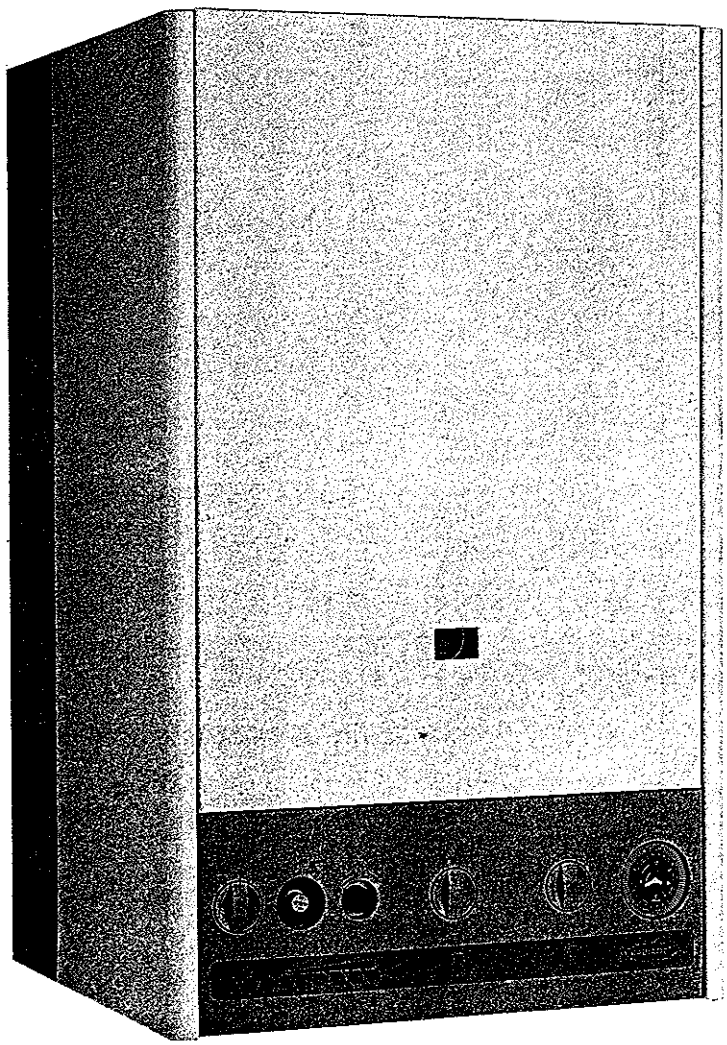
RADIANT BRUCIATORI s.r.l.

INSTALLATION INSTRUCTION FOR RADIANT RCM - RCMF AND RSF RANGE OF WALL HUNG, GAS FIRED COMBINATION BOILERS



This appliance must be installed in accordance with the relevant Codes of Practice by British Gas and by an authorized C.O.R.G.I. installer

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

Combined Appliances for Heating and Domestic Hot Water
RCM 24 (9.3 TO 24.4 Kw)
Open Flued, Wall Hung Combi Boiler
RCMF 24 (9.3 TO 24.4 Kw)
Fan Assisted Open Flue, Wall Hung Combi Boiler
RSF 24 (9.3 TO 27.0 Kw)
Room Sealed Fanned Flue Wall Hung Combi Boiler

CONTENTS

1 INTRODUCTION

The Radiant Combi Boiler is a wall-mounted boiler with built in instantaneous domestic hot water heater.

Output Ratings are shown in "Technical Data".

The Boiler is designed for use in a sealed or open vented system with pumped circulation and includes the instantaneous hot water system.

Circulation pump, Expansion Vessel, (for sealed system only), Terminal Box, Control and Safety devices with the appliance.

The appliance range covered by this booklet consists of the following three boilers:

a) RCM 24

The RCM 24 is a wall hung, open flued appliance with a rated input of 27.2 Kw (93.000 Btu/hr) and a maximum heating output of 24.4 Kw (83.000 BTU/hr).

b) RCMF 24

The RCMF 24 is a wall hung, fan-assisted, open flued appliance with a rated input of 27.2 Kw (93.000 Btu/hr) and a maximum heating output of 24.4 Kw (83.000 Btu/hr).

c) RSF 24

The RSF 24 is a wall-hung, room sealed fanned Flue appliance with a rated input of 29.8 Kw (102.000 Btu/hr) and a maximum heating output of 27.0 Kw (92.100 Btu/hr).

2 GENERAL REQUIREMENTS

a) Related Documents

The installation of the Combi 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 undertaking.

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:

CP 331	:	Installation of pipes and meters for town gas. PART 3: Low pressure Installation Pipes
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	:	Centralized Hot Water Supply PART 1: Individual Dwellings 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	:	1979 Installation of Gas Hot Water supplies for domestic purposes

It is the law that all gas appliances are installed by competent persons in accordance with the above regulations.
Failure to install appliances correctly could lead to prosecution. This is in your own interest and that of safety to ensure that the law is complied with.

b) **Location**

(i) **RCM 24 AND RCMF 24 (NON ROOM SEALED APPLIANCES)**

The location chosen for the Combi Boiler must permit the provision of a satisfactory flue and adequate air supply.
The location must also provide adequate space for servicing and air circulation around the appliance.

The Combi Boiler must not be installed in a room containing a bath or shower. In addition the Combi Boiler should not be fitted in a bedroom or a garage. Where the installation of the Combi Boiler will be in an unusual position, special procedures may be necessary and BS 5376: 2 and BS 5546 give detailed guidance on this aspect. A compartment used to enclose the Combi Boiler must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used provided that it is modified for the purpose.

