



**ONE STAGE LIGHT OIL BURNERS**

▶ **RC SERIES**

▶ <b>RC2-26R</b>	17 ÷ 26 kW
▶ <b>RC2-38R</b>	24 ÷ 38 kW
▶ <b>RC2-46R</b>	33 ÷ 46 kW
▶ <b>RC2.1-46R</b>	33 ÷ 46 kW



Riello RC2-R is synonymous with highly compact size. The new burners in the light oil series are one stage with an output ranging from 17 to 46 kW. These burners have been specifically designed to meet the increasing trends towards direct connection to outside air for combustion and high pressure working field demand.

They are also flexible enough to suit both conventional and balanced flue versions, only changing the plastic screen to the snorkel in the air intake. These burners come with or without the cover.

This designed marks Riello entry into many applications in the market which require both high performance and compact size. All RC2-R burners are fired before leaving the factory.

# TECHNICAL DATA

Model			▼ RC2-26R	▼ RC2-38R	▼ RC2-46R	▼ RC2.1-46R
Burner operation mode			One stage			
Modulation ratio at max. output			--			
Servomotor	run time	type	--			
		s	--			
Heat output	kW		17 ÷ 26	24 ÷ 38	33 ÷ 46	33 ÷ 46
	Mcal/h		14,6 ÷ 22,4	20,6 ÷ 32,7	28,4 ÷ 39,6	28,4 ÷ 39,6
	kg/h		1,4 ÷ 2,2	2,0 ÷ 3,2	2,8 ÷ 3,9	2,8 ÷ 3,9
Working temperature		°C min./max.	0/40			
Net calorific value		kWh/kg	11,8			
		kcal/kg	10200			
Viscosity		mm <sup>2</sup> /s (cSt)	4 - 6 (at 20°C)			
Pump	delivery	type	R.B.L.			
		kg/h	30 (at 12 bar)			
Atomised pressure		bar	7 ÷ 15			
Fuel temperature		max. °C	50			
Fuel pre-heater			YES			
Fan		type	centrifugal with forward curve blades			
Air temperature		max. °C	60			
Electrical supply		Ph/Hz/V	1/50/230±10%			
Auxiliary electrical supply		Ph/Hz/V	--			
Control box		type	R.B.L. 531 SE *			
Total electrical power		kW	0,150			
Auxiliary electrical power		kW	--			
Heaters electrical power		kW	0,025			
Protection level		IP	20			
Pump motor electrical power		kW	--			
Rated pump motor current		A	--			
Pump motor start up current		A	--			
Pump motor protection level		IP	--			
Fan motor electrical power		kW	0,09			
Rated fan motor current		A	0,75			
Fan motor start up current		A	3			
Fan motor protection level		IP	20			
Ignition transformer		type	Incorporated in the control box			
		V1 - V2	8 kV			
		I1 - I2	16 mA			
Operation			Intermittent (at least one stop every 24 h)			
Sound pressure		dB (A)	62,5 (with baffle plate), 57,5 (without baffle plate)			
Sound power		W	--			
CO emission		mg/kWh	8	2	8	1
Grade of smoke indicator		N° Bacharach	<1			
C <sub>x</sub> H <sub>y</sub> emission		mg/kWh	<10 (after the first 20s)			
NOx emission		mg/kWh	195	168	142	175
Directive			89/336/EEC, 73/23/EEC, 98/37/EEC, 92/42/EEC			
Conforming to			EN 267			
Certification			CE 0036 0352/04			in progress

\* R.B.L. 555 SE on request to approve.

