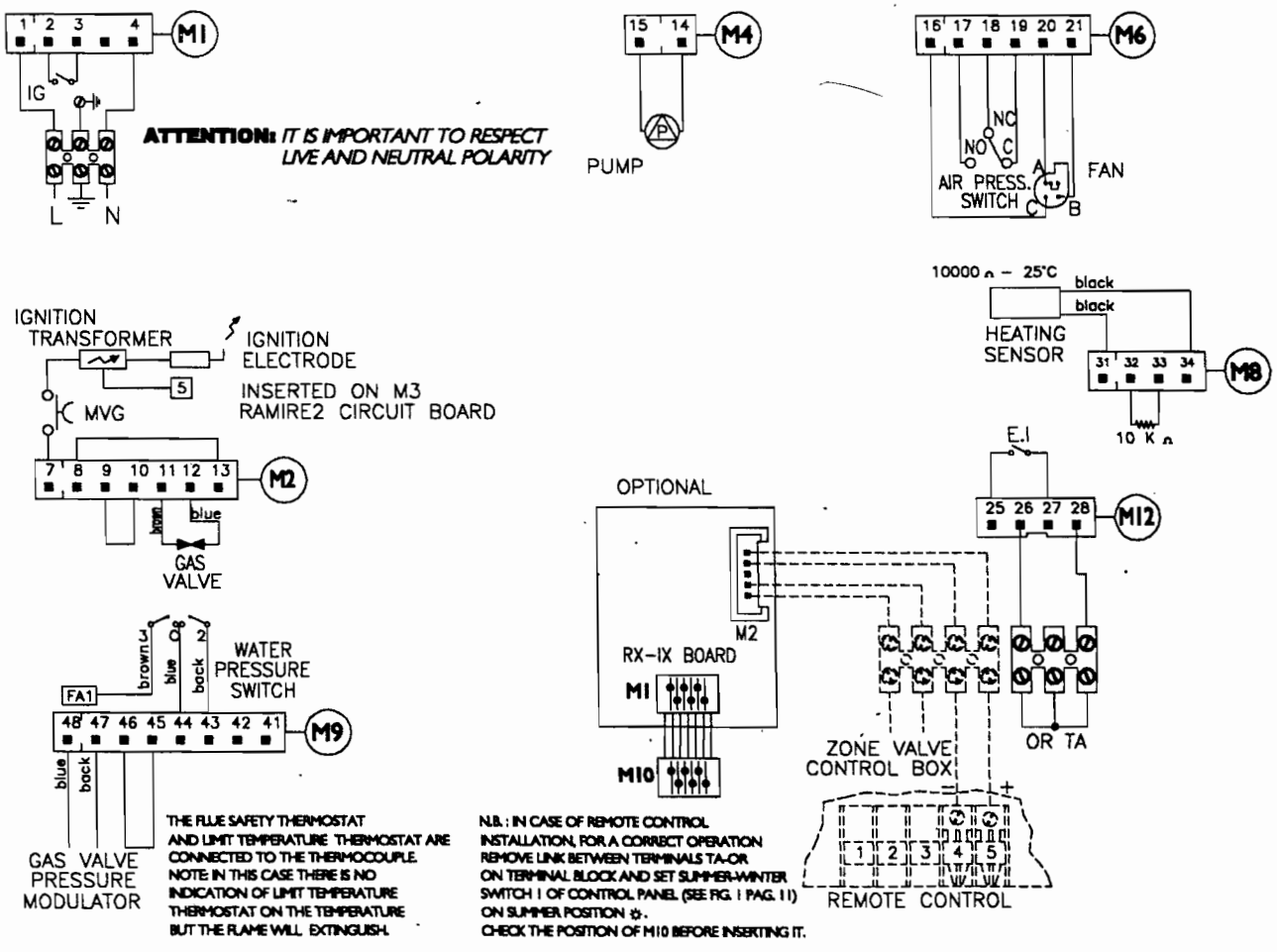


RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS



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

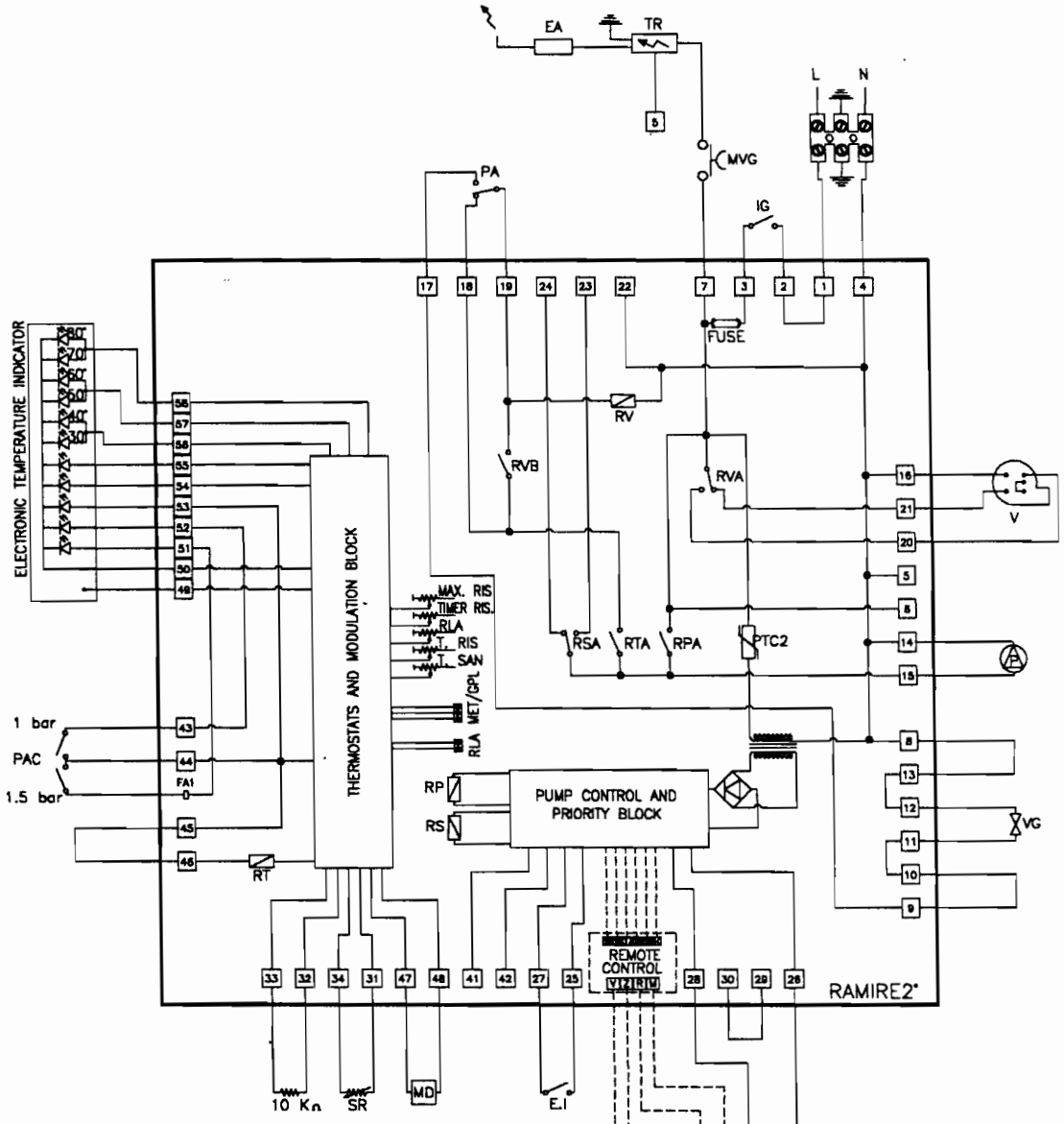
WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR RS 20-24 P PILOT FLAME BOILER



THE FLUE SAFETY THERMOSTAT AND LIMIT TEMPERATURE THERMOSTAT ARE CONNECTED TO THE THERMOCOUPLE. NOTE: IN THIS CASE THERE IS NO INDICATION OF LIMIT TEMPERATURE THERMOSTAT ON THE TEMPERATURE BUT THE FLAME WILL EXTINGUISH.

N.B.: IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

WIRING DIAGRAM FOR RS 20-24 P PILOT FLAME BOILER



KEY

L	- LINE
N	- NEUTRAL
PAC	- WATER PRESSURE SWITCH
PA	- PRESSURE SWITCH
IG	- MAIN SWITCH
SR	- HEATING SENSOR
P	- PUMP
V	- FAN
E.I.	- SUMMER-WINTER SWITCH
MVG	- PILOT IGNITION MICRO-SWITCH
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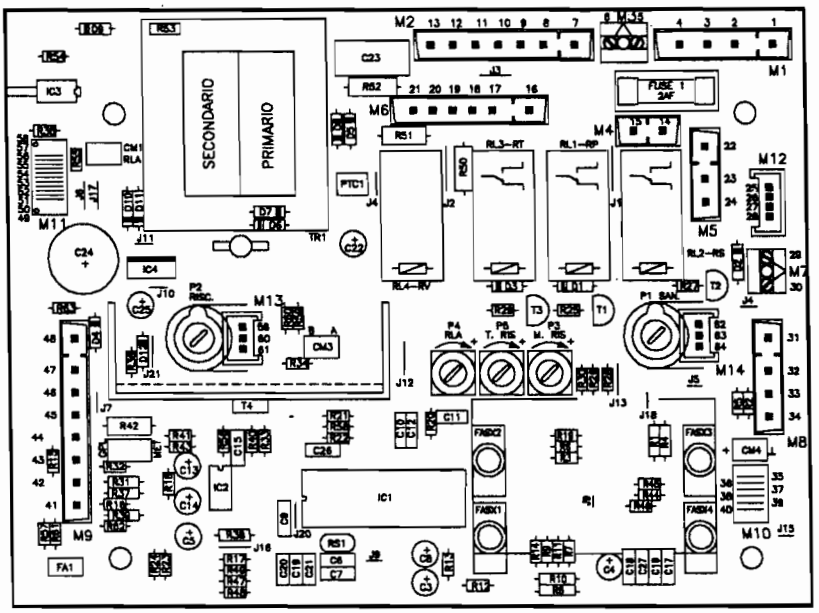
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

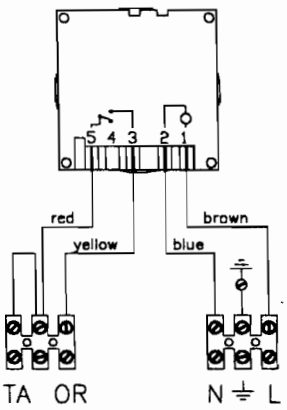
ELECTRICAL CONNECTIONS FOR RS 20-24 E ELECTRONIC IGNITION BOILER

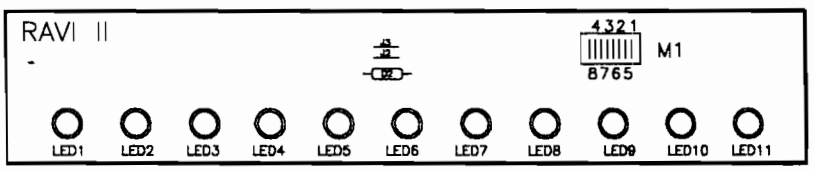
N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS



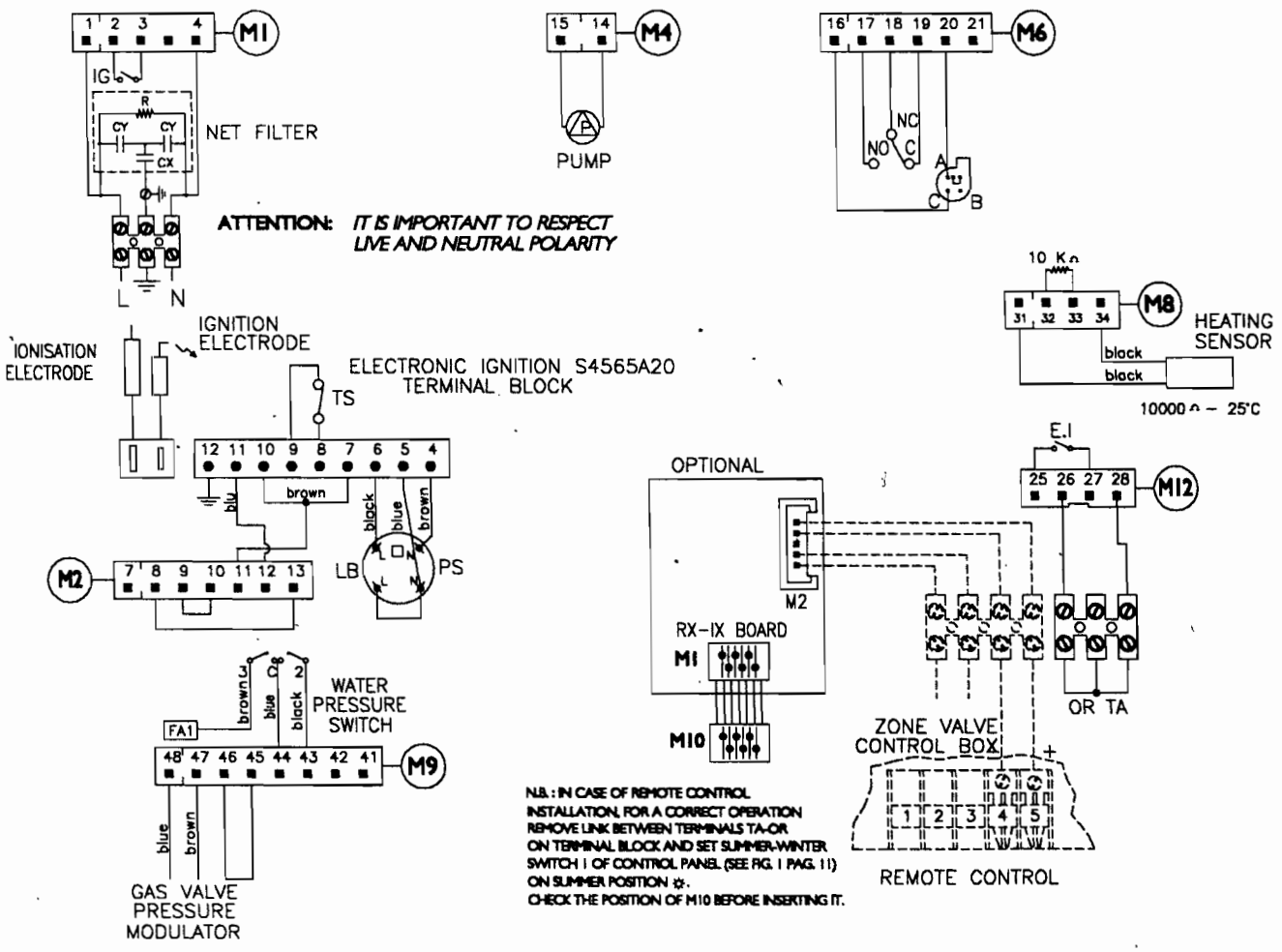
TIME CLOCK
Wiring diagram





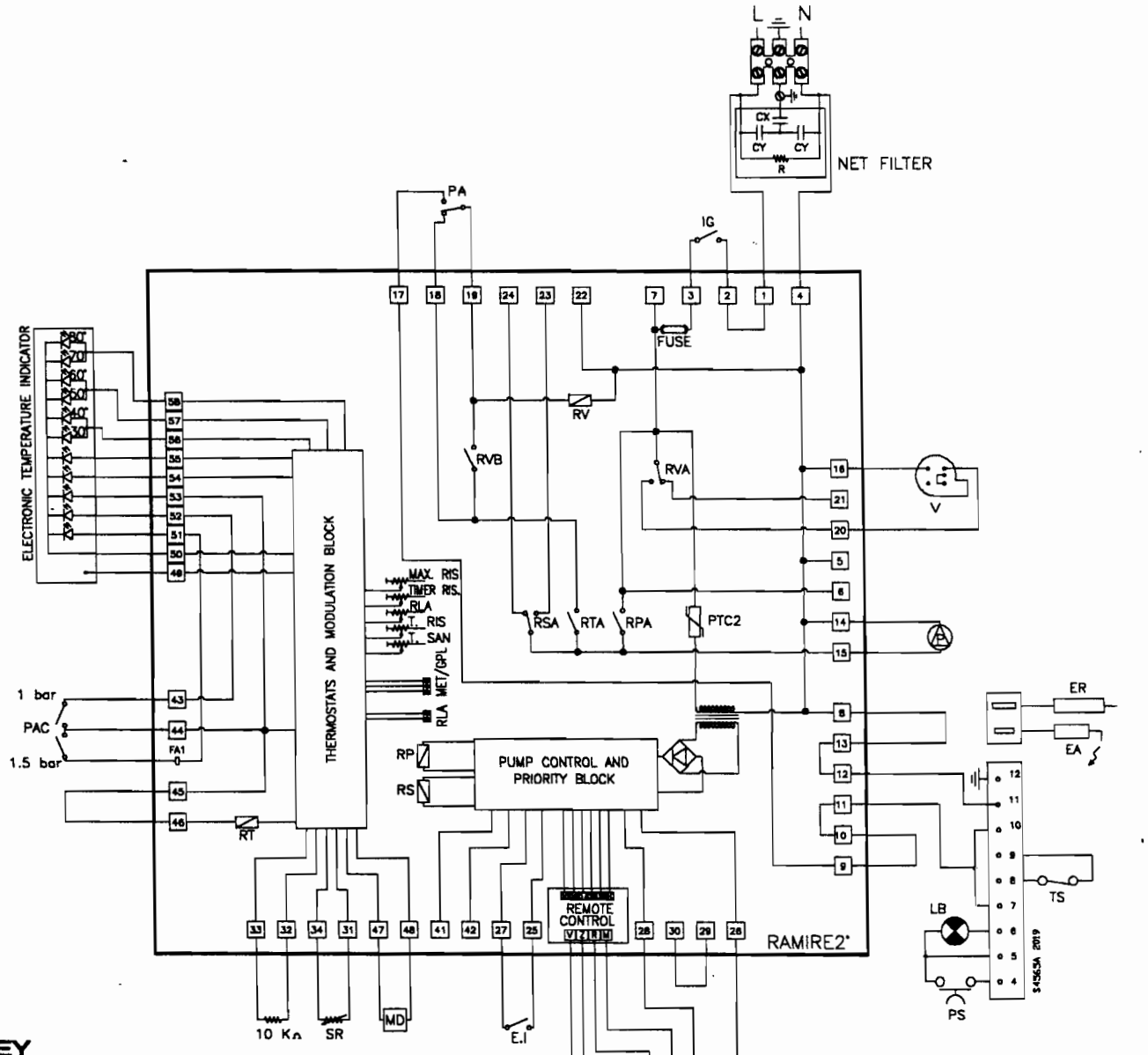
RAVI 2 CIRCUIT BOARD—ELECTRONIC TEMPERATURE INDICATOR WITH SELF-DIAGNOSTIC

WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR RS 20-24 E ELECTRONIC IGNITION BOILER



N.B.: IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

WIRING DIAGRAM FOR RS 20-24 E ELECTRONIC IGNITION BOILER



KEY

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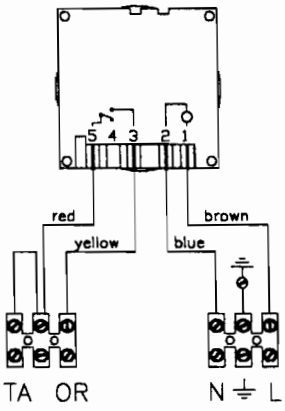
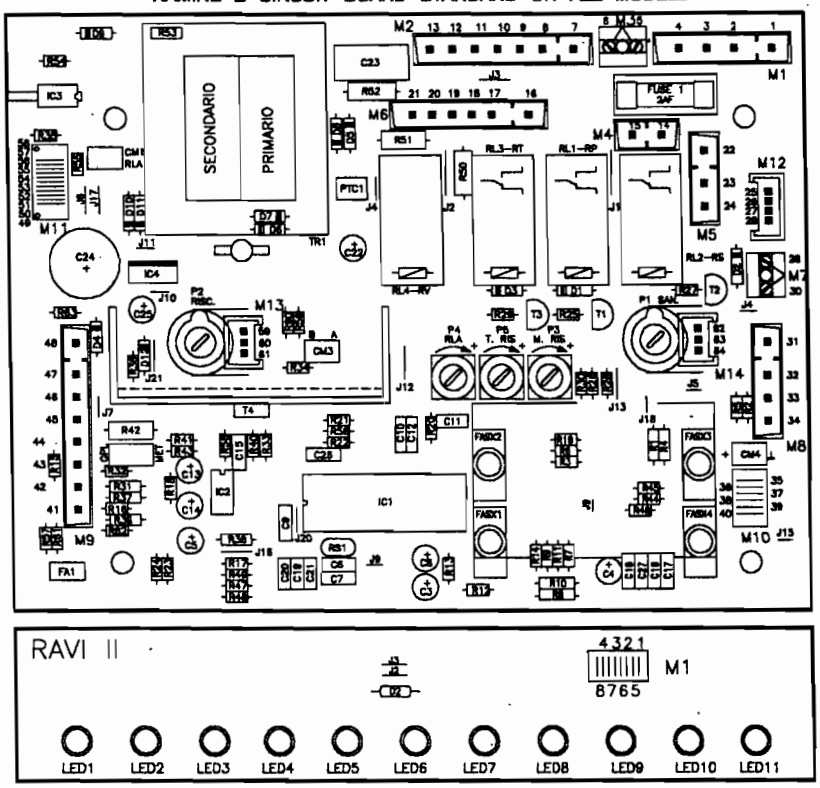
ELECTRICAL CONNECTIONS FOR MOD. RSF 20-24 P PILOT FLAME BOILER

N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

TIME CLOCK
Wiring diagram

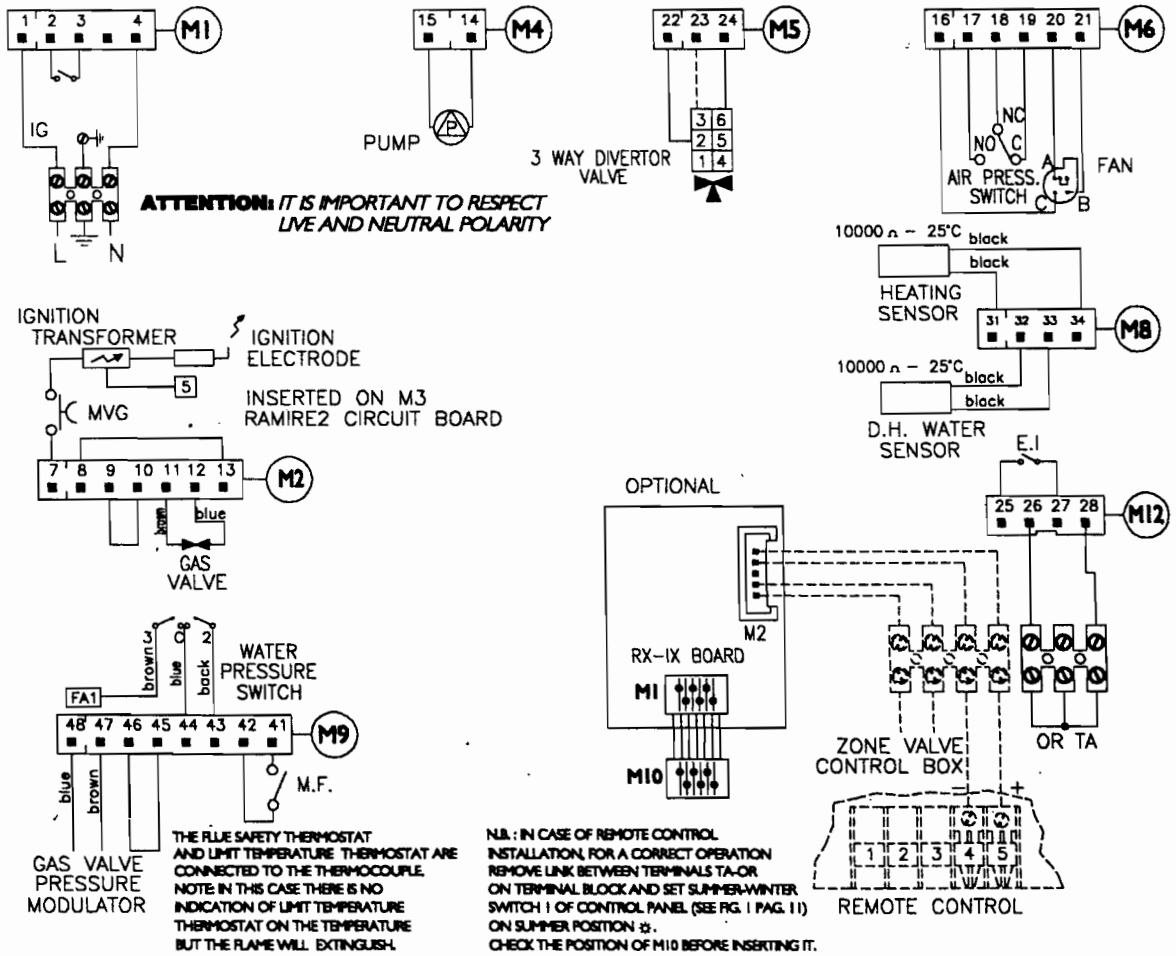


RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS



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

WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR RSF 20-24 P PILOT FLAME BOILER