Details of essential features of cupboard/compartment design including airing cupboard installations are given in BS 5376: 2

(ii) **RSF 24 (ROOM SEALED APPLIANCE)**

The location chosen for the Combi Boiler must permit the provision of a satisfactory flue terminal. The location must also provide adequate space for servicing and air circulation round the heater.
The Combi Boiler may be installed in any room, although particular attention is drawn to the requirements of the I.E.E. Regulations and, in Scotland, the electrical provisions of the Building Regulations, with respect to the installation of the Combi Boiler in a room containing a bath or a shower.

Where the installation of the Combi Boiler will be in an unusual location, special procedures may be necessary and BS 5546: 2 give detailed guidance on this aspect.

A compartment used to enclose the Combi Boiler must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used provided that it is modified for this purpose.

Details of essential features of cupboard/compartment designs including airing cupboard installations are given in BS 5376: 2.

c) **Gas Supply**

i) **Service Pipes**

The local gas region should be consulted at the installation planning stage in order to establish the availability of an adequate supply of gas.

An existing service pipe must not be used without prior consultation with the local gas region.

ii) **Meters**

A gas meter is connected to the service pipe by the local gas region or a 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.

iii) **Installation Pipes**

Installation pipes should be fitted in accordance with CP 331:3 pipework from the meter to the Combi Boiler must be of an adequate size. Do not use pipes of a smaller size than the Combi Boiler gas connection.

The complete installation must be tested for soundness as described in the above Code.

d) **Flue System**

i) **RCM 24 and RCMF 24 (open flued, non room Sealed Appliances)**

Detailed recommendations for fluing are given in BS 5440:1.
The following notes are intended to give general guidance. The flue should terminate in accordance with the relevant recommendations given in BS 5440:1 Table 4. The point of termination must not be within 600 mm (2ft) of an openable window, air vent or any other ventilation opening.

ii) **RSF 24 (Room sealed Fanned Flue Appliance)**

The boiler must be installed so that the flue terminal exposed is to the external air.

Termination should be on a clear expanse of wall; the terminal being preferably not less than 600 mm (2ft) away from a corner, a recess or a projection.

Do not install the terminal:

a) Within 300 mm (1 ft) measured vertically from the bottom of an openable window; air vent, or any other ventilation opening

b) Within 300 mm (1 ft) above adjacent ground level

c) Within 600 mm (2 ft) of any surface facing the terminal

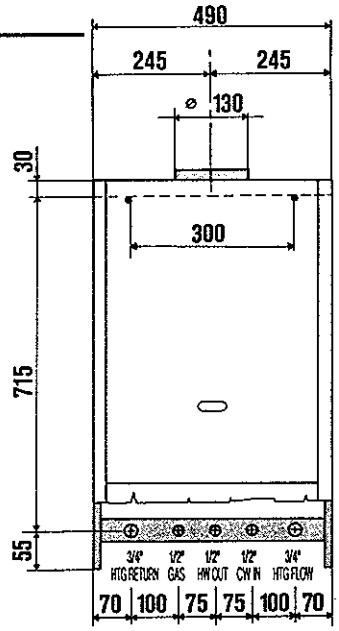
d) Immediately beneath eaves or a balcony

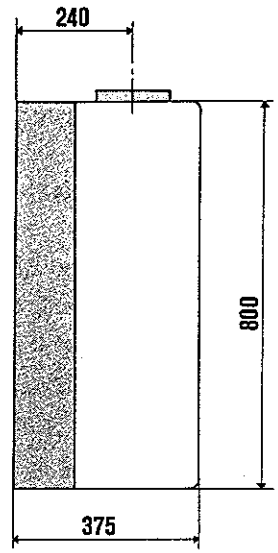
Where the lowest part of terminal is less than 2m (6.6 ft) above the level of any ground, balcony, flat roof or place to wich people have access, the terminal must be protected by a guard of durable material

The air inlet/products outlets duct of the terminal of the boiler must not be closer than 50 mm (2 in) to combustible material

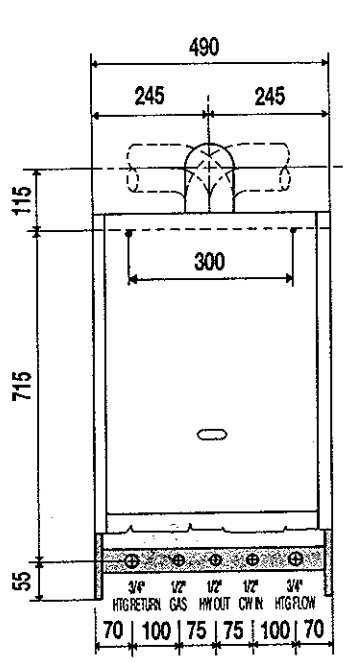
- See overall dimensions and functioning diagrams in the next page.