#### Reference conditions:

Temperature: 20 °C

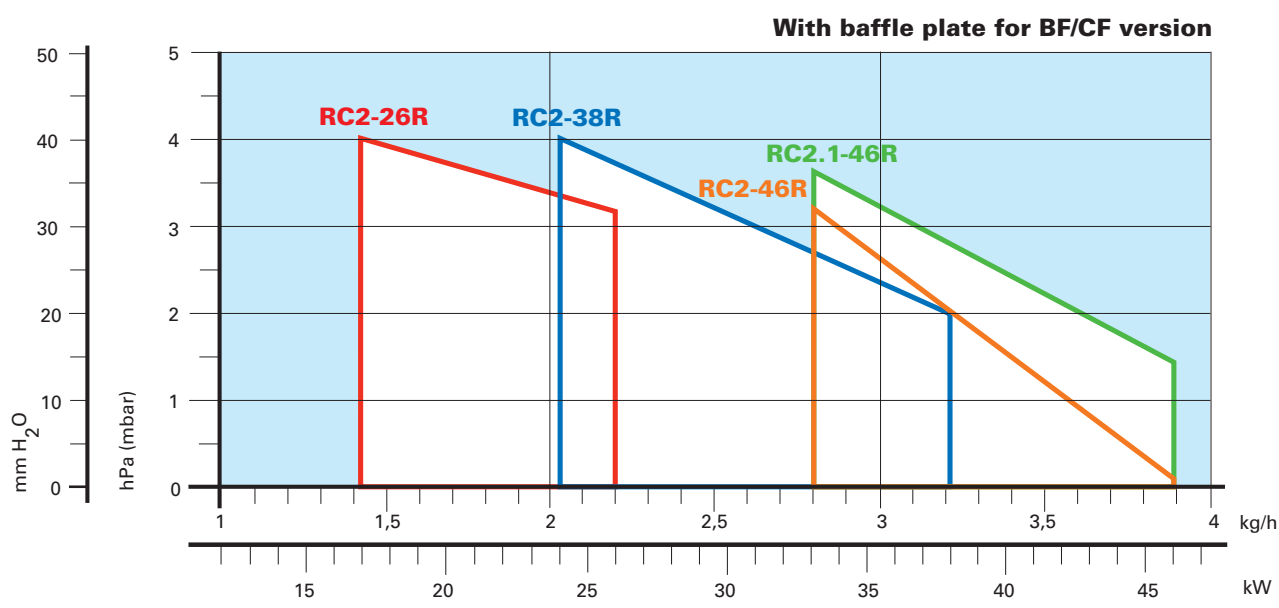
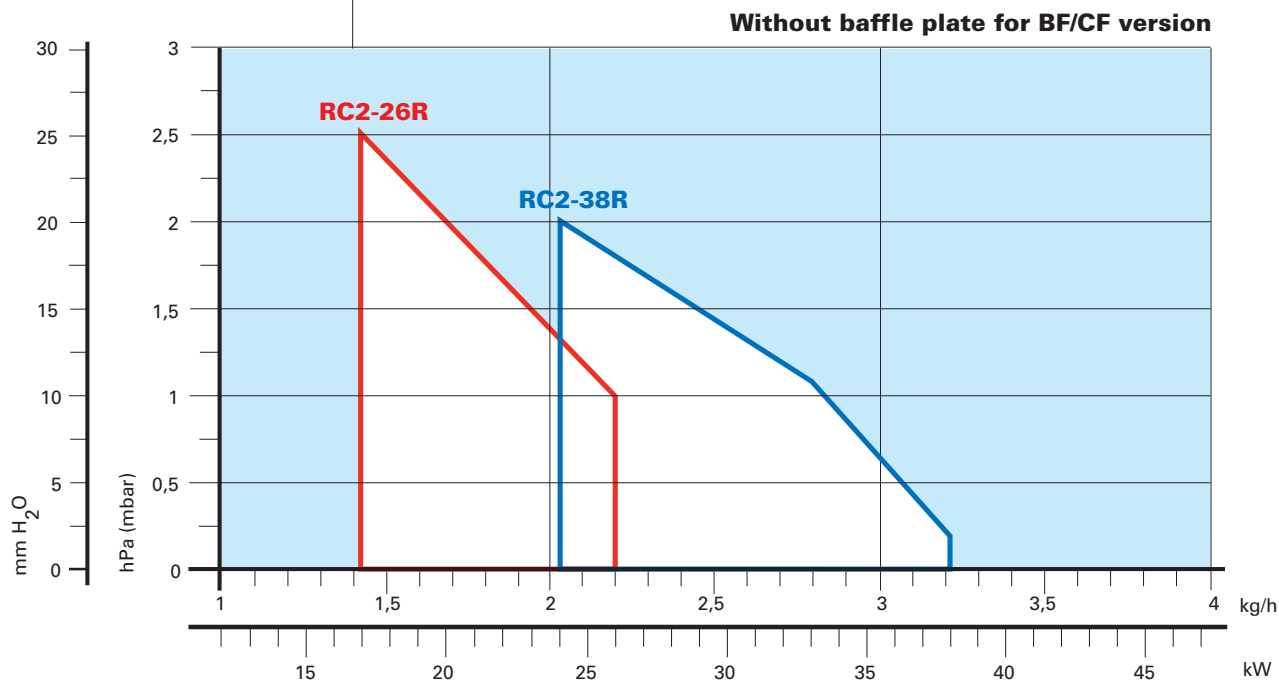
Pressure: 1013 mbar

Altitude: 0 m a.s.l.