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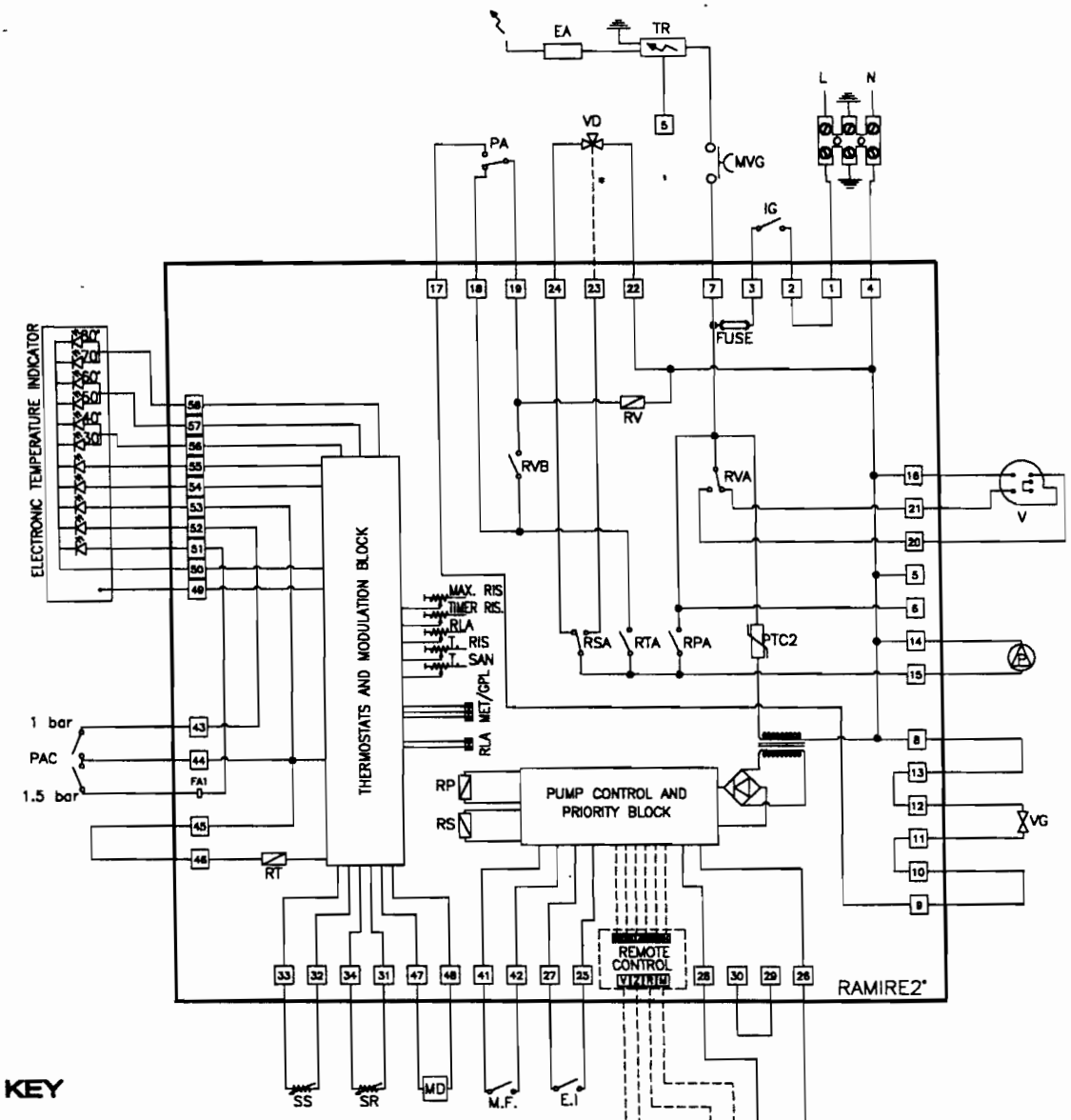
N.B.: IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼. CHECK THE POSITION OF M10 BEFORE INSERTING IT.

WIRING DIAGRAM FOR RSF 20-24 P PILOT FLAME BOILER



KEY

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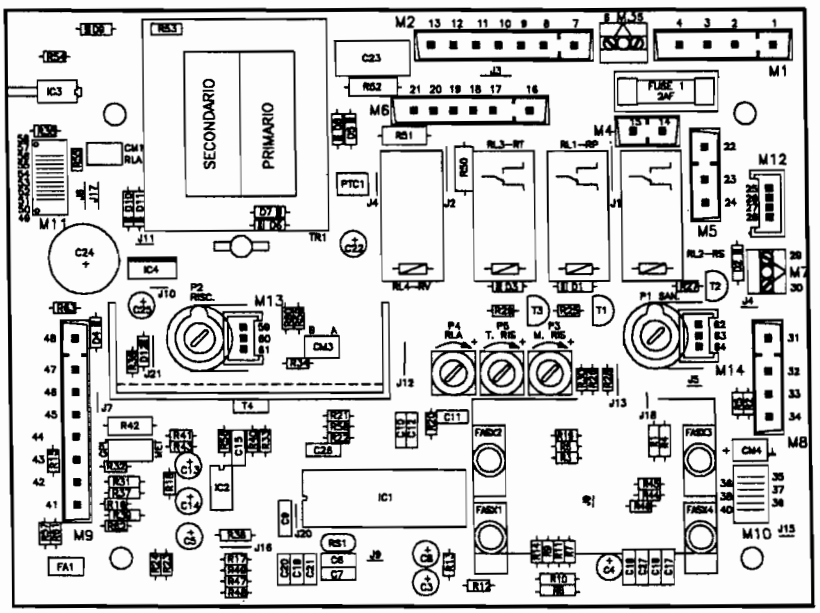
N.B. : IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA-OR ON TERMINAL BLOCK AND SET SUMMER-WINTER SWITCH I OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼.
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

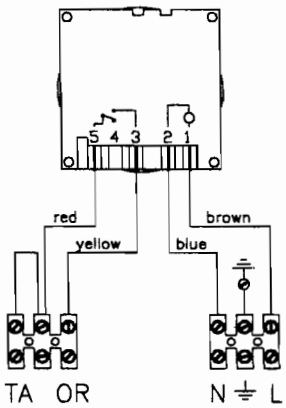
ELECTRICAL CONNECTIONS FOR RSF 20-24 E ELECTRONIC IGNITION BOILER

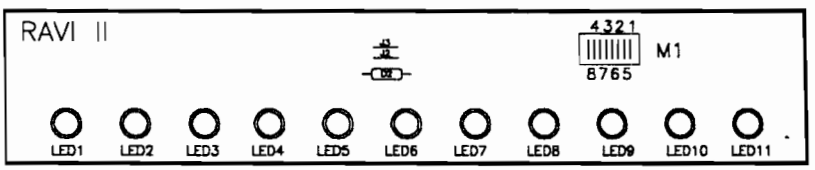
N.B. M1 CONNECTOR OF THE RAVI 2 CIRCUIT BOARD MUST BE CONNECTED TO THE M11 CONNECTOR OF THE RAMIRE2 CIRCUIT BOARD.

RAMIRE 2 CIRCUIT BOARD STANDARD ON ALL MODELS



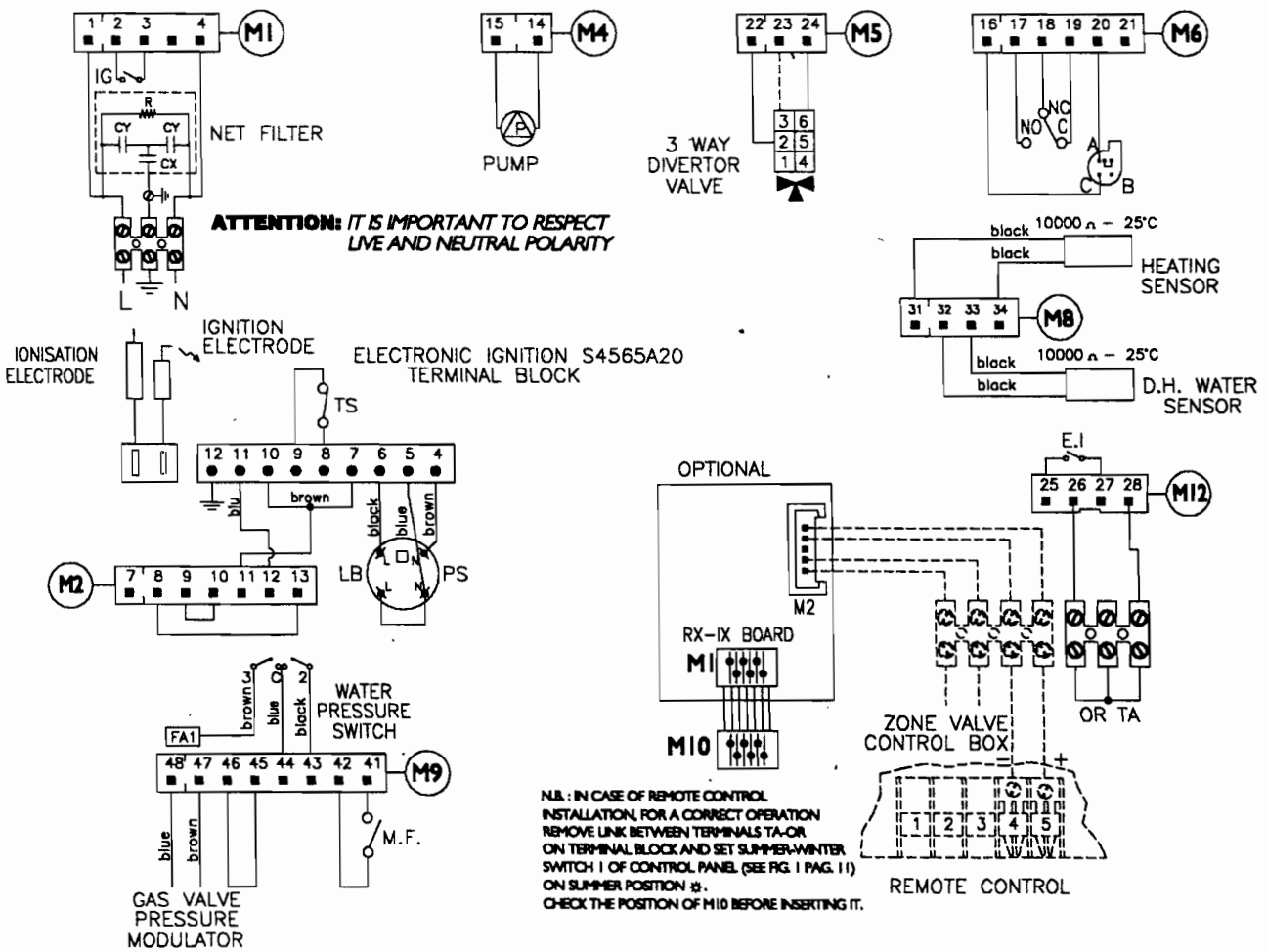
TIME CLOCK
Wiring diagram





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

WIRING OF COMPONENTS BY MEANS OF CONNECTORS FOR RSF 20-24 E ELECTRONIC IGNITION BOILER



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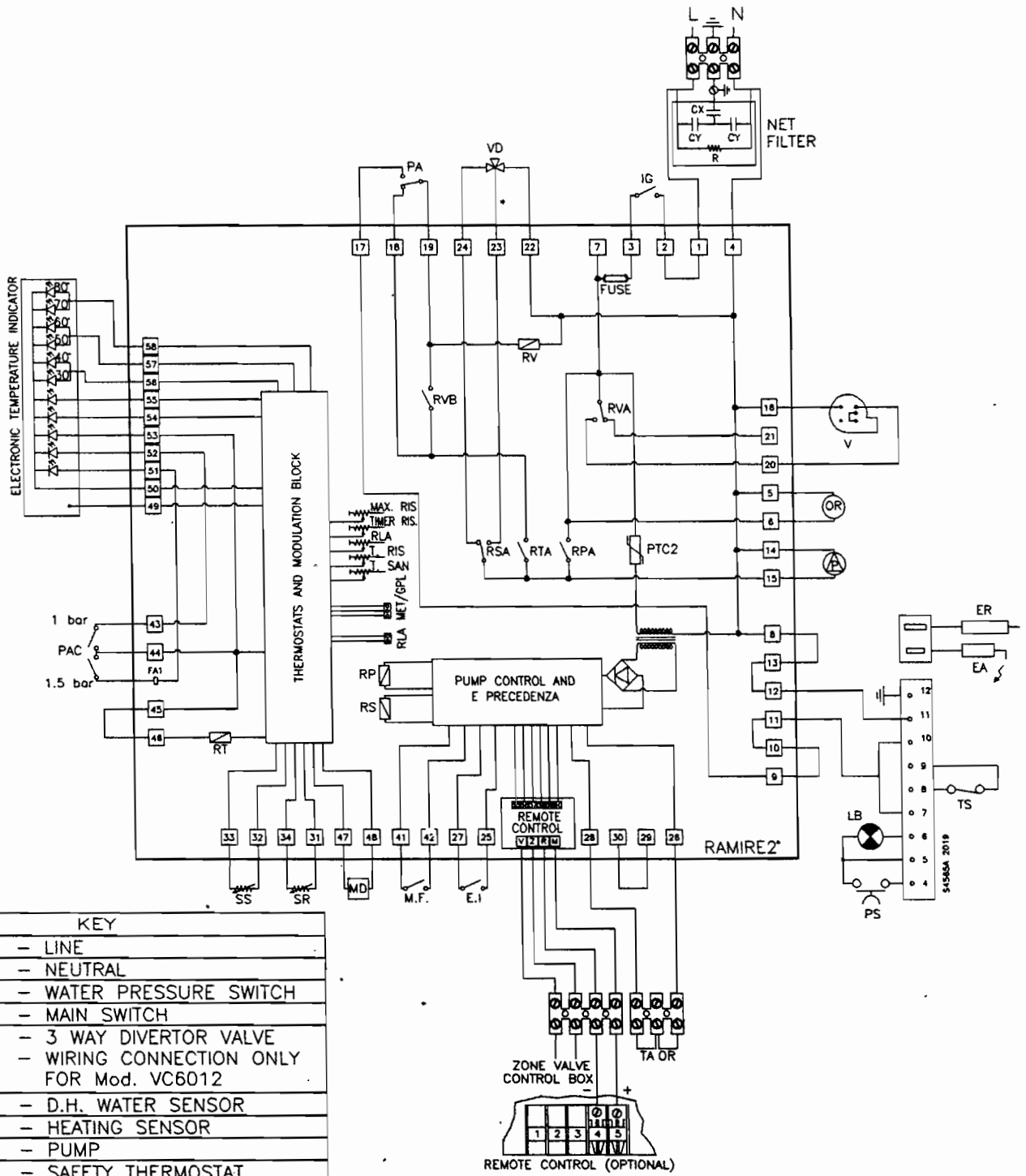
CHECK THE POSITION OF M10 BEFORE INSERTING IT.

WIRING DIAGRAM FOR RSF 20–24 ELECTRONIC IGNITION BOILER



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SS	– D.H. WATER SENSOR
SR	– HEATING SENSOR
P	– PUMP
TS	– SAFETY THERMOSTAT
M.F.	– FLOWSWITCH MICRO–SWITCH
E.I.	– SUMMER–WINTER SWITCH
MD	– MODULATING UNIT
TA	– ROOM THERMOSTAT
OR	– TIME CLOCK
RS	– D.H. WATER RELAY
RP	– PUMP RELAY
RV	– FAN RELAY
RT	– THERMOSTAT RELAY
PS	– RESET BOTTON
LB	– LOCK–OUT INDICATOR
EA	– IGNITION ELECTRODE
ER	– IONISATION ELECTRODE
PA	– AIR PRESSURE SWITCH
V	– FAN

N.B. : IN CASE OF REMOTE CONTROL INSTALLATION, FOR A CORRECT OPERATION REMOVE LINK BETWEEN TERMINALS TA–OR ON TERMINAL BLOCK AND SET SUMMER–WINTER SWITCH 1 OF CONTROL PANEL (SEE FIG. 1 PAG. 11) ON SUMMER POSITION ☼. CHECK THE POSITION OF M10 BEFORE INSERTING IT.

MAINTENANCE

Do not clean the boiler casing or internal parts with diluents or solvents. Clean with water and soap only. To keep the boiler in efficient and safe operating condition, we advise you to perform the following checks at least once a year:

1- Check all seals on the gas side and replace gaskets to restore perfect seal as required.
2- Check all seals on the water side and replace gaskets to restore perfect seal as required.
3- Visually check combustion and the combustion chamber; dismantle and clean the chamber if necessary.
4- Overheating check of main heat exchanger and cleaning of exchanger on exhaust side if necessary.
5- Adjustment of correct gas flow rate at ignition under partial load and under maximum load.
6- Check functioning of gas safety systems:
Insufficient gas safety (flame detection sensor for electronic ignition boilers, thermocouple for pilot light boilers)
7- Check functioning of heating safety systems:
Safety thermostat for temperature limit.
Safety sensor for pressure limit.
8- Check that the electrical connection conforms to the description in the instruction manual for the boiler.
9- Check domestic water flow rate and temperature.
10- General check of boiler function.
11- Check exhaust levels of combustion products.

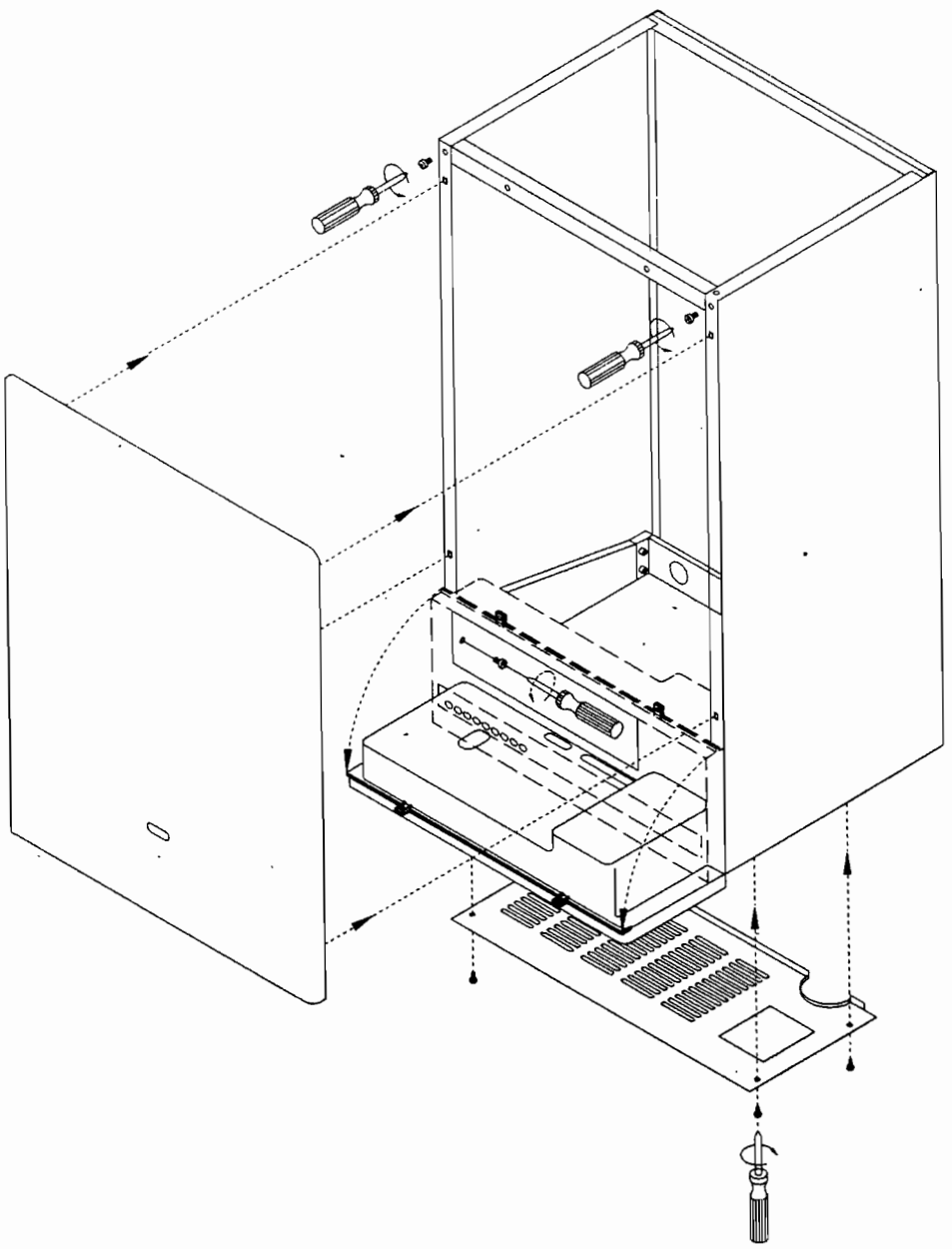


Fig. 1

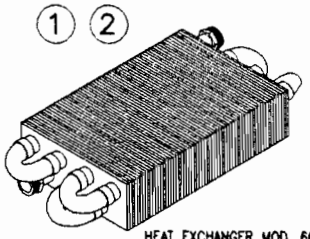
FAULT FINDING CHART

Malfunction	*Possible cause*	*Remedy*
1) Pilot light does not ignite.	a - gas tap closed b - pilot nozzle clogged c - ignition electrode broken d - ignition transformer broken e - ignition micro broken	a - open the tap b - clean it c - replace it d - replace it e - replace it
2) Pilot light ignites but cuts out, leaving ignition pilot	a - gas valve broken b - thermocouple damaged c - thermocouple out of position	a - replace it b - replace it c - put in position
3) Boiler powered electrically (light on) but nothing works	a - water pressure switch b - water pressure below 0.5 bar c - RAMIRE circuit board damaged	a - replace it b - load water c - replace it
4) Boiler is on, pump is running, but flame doesn't ignite. For model RSF boilers For model RCM-RSF boilers with electronic ignition	a - RAMIRE circuit board damaged b - sensors ruined c - gas valve damaged d - fan motor doesn't run e - air pressure switch not working f - S4565A elect.ign. board notworking g - line polarity - neutral inverted	a - replace it b - replace them c - replace it d - replace it e - check that exhaust pipe is not longer than 3 mt. and that all connections are perfectly sealed f - replace it g - put in correct position
Models with electronic ignition 5) Boiler starts up, pump is running, flame is on but cuts out after 10 seconds	a - ionisation electrode broken or earthed b - ionisation electrode cable interrupted or our of place c - S4564A elect. ignition board damaged d – wrong polarity	a - replace it b - replace it c - replace it d – put in correct position
Models with electronic ignition 6) Boiler is working but ignition board cuts out (red button lights up)	a - pump clogged or burned out b - air in system c - flowswitch damaged	a - unclog or replace b - bleed system c - replace it
Models with electronic ignition 7) Boiler is on, pump is running, flame doesn't ignite, boiler cuts out after 10 seconds (red button lights up) For model R - RCM boilers	a - ignition electrodes broken b - electrode wire detached c - gas valve damaged d - insufficient fuel e - 105° C limit thermostat broken f - 75° C safety thermostat broken	a - replace it b - connect it c - replace it d - supply more gas e - replace it f - replace it
8) Boiler starts up but flame ignites with an explosion	a - ignition electrodes don't discharge well b - pilot burner is dirty c - burner is dirty d - trimmer RLA set too high	a - check that distance of burner is 2.5 - 3 mm. b - clean it c - clean it d - adjust it
9) Boiler is ignited but doesn't modulate flame and cuts out when temperature is reached	a - RAMIRE circuit board damaged b- modulator tube clogged c - modulator calibrated incorrectly	a - replace it b - replace it c - recalibrate it
10) Boiler starts up and modulates flame, but doesn't heat radiators	a - diverter valve blocked or broken	a - replace it
11) Boiler always runs at minimum	a - modulator coil broken b - RAMIRE circuit board damaged	a - replace it b - replace it
Model RCM 12) If flame ignites, boiler cuts out after 10 seconds (red button lights up)	a - check flue exhaust	a - contact authorised personnel
Winter mode operation 13) No water when tap is opened	a - domestic hot water pressure below 0.3 bar (inlet water filter dirty) b - micro flowswitch broken	a - adjust pressure, clean filter b - replace it