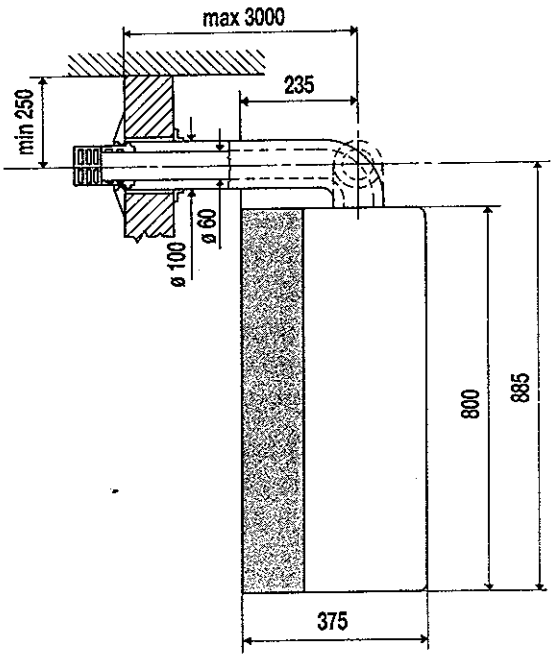
R - RCM



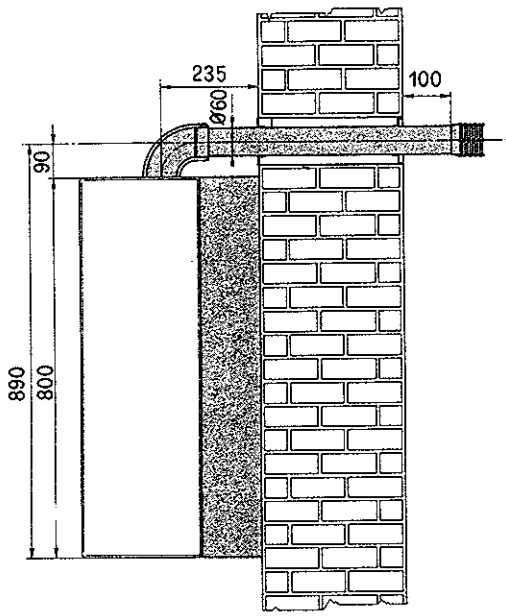


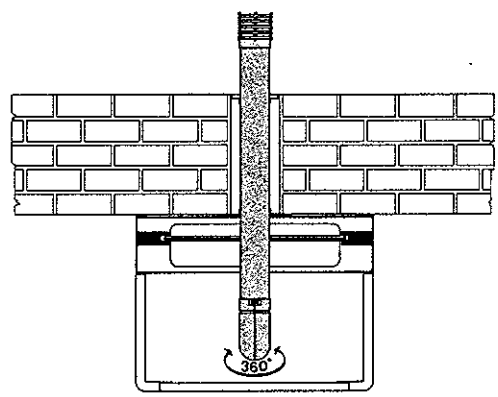
RS - RSF





RF - RCMF





Detailed recommendations on protection of combustible material are given in BS 5440:1

e) **Air Supply**

Detailed recommendations for air supply are given in BS 5440:2.

The following notes are intended to give general guidance.

i) **Room or Space Air Supply**

The room or space in which the boiler is located must have a permanente air vent. This vent must be either direct to the outside air or to an adjacent room or internal space which must itself have a permanent air vent of at least the same size direct to the outside air. The minimun effective area of permanent air vent(s) is specified below and is related to the maximum rated Heat Input of the Unit.

Appliance	cm^2	in^2
RCM 24	130	20
RCMF 24	130	20

The room sealed fanned flue Combi Boiler, RSF 24, does not require the room or internal space to have a permanent air vent.

ii) **Cupboard or Compartment Air Supply**

Where the Combi Boiler is to be installed in a cupboard or Compartment, permanent air vents are required (for cooling purposes and in the case of open flued appliances also for combustion and flue dilution) in the cupboard or compartment at high and low level. These air vents must either communicate with the room or internal space or be direct to outside air.

The minimum effective areas of the permanent air vents required in the cupboard or compartment are specified below and are related to the maximum rated heat input of the unit.

Position of Air Vents **Air Vent Areas**

		Air from room or internal space		Air direct from outside	
		cm^2	in^2	cm^2	in^2
High Level	RCM 24	320	50	160	25
	RCMF 24	320	50	160	25
	RSF 24			140	21
Low Level	RCM 24	640	100	320	50
	RCMF 24	640	100	320	50
	RSF 24			250	38

Both Air Vents must communicate with the same room or internal space or must be both on the same wall to the outside air.
Where cupboard or compartment air vents communicate with the room or internal space the room or internal space must itself have a permanent air vent(s).

iii) **Effect of Extractor Fan**

If there is any type of extractor fan fitted in the premises there is the possibility that if adequate air inlet area from outside is not provided, spillage of the products from the open flued Combi Boilers flue could occur when the extractor fan is in operation. Where such installations occur a spillage, appropriate action should be taken.

3 INSTALLATION OF BOILER

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

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.

In addition, a minimum clearance of 400 mm (16 in) must be available at the front of the appliance to enable the Combi boiler to be serviced.

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

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.
NB Copper connections are supplied with every boiler as is the fixing template.