Noise measured at a distance of 1 meter.

Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed.  
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# FIRING RATES



Useful working field for choosing the burner

**Test conditions conforming to EN 267:**  
 Temperature: 20 °C  
 Pressure: 1013 mbar  
 Altitude: 0 m a.s.l.





## FUEL SUPPLY

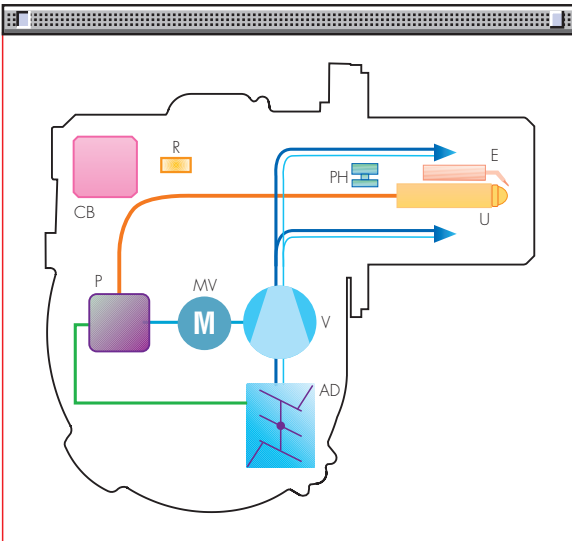
### HYDRAULIC CIRCUIT

The burners are fitted with a Riello geared pump, with safety valve on the return circuit, and a light oil pre-heater.



Fuel pump

### RC2-R



AD	Air damper adjustable
MV	Air fan motor
P	Pump with filter and pressure regulator
V	Supply air fan
U	Nozzle
PH	Preheater with thermostat
E	Ignition electrode
CB	Control box
R	Photoresistance