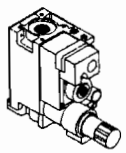
SHORT LIST

No	CODE	DESCRIPTION	RCM 20		RSF 20		RSF 24		R 20		RS 20		RS 24	
			PILOT FLAME	ELECT. IGNIT.	PILOT FLAME	ELECT. IGNIT.	PILOT FLAME	ELECT. IGNIT.	PILOT FLAME	ELECT. IGNIT.	PILOT FLAME	ELECT. IGNIT.	PILOT FLAME	ELECT. IGNIT.
1	58006LP	HEAT EXCHANGER MOD. 20.000 kcal/h CE	⊗	⊗	⊗	⊗			⊗	⊗	⊗	⊗		
2	58007LP	HEAT EXCHANGER MOD. 24.000 kcal/h CE					⊗	⊗					⊗	⊗
3	36001LA	PILOT GAS VALVE V4600 A 1029	⊗		⊗		⊗		⊗		⊗		⊗	
4	36047LA	ELECTRONIC GAS VALVE VK4105 A 1001		⊗		⊗		⊗		⊗		⊗		⊗
5	76616LA	ELECTRONIC IGNITION BOARD		⊗		⊗		⊗		⊗		⊗		⊗
6	53008LA	GAS PRESSURE MODULATOR	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
7	76620LA	MAIN P.C.B. RAMIRE 2	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	
8	76622LA	INDICATORS P.C.B. RAVI 2	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	
9	73501LA	D.H.W. SENSOR 1/8"	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	
10	31011LA	D.H.W. SENSOR LEAD	⊗	⊗	⊗	⊗	⊗	⊗						
11	31031LA	HEATING SENSOR LEAD							⊗	⊗	⊗	⊗	⊗	
12	88001LA	IGNITION TRANSFORMER AC69725464	⊗		⊗				⊗		⊗		⊗	
13	20002LA	EXCHANGER PB 21-73	⊗	⊗	⊗	⊗								
14	20003LA	EXCHANGER PB 24-02					⊗	⊗						
15	24012LA	CIRCULATING PUMP GOLD-V-CH6K W/AIR VENT	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
16	---	---	-	-	-	-	-	-	-	-	-	-	-	-
17	24013LA	3-SPEED CIRCULATING PUMP W/ AIR VENT DYL50 15PH6K	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
18	---	---	-	-	-	-	-	-	-	-	-	-	-	-
19	96008LA	3 bar PRESSURE RELIEF VALVE	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
20	59010LA	WATER PRESSURE SWITCH	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
21	96012LA	AUTOMATIC AIR VENT 3/8" 5020	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
22	95011LA	8 lt. EXPANSION VESSEL W/BRACKET	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
23	96007LP	ELECTRONIC FLOWSWITCH 1/2"	⊗	⊗	⊗	⊗	⊗	⊗						
24	37008LA	EXHAUST FAN			⊗	⊗	⊗	⊗			⊗	⊗	⊗	⊗
25	59006LB	AIR PRESSURE SWITCH C6065AH1095 CE			⊗	⊗	⊗	⊗			⊗	⊗	⊗	⊗
26	21001LA	GAS BURNER 1.25 13 NP	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
27	21002LA	GAS BURNER 0.75 13 NP	⊗	⊗	⊗	⊗			⊗	⊗	⊗	⊗		
28	21004LA	GAS BURNER 0.77 13 NP					⊗	⊗					⊗	⊗
29	21021LA	PILOT ASSEMBLY BRACKET	⊗		⊗		⊗		⊗		⊗		⊗	
30	21014LA	L.P. GAS PILOT ASSEMBLY BRACKET	⊗		⊗		⊗		⊗		⊗		⊗	
31	86006LA	WATER SAFETY THERMOSTAT		⊗		⊗		⊗		⊗		⊗		⊗
32	86015LA	FLUE SAFETY THERMOSTAT		⊗						⊗				
33	86021LA	FLUE SAFETY THERMOSTAT W/ MANUAL RESET		⊗						⊗				
34	87001LA	THERMOCOUPLE W/FB11 WASHER			⊗		⊗				⊗		⊗	
35	87007LA	THERMOCOUPLE W/2 THERMOSTATS 105/75	⊗						⊗					
36	35008LA	IGNITION ELECTRODE x PILOT	⊗		⊗		⊗		⊗		⊗			
37	35007LA	IGNITION ELECTRODE KA1 x ELECTR.		⊗		⊗		⊗		⊗		⊗		⊗
38	35009LA	IONISATION ELECTRODE KA10		⊗		⊗		⊗		⊗		⊗		⊗
39	47015LA	3 POSITION COMMUTATOR SWITCH	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
40	47014LA	GAS VALVE LOCK-OUT INDICATOR		⊗		⊗		⊗		⊗		⊗		⊗
41	96001LA	3 WAY DIVERTOR VALVE	⊗	⊗	⊗	⊗	⊗	⊗						
42	55514LA	3 WAY DIVERTOR VALVE MOTOR UNIT	⊗	⊗	⊗	⊗	⊗	⊗						
43	31091LA	MICRO TRANSFORMER LEAD	⊗		⊗		⊗		⊗		⊗		⊗	
44	31054LA	IGNITION ELECTRODE LEAD		⊗		⊗		⊗		⊗		⊗		⊗
45	31055LA	IONISATION ELECTRODE LEAD		⊗		⊗		⊗		⊗		⊗		⊗

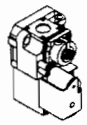
SHORT LIST



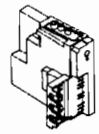
1 2 HEAT EXCHANGER MOD. 66A
HEAT EXCHANGER MOD. 68A



3 PILOT GAS VALVE V4600

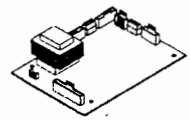


4 ELECTRONIC GAS VALVE VK4105

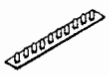


5 ELECTRONIC IGNITION BOARD

6 GAS PRESSURE MODULATOR



7 MAIN P.C.B. RAMIRE 2

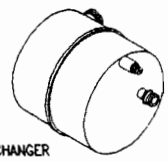


8 INDICATORS P.C.B. RAVI 2

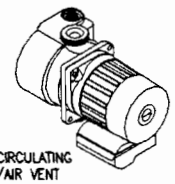
9 D.H.W. SENSOR 1/8"
HETING SENSOR 1/8"

10 11 D.H.W SENSOR LEAD
HEATING SENSOR LEAD

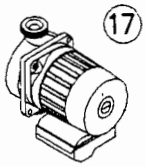
12 IGNITION TRANSFORMER
AC69725464



13 14 EXCHANGER



15 16 3-SPEED CIRCULATING
PUMP W/AIR VENT

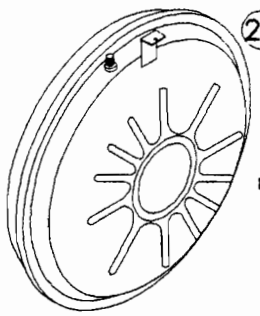


17 18 3-SPEED CIRCULATING

19 3 bar PRESSURE
RELIEF VALVE

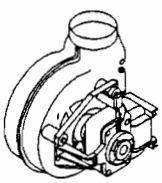
20 WATER PRESSURE GAUGE

21 AUTOMATIC AIR VENT



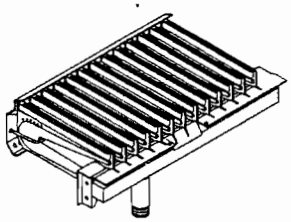
22 8 lt. EXPANSION VESSEL
W/BRACKET

23 ELECTRONIC
FLOWSWITCH



24 EXHAUST FAN

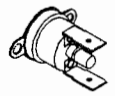
25 AIR PRESSURE SWITCH



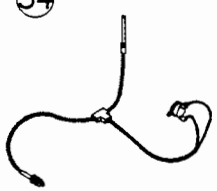
26 27 28 GAS BURNER 13 NP

29 30 PILOT ASSEMBLY BRACKET

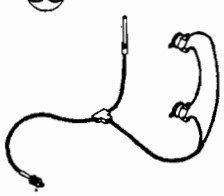
31 32 WATER SAFETY THERMOSTAT
FLUE SAFETY THYERMOSTAT



33 FLUE SAFETY THYERMOSTAT
W/ MANUAL RESET



34 THERMOCOUPLE W/FB11 WASHER



35 THERMOCOUPLE W/2 THERMOSTATS

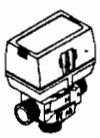
36 IGNITION ELECTRODE x PILOT

37 IGNITION ELECTRODE
KA1 x ELECTR.

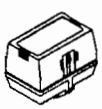
38 IONISATION ELECTRODE KA10

39 3 POSITION COMMUTATOR
SWITCH

40 GAS VALVE LOCK-OUT INDICATOR



41 3 WAY DIVERTOR VALVE



42 3 WAY DIVERTOR VALVE MOTOR. UNIT

43 MICRO TRANSFORMER LEAD

44 IGNITION ELECTRODE LEAD

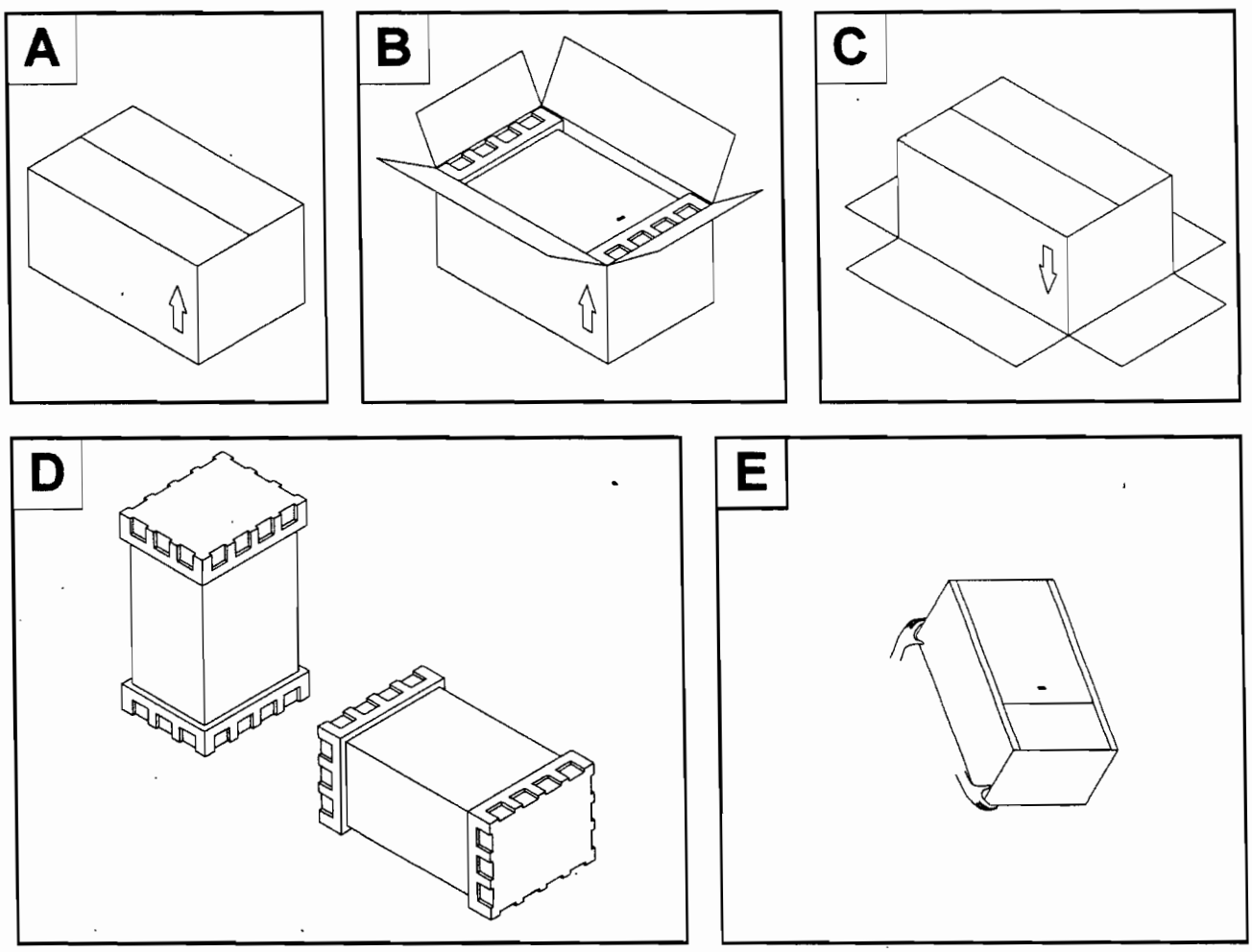
45 IONISATION ELECTRODE L

UNPACKING

A - Set the packed boiler on the floor. Make sure the arrow is pointing up.
B - Remove the tape and open the 4 flaps toward the outside.
C - Rotate the box 180°, holding the boiler from below with your hand.
D - Remove the polystyrene packing.
E - Hold the boiler from the rear (frame) when lifting.

IMPORTANT !
The packing materials (cardboard and polystyrene foam) are recyclable.

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



USE AND ADJUSTMENT BY USER

Read the following warnings carefully before starting up the boiler.
Make sure that the warranty certificate has the seal of the authorised technician who inspected the boiler. Installation, first start-up, adjustments, and maintenance must be performed by qualified personnel only. Incorrect installation may cause damage to persons, animals, and property, for which the constructor will assume no liability.

IMPORTANT !
Check that all regulations are respected regarding air intake and ventilation of the room in which the boiler is to be installed (see installation instructions on p. 4).

WARNINGS FOR THE USER

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).
- Periodically check system pressure on the pressure gauge (see p. 23 pos. 21) and check that pressure is between 0.5 - 1.5 bar with the system cold.

If pressure is below 0.5 bar, it must be restored (see p. 15). If pressure drops too frequently, there is probably a water leak in the system (in this case, an authorised technician must be called).
- Do not clean the casing or internal parts of the boiler with diluents or solvents. Clean only with soap and water.

N.B.: The boiler is equipped with an anti-frost system, which is operative with switch 1 (see p. 49) in either SUMMER ☼ or WINTER ❄ position, even if the room thermostat is set at zero, as long as there is electrical power and gas feed.
- For greater comfort and more rational use of heat, it is advisable to install a room thermostat connected to a programmer clock to turn the boiler on and off during the course of the day or week.
- If the boiler is not to be used for an extended period, cut electrical power by setting switch 1 to **OFF** (see p. 49) and close the gas tap outside the boiler. It is also advisable to drain all water from the system.

FLUE SAFETY

Model RCM - R natural draft boilers are equipped with a device that controls correct evacuation of exhaust fumes. This device guarantees maximum safety during operation. If the flue is partially or completely obstructed, or if its section is insufficient for evacuation of exhaust fumes, the device will intervene and block the flow of gas to the main burner and to the pilot light, turning off the boiler. If this occurs, contact an authorised technician and close the access tap for the boiler. DO NOT TAMPER WITH THE DEVICE IN ANY WAY.

PILOT FLAME INSTRUMENT PANEL

Mod. R - RS

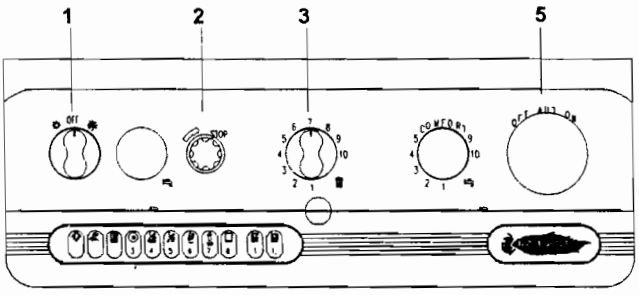


Fig. 1

Mod. RCM - RSF

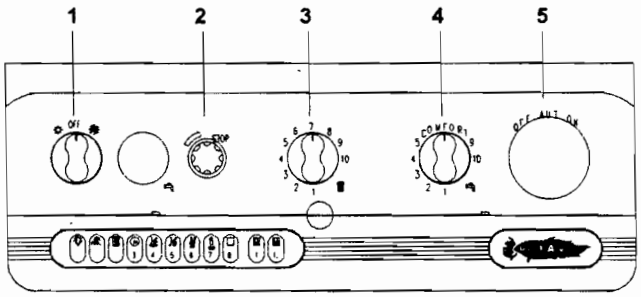


Fig. 2

LEGEND

1. Summer-winter ON-OFF switch
2. Pilot light ignition button
3. Heating temperature adjustment knob
4. Water temperature adjustment knob
5. Optional time clock

SELF- DIAGNOSTIC LEGEND (see fig. 5)

6. Operating/ Power indicator
7. Domestic hot water operation
8. Heating operation
9. Air pressure switch failure
10. Light-Flashing domestic water sensor failure
11. Light-Flashing heating sensor failure
12. Light-Flashing 90° C max temperature sensor failure
13. Light-Flashing flue safety - thermostat failure
14. Light-Flashing water deficiency in system
15. Water pressure level 1 bar
16. Water pressure level 1.5 bar
17. Electronic temperature indicator

ELECTRONIC IGNITION INSTRUMENT PANEL

Mod. R - RS

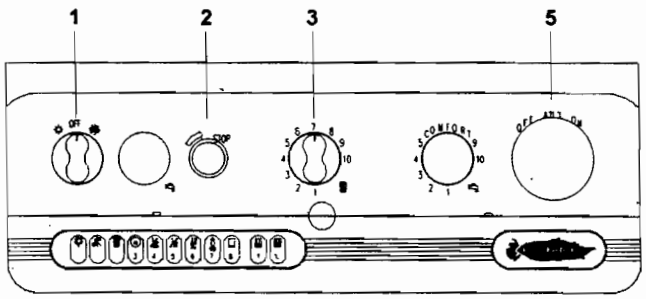


Fig. 3

Mod. RCM - RSF

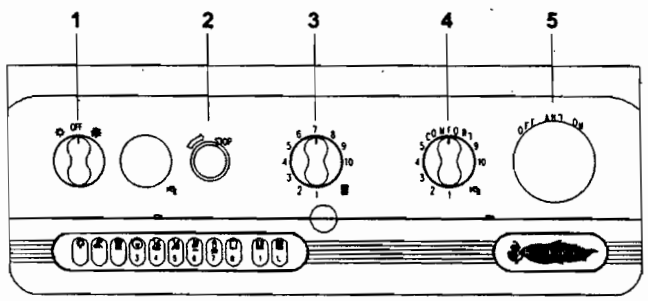


Fig. 4

LEGEND

1. Summer-winter ON-OFF switch
2. Lock-out indicator
3. Heating temperature adjustment knob
4. Water temperature adjustment knob
5. Optional time clock

SELF- DIAGNOSTIC LEGEND (see fig. 5)

6. Operating/ Power indicator
7. Domestic hot water operation
8. Heating operation
9. Air pressure switch failure
10. Light-Flashing domestic water sensor failure
11. Light-Flashing heating sensor failure
12. Light-Flashing 90° C max temperature sensor failure
13. Light-Flashing flue safety - thermostat failure
14. Light-Flashing water deficiency in system
15. Water pressure level 1 bar
16. Water pressure level 1.5 bar
17. Electronic temperature indicator

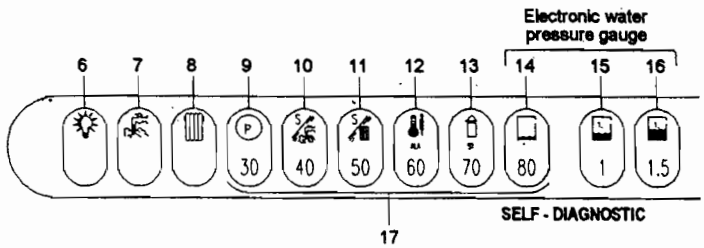


Fig. 5

STARTING UP THE BOILER (see p. 49)

Pilot Flame Ignition

- Open the gas tap located under the boiler.
- Set switch **1** to one of the two symbols (see fig. 1).
- Check that power/operating indicator **7** has turned on (see pag. 49 fig. 5).
- Push button **2** completely in. This will cause the ignition spark and simultaneous flow of pilot burner gas.
- Check through the hole on the front of the casing that the flame has ignited. When the flame has ignited, keep the button pushed in for about 20 seconds more. The flame should stay on when the button is released,. If the pilot light goes out, wait 3 minutes before repeating the ignition procedure.

Ignition by ionisation of pilot light (electronic ignition)

a) Open the gas tap located under the boiler.

b) Set switch **1** to one of the two symbols (see fig. 2).

- Check that power/operating indicator **7** has turned on (see fig.5 pag. 49). The automatic ignition system will turn on the burner. It may be necessary to repeat the operation several times to eliminate air from the pipes. To repeat the ignition operation, push electronic ignition release button **3** and then repeat the ignition procedure.

Turning off the pilot light

Turn button **2** clockwise until it stops. When released, it will return to starting position.

Set switch **1** to **OFF** (see fig.1).

For long periods of non-use, it is advisable to close the gas tap located under the boiler grid.

Turning off the electronic ignition

Set switch **1** to **OFF** (see fig. 2). For long periods of non-use, it is advisable to close the gas tap located under the boiler grid.

USE OF THE BOILER

Summer - Winter program.

- Set switch **1** to the ❄ program to have the boiler in WINTER mode, with heating and production of hot water (see fig. 1).
- Set switch **1** to the ☼ program to have the boiler in SUMMER mode, with production of hot water only.

If the system is equipped with a room thermostat, set the temperature at the desired level (by law, 20°C).

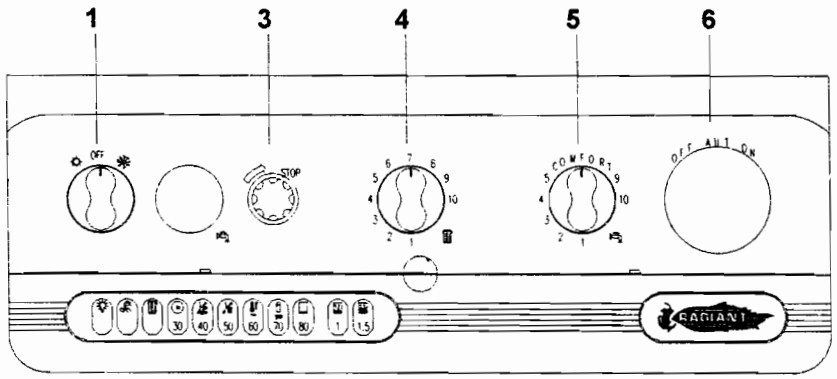


Fig. 1

ADJUSTMENT OF HEATING TEMPERATURE

Temperature is adjusted by means of knob **4**:

- Turn anti-clockwise to decrease temperature.
- Turn clockwise to increase temperature.

Heating temperature may be adjusted from a minimum of 30°C to a maximum of 80°C.

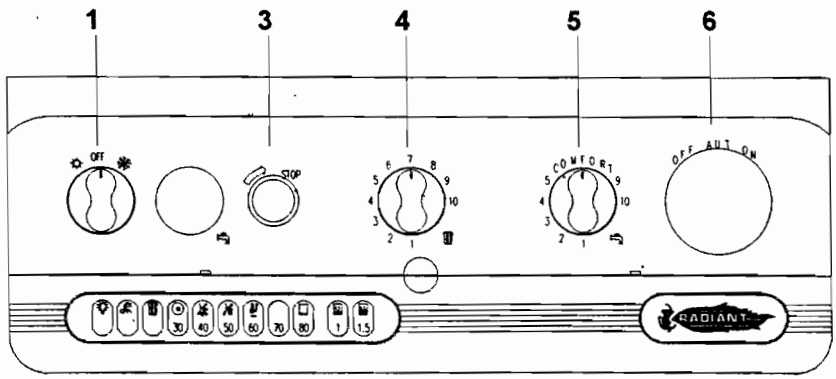


Fig. 2

ADJUSTMENT OF DOMESTIC HOT WATER TEMPERATURE

Temperature is adjusted by means of knob **5**:

- Turn anti-clockwise to decrease temperature.
- Turn clockwise to increase temperature.

Domestic hot water temperature may be adjusted from a minimum of 35°C to a maximum of 60°C .

RADIANT BRUCIATORI s.r.l.

Gas, Oil, Heavy-oil burners
Wall-hung boilers
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Water heaters

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INSTALLATION MANUAL FOR RADIANT RSF 24 WALL HUNG, GAS FIRED, COMBINATION BOILER G.C. No. 47 651 01

These instructions MUST be read prior to installation.