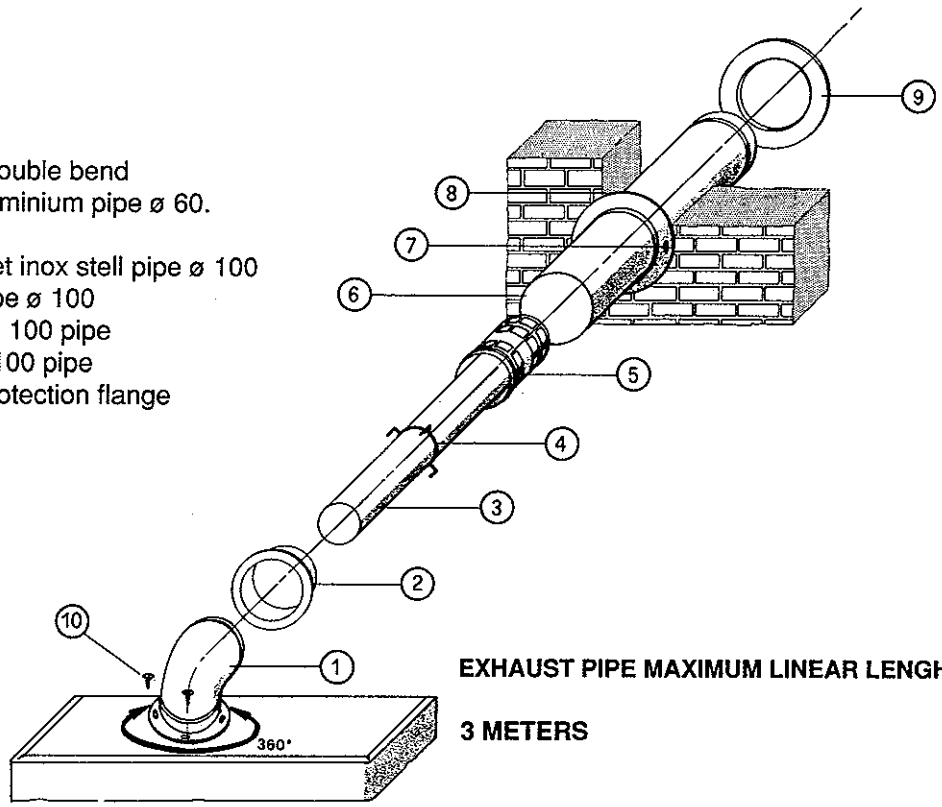
Important.
The safety discharge valve must be connected and taken through to the outside. This should face downwards and terminate approximately 6 inches from the ground.

4 INSTALLATION OF FLUE (RSF 24 MODEL)

Fit flue bend to boiler. Measure distance from exterior of outside wall to outlet of flue bend. Cut outer flue duct to required length making sure that the inner flue protrudes 32 mm further than the outer flue. Connect flue length to flue bend using rubber collar.
See diagrams below for dimensions.

LEGEND

1 Double bend
2 Silicone fitting for double bend
3 Smoke exhaust aluminium pipe ø 60.
4 Centering rings
5 Air exhaust and inlet inox stell pipe ø 100
6 External air inlet pipe ø 100
7 Locking screw for ø 100 pipe
8 Fixing flange for ø 100 pipe
9 Silicone external protection flange
10 screws

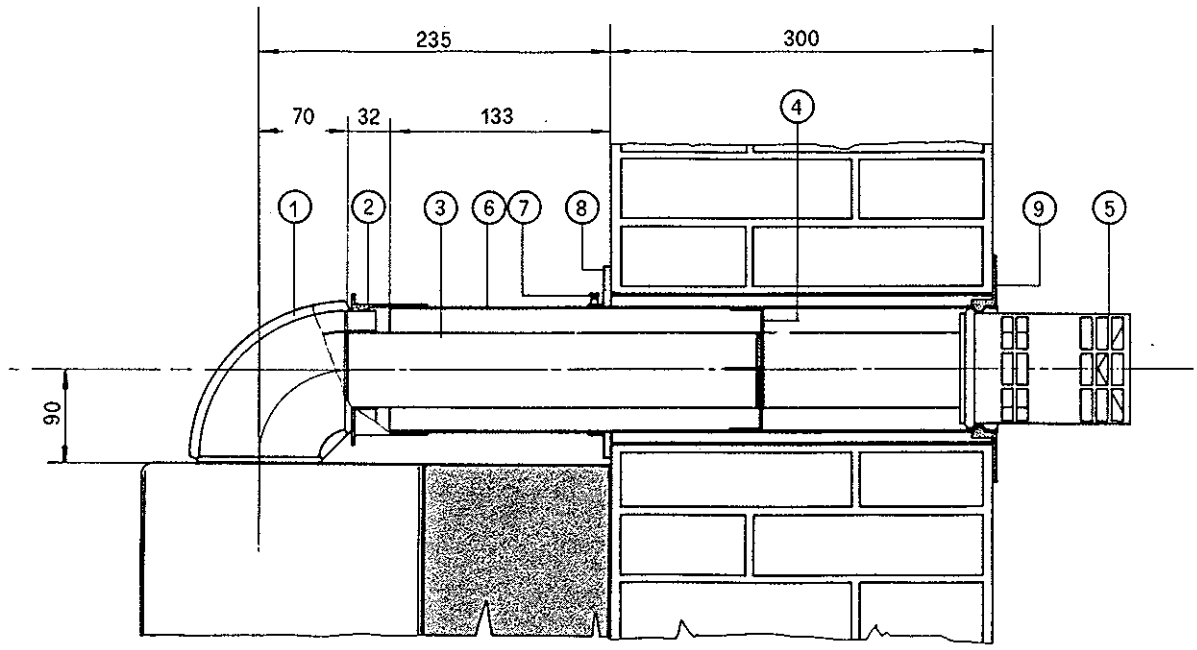


EXHAUST PIPE MAXIMUM LINEAR LENGHT:

3 METERS

NOTE: For every bend used length is reduced by 1 mtr.

IT IS POSSIBLE TO POSITION THE FLUE IN ANY DIRECTION



5 EXPANSION VESSEL

A 8 litres expansion vessel is incorporated into the Combi Boiler suitable for a sealed heating system with a maximum water content of 220 litres.

The expansion vessel is charged to a pressure of 1 bar and should be kept at 1 bar at all times.