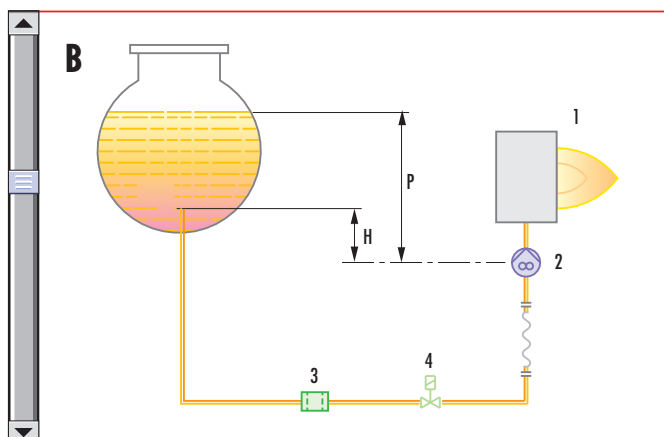
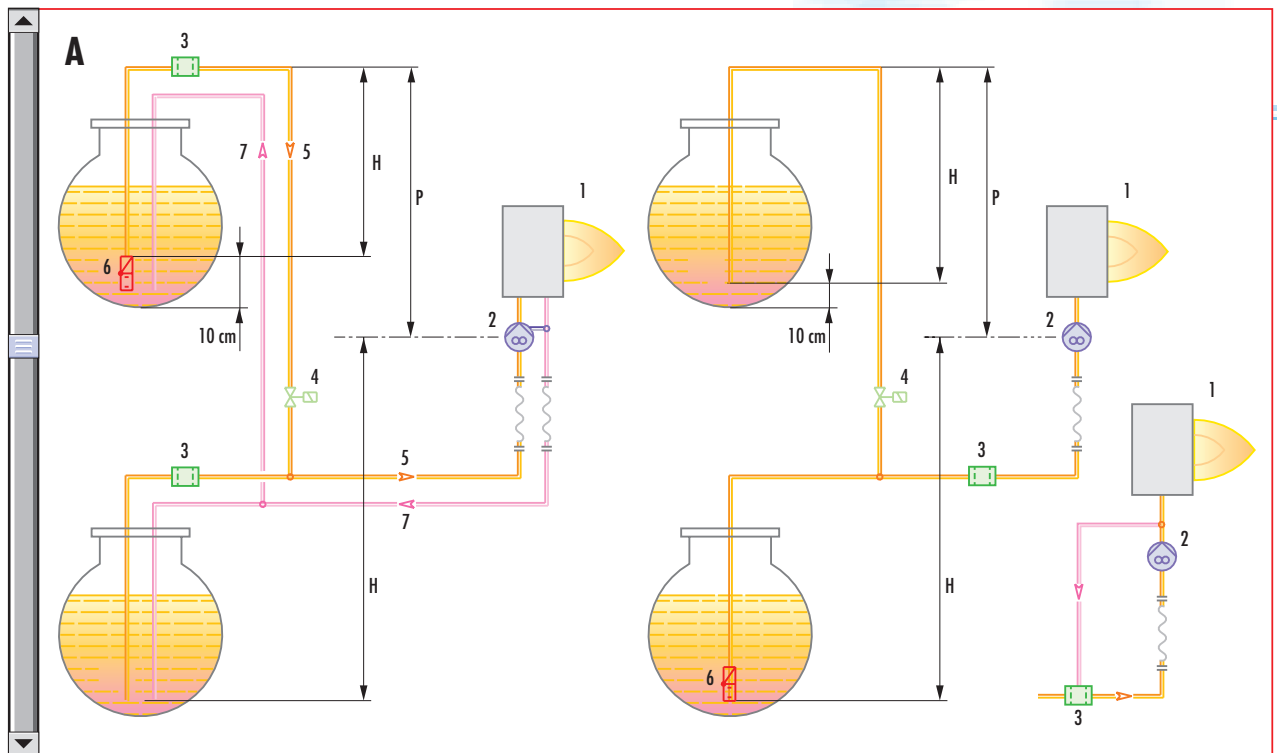


## SELECTING THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local regulations in force.

The table shows the choice of piping diameter for the various burners, depending on the difference in the height between the burner and the tank and the distance between them.

MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]				
Pipe size	Type A system		Type B system	
	Ø8mm	Ø10mm	Ø8mm	Ø10mm
H (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)
0	35	100	-	-
0,5	30	100	10	20
1,0	25	100	20	40
1,5	20	90	40	80
2,0	15	70	60	100
3,0	8	30	-	-
3,5	6	20	-	-



H	Difference in height
Ø	Internal pipe diameter
P	Difference in height ≤ 4 m
1	Burner
2	Pump
3	Filter
4	Shut-off solenoid valve
5	Suction pipework
6	Bottom valve
7	Return pipework



## VENTILATION

The new compact RC2-R ventilating system ensures high performance thanks a perfectly sealed system between the moving parts which reduces air flow loss and noise to a minimum. This compression air system inside the fan creates a high air pressure head.

Special attention has also been paid to the air-tightness of the air circuit (this is also checked during the functional tests to the burners on the production line); the air-tightness is guaranteed by special technical solutions and seals, and is always conserved after any servicing operations.



Air regulation unit



Air regulation unit in conventional flue version



Air regulation unit in balanced flue version



## COMBUSTION HEAD

The burners are fitted with fixed combustion head.

The following diagram shows the flame dimensions in relation to the burner output.