This appliance must be installed in accordance with the relevant Codes of Practice by British Gas or by an authorised CORGI installer.

These instructions should be left near the appliance when the installation is completed.

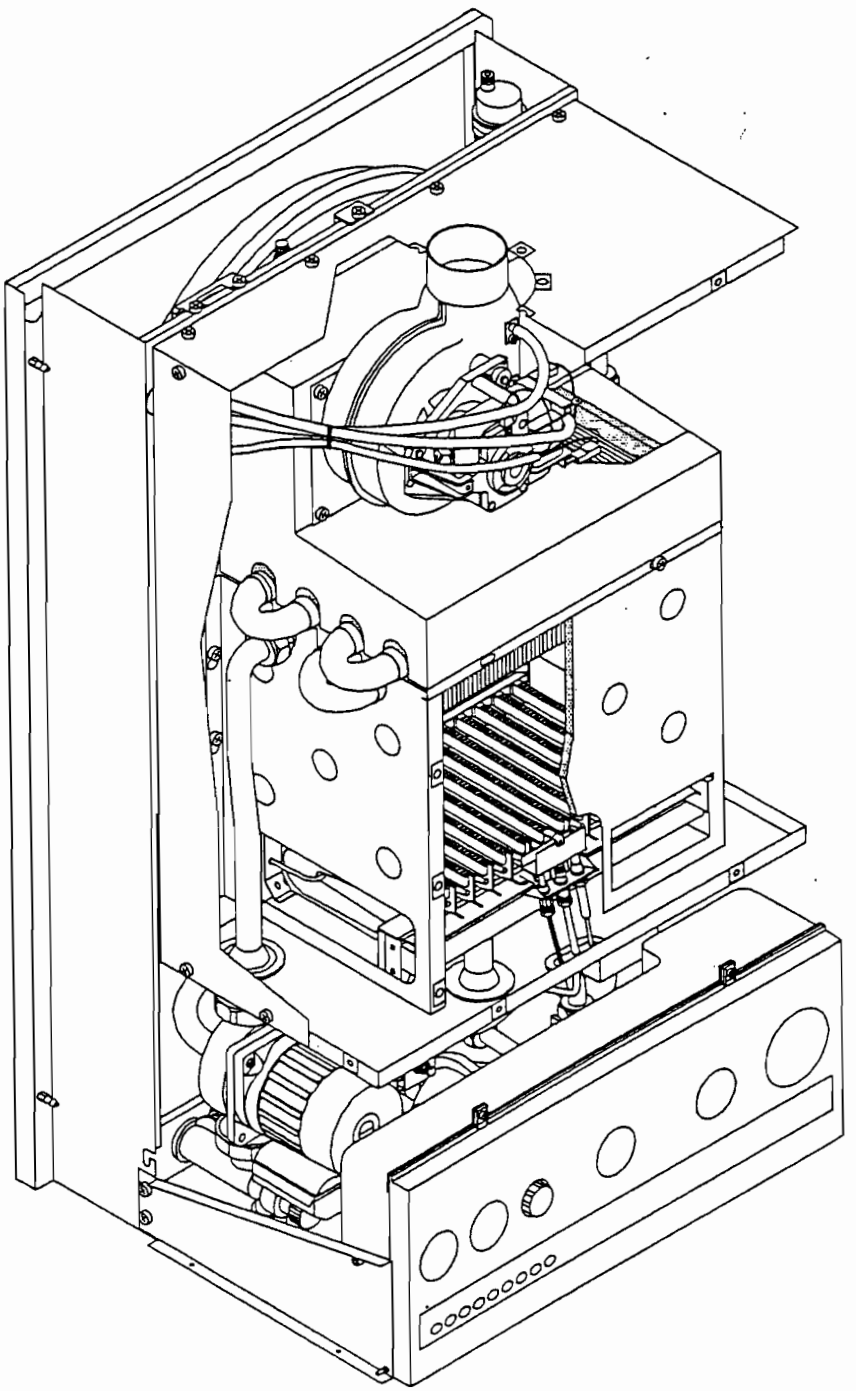
Combined Appliance for Heating and Domestic Hot Water
RSF 24 (16.38 to 27.0 Kw)
Room Sealed Fanned Flue Wall Hung Combination Boiler

INDEX

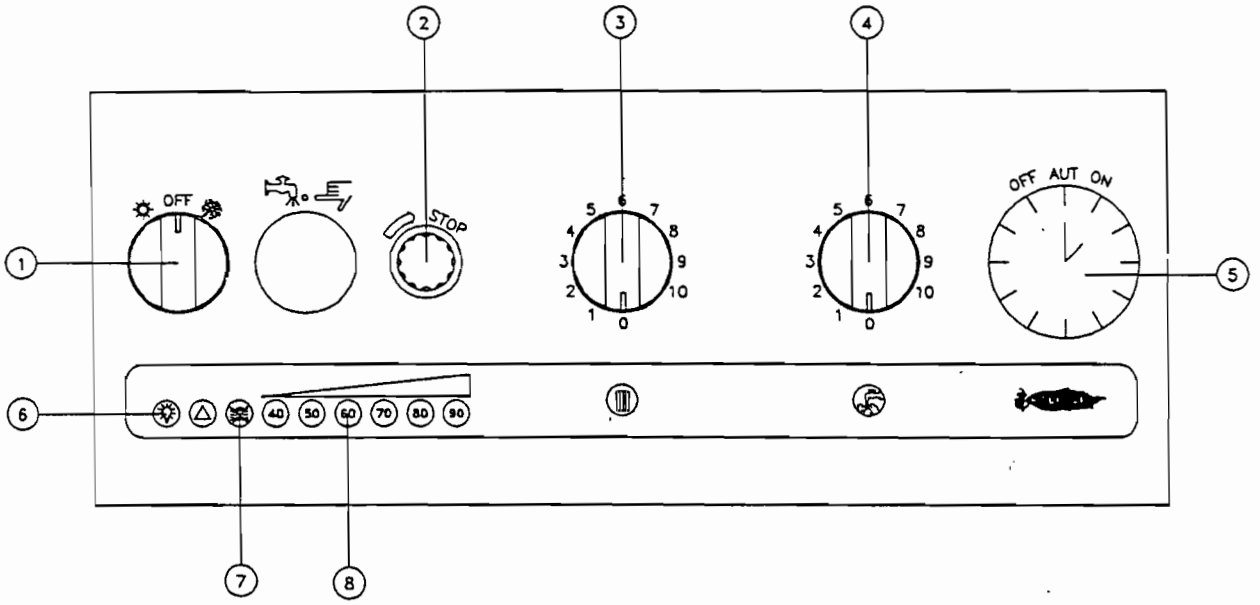
1. GENERAL INTRODUCTION

1.1. The appliance covered by this manual is the Radiant RSF 24. The RSF 24 is a wall-hung, room sealed fanned flue appliance with a rated input of 29.9 Kw (103,000 BTU/hr) and a maximum heating output of 27.0 Kw (92,100 BTU/hr).

1.2. RSF 24 WALL HUNG COMBINATION BOILER: CUTAWAY DIAGRAM



1.3. RSF 24 CONTROL PANEL DIAGRAM



1. On/Off Summer-Winter control
2. Pilot igniter
3. Heating temperature control
4. DHW temperature control
5. Optional time clock
6. Operating indicator
7. Water pressure deficiency indicator
8. Electronic temperature indicator

2. GENERAL SPECIFICATION DETAILS

2.1. OPERATING OVERVIEW

2.1.1. On the RSF24 the heat output both to central heating and domestic hot water is controlled by the printed circuit board giving full modulation to the gas valve which has a permanent pilot. Maximum output is 92,100 BTU/hr. DHW service always has priority and domestic hot water is available at all times. At a predetermined temperature and with the water flow rate set at 10 litres per minute, the boiler will commence to modulate and maintain water temperature to within 0.5 of 1 deg.C.

2.1.2. The boiler is designed for use on sealed systems only and to use natural gas .

2.1.3. The boiler is not suitable for providing DHW without connection to a heating system.

2.1.4. The RSF 24 is supplied fully assembled with DHW calorifier divertor valve, circulating pump, pressure gauge, safety release valve and sealed system expansion vessel.

2.1.5. The boiler is also supplied with a standard flue kit of 920mm in length which may be fitted right or left or front or back of boiler. Extension flue kits can be supplied as

optional extras allowing the flue length to be increased up to a maximum of 3 meters. On the RSF 24 model, there is also available a vertex flue option which can be extended up to a maximum of 3.5 meters (for full details on flue installation, see Sections 5.3, 5.4 and 5.5).

2.2. INTERNAL CONTROLS

2.2.1. Provision is made on main PCB within boiler control panel for the connection of the Radiant time clock and a remote room stat if required.

2.3. EXTERNAL CONTROLS

2.3.1. Provision is also made on main PCB for an external time clock and room stat Thermostatic radiator valves may be used providing either a 22mm bypass is fitted with a balancing valve and sited a minimum of 2 meters away from the boiler or a single uncontrolled radiator fitted with lockshield valves, with a minimum output of 4,000 BTU (see Section 5.6).

2.4. ELECTRICAL SURVEY

2.4.1. All boilers are suitable for operation with a main supply of 240v, A.C.-50hz. The supply should be taken from a switched 3 Amp rated fused spur.

2.5 ELECTRONIC MODULATION SYSTEM

2.5.1. The PCB ensures full user comfort by minimising noise levels e.g. constant burner modulation, also controlling within 0.5 of 1 deg.C temperature stability on the DHW ensuring maximum comfort at all times even with the water flow operating as low as 2 litres per minute.

2.6. HEATING CAPACITY

2.6.1. The heating capacity of the boiler is adjustable by the trimmer in the main PCB. This enables the heating circuit output to be reduced when only a limited amount of radiator surface is to be used on the system, i.e. when the boiler is installed in a property and only 2/3 radiators are initially fitted and further radiators will be added at a later date.

2.7. HIGH OUTPUT HEAT EXCHANGER

2.7.1. The high output copper heat exchanger has an efficiency better than 90%.

3. TECHNICAL DATA

3.1. RSF 24 TECHNICAL DATA AND SPECIFICATION

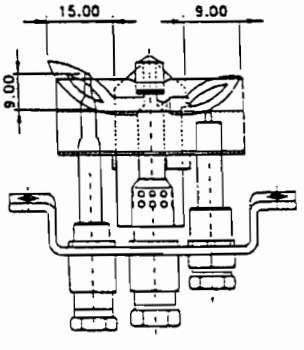
Rated output to heating (maximum)	27.0 Kw : 92,100 BTU/hr
Rated output to heating (minimum)	16.38Kw : 55.800 BTU/hr
Rated input	29.8 Kw : 102,000 BTU/hr
Maximum flow temperature	85 degC
Minimum working pressure (heating)	0.5 Bar
Maximum working pressure (heating)	2.5 Bar
Expansion vessel capacity	8 litres
Pressure expansion vessel	1 Bar
Maximum hot water output	27.0 Kw : 92,100 BTU/hr
Hot water flow Δt 35°	10.6 litres/min: 2.33 gals/min
Maximum incoming pressure for DHW	6 Bar
Minimum incoming pressure for DHW	1.0 Bar
Electrical connection	240v : 50hz
Power consumption	170w
Weight	49.5 Kg : 112 lbs
Gas connections	15mm
Cold water inlet	15mm
Hot water inlet	15mm
Heating flow	22mm
Heating return	22mm
Minimum domestic DHW flow rate	3 litres/min
Flue size	100 mm
Minimum flue length	550 mm
Maximum flue length	3 metres

Minimum gas supply working pressure of 20 m bar (8 in wg) is required at the boiler inlet pressure test point.

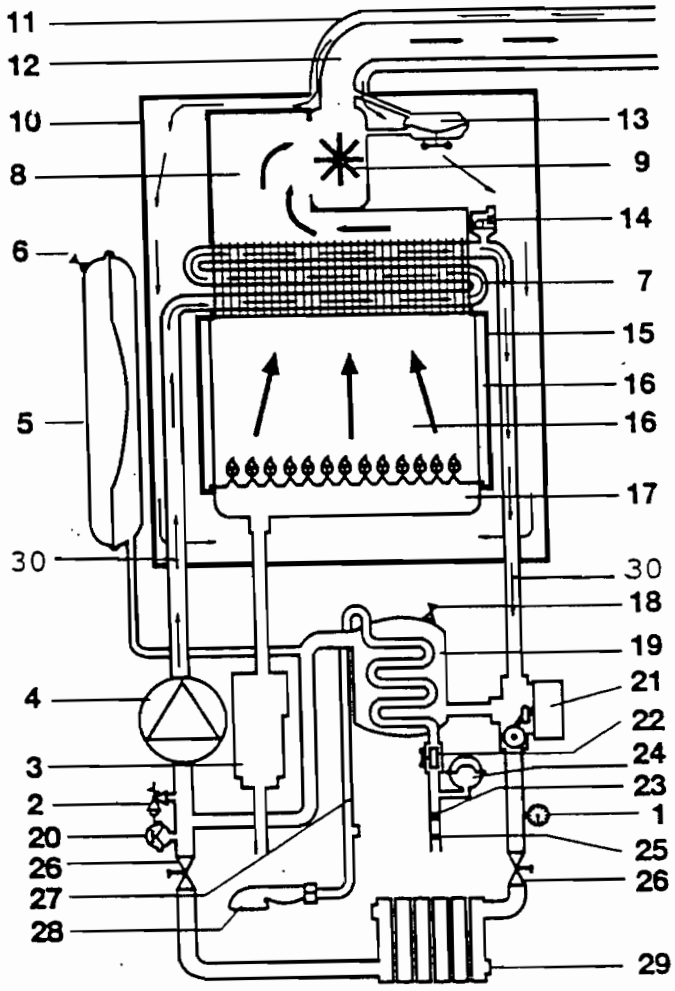
Boiler gas burn rate set at factory is 80% of full rated output.
Safety valve connection: 1/2" B.S. female fitting

DIMENSIONS
Height: 800mm, Width: 490mm, Depth: 375mm

PILOT FLAME should be approximately 15mm in length from the pilot shroud to the tip of the flame, be oval in shape and blue in colour. See diagrams alongside.

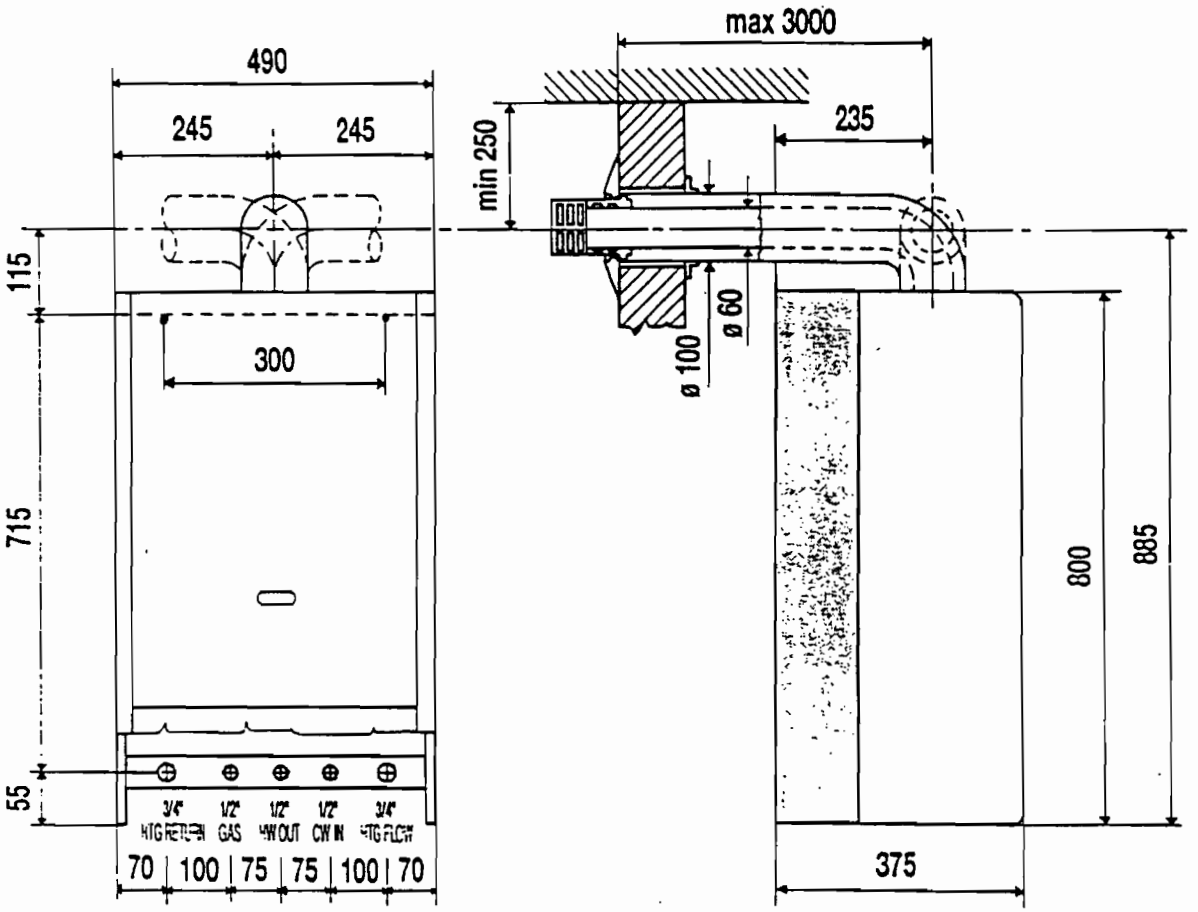


3.2. RSF 24 TECHNICAL DRAWING



1. Bar pressure gauge insulation
2. 3 bar relief valve
3. Modulating gas valve
4. Pump (must be set at 3)
5. Heating expansion vessel
6. Heating expansion vessel air valve
7. Main heat exchanger
8. Combustion flue hood
9. Exhaust flue fan
10. Combustion chamber cover
11. External air intake pipe
12. Exhaust flue pipe
13. Fan pressure switch
14. Auto air vent
15. Combustion chamber cover
16. Combustion chamber ceramic insulation
17. Stainless steel multi gas burner
18. DHW secondary heat exchanger air vent
19. DHW secondary heat exchanger
20. System water deficiency switch
21. Diverter valve
22. DHW electronic flow switch
23. DHW flow rate regulatory valve
24. DHW expansion vessel
25. Domestic water filter
26. Heating isolation valves
27. DHW sensor/thermistor
28. DHW internal water circuit
29. Central heating circuit
30. Central heating return/flow

3.3. RSF 24 DIMENSIONS, WITH STANDARD FLUE KIT



4. GENERAL INSTALLATION REQUIREMENTS

4.1. GAS SAFETY

4.1.1. It is the law that all gas appliances are installed by a CORGI registered installer 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.

4.2. RELATED DOCUMENTS

4.2.1. 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 byelaws of the local water authority.

4.2.2. 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

4.3. GAS SUPPLY

4.3.1. 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.

4.3.2. 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 ft/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 from the meter to the boiler must be 22mm copper tube. 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.

4.4. LOCATION OF BOILER

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

4.4.2. 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.

4.4.3. 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.

4.4.4. 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.

4.4.5. 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.

4.4.6. 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.

4.4.7. 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.

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

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

4.5. FLUE POSITION

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

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

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

4.5.4. 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.

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

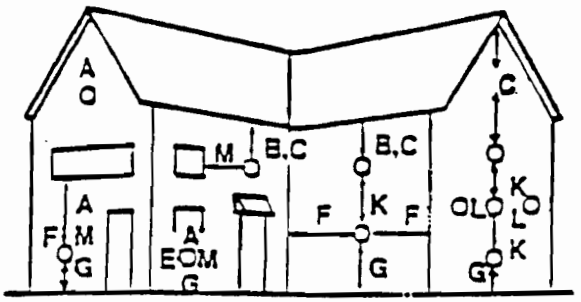
4.5.6. IMPORTANT REQUIREMENT: The correct dimensional relationship between the terminal and any obstruction, openable window or ventilator as shown in Section 4.5.10, Fig 1 and stipulated in Section 4.5.10, Fig 2. It is ESSENTIAL TO ENSURE, in practice, that products of combustion discharging from the 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.

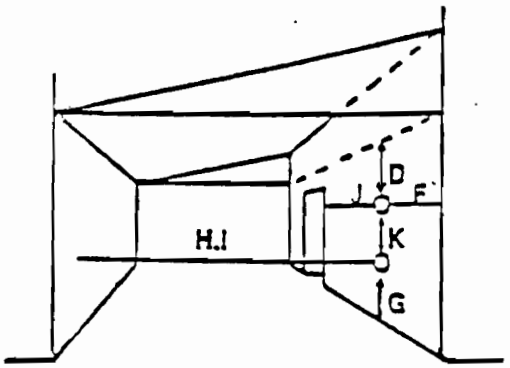
4.5.7. Where the lowest part of the terminal is fitted less than 2m (6.6ft) above a balcony, above ground, or above a flat roof to which people have access, the terminal MUST be protected by a purpose designed guard. See Section 5.4.

4.5.8. 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 1500mm (59in) long should be fitted to the underside of the gutter painted surface.

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

4.5.10. Flue Positioning: Fig. 1





Under carport with open sides

Fig.2: Terminal Position

		Minimum Spacing
A	Directly below an openable window, air vent or any other ventilation opening	300mm (12in)
B	Below guttering, drain pipes or soil pipes	75mm (3in)
C/D	Below eaves, balconies or carport roof	200mm (8in)
E	From vertical drain pipes or soil pipes	75mm (3in)
F	From internal or external corners	300mm (12in)
G	Above adjacent ground, roof or balcony level	300mm (12in)
H	From a surface facing the terminal	600mm (24in)
I	From a terminal facing the terminal	1200mm (48in)
J	From an opening in the carport (eg door, window) into the dwelling	1200mm (48in)
K	Vertically from a terminal on the same wall	1500mm (60in)
L	Horizontally from a terminal on the same wall	300mm (12in)
M	Adjacent to opening	300mm (12in)

4.6 AIR PRESSURE SWITCH

4.6.1. The RSF24 has this unit fitted and preset at the factory. This setting MUST NEVER be altered under ANY circumstances. The switch is designed to allow the main gas valve to open at a predetermined differential air pressure created by the fan when it achieves a given speed. Model No. C6065A1226B: mfr. Honeywell. Max.air pressure setting: 1.5mbar. Min. air pressure setting: 0.6mbar.

4.7. AIR SUPPLY

4.7.1. Detailed recommendations for air supply are given in BS 5440:2. The following notes are intended for general guidance:

4.7.2. It is NOT necessary to have a purpose provided air vent in the room or internal space in which the boiler is installed.

4.7.3. If the boiler is to be installed in a cupboard or compartment, permanent air vents are required (for cooling purposes) in the cupboard/compartment, at both high and low levels. The air vents must either communicate with a room/internal space, or be direct to outside air. The minimum effective areas of the permanent air vents, required in the cupboard/compartment, are specified in below.

Position of Air Vent	Air from room/internal space	Air direct from outside
High Level	267cm2 (41in.2)	140cm.2 (21in.2)
Low Level	267cm.2. (41in.2)	250 cm.2 (21in.2)

4.7.4. Both air vents MUST communicate with the same room or internal space, or MUST both be on the same wall to outside air.

4.7.5. Minimum clearances around the boiler should be as follows: 50mm (2") either side, 300mm (12") bottom, 300mm (12") top.

4.7.6 In addition a minimum clearance of 450mm must be able to be made at the front of the appliance to enable the boiler to be serviced.

5. INSTALLATION OF BOILER

5.1. PACKAGING

5.1.1. The largest carton contains boiler, hanging bracket, boiler unions, guarantee documents and installation manual. The second package marked "Flue" (RSF 24) contains all standard flue components. The third package contains 2 x 22mm valves, 1 x 15mm valve and a copy of the User Instructions.

5.2. PREPARATION FOR MOUNTING

5.2.1. The boiler is to be wall-mounted and a vertical flat area of wall is required which must measure as shown on template.

5.2.2. This area does not include clearance for installation and servicing. If the appliance is fitted on a wall of combustible material, the wall should be protected by a sheet of fireproof material.

5.2.3. In addition, a minimum clearance of 450mm (18in) must be available at the front of the appliance to enable the boiler to be serviced.