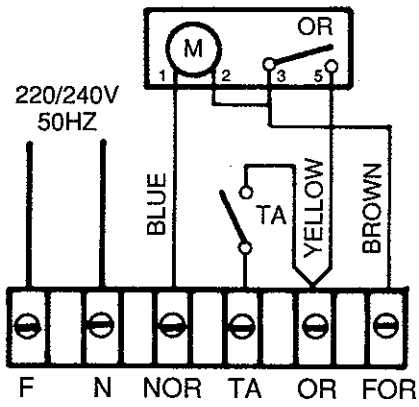
6 ELECTRICAL CONNECTIONS

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 prewired with a flying lead for direct connection.

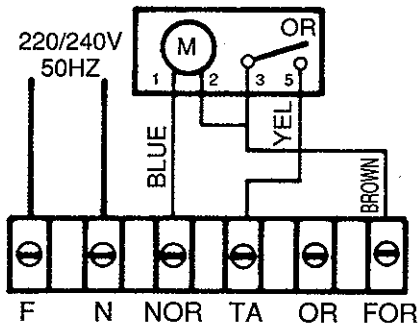
6.1 INSTRUCTIONS FOR FITTING OF RADIANT INTEGRAL TIME CLOCK

ISOLATE ELECTRICS BEFORE COMMENCING WIRING.

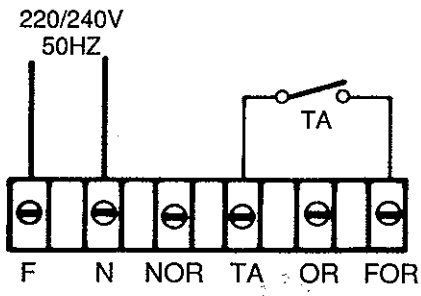
When fitting clock, remove the blanking cover (6) to expose clock position.
Insert clock from the rear.
Ensure the arrow on the clock face is pointing upwards.
Secure with the two fixing screws through holes either side of the clok from the back.
Carry out wiring as per electrical connections shown in the next page.