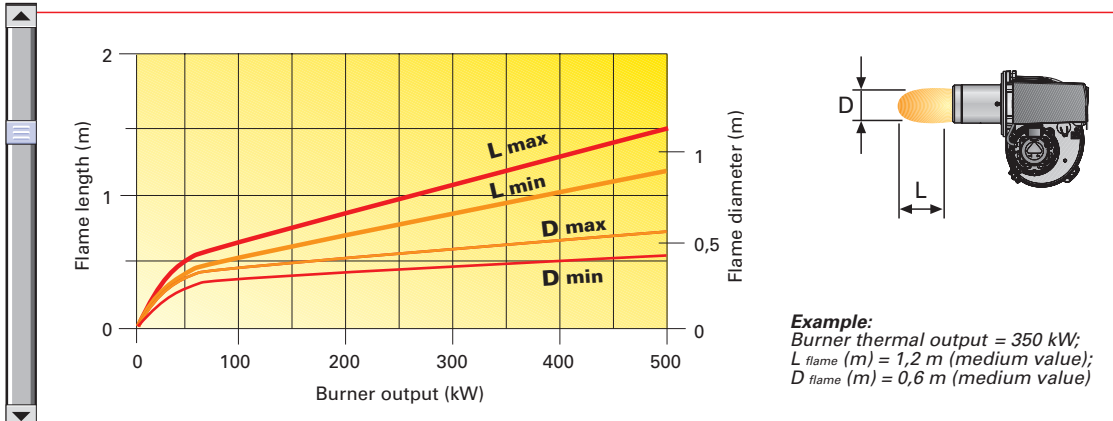


Burner with fixed combustion head



Combustion head

### Dimensions of the flame



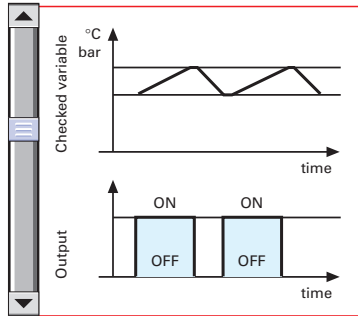
# ADJUSTMENT



## BURNER OPERATION MODE

The burners are one stage operation.

### "One stage" operation



## BURNER CONFIGURATION



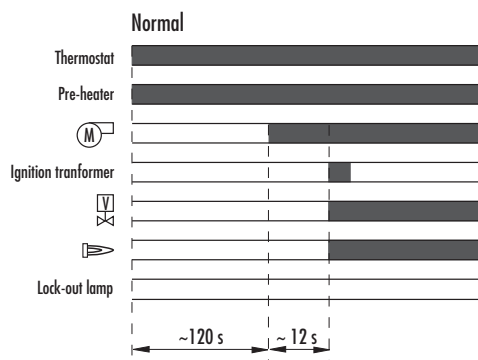
Conventional flue air intake system



Balanced flue air intake system

The conventional flue models can be easily converted to balanced flue, and vice versa, by using a special kit.

## START UP CYCLE



### Correct operations

- 0s The burner begins the ignition cycle.
- 0s-120s Delay before pre-purge: this delay period can reach 120s, depending on the room and fuel temperatures.
- 120s-132s Pre-purge with opened air damper.
- 132s Firing.

### Lock-out due to ignition failure

If the flame does not light within the safety limit (~5s) the burner locks-out.  
Lock-out is indicated by a lamp on the control box.



## WIRING DIAGRAMS

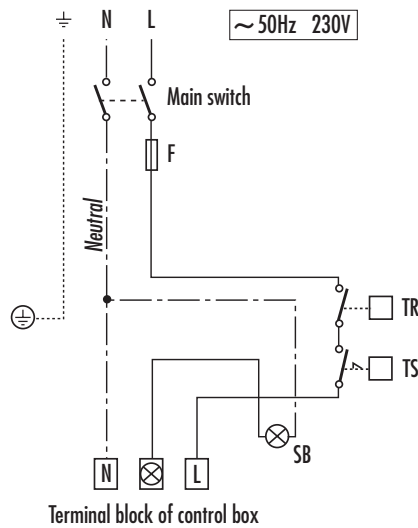
Electrical connections must be made by qualified and skilled personnel in conformity with the local regulations in force.

A cable with 6 pole socket is included in the burner equipment.



Burner control box

### ▶ "ONE STAGE" OPERATION



**TR** - Regulating thermostat  
**TS** - Safety thermostat (with manual resetting)  
**SB** - Remote lock-out lamp (230V 0,5A max)  
**F** - Fuse

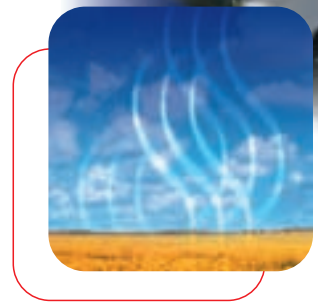
The following table shows the supply lead sections and types of fuse to be used.