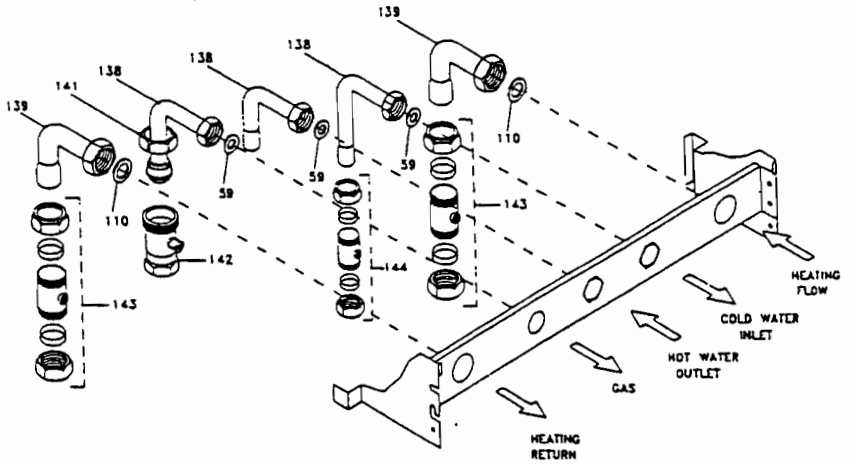
5.2.4. Service clearance of 50mm (2in) either side is required.

5.2.5. Position template on the wall and mark positions of fixing holes. The type of fixing used will depend on the type of wall. Fix hanging bracket to the wall. The boiler can now be hung in place and all necessary pipe connections made. *N.B. Copper connections are supplied with every boiler as is the fixing template.*

5.2.6. The template shows all pipe positions required to install boiler.

5.2.7. From left to right looking at template they read as follows(see diagram below):

1. 22mm heating return
2. 15mm gas connection. *NB: The supplied gas cock must be fitted at this point.*
3. 15mm domestic hot water outlet
4. 15mm cold water mains inlet
5. 22mm heating flow



5.2.8. Supplied with the boiler are 2 x 22mm isolation valves to be fitted below boiler on the heating flow/return pipes, number 1 and 5 on the template. Also supplied is a 15mm isolation valve to be fitted on the domestic cold water inlet pipe, No.4. 15mm gas cock to be fitted at No. 2. All isolation valves must be fitted immediately below boiler to enable it to be isolated for servicing.

IMPORTANT: SAFETY DISCHARGE VALVE SITED DIRECTLY UNDER PUMP MUST BE CONNECTED AND TAKEN THROUGH TO OUTSIDE. THIS SHOULD FACE DOWNWARDS AND TERMINATE APPROXIMATELY 6IN. FROM GROUND.

5.3. FLUE INSTALLATION: Read in conjunction with Fig 1 & 2, Section 5.3.16.

5.3.1 Before starting to drill or knock out the flue aperture, remove white casings from around boiler then cover the top of the boiler with a dust sheet. This is to stop dust and pieces of plaster or brick entering the combustion chamber and fan assembly.

5.3.2. Measure the distance from the exterior of the outside wall to the outlet of the flue turret bend (3) and then add 30mm to the measurement. Cut the outer air flue pipe (9) to the required length.

5.3.3 Fit the outer flue pipe through the wall leaving a gap of 10mm between the flue turret bend and the outer flue pipe.

5.3.4. Cut this inner exhaust flue pipe to a length 42mm longer than the outer flue pipe.

5.3.5. Fit the internal wall sealing flange (12) onto the outer flue pipe.

5.3.6. Insert the inner flue pipe into the outer pipe (this must be done from inside and NOT outside).

5.3.7. Fit the rubber sealing collar (4) onto the outer flue pipe.

5.3.8. Insert the two 60mm sealing rings into the recesses in either end of the flue turret bend.

5.3.9. Fit the spire clips (13) onto the top of the combustion chamber housing.

5.3.10. Fit the flue turret bend and gasket to the top of the boiler and fix with screws (14).

5.3.11. Push the internal exhaust flue pipe into the flue turret bend (this is done by turning and pushing at the same time).

5.3.12. Pull the outer flue towards the flue turret bend until there is a gap of 10mm.

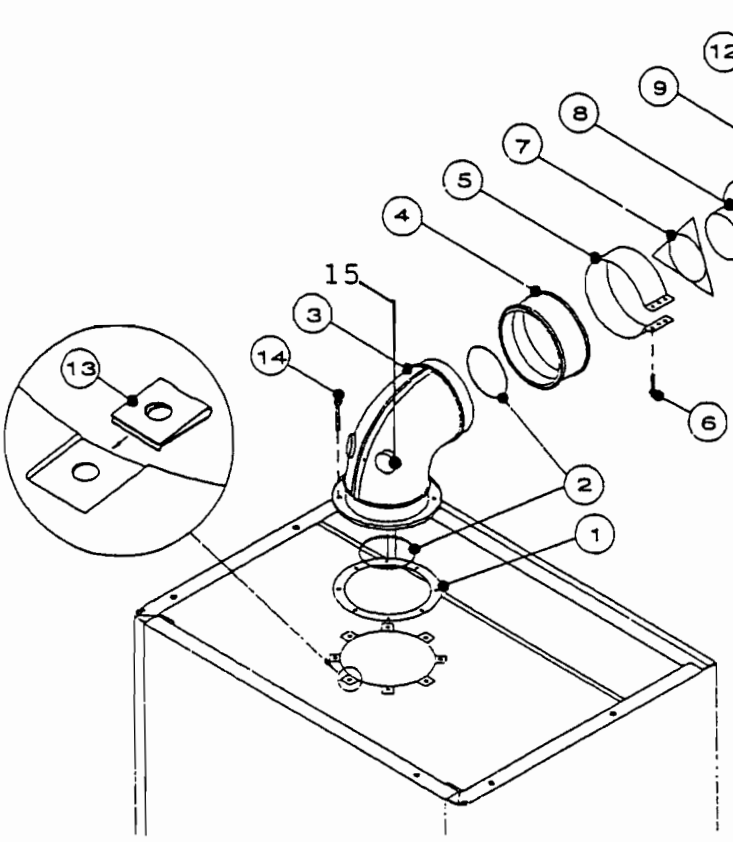
5.3.13. Slide the rubber sealing collar over the flue turret bend and fit the clamp (5).

5.3.14. Fit the external wall seal (11) to the outer flue.

5.3.15. The combustion products test point is sited on the front of the flue turret bend (15) and access is gained by simply unscrewing the cap.
NB: The line of the flue should be horizontal or running down slightly, NEVER rising. Maximum length of flue allowed is 3 meters but if bend is used in flue, the maximum then allowed is 2 meters. Minimum length of flue allowed 550mm.

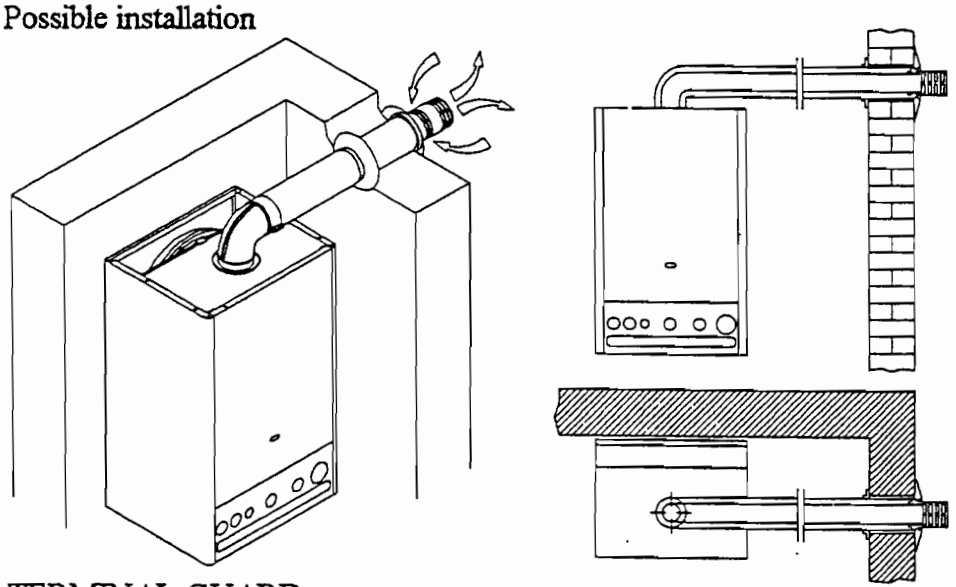
IMPORTANT: WHEN THE FLUE HAS BEEN INSTALLED AND TESTED, IT IS NECESSARY TO RECHECK THAT THE TERMINAL HAS NOT BEEN PUSHED INTO THE FLUE PIPE DURING INSTALLATION AND IS SITED CORRECTLY ON THE LUGS PROVIDED

5.3.16. Fig. 1: RSF 24 Flue Kit with coaxial flue: Exploded drawing



POS.	CODE	DESCRIPTION
1	43085LA	100mm neoprene sealing gasket
2	43078LA	2nd internal 60mm flue sealing rings
3	27031LA	100mm/60mm aluminium flue turret
4	43056LA	Rubber collar to seal flue turret to 100mm flue pipe
5	38502LA	Clamp to fix rubber collar to 100mm flue pipe
6	99009LA	Fixing screw for clamp
7	54002LA	Internal - external flue pipe separators
8	82001LP	60mm inner flue pipe
9	82004LP	100mm outer flue pipe
10	80001LA	Exhaust flue terminal
11	43012LA	External rubber wall seal
12	40016LA	Internal wall seal
13	54014LA	Spare clips for screw fixing of flue turret
14	99049LA	Turret flange screws
15		Test point

Fig. 2: Possible installation



5.4. TERMINAL GUARD

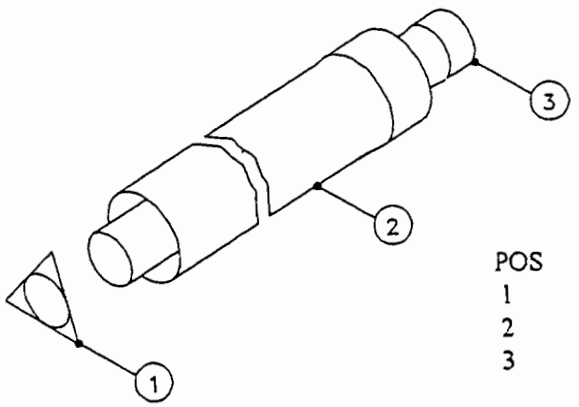
5.4.1. A terminal guard must be fitted over the flue terminal on the outside wall on all installations where the flue terminal is fitted less than 2.4 meters from ground level or any balcony or flat roof. The terminal guard should be circular (with lugs) and measure 6.5" x 11" (165mm x 288mm) as manufactured by Tower Flue Components Part No. C393554. The guard should be held firmly in place by wall fixings using the lugs provided on the outside of the terminal guard.

5.5. TO FIT FLUE EXTENSION

5.5.1. The flue can be extended up to a maximum length of 3 metres.

5.5.2. When fitting the flue extension kit ALWAYS fit the extension kit from the boiler flue turret out and finally cutting to length the ORIGINAL FLUE KIT that came with the boiler.

5.5.3. Cut flue to length as described in Section 5.3.



POS	CODE	DESCRIPTION
1	54002LA	Internal-external flue pipes separator
2	82005LP	100mm flue pipe
3	82002LP	60mm flue pipe

5.6. PIPEWORK

5.6.1. Central heating boiler is supplied with 22mm tails on the heating flow/return. Pipework from boiler must be run in 22mm copper pipe for a minimum of 3 meters before any reduction in pipe size.

5.6.2. When TRV's are used, a bypass MUST be fitted a minimum of 2 meters away from boiler and must be in 22mm with a minimum span of 14in and controlled by an adjustable lockshield valve. The bypass must be adjusted on completion of installation to give a minimum differential temperature of 11 C between flow and return with all radiators in the closed position.

5.6.3. As the boiler is of a sealed system type it is necessary to fit in line, between cold mains and the flow or return heating pipes, a filling loop fully approved by the Water Council that conforms to full B.S.S. Code of Practice as at Section 4.2.2.

5.7. DOMESTIC WATER

5.7.1. The minimum incoming mains water pressure to the boiler must be 1 bar (14.5 psi) and the maximum incoming pressure must not exceed 6 bar (87 psi). If pressure exceeds 10 bar an approved pressure reducing valve must be fitted directly in line with the boiler.

5.6.2. It is recommended that, in order to obtain optimum performance from the boiler, all domestic hot water pipes should be run in 15mm copper and if any lead pipework is found on the domestic hot water runs, this must be replaced.

5.8. GAS SUPPLY

5.8.1. The fully approved gas cock supplied must be fitted to boiler gas inlet tail. The gas

supply must be run directly from meter to immediately below gas cock on boiler in 22mm pipe. If a smaller diameter pipe is used or if any other appliance is taken from the gas run between boiler and meter the boiler will not function correctly.

5.9. FLUSHING OUT

5.9.1. The heating system should now be pressurised to 1.5 bar and completely flushed out by use of a drain cock sited at the lowest point of the system.

5.9.2. Also at this stage the gas line to the boiler should be purged to ensure that no foreign matter is within any pipework.

5.10. ELECTRICAL CONNECTIONS. IMPORTANT: ISOLATE ELECTRICS BEFORE COMMENCING WIRING

5.10.1.The boiler must be connected through a 3 amp Double Pole fused isolating switch. The boiler must have a permanent supply for domestic hot water. An integral time clock is available as an optional extra. The boiler is pre-wired with a flying lead for direct connection. All electrical wiring MUST be carried out by a competent electrician. All external components must be aproved and must be connected in accordance with current I.E.E. wiring and earthing regulations and any local regulations which apply. 3 amp fuse and spur or plug must comply with B.S. 1363.

6. COMMISSIONING AND START-UP PROCEDURE

6.1. COMMISSIONING PROCEDURE

6.1.1. The boiler must be commissioned by a CORGI registered heating engineer and the correct procedure must be followed.

6.2. GAS TEST

6.2.1. The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged .

6.3. GAS VALVE PRESSURE ADJUSTMENT AND CONTROL

6.3.1. For other adjustments follow these instructions alongside diagrams in Section 6.3.9. .

6.3.2. Insert a gauge on the pressure test tap (G) (for pilot flame boilers). *NB: All pressure adjustments must be effected without the coil (3).*

6.3.3. Take off the clips (1) and the spring (2), extract the coil (3) placed over the valve, finger tighten the plastic screw (4) and slacken lock nut (6).

6.3.4. The appliance comes from the factory with a calibration of about 80% of the maximum capacity. It is now necessary to increase the pressure to allow the boiler to operate

at maximum capacity. *NB: It is not possible to exceed the values stated in the setting-up: procedure regarding the different types of gas.*

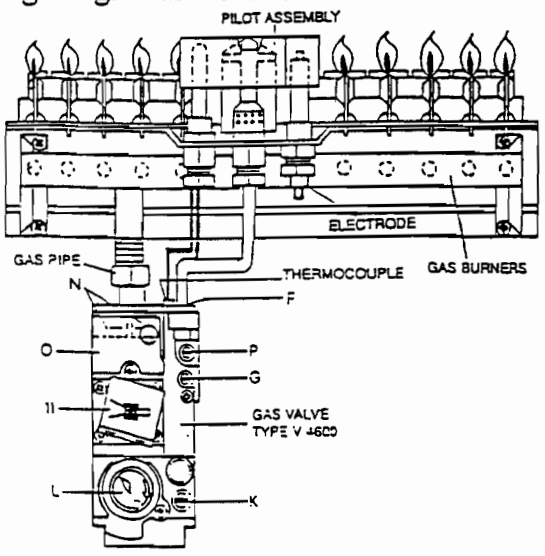
6.3.5. Set the domestic hot water thermostat on boiler to maximum. Open any hot water tap and adjust the maximum burning pressure to 14.6M.Bar for Natural Gas . This is done by screwing in the core on gas valve (5) until this is achieved. After maximum pressure adjustment, retighten lock nut (6).

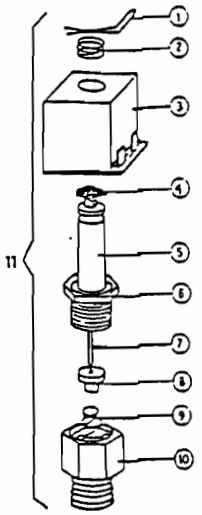
6.3.6. For minimum pressure adjustment unscrew the plastic screw (4) until gauge shows 5.3 milli Bar natural gas. Once operations are complete, refit the coil (3) and the spring (2) and secure them by the clip (1). *NB: Retighten the screw on pressure test tap (G).*

6.3.7. You MUST check that the push extension arm on the gas valve is not touching the sides of casings.

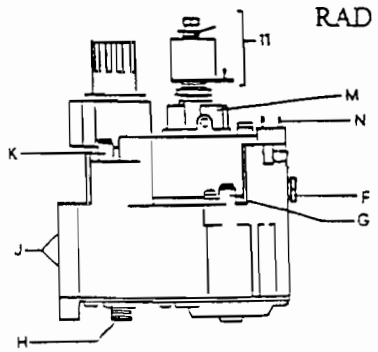
6.3.8. Pilot flame adjustment is achieved through rotation of 'P'. The flame should be set to envelop 3/8" (9.5 mm) of thermocouple tip during normal operation at 1/2" length and of oval dimensions.

6.3.9. Gas valve type V4600 Honeywell for electronic system "ES" with pilot flame DC voltage to gas valve 9-12.





1. Clips
2. Spring
3. Coil
4. Plastic screw
5. Core
6. Lock nut
7. Coupling pin
8. Thrust washer
9. Spring (for requested type of gas)
10. Coil holder
11. Pressure modulator RAD 004.



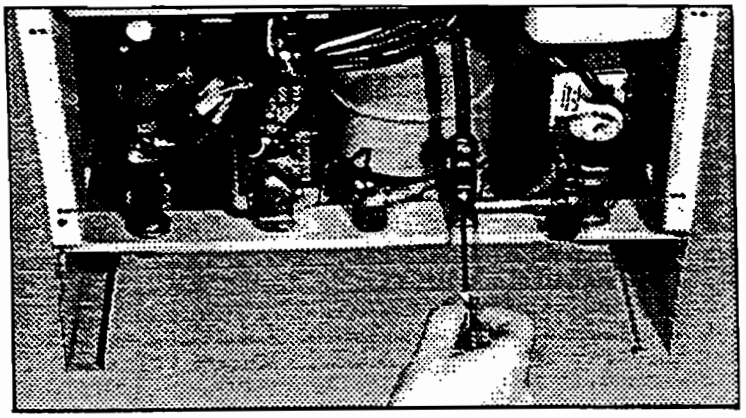
F	Pilot connection
G	Outlet pressure tap
H	Thermocouple connection
J	Flange mounting holes
K	Inlet pressure tap
L	Single action push button
M	Stabilizer VS306E 1010 hat
N	Flat AMP terminals
O	Terminal cover
P	Pilot flow adjustment

6.4. DOMESTIC HOT WATER

6.4.1. Now set DHW flow rate to delivery 10 litres per minute.

6.4.2. Before connecting the boiler to the water network, remove all impurities from the pipes. Possible foreign matters in the pipeline can cause malfunctioning of the boiler.

6.4.3. Domestic hot water flow regulation valve.



6.4.4. The system should be filled with water via the separate filling point.

6.4.5. The heating system will not fill automatically from the domestic side.

6.4.6. There is no internal by-pass fitted on the boiler. You must fit one externally, or leave one radiator with manual valves (see Section 5.6.).

6.4.7. The whole of the system should be flushed out with cold water, ensuring all valves are open.

6.4.8. After completely draining the system, refill it to 1.5 Bar.

6.4.9. The heating system should be purged of any air, the pump should be vented and the automatic air vent on the boiler should be opened.

6.4.9. Now that you have set the boiler to give 100% on gas burn rate, you need to set the DHW flow rate. This is achieved as follows:

6.4.10. You may use a flow meter by means of attachment to any hot water tap, or a 1 litre measuring jug. If you use a flow meter, set the flow rate to give 10 litres per minute by regulating the incoming water to the boiler by adjusting the Ballo Fix type valve screw underneath the incoming cold water brass housing connection (see Section 6.4.3.).

6.4.10. If you use the 1 litre measuring jug method, simply set the hot water flow rate to give again 10 litres per minute or 1 litre per 6 seconds. Once you have done this, the boiler is now completely commissioned.

6.5. WATER DEFICIENCY INDICATOR

6.5.1. If the green light on the bottom front panel is illuminated at any time, the boiler system is calling for water to repressurise the system. Whilst the green light is on, the internal circuits of the boiler will be completely dead. *NB: This will also stop the internal clock. Therefore the boiler will not operate on any setting.*

6.6. ELECTRICS

6.6.1. Check that the electric supply is connected and giving correct voltage at the boiler.

6.7. START-UP PROCEDURE

6.7.1. Turn on the gas tap and push in the button of the gas valve. This activates the ignition spark and opens the gas supply to the pilot burner simultaneously. When first igniting it may be necessary to keep the button pressed for some minutes in order to purge all the air contained in the pipes. When the pilot ignites, keep the button pressed down for a further 30 seconds. After releasing the button the pilot flame should remain alight. If it extinguishes, remember a FULL THREE MINUTES must elapse before repeating the Start-Up Procedure.

6.7.2. Set boiler controls and any clock and/or room stat to call for heat and the boiler will now fire. Run boiler until a minimum temperature of 60deg.C is attained. At this point switch off the boiler and fully drain the heating system via the drain-off cock ensuring all valves are fully open.

6.7.3. After draining is completed, close drain-off cock and refill and vent heating system to 1.5 bar.

7. HANDING OVER TO YOUR CUSTOMER

7.1.1. When the installation and commissioning of the system has been completed, the installer should give the householder the following advice.

7.1.2. A copy of the "Radiant User's Instructions" should be handed over and the householder's responsibilities under the "Gas Safety (Installation and Use) Regulations 1984" explained to him or her.

7.1.3. The lighting and shutting down procedures should be explained and demonstrated.

7.1.4. The boiler's operation including the use and adjustment of all system controls should be fully explained. This will ensure the greatest possible fuel economy taking into consideration the household requirements of both heating and hot water.

7.1.5. The householder should be told of the necessary precautions to prevent damage to the system, and to the building, in the event of the system remaining inoperative during very cold conditions.

7.1.6. The functions and the uses of the control panel should be explained in relation to hot water only, heating and hot water, Summer/Winter and ON/OFF switches.

7.1.7. Also explain and demonstrate the function of time and temperature controls, radiator valves etc. for the most economic use of the system.

7.1.8. If the optional time clock is fitted, give a copy of the User Instructions to the householder.

7.1.9. Emphasise the importance of regular servicing by a qualified CORGI registered Heating Engineer and that a comprehensive service should be carried out at least once a year.

8. SERVICING INSTRUCTIONS

8.1. Servicing

8.1.1. To ensure continued efficient operation of the boiler it is necessary to carry out servicing and cleaning at regular intervals. The frequency of cleaning will depend upon the particular installation conditions and usage, but in general, once per year should be adequate.

8.1.2. We can offer maintenance contracts. Please contact our SERVICE DEPARTMENT on the telephone number shown on User's Instructions.

9. INSTRUCTIONS TO CHANGE MAIN GAS BURNER.

Read in conjunction with Diagram at Section 9.7.