VERSION WITH CLOCK AND ROOM THERMOSTAT



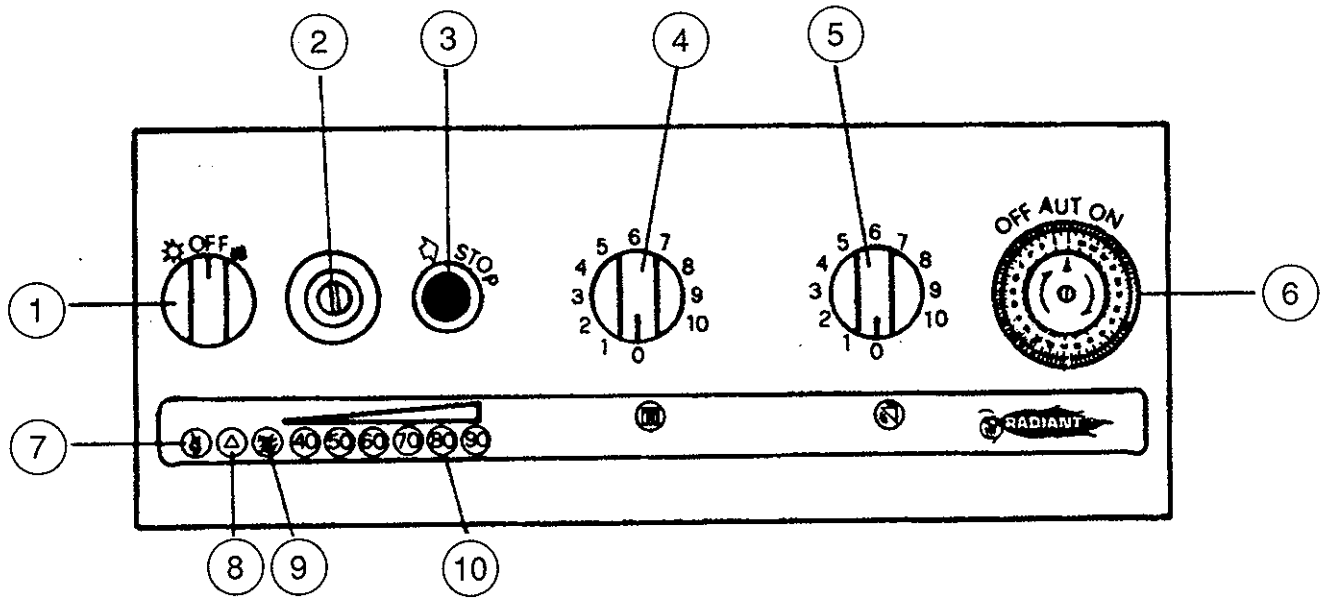
VERSION WITH CLOCK



VERSION WITH ROOM THERMOSTAT

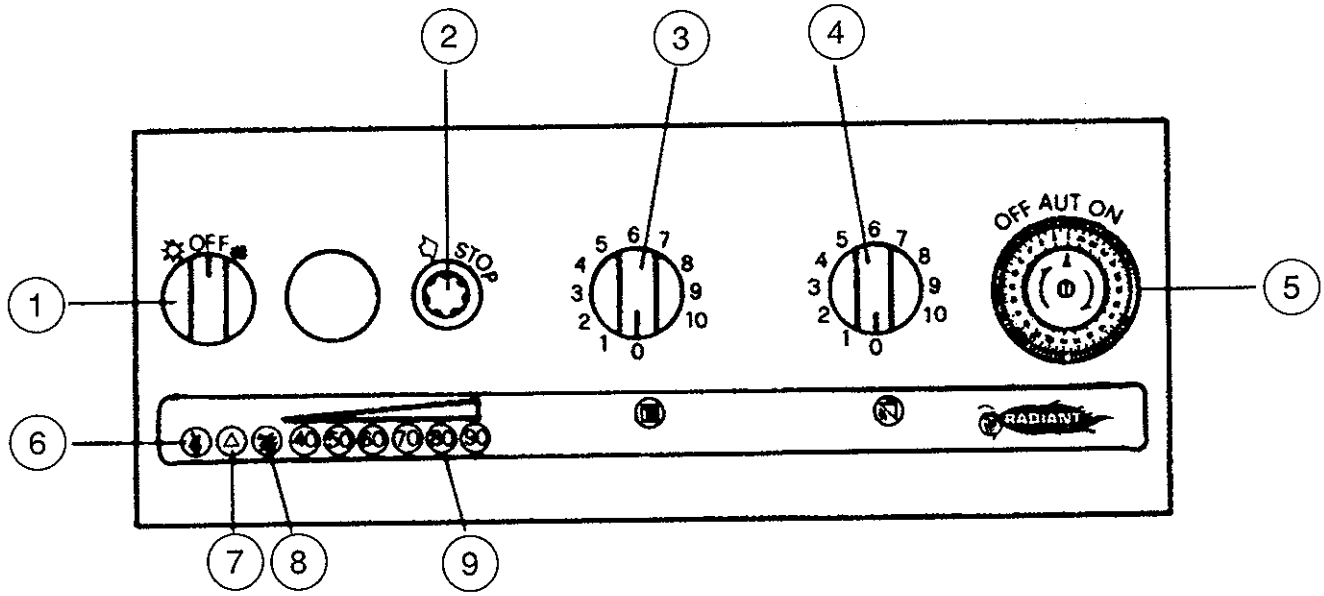
WITH ALL OF THE EXAMPLES SHOWN, BE SURE TO REMOVE THE LINK BETWEEN 2 AND 4 ON THE TERMINAL BLOCK.

ELECTRONIC IGNITION BOILERS



LEGEND
1 Summer-winter control
2 Water deficiency sensor
3 Electronic ignition lock indicator
4 Heating temperature control
5 D.H.W. temperature control
6 Optional time clock
7 Operating indicator
8 Flue safety indicator
9 D.H.W. deficiency indicator
10 Electronic temperature indicator

PILOT FLAME BOILERS



LEGEND
1 Summer-winter control
2 Pilot igniter
3 Heating temperature control
4 D.H.W. temperature control
5 Optional time clock
6 Operating indicator
7 Flue safety indicator
8 D.H.W. deficiency indicator
9 Electronic temperature indicator

7 COMMISSIONING AND START-UP PROCEDURE

The boiler must be commissioned by a competent heating engineer and the correct procedure must be followed.

a) Before connecting the boiler to the water network, remove all impurities from the pipes. Possible foreign matters in the pipeline can cause mal functioning of the boiler.

b) The system should be filled with water via a separate filling point fitted at a convenient point on the heating circuit. The heating system will not be filled automatically from the domestic side. Methods of filling sealed systems are given in Appendix A BS 5356:2. Fill to 1.5 Bar. There is not an internal bi-pass fitted on the boiler you must fit one external to the boiler, or leave one radiator with manual valves.

c) The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations of CP 331:3.

d) The whole of the system should be flushed out with both cold and hot water. Ensure all valves are open.

e) 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 and the domestic hot water heat exchanger should be wented.

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

g) Turn on the gas tap 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 another 30 seconds. After releasing the button the pilot flame should remain alight, if the pilot extinguishes repeat.

GAS VALVE PRESSURE ADJUSTMENT AND CONTROL

The appliance comes from the factory with a calibration of about 80% of the max capacity. If it is necessary to increase the pressure take into consideration that it is not possible to exceed the values stated in the table on page 19 regarding the different types of gas.

GAS VALVE ADJUSTMENT AND CONTROL CONTINUE.

For other adjustment follow these instructions:

- Insert a gauge on the pressure tap (G) for pilot flame boilers.

ATTENTION: all pressure adjustments must be effected without the coil (3).

- Take off the clips (1) and the spring (2), extract the coil (3) placed over the valve, tighten the plastic screw (4) as hard as possible without breaking it, unscrew the lock nut (6) holding the coil's core by a 17 point wrench.

- Light the boiler, adjust the max. pressure by screwing the core (5); tighten it to get the increase of working pressure to a maximum of 32 m/Bar for L.P.G. and 12 m/Bar for Natural Gas.
  After the maximum pressure adjustment tighten the lock nut (6) by means of a 17 point wrench.

For the minimum pressure adjustment of modulation (without the coil) follow these instructions:

- Unscrew slowly the plastic screw (4) until the gauge shows 4 m/Bar pressure for L.P.G. and 2 m/Bar for Natural Gas.

- Once you have done all these operations, fit the coil (3) and the spring (2) again securing them by the clips (1).

(see diagrams in the next page).

h) On completion of commissioning procedure explain to customer operating and lighting procedure of boiler and system controls.