9.1. Remove the Multigas Burner Unit by disconnecting main burner connection nut on gas tube (Fig 3).

9.2. Disconnect pilot tube from pilot assembly on main burner (Fig 5) and remove pilot flame nipple (Fig 8).

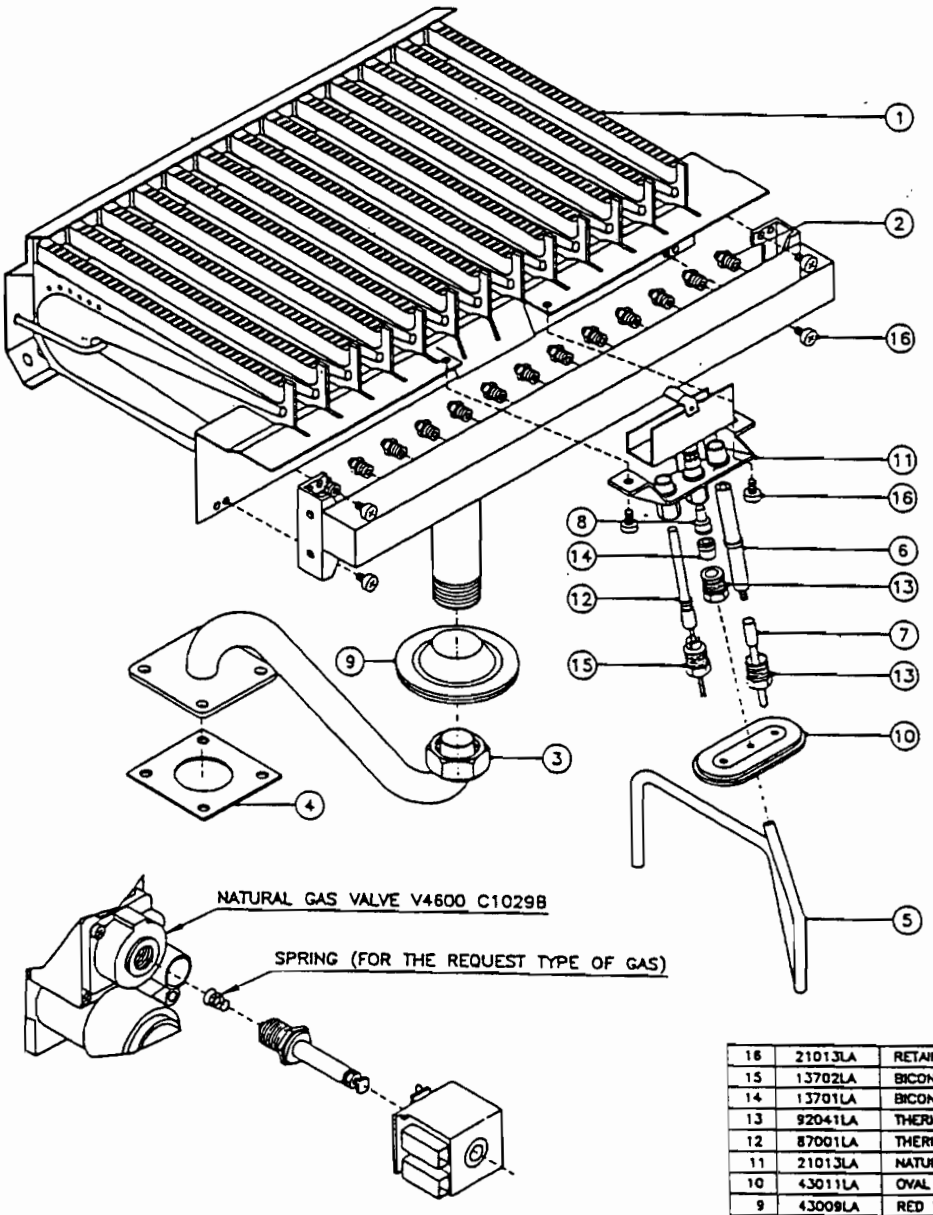
9.3. Disconnect thermocouple from pilot assembly (Fig 12).

9.4. Disconnect ignition electrode (Fig 7).

9.5. Remove 4 screws holding the burner to the front of the boiler (Fig 16) and 2 screws holding pilot bracket (Fig 16).

9.6. Lift the burner upwards and forwards. The main burner can now be completely removed from the boiler.

9.7. Natural Gas Burner: Exploded View



POS.	CODE	DESCRIPTION
16	21013LA	RETAINING SCREWS
15	13702LA	BICONE UNIT ø6
14	13701LA	BICONE ø6
13	92041LA	THERMOCOUPLE FIXING 1/8"
12	87001LA	THERMOCOUPLE WITH RING 416
11	21013LA	NATURAL GAS PILOT ASSEMBLY BRACKET 525F/27.2
10	43011LA	OVAL RED WASHER FB12
9	43009LA	RED WASHER GROMMETS FB10
8	92003LA	NATURAL GAS PILOT JET
7	31024LA	IGNITION ELECTRICAL CABLE GSV
6	35008LA	IGNITION ELECTRODE 830.2
5	84002LP	PILOT TUBE ø6
4	43004LA	GAS TUBE WASHER 45x45
3	84003LP	GAS TUBE ø14 (PILOT GAS VALVE)
2	92001LA	NATURAL GAS INJECTOR NP75
1	21001LA	NATURAL GAS BURNER 13R

10. FITTING INSTRUCTIONS FOR RADIANT 24 HOUR INTEGRAL TIME CLOCK/DIGITAL CLOCK

Read in conjunction with diagram below in Section 10.7.

IMPORTANT: ALL ELECTRICS MUST BE ISOLATED BEFORE ANY WORK COMMENCES.

10.1. Disconnect and remove link on PCB board between terminals "TA" and "FOR".

10.2. Push out blanking disc on right hand front of Control Panel which is located directly above the Radiant logo.

10.3. When fitting clock ensure the white arrow on clock face is central and pointing upwards and lines up with the "AUT" position marked on facia of Control Panel. On Digital Clocks ensure the markings "AUTO" and "RUN" are at the top when fitted.

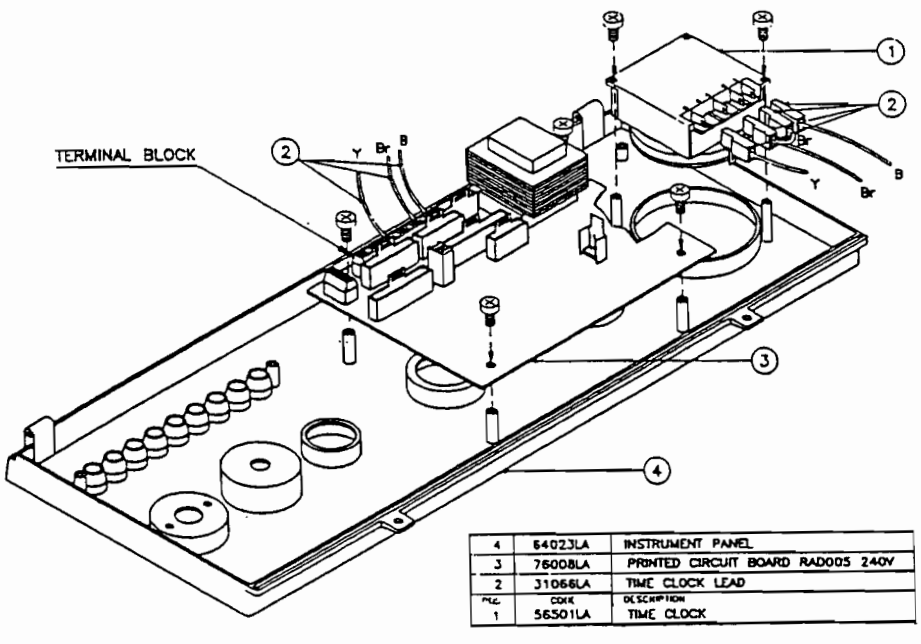
10.4. Secure clock to Control Panel using the two self tapping screws provided which screw into the two lugs on the back of the Control Panel.

10.5. Wire clock to PCB using wires and terminal as shown below:

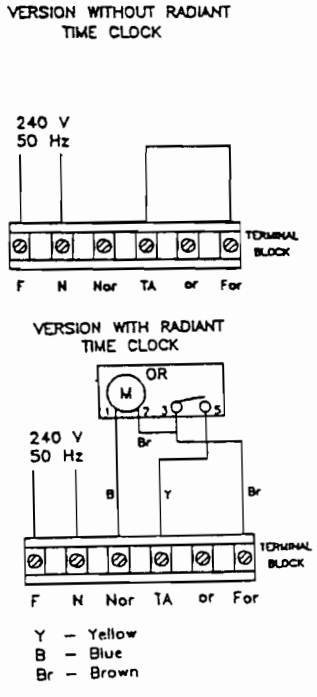
Blue wire from clock terminal 1 to PCB "NOR"
Brown wire from clock terminal 2 and 3 to PCB "FOR"
Yellow wire from clock terminal 5 to PCB "TA"

10.6. In the event that the clock has total failure, remove the three wires from Terminals 1-2 and 4 and then link Terminals 2 and 4 on main PCB RAD005. This will enable the user to have use of central heating without use of the time clock.

10.7. Time Clock Electrical Wiring: Exploded Drawing



4	64023LA	INSTRUMENT PANEL
3	76008LA	PRINTED CIRCUIT BOARD RAD005 240V
2	31066LA	TIME CLOCK LEAD
REF. 1	CODE 56501LA	DESCRIPTION TIME CLOCK



11. FITTING ROOM THERMOSTAT IN CONJUNCTION WITH RADIANT INTEGRAL CLOCK

11.1. Terminal (1) on clock to Terminal (1) on PCB (NOR)
Terminal (3) on clock to Terminal (4) on PCB (FOR)
Terminal (5) on clock to Terminal (3) on PCB (OR)
Terminal (3) on PCB must also be used to take the line out to the Room Thermostat and Terminal (2) on the PCB is then used to connect the incoming line from the Room Thermostat.

NB: The link in the PCB between Terminals 2 and 4 must be removed.

12. TIME CLOCKS FROM OTHER MANUFACTURERS WHICH MAY BE USED WITH RADIANT BOILERS

12.1. Randall 103	Clock Terminals	Boiler Terminals
ACL LP111	1 & 3	2 & 4
RWB 30		
RWB 100	2 & 4	2 & 4

12.2. If fitting a room stat without clock, use terminals 2 and 4 on boiler.

IMPORTANT: WHEN FITTING CONTROLS DESCRIBED ABOVE, THE LINK ON THE BOILER PCB BETWEEN TERMINALS 2 AND 4 MUST BE REMOVED AND NO LINK MUST BE USED IN ANY EXTERNAL CONTROLS.

13. USE OF TRIMMER ON MAIN PCB

13.1. The RSF24 has a trimmer on the main PCB to enable the output of the boiler to be adjusted to suit the size of the central heating system.

13.2. The way to adjust the output is as follows:

13.2.1. Fit a 'U' gauge to the test point on the gas valve.

13.2.2. Fire the boiler on central heating.

13.2.3. Now adjust the boiler output by use of the trimmer position on PCB as shown below, turning anti-clockwise to reduce output or clockwise to increase output. See table for adjustments:

69,352 BTU/hr	6 m bar
80,581 BTU/hr	8 m bar
88,397 BTU/hr	10 m bar
98,294 BTU/hr	12 m bar

NB: The heating adjustment must be done after the DHW has been set up and all adjustments for heating must be made with the modulation coil in place.

14. INSTRUCTIONS FOR USE OF 24 HOUR INTEGRAL TIME CLOCK

14.1. When fitted the Radiant Integral Clock has the following functions:

The switch on the top of the clock face has three settings and when set in the central position, i.e. directly above the white arrow on clock face, it is in a timed mode and the boiler will come on or go off at the time set.

By moving the switch to the right the boiler is on continuously.

By moving the switch to the left the boiler is turned off.

14.2. To set the clock for timed function, press in the small black lugs on the clock towards the face for the period of time you require the boiler to function, i.e. if you require the boiler to come on at 6 am and turn off at 8 am all lugs between 6 and 8 on the clock must be pushed in.

14.3. Your customer can now set the clock to turn on or off to suit their own requirements.

15. INSTRUCTIONS FOR USE OF DIGITAL CLOCK

See separate instructions enclosed with Digital Clock

16. PUMP REPLACEMENT

Read in conjunction with Diagram in Section 16.7.

IMPORTANT: MAKE SURE THE ELECTRICAL SUPPLY TO BOILER IS OFF

16.1. Close the flow and return isolation valve for the heating circuit (sited immediately below the boiler).

16.2. Drain the boiler by way of the 3 Bar Relief Valve (4).

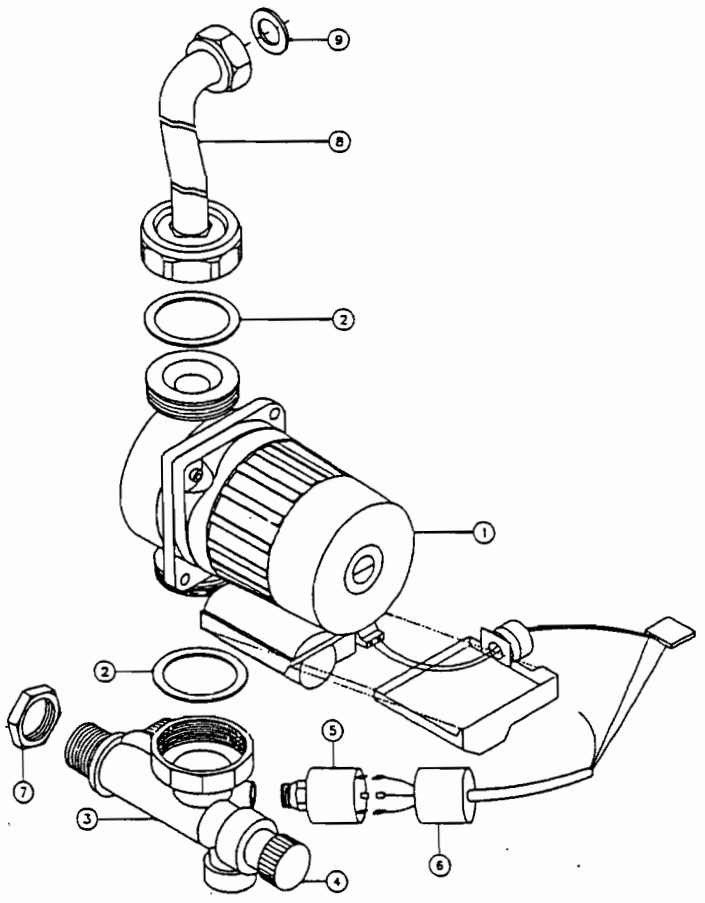
16.3. Slacken the 2 no. pump unions (10) and with a twisting movement pull the pump from the bottom towards you.

16.4. Disconnect the pump wiring from the pump terminals.

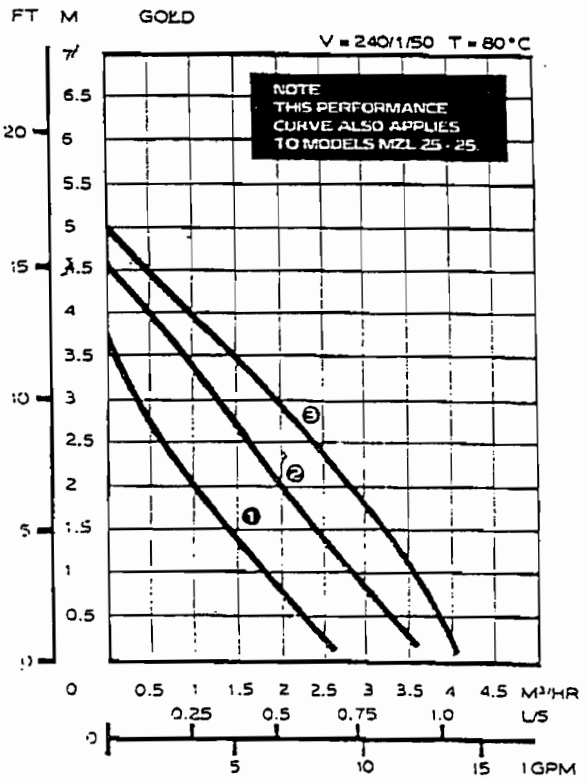
16.5. To fit the new pump reverse the removal procedure.

16.6 Always use new pump flange washers.

16.7. Circulating Pump: Exploded View



9	43001LA	3/4" WASHER
8	830121P	HEAT EXCHANGER - PUMP TUBE #18
7	34002LA	3/4" BACKNUT
6	31073LA	CIRCULATING PUMP - WATER PRESSURE SWITCH CABLE 9213
5	59003LA	WATER DEFICIENCY PRESSURE GAUGE 1/8" 5811
4	98008LA	3 BAR PRESSURE RELIEF VALVE 1/2"
3	26006LA	BOTTOM PUMP CONNECTION
2	43005LA	PUMP WASHER
ITEM	CODE	DESCRIPTION
1	24003LA	CIRCULATING PUMP SALMSON GOLD 6K



Speed	RPM	Watts Full Load Input	Current In Amps
Position I	1600	50-65	0.25
Position II	2000	65-85	0.35
Position III	2600	80-100	0.40

17. REPLACEMENT OF 3 BAR RELIEF VALVE.

Read in conjunction with Diagram at Section 16.7 and Section 18 for electrical safety.

17.1. Close the flow and return isolation valve for the heating circuit (sited immediately below the boiler).

17.2. Drain the boiler by way of the 3 Bar Relief Valve.

17.3. Release nut securing pipework to 3 Bar Relief Valve (Fig 7).

17.4. Unscrew the brass bottom pump connection union (Fig 10).

17.5. Release piped connection at rear of boiler then unscrew lock nut holding the 3 Bar Relief Valve in place.

17.6. Refit new 3 Bar Relief Valve in reverse order. *NB: Always use a new pump flange washer.*

17.7. Open isolation valves and repressurise.

18. RSF24 REPLACEMENT OF WATER DEFICIENCY SWITCH.

Read in conjunction with Diagram at 16.7.

IMPORTANT: MAKE SURE THE ELECTRICAL SUPPLY TO BOILER IS OFF

18.1. Close the flow and return isolation valves for the heating circuit (sited immediately below the boiler).

18.2. Drain the boiler by way of the 3 Bar Relief Valve (4).

18.3. Disconnect the 3 spade connectors from the W.D. switch (5).

18.4. Unscrew the W.D. switch from the body of the bottom pump connection and 3 Bar Relief Valve housing (3).

18.5. Fit new W.D. switch and reconnect wiring to switch (white cable goes to NC, Red to Con and yellow and red to ON.

18.6. Close relief valve, open the isolation valves and repressurise.

19. TO REPLACE DIVERTER VALVE FOR RADIANT RSF 24.
Read this in conjunction with diagram at Section 19.7.

19.1. Close the flow and return isolation valves for the heatint circuit, sited immediately below the boiler.

19.2. Disconnect the wiring to the Diverter Valve (fig 1) from Terminal M10 on the main PCB and the earthing wire from the earthing stud at the back on the Control Panel.

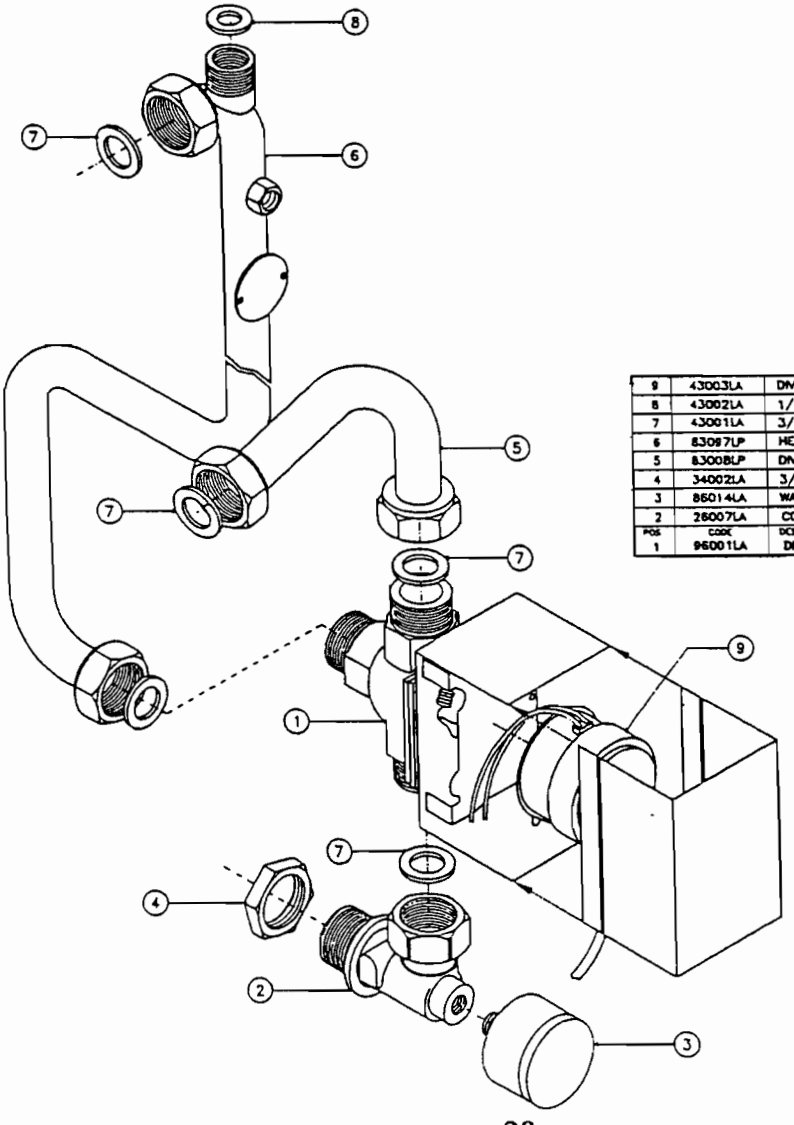
19.3. Drain the boiler by opening the 3 bar relief valve.

19.4. Remove side panel from boiler (R/H).

19.5. Disconnect the 3 pipe connections to the Diverter Valve (top, fig 5, bottom fig 2 and rear fig 6) and remove Diverter Valve from boiler.

19.6. To fit new Diverter Valve reverse the above instructions.

19.7. Diverter Valve: Exploded Drawing



POS	CODE	DESCRIPTION
9	43003LA	DIVERTOR VALVE MOTOR 240V 40002737-002
8	43002LA	1/2" WASHER
7	43001LA	3/4" WASHER
6	83087LP	HEAT EXCHANGER - DIVERTOR VALVE TUBE ø18
5	83008LP	DIVERTOR VALVE - D.H.W. EXCHANGER TUBE ø18
4	34002LA	3/4" BACKNUT
3	86014LA	WATER PRESSURE GAUGE D40P 1/8"
2	26007LA	CONNECTION BODY FOR DIVERTOR VALVE 3/4"
1	96001LA	DIVERTOR VALVE 3/4"

20. TO REMOVE BOILER CASE

Read in conjunction with diagram at Section 20.8.

20.1. Remove 4 screws from underside of bottom grill (1) and remove grill.

20.2. Pull off upper front panel (2).

20.3. Push side panels (3) outwards and pull from clips.

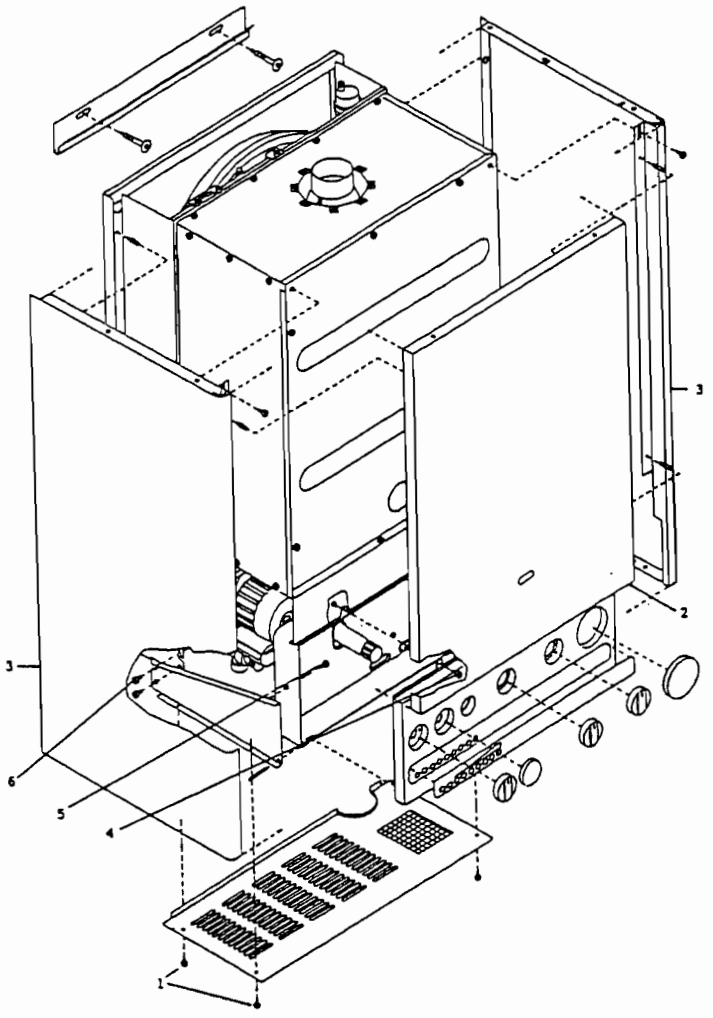
20.4. Remove 2 screws from front of ABS housing (4) and drop front panel down.

20.5. Remove 2 screws (5) from both sides of the inner ABS housing. The complete control panel will now hinge down.

20.6. Remove 2 screws from the top of ABS bracket assembly (6) and the complete housing and bracket assembly will hinge down.

20.7. To reassemble reverse the above instructions.

20.8. Boiler Case removal: Exploded drawing



21. TO REPLACE FAN ASSEMBLY

Read these instructions in conjunction with diagram at Section 21.10.

21.1. Remove internal boiler casing to expose fan assembly.

21.2. Disconnect pressure switch tubes (5).

21.3. Disconnect fan cable (6).

21.4. Take out 4 screws (9) holding the fan flange plate (7) to flue hood (8).

21.5. Remove fan and plate from boiler.

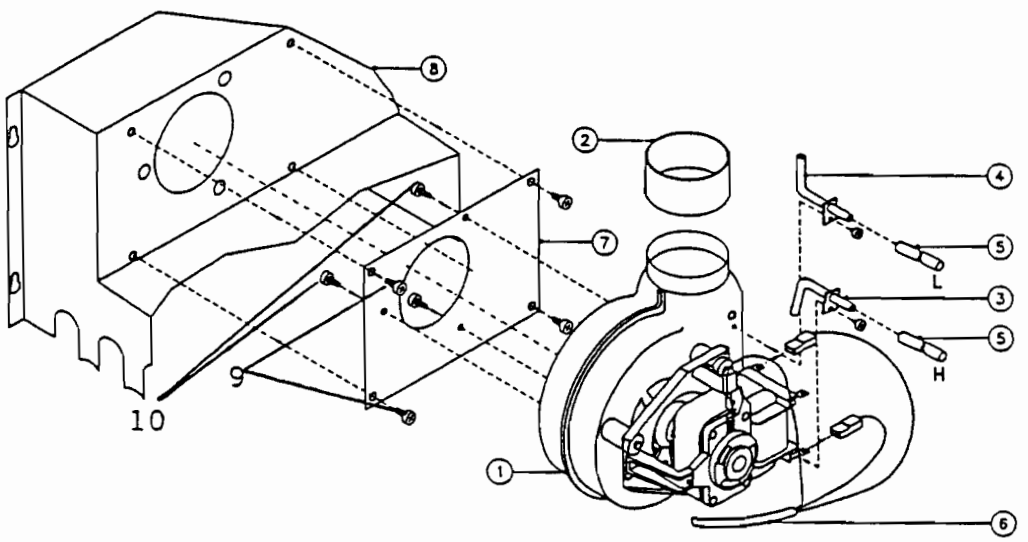
21.6. Remove fan flange plate from fan by taking out the retaining screws (10).

21.7. Remove flue collar (2) from fan.

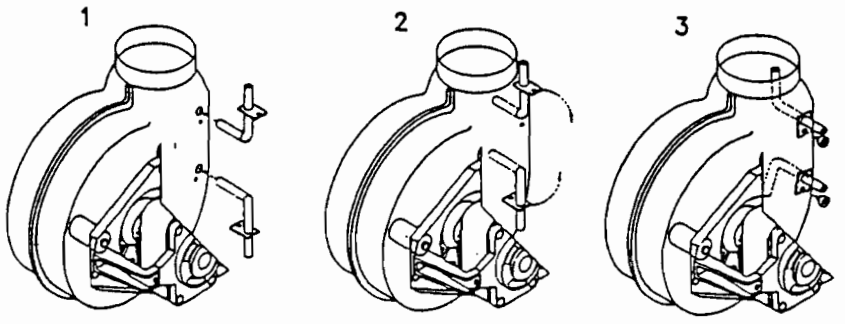
21.8. Take out the right inlet and left outlet air plugs (3 and 4).

21.9. Refit new fan in reverse order.

21.10. Exhaust fan: Exploded drawing



FITTING AND FIXING RIGHT INLET – LEFT OUTLET AIR PLUG ø6 DETAIL



POS	CODE	DESCRIPTION
10		Flange plate retaining screws
9		Fan flange plate screws
8	25022LP	Flue hood
7	40024LP	Flange 68mm
6	31067LA	Fan cable - 927
5	43018LA	Pressure switch tubes
4	57502LP	Left outlet air plug C6
3	57501LP	Right inlet air plug 6
2	10010LP	Flue collar 60mm
1	37006LA	Exhaust fan 220/240V

22. TO REPLACE MAIN HEAT EXCHANGER

Read in conjunction with Diagram at Section 22.9.

22.1. Remove the internal case of the boiler.

22.2. Take out screws from front cover combustion chamber.

22.3. Remove exhaust fan (see Section 21.10).

22.4. Take out the 4 retaining screws from back of the flue hood.

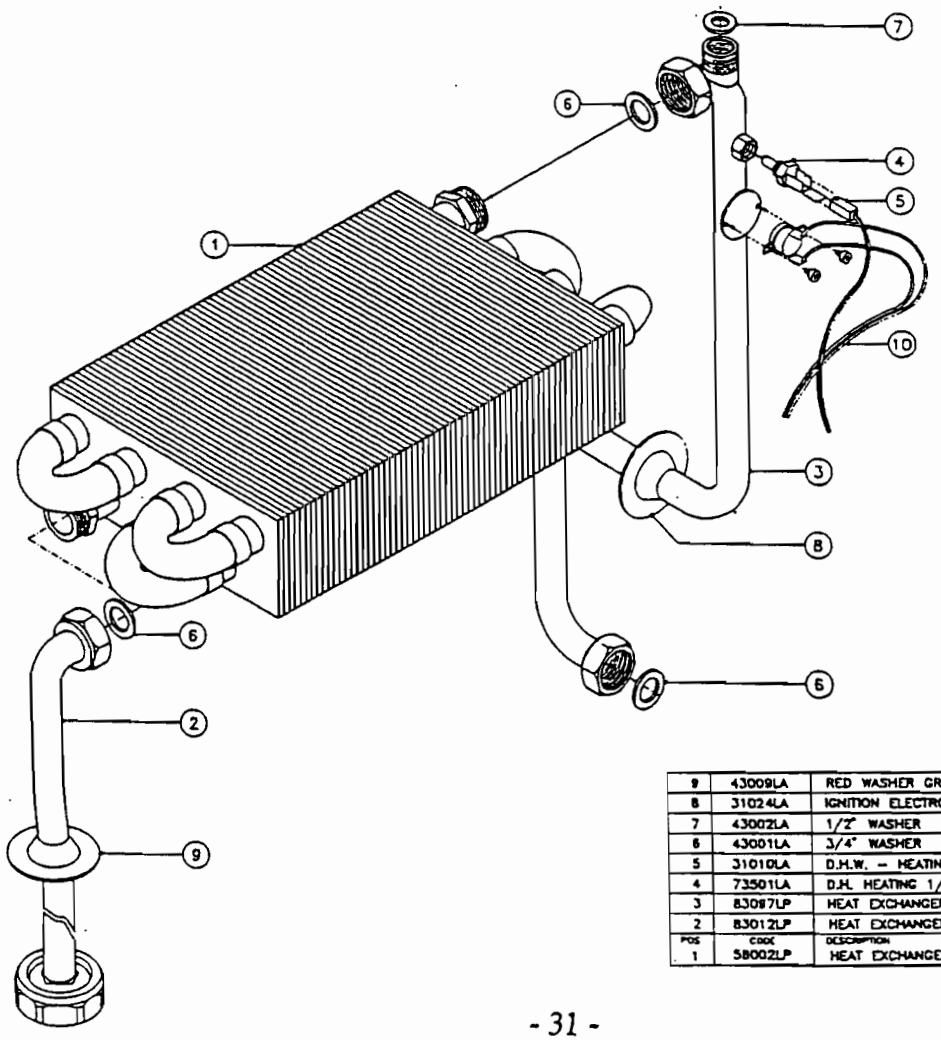
22.5. Remove flue hood.

22.6. Close the flow and return heating isolation valves. Drain boiler by way of 3 bar relief valve.

22.7. Disconnect flow and return heat exchanger unions.

22.8. Lift out heat exchanger and replace with new exchanger in reserve order of instructions above.

22.9. Heat Exchanger: Exploded drawing



9	43009LA	RED WASHER GROMMETS FB10/1
8	31024LA	IGNITION ELECTRODE CABLE GSV
7	43002LA	1/2" WASHER
6	43001LA	3/4" WASHER
5	31010LA	D.H.W. – HEATING SENSOR PROBE WIRE
4	73501LA	D.H. HEATING 1/8" SENSOR
3	83087LP	HEAT EXCHANGER – DIVERTOR VALVE TUBE #18
2	83012LP	HEAT EXCHANGER – PUMP TUBE #18
POS	CODE	DESCRIPTION
1	58002LP	HEAT EXCHANGER 625 – 24.000 K/Cal

23. REPLACEMENT OF AUTO AIR VENT

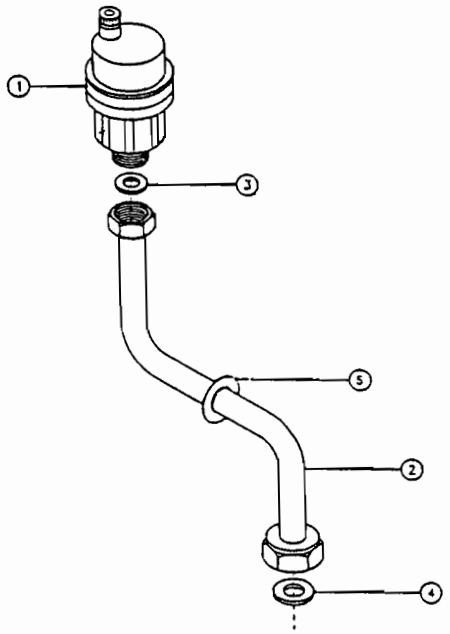
Read in conjunction with diagram at Section 23.4.

23.1. Close the flow and return heating isolation valves and drain boiler by way of 3 bar relief valve.

23.2. Unscrew auto vent (5) and replace with new part.

23.3. Open flow and return valves and re-pressurise system.

23.4. Automatic Air Vent: Exploded drawing



POS.	CODE	DESCRIPTION
5	43010LA	CONICAL RED WASHER FB11/1
4	43002LA	1/2" WASHER
3	43003LA	3/8" WASHER
2	83011LP	AUTOMATIC AIR VENT TUBE ø12
1	96003LA	AUTOMATIC AIR VENT 3/8"

24. REPLACEMENT OF D.H.W., HEATING PROBE CABLE AND SENSORS

Read in conjunction with Diagram at Section 24.7.

24.1. Remove the outer case of the boiler (see Section 30).

24.2. Remove the front cover of the internal case of the boiler.

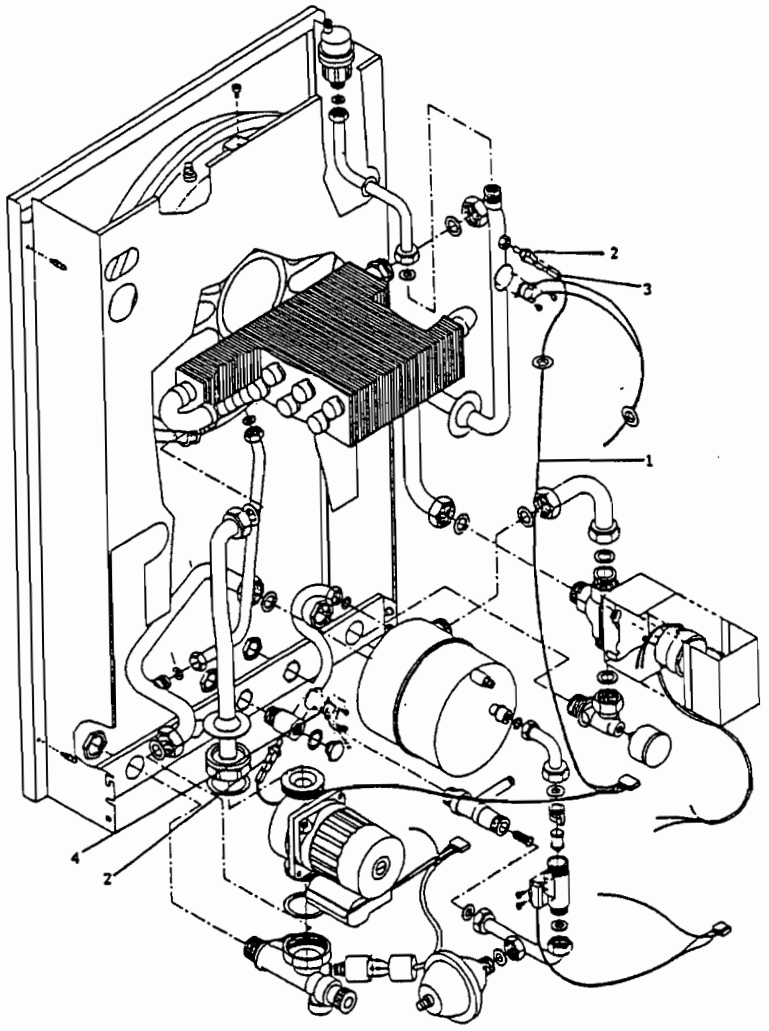
24.3. Close the flow and return isolation valves to the heating circuit and also the isolation valves to the incoming cold mains to the boiler.

24.4. Drain the boiler by way of the 3 Bar Relief valve and open a hot water tap to relieve any back pressure from the DHW system.

24.5. (Read in conjunction with diagram at Section 24.7.) Pull off the leads (1) to the DHW sensor and/or CH Sensor (2) and then take out the DHW or CH 1/8" sensors and replace same. Also remove cable plug from PCB RAD005 (M5 on PCB) and replace with new one.

24.6. To refit new sensors or cable fit in reverse order.

24.7. Replacement of DHW and Heating probe cable and sensors: Exploded drawing



25. TO REPLACE THERMOCOUPLE/LIMIT STAT

Read in conjunction with diagram at Section 9.7.

25.1. Remove boiler casing.

25.2. Remove front panel of combustion chamber.

25.3. Remove limit stat from heating flow pipe on heat exchanger.

25.4. Pull thermocouple tip down from retaining clip on pilot assembly (see Section 9.3.)

25.5. Disconnect thermocouple union from rear of gas valve.

25.6. To fit new part, reverse the instructions.

25.7. The millivolt range of the thermocouple is 27.5.

26. REPLACEMENT OF AIR PRESSURE SWITCH

Read in conjunction with diagram at 26.6.

26.1. Switch off 240 volt electrical supply to the boiler.

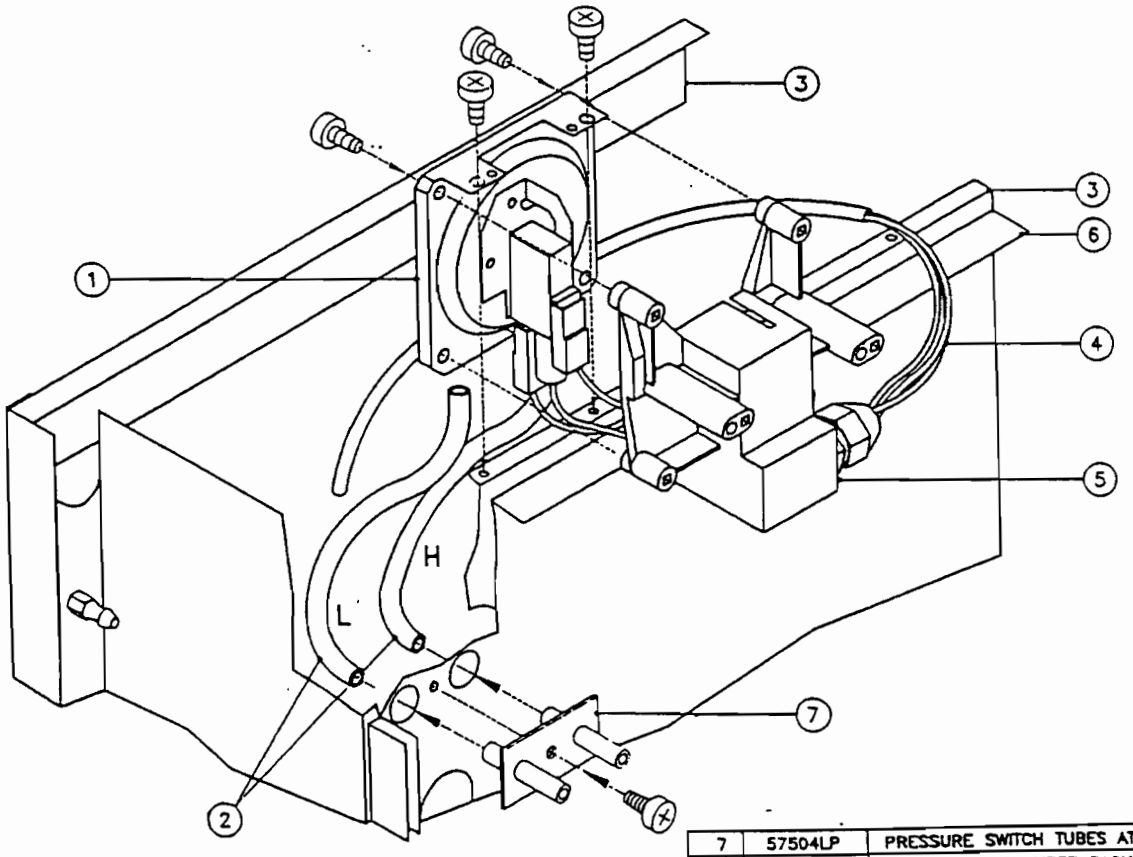
26.2. Remove the two screws holding the air pressure and cover to the top of the boiler (position 8).

26.3. Remove the two screws (position 9) holding the cover to the air pressure switch.

26.4. Pull off the air tubes (position 2). Also pull off the spade connectors (position 10). Remove the air pressure switch from the boiler and fit new switch.

26.5. To fit new air pressure switch, reverse the removal procedure.

26.6. Air Pressure Switch: Exploded drawing



POS.	CODE	DESCRIPTION
7	57504LP	PRESSURE SWITCH TUBES ATTACHMENT
6	28010LA	ROOM-SEAL CHAMBER BACKPLATE
5	28504LP	AIR PRESSURE SWITCH COVER
4	31065LA	AIR PRESSURE SWITCH CABLE - 925
3	79001LP	FRAME
2	43018LA	PRESSURE SWITCH TUBES
1	59006LA	AIR PRESSURE SWITCH C6065A1010

27. REPLACEMENT OF ELECTRONIC FLOW SWITCH

Read in conjunction with diagram at 27.6.

27.1. Isolate the electrical supply to the boiler.

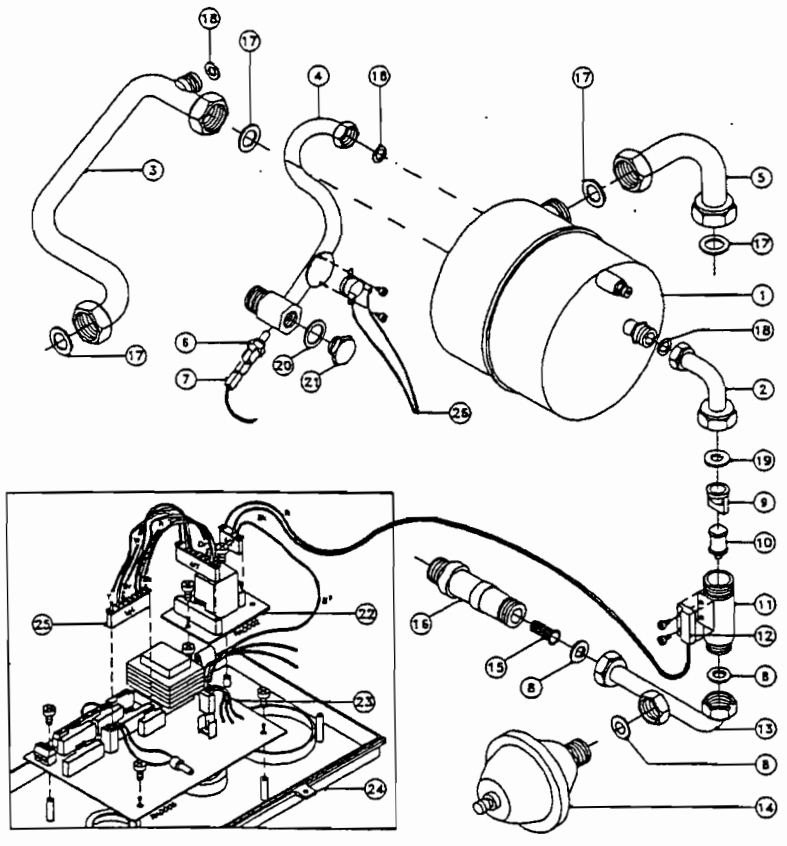
27.2. Turn off the incoming mains water supply to the boiler.

27.3. Disconnect the flow switch tube (position 2) from the D.H.W. heat exchanger and also disconnect the cold water inlet tube (position 13) from the bottom of the flow switch.

27.4. Unplug the flow switch microlead (position 12) from the flow switch P.C.B. Rad 002 (position 22) and take the blue wire out of Terminal M10 on the main P.C.B. Rad 005 (position 23).

27.5. To fit new flow switch, reverse the removal procedure.

27.6. Electronic flow switch: Exploded drawing



26	87002LA	TERMOCOUPLE ZTE L=510
25	31070LA	FLOWSWITCH P.C.B. RAD2 LEAD
24	64023LA	INSTRUMENT PANEL
23	76608LA	PRINTED CIRCUIT BOARD RAD005 240V
22	76606LA	FLOWSWITCH PRINTED CITCUIT BOARD RAD2
21	89030LA	BRASS COVER 3/8"
20	43031LA	BRASS COVER WASHER IN "K/O/S" mm. 23.50x17x1.50
19	43061LA	FLOWSWITCH WASHER IN "K/O/S" mm. 22x10.50x1.50
18	43003LA	3/8" WASHER
17	43001LA	3/4" WASHER
16	88003LA	D.H. WATER CONNECTION
15	41015LA	FLOW SWITCH FILTER
14	85005LA	1/2" STEEL EXPANSION TANK
13	83008LP	COLD WATER INLET TUBE D.12
12	31081LA	FLOWSWITCH MICROLEAD
11	32001LA	FLOWSWITCH BODY
10	81004LA	FLOWSWITCH PISTON
9	81005LA	PISTON STOP
8	43002LA	1/2" WASHER
7	31010LA	D.H.W. - HEATING SENSOR PROBE WIRE
6	73501LA	D.H. WATER 1/8" SENSOR
5	83008LP	DIVERTOR VALVE - D.H.W. EXCHANGER TUBE D.18
4	83033LP	D.H. WATER TUBE D.12
3	83007LP	PRIMARY TUBE D.18
2	83029LP	D.H. WATER EXCHANGER - FLOWSWITCH TUBE D.12
1	20002LA	D.H.WATER EXCHANGER D.12

28. REPLACEMENT OF D.H.W. HEAT EXCHANGER

Read in conjunction with Diagram at Section 28.7.

28.1. Switch off 240 volt electrical supply to the boiler.

28.2. Close the central heating isolation valves on the flow and return.

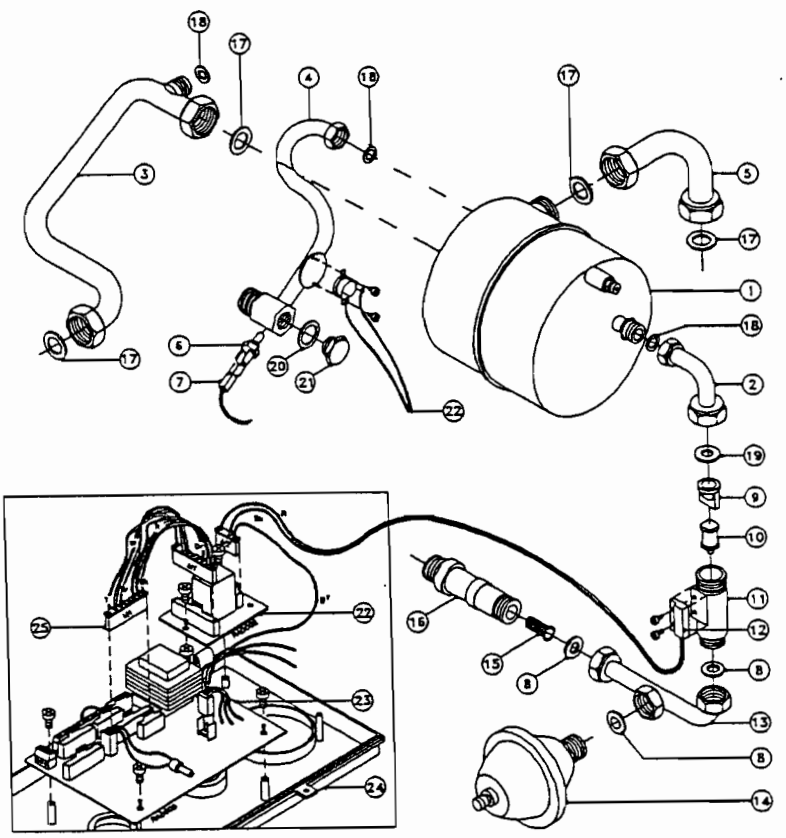
28.3. Close the incoming cold water supply to the boiler via the isolation valve.

28.4. Drain the boiler by opening the 3 Bar Relief Valve.

28.5. Disconnect the four pipes (positions 2, 3, 4, 5) from the exchanger and now take out the D.H.W. exchanger from the boiler.