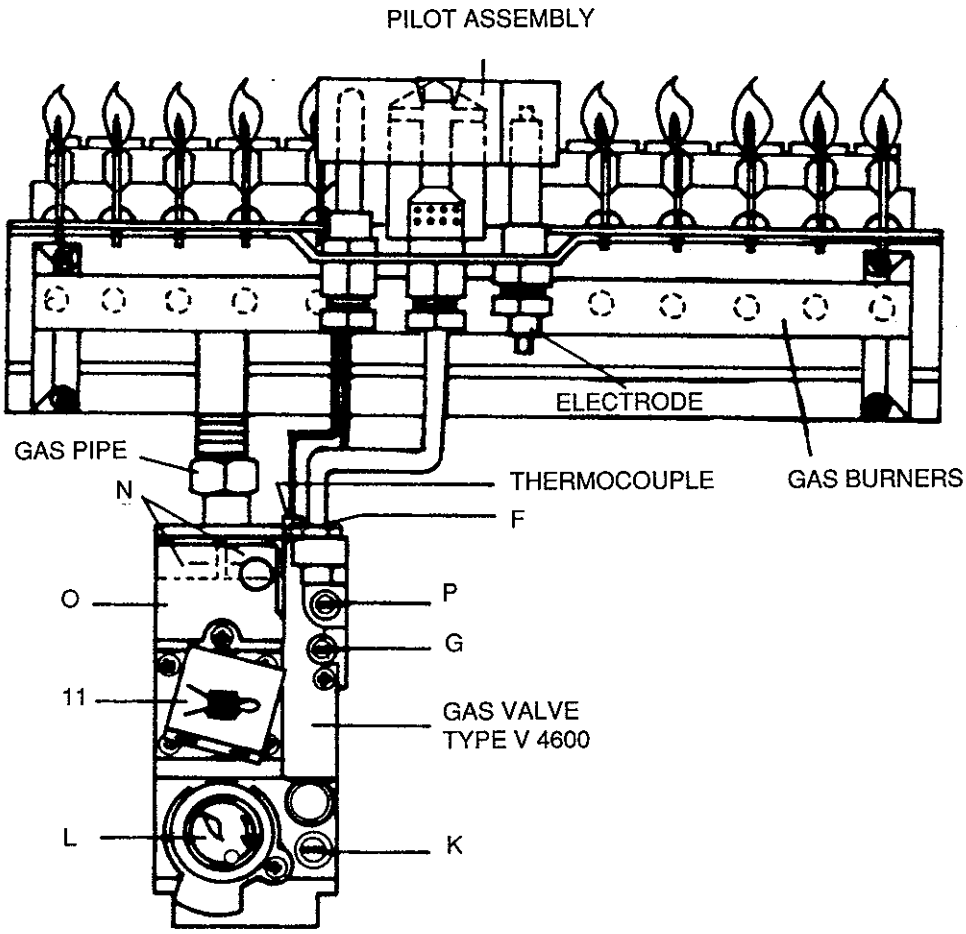
8 MAINTENANCE

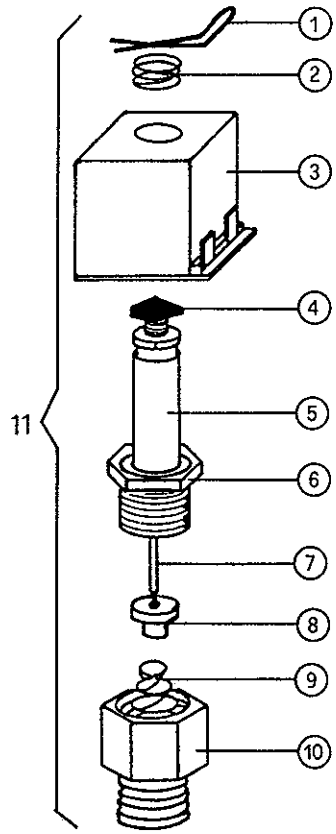
THE BOILER MUST BE SERVICED ANNUALLY AND THE PERFORMANCE AND SAFETY OF THE APPLIANCE CHECKED.

We can offer maintenance contracts to suit your needs.

Please contact our SERVICE DEPARTMENT ON: *See the last page of this manual*

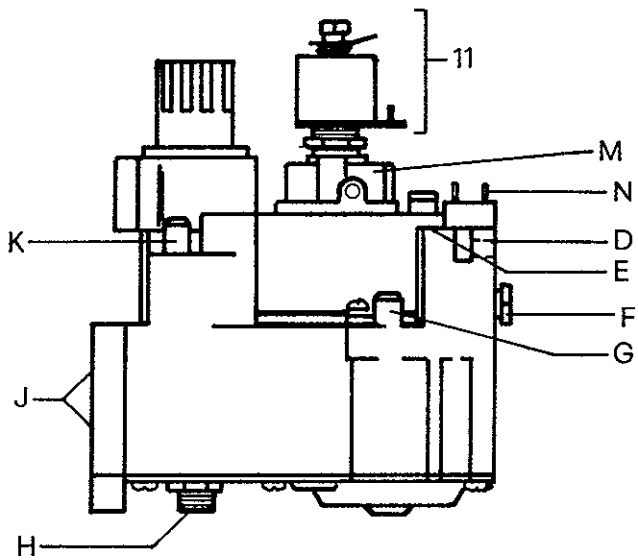
GAS VALVE TYPE V4600 HONEYWELL FOR ELECTRONIC SYSTEM "ES" WITH PILOT FLAME





LEGEND

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



D	ALTERNATIVE THERMOCOUPLE CONNECTION
E	REROUTE CONNECTOR SLOT
F	PILOT CONNECTION
G	OUTLET PRESSURE TAP
H	THERMOCOUPLE CONNECTION
J	FLANGE MOUTING HOLES
K	INLET PRESSURE TAP
L	SINGLE ACTION PUSH BUTTON
M	STABILIZER VS 306E 1010 HAT
N	FLAT A.M.P. TERMINALS
O	TERMINAL LOVER
P	PILOT FLOW ADJUSTMENT
11	PRESSURE MODULATOR RAD004