28.6. To fit new D.H.W. exchanger reverse the removal procedure.

28.7. DH Water Exchanger: Exploded drawing



22	87002LA	TERMOCOUPLE ZTE L=510
21	88030LA	BRASS COVER 3/8"
20	43031LA	BRASS COVER WASHER IN "K/0/S" mm. 23.50x17x1.50
19	43061LA	FLOWSWITCH WASHER IN "K/0/S" mm. 22x10.50x1.50
18	43003LA	3/8" WASHER
17	43001LA	3/4" WASHER
16	88003LA	D.H. WATER CONNECTION
15	41015LA	FLOW SWITCH FILTER
14	85005LA	1/2" STEEL EXPANSION TANK
13	83008LP	COLD WATER INLET TUBE D.12
12	31061LA	FLOWSWITCH MICROLEAD
11	32001LA	FLOWSWITCH BODY
10	81004LA	FLOWSWITCH PISTON
9	81005LA	PISTON STOP
8	43002LA	1/2" WASHER
7	31010LA	D.H.W. - HEATING SENSOR PROBE WIRE
6	73501LA	D.H. WATER 1/8" SENSOR
5	83008LP	DIVERTOR VALVE - D.H.W. EXCHANGER TUBE D.18
4	83033LP	D.H. WATER TUBE D.12
3	83007LP	PRIMARY TUBE D.18
2	83029LP	D.H. WATER EXCHANGER - FLOWSWITCH TUBE D.12
1	20002LA	D.H.WATER EXCHANGER D.12

29. REPLACEMENT OF HEATING EXPANSION VESSEL

Read in conjunction with diagram at Section 29.7.

29.1. The expansion vessel is situated at the rear of the boiler. Under certain installation conditions the boiler must be removed from the wall to allow the replacement of the expansion vessel. However, the following conditions allow you to replace the expansion vessel in situ.

29.2. If the flue is exiting to the rear of the boiler, you have to remove the boiler from the wall or fit a separate expansion vessel within the system.

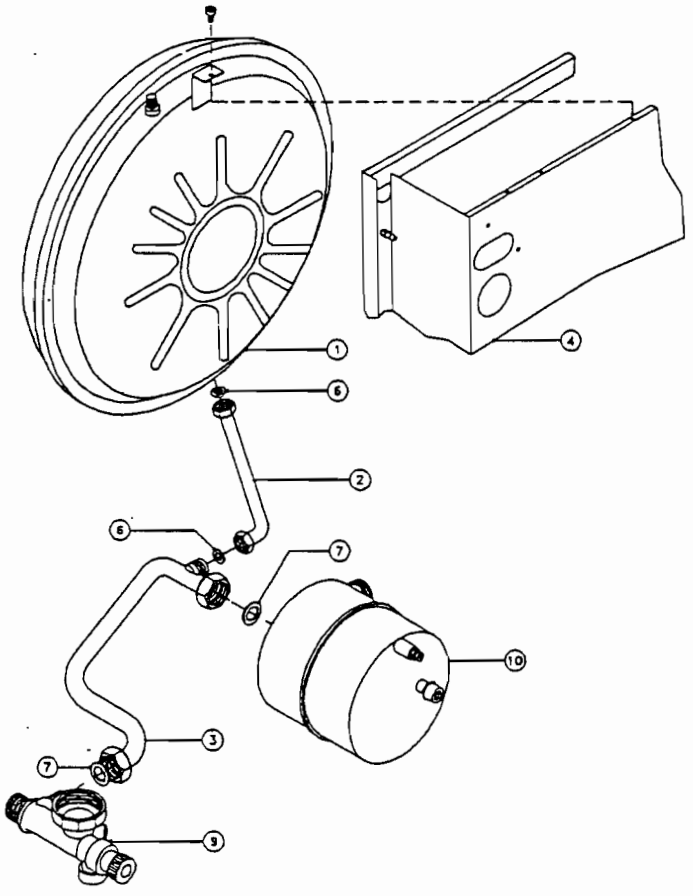
29.3. If the flue is exiting to the left or right of the boiler and there is a minimum of 400mm above the top of the boiler, proceed as follows.

29.4. Close the flow and return isolation valves on the heating circuit on the boiler, then draw the boiler by way of opening the 3 Bar Relief Valve.

29.5. Remove the pump complete.

29.6. Disconnect the expansion pipe (position 2) then remove screw retaining vessel to rear of boiler (position 5). Now remove the expansion vessel and refit new expansion vessel in reverse order of removal.

29.7. Expansion Vessel: Exploded drawing



POS	CODE	DESCRIPTION
10	20002LA	D.H.W. EXCHANGER
9	26013LA	BOTTOM PUMP CONNECTION
8	43002LA	1/2" WASHER
7	43001LA	3/4" WASHER
6	43003LA	3/8" WASHER
5	79001LP	FRAME
4	83033LP	D.H. WATER TUBE ø12
3	83007LA	PRIMARY TUBE ø18
2	83010LP	EXPANSION VESSEL TUBE ø12
1	95001LA	EXPANSION VESSEL 8 lt.

30. REPLACEMENT OF COMBUSTION CHAMBER INSULATION PANELS

To be read with diagram at Section 30.10.

30.1. To replace the insulation panels inside the combustion chamber proceed as follows.

30.2. Take out the six screws (position 15) which hold the combustion chamber front cover and right hand side panel and then remove the front cover and side (position 4) and also the electrical wiring protection plage (position 6).

30.3. Take out the screws from the combustion chamber front plate (position 12) and remove.

30.4. Remove exhaust fan (see Section 20).

30.5. Take out the 4 retaining screws from back of flue hood and remove flue hood.

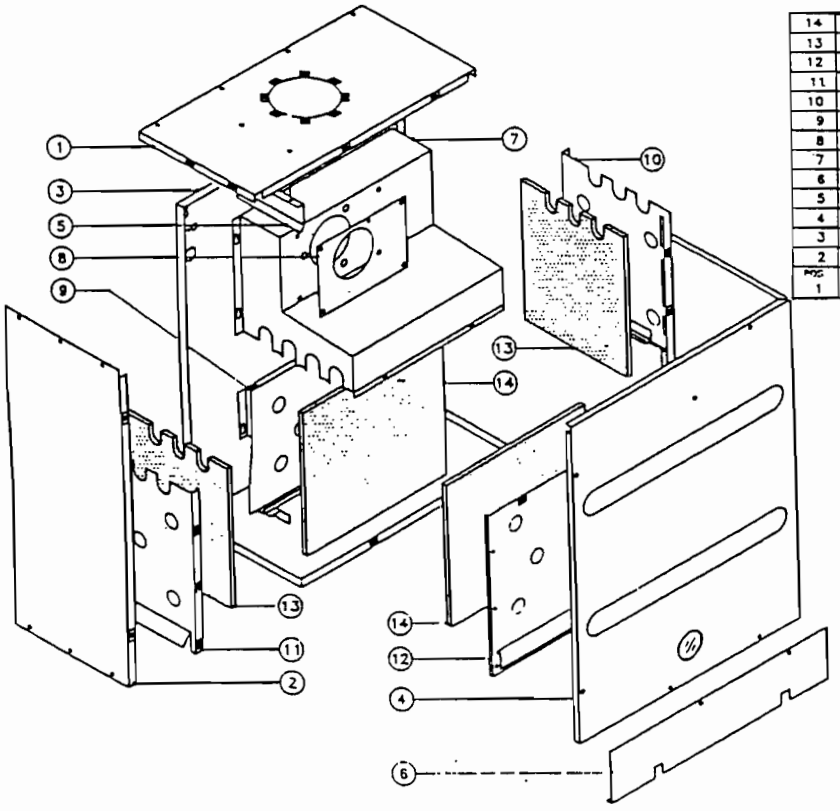
30.6. Close the flow and return heating isolation valves. Drain boiler by way of 3 Bar Relief Valve.

30.7. Disconnect flow and return heat exchanger unions and lift out the heat exchanger.

30.8. At this point you are now able to replace all the ceramic fibre insulation panels.

30.9. To refit components reverse the instructions.

30.10. Combustion Chamber: Exploded drawing



POS	CODE	DESCRIPTION
14	40016LA	CERAMIC FIBRE 210x275
13	43015LA	CERAMIC FIBRE 210x200
12	30014LP	COMBUSTION CHAMBER FRONT PANEL
11	30012LP	COMBUSTION CHAMBER LEFT PANEL
10	30013LP	COMBUSTION CHAMBER RIGHT PANEL
9	30015LP	BACK PIECE
8	40024LP	FLANGE ø68
7	25022LP	FLUE HOOD
6	62030LP	ELECTRICAL WIRING PROTECTION PLATE
5	34517LP	DEFLECTOR PLATE
4	28501LP	ROOM – SEAL CHAMBER COVER
3	28504LP	ROOM – SEAL CHAMBER BACKPLATE
2	28503LP	ROOM – SEAL CHAMBER LEFT PANEL
1	28502LP	ROOM_SEAL CHAMBER TOP

31. REPLACEMENT OF GAS VALVE

Read in conjunction with diagram at Section 31.9.

31.1. Turn off the gas supply to the boiler and isolate the electrical supply.

31.2. Take off the micro transformer switch/cable (position 9).

31.3. Take off the modulating coil (position 14) and pull off the spade connectors (position 16) from the solenoid.

31.4. Disconnect the pilot tube (position 4) from the gas valve body.

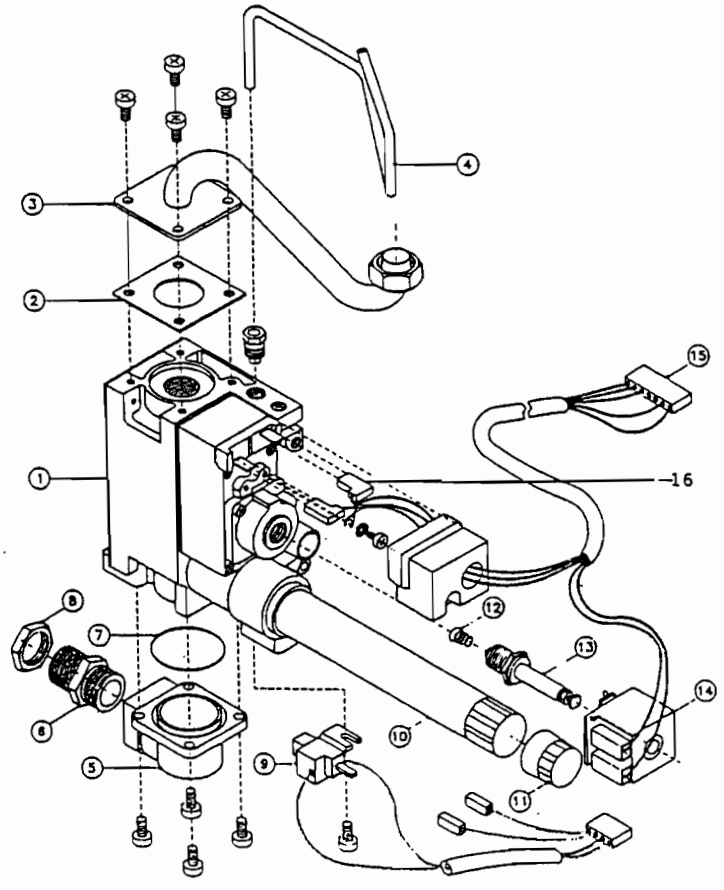
31.5. Disconnect the nut holding the gas inlet tube to the main burner (position 3).

31.6. Take out the 4 no. screws holding the gas valve to the remale flange elbow (position 5). Now remove the gas valve from the boiler and also disconnect the thermocouple from the back of the gas valve.

31.7. Take the brass cored modulating unit from the gas valve (position 13) and also the modulation spring (position 12).

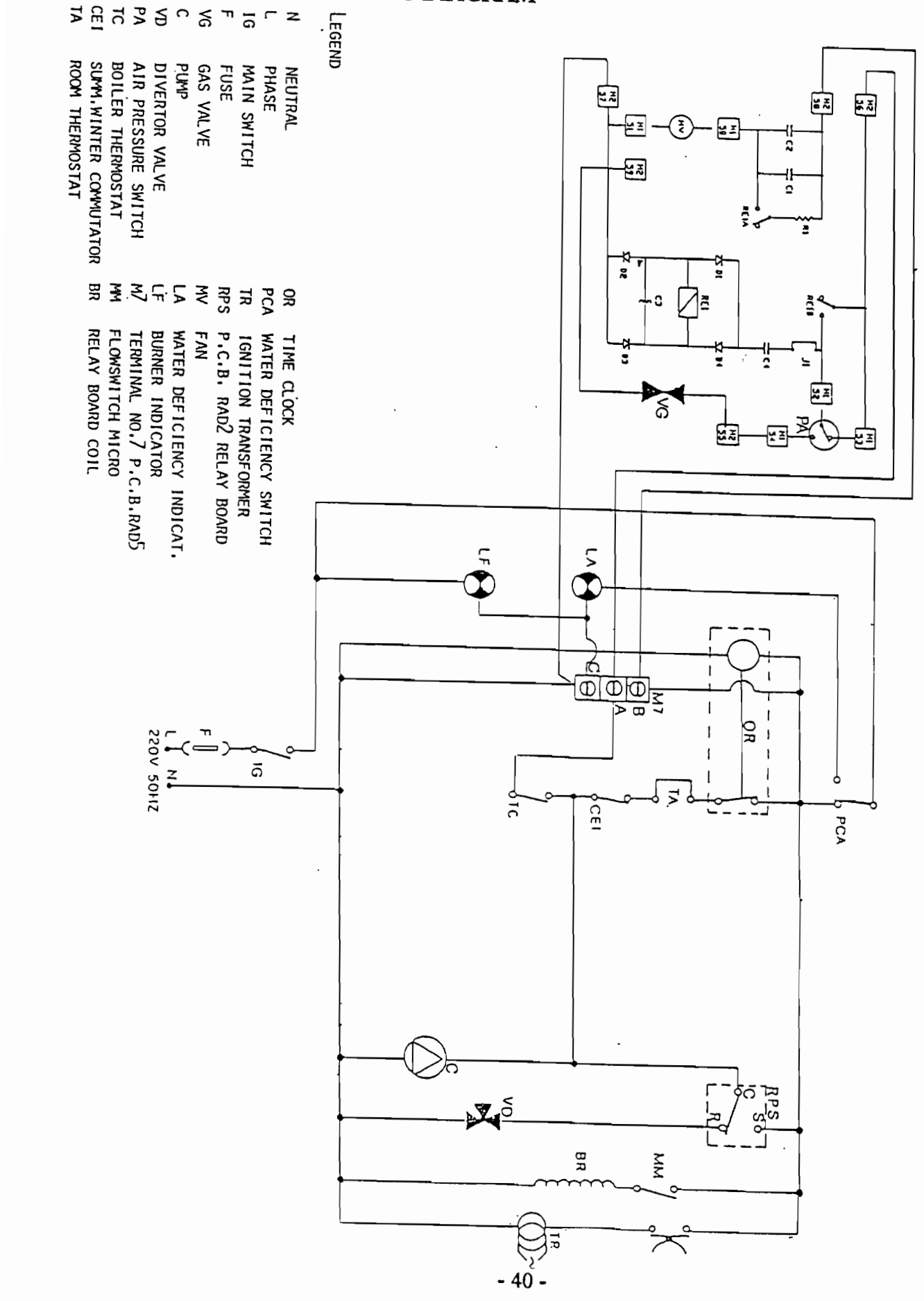
31.8. To fit new gas valve reverse the removal procedure and then set the gas ratings to 14.6M Bar high 5.3M Bar low (see relevant instructions in Section 6.3.).

31.9. Gas Valve: Exploded View



POS	CODE	DESCRIPTION
16		SPADE CONNECTOR
15	31062LA	GAS VALVE V4600 LEAD
14	18003LA	MODULATING COIL
13	97007LA	MODULATING UNIT
12	54008LA	NATURAL GAS MODULATING SPRING
11	89019LA	PILOT GAS VALVE IGNITION BUTTON COVER
10	55008LA	PILOT GAS VALVE IGNITION BUTTON
9	31068LA	MICRO - TRASFORMER CABLE RAD928
8	34001LA	1/2" BACKNUT
7	43055LA	1/2" O-RING WASHER
6	56009LA	1/2" NIPPLE
5	40015LA	FLANGE 1/2" FEMALE ELBOW V.G. V4600
4	84002LP	PILOT TUBE #6
3	84003LP	GAS TUBE #14 (PILOT GAS VALVE)
2	43004LA	GAS TUBE WASHER 45x45
1	36001LA	NATURAL GAS VALVE V4600 C1029B

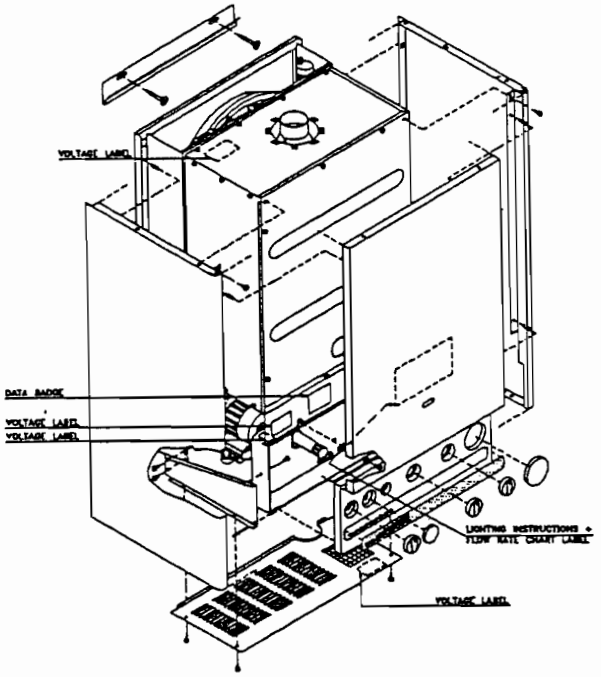
32. ELECTRICAL WIRING DIAGRAM



33. FAULT FINDING

FAULT	POSSIBLE CAUSE	REMEDY
1. Pilot will not light	No power to boiler	Check fuse
	No gas to boiler	Check supply
	Is green light showing?	Repressure system to 1.5 bar
	Pilot jet blocked	Clean it
	Ignition electrode broken	Replace it
	Faulty ignition lead	Replace it
	Faulty ignition transformer	Replace it
	Faulty ignition micro unit	Replace it
2. Pilot lights but when ignition button is released it goes out	Thermocouple/limit stat faulty	Replace it
	Pilot flame not strong enough	Clean and adjust
	Faulty gas valve	Replace it
3. Boiler will not fire - pilot is established but not power to circuits	If green light is showing, no power to boiler	Repressure system to 1.5 bar and check fuses
4. Boiler will not fire to give hot water	Faulty DHW Sensor	Replace it
	Faulty main PCB	Replace it
	Sticking micro flow switch	Clean and check
	Faulty DHW relay PCB	Replace it
5. Boiler fires continuously in DHW mode and will not modulate or change over to C/H	Faulty DHW relay PCB	Replace it
	Micro flow switch (shorting out)	Replace it
	Micro flow switch leads damaged	Replace them
6. Boiler fires in C/H mode but heating does not come on	Diverter valve failed or stuck	Free and clean and replace
	Jammed pump or failed	Free or replace it
7. Boiler fires in C/H mode but will not shut down	Faulty heating sensor	Replace it
	Faulty heating stat on main PCB	Replace main PCB
8. Boiler will not fire in any position	Faulty fan	Replace it
	Faulty fan relay board	Replace it
	Faulty air switch	Replace it
	Faulty main PCB	Replace it
9. If by turning Summer/ Winter control whilst in C/H mode, boiler goes out	Clock has been wired wrongly	Recheck and rewire clock
10.Boiler fires but goes to lock out on overheat	Jammed pump or failed	Free and clean or replace it

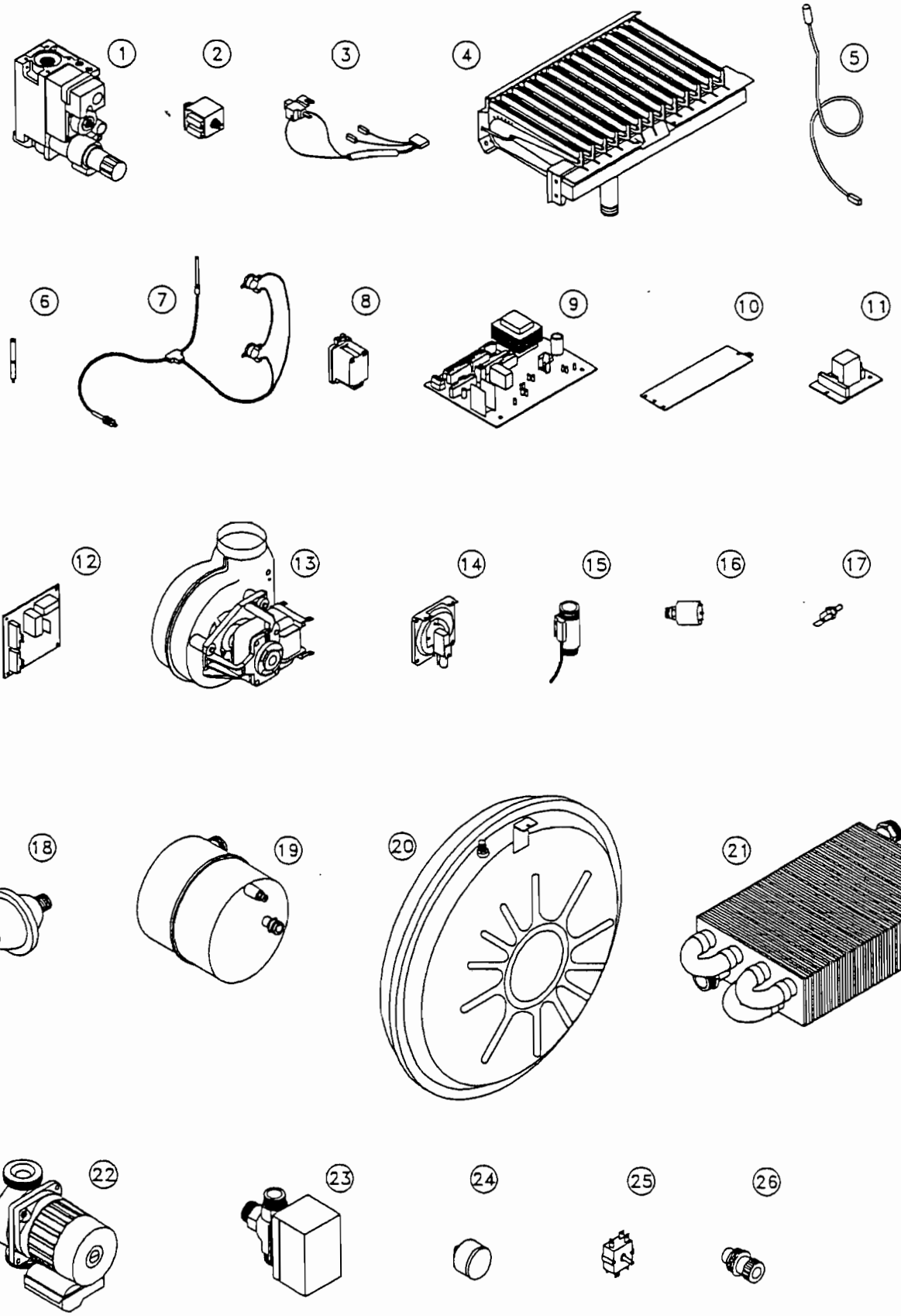
34. LABEL LOCATION DIAGRAM



35. SHORT PARTS LIST

	DESCRIPTION	PART NO.
1.	Natural gas valve (V4600 C1029B)	36001LA
2.	Pressure modulator	53008LA
3.	Micro-transformer lead	31068LA
4.	Main burner	21001LA
5.	Ignition electrode cable	31024LA
6.	Ignition electrode	35008LA
7.	Thermocouple	87002LA
8.	Ignition transformer	88001LA
9.	Main PCB RAD5	76609LA
10.	Temperature indicator PCB	76607LA
11.	Flowswitch PCB RAD2	76606LA
12.	Fan-air pressure switch PCB	76612LA
13.	Exhaust fan	37008LA
14.	Air pressure switch	59006LA
15.	Flowswitch and micro lead	96007LP
16.	Water deficiency pressure switch	59006LA
17.	DHW - heating sensor	73501LA
18.	DHW - expansion vessel	95005LA
19.	DHW exchanger	20002LA
20.	Heating expansion vessel 8 lt.	95011LA
21.	Heat exchanger	58002LP
22.	Pump	24008LA
23.	Diverter valve	96001LA
24.	Water pressure gauge	86014LA
25.	Summer/Winter control switch	47015LA
26.	3 bar pressure relief valve	96008LA

35. PARTS DIAGRAMS



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