9 TECHNICAL DATA AND SPECIFICATIONS

	RCM 24 Open Flue	RCMF 24 Open Flue- fan assisted	RSF 24 Room Sealed fanned flue
Rated Output to heating (maximum)	24.4 Kw 83,300 Btu/hr	24.4 Kw 83,300 Btu/hr	27.0 Kw 92,100 Btu/hr
Rated Output to heating (minimum)	9.3 Kw 31,700 Btu/hr	9.3 Kw 31,700 Btu/hr	9.3 Kw 31,700 Btu/hr
Rated Input	93,000 Btu/hr 27.2 Kw	93,000 Btu/hr 27.2 Kw	102,000 Btu/hr 29.8 Kw
Maximum flow temperature	90° c	90° c	90° c
Minimum working pressure (heating)	0.5 Bar	0.5 Bar	0.5 Bar
Maximum working pressure (heating)	3 Bar	3 Bar	3 Bar
Expansion vessel capacity	8 litres	8 litres	8 litres
Pressure expansion vessel	1 Bar	1 Bar	1 Bar
Maximum hot Water Output	24.4 Kw 83,300 Btu/hr	24.4 Kw 83,300 Btu/hr	27.0 Kw 92,100 Btu/hr
Hot Water Flow Rate at Δt 30° c	11.6 litres/ minute 2.55 gallons/ minute	11.6 litres/ minute 2.55 gallons/ minute	13.0 litres/ minute 2.90 gallons/ minute
Hot Water Flow Rate at Δt 45° c	7.7 litres/ minute 1.69 gallons minute	7.7 litres/ minute 1.69 gallons minute	9.0 litres/ minute 1.90 gallons minute
Maximum pressure for D H W	6 Bar	6 Bar	6 Bar
Minimum pressure for D H W	0.6 Bar	0.6 Bar	0.6 Bar
Flue Sizes	130 mm	60 mm	100 mm
Electrical Connection	240 v 50 hz	240 v 50 hz	240 v 50 hz
Power Connections	125 w	125 w	125 w
Weight	48 Kg 105 lbs	48 Kg 105 lbs	52.5 Kg 115 lbs
Gas Connections	15 mm	15 mm	15 mm
Cold Water Inlet	15 mm	15 mm	15 mm
Hot Water Outlet	15 mm	15 mm	15 mm
Heating Flow	22 mm	22 mm	22 mm
Heating Return	22 mm	22 mm	22 mm
Calibrated Pressure Relief Valve	3 .5 Bar	3 .5 Bar	3 .5 Bar

10 FAULT FINDING CHART

FAULTS	POSSIBLE CAUSE	REMEDY
1) The pilot flame does not light.	a - Pilot jet blocked. b - Ignition electrode broken c - Ignition trasformer broken d - Incoplete/ Not complete air bleeding of the gas pipe. e - Ignition micro broken.	a - Clean it. b - Replace it. b - Replace it. d - Effect again the air bleeding. e - Replace it.
2) The pilot lights but when you release the ignition button it extinguishes.	a - Gas valve damaged. b - Thermocouple faulty.	a - Replace it. b - Replace it.
3) The boiler is on but the burner does not ignite for D.H.W.	a - Water flowswitch faulty	a - Replace it.
3) The boiler is on, the pump runs but the flame does not light.	a - The fan does not run/work. b - The air pressure switch does not operate or it is not calibrated. c - The safety thermostat is resetting or it is broken. d - The boiler thermostat is damaged. e - Feelers are in short circuit. f - The gas valve is damaged.	a - Replace it. b - Replace it or make it calibrate. c - Remove the resetting or replace it. d - Replace it. e - Replace them. f - Replace it.
For RSF type:	* - Check that the flue pipe does not exceed 2.5 meters in length and that the coupling is sealing.	
5) The boiler is on, the pump runs, the burner lights but extinguishes after after 5 seconds.	a - Flame sensor faulty. b - Ionic feeler cable interrupted. c - Gearcase broken.	a - Replace it. b - Replace it. c - Replace it.
6) The boiler is working but keeps on resetting.	a - The pump is locked or burnt out. b - Air in the system/plant. c - Flowmeter clogged. d - Modulation sensors damaged.	a - Loose it or replace it. b - Effect the air bleeding through the bleeding valve. c - Clean it. d - Replace them.
7) The boiler is on, the pump works the burner does not light up; after 5 seconds the boiler goes to reset and the red light lights up.	a - Ignition electrodes broken. b -Gercase broken. c - Cables disconnected. d - Gas valve damaged. e - Lack of fuel.	a - Replace them. b - Replace it. c - Connect them. c - Replace it. e - Get more gas.
8) The boiler is on but the burner light with a bang.	a - Ignition electrodes don't discharge well. b - Pilot burner dirty. c - Burner dirty d - Gas valve damaged.	a - Check that distance from the burner is 2,5/3 mm. b - Clean it. c - Clean it. c - Replace it.
9) The boiler is on but does not modulate the flame and keeps on resetting.	a - Modulation feelers damaged. b - Flowswitch clogged. c - Printed circuit board faulty.	a - Replace them. b - Clean it. c - Replace it.
10) The boiler is on but there is no central heating.	a - Diverter valve sticking or broken .	a - Replace it.

RADIANT

RADIANT BRUCIATORI s.r.l.

Bruciatori di gas - Gasolio - Nafta - Caldaie murali
Caldaie in ghisa - Caldaie ad accumulo

Sede Legale Amm.va e Stabilimento:
61025 Loc. Montelabbate (PS) - Via Pantanelli, 164
Tel 0721/498822 (n. 4 linee r.a.) - Fax 0721/499815