Model	▼ RC2-26R	▼ RC2-38R	▼ RC2-46R	▼ RC2.1-46R
	230V	230V	230V	230V
F A	T6	T6	T6	T6
L mm <sup>2</sup>	1	1	1	1

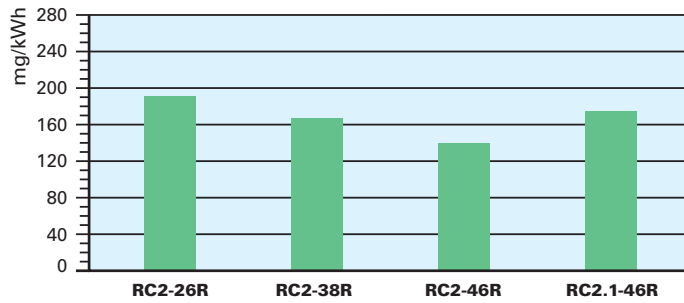
F = Fuse      L = Lead section



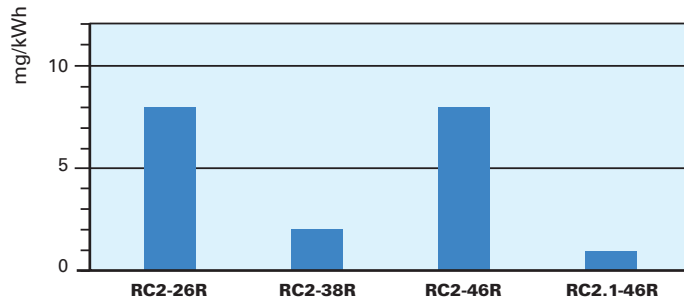
# EMISSIONS



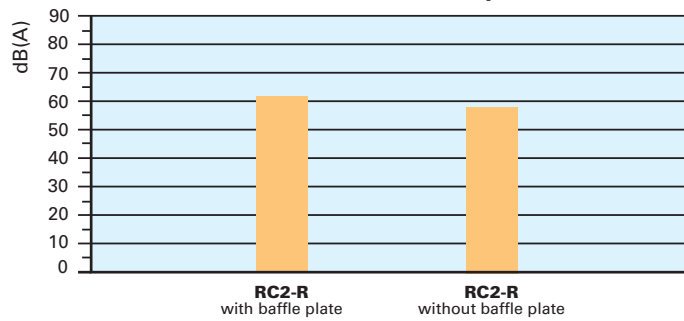
## NO<sub>x</sub> EMISSIONS



## CO EMISSIONS



## SOUND EMISSIONS (sound pressure)



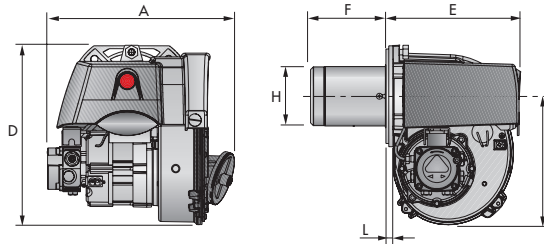
The emission data have been measured in the RC2-R at maximum output, in conformity with EN 267 standard.



## OVERALL DIMENSIONS (mm)

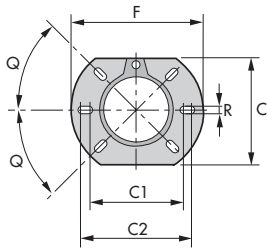
These models are distinguished by their reduced size, in relation to their output, which means they can be fitted to any boiler on the market.

### BURNER



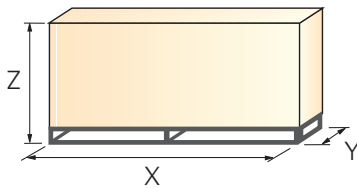
Model	A	D	E	F	H	I	L
▶ RC2-26R	267	256	192	108	85	183	10
▶ RC2-38R	267	256	192	108	85	183	10
▶ RC2-46R	267	256	192	108	85	183	10
▶ RC2.1-46R	267	256	192	108	85	183	10

### BURNER-BOILER MOUNTING FLANGE



Model	C	C1	C2	F	Q	R
▶ RC2-26R	144	130	150	180	45	11
▶ RC2-38R	144	130	150	180	45	11
▶ RC2-46R	144	130	150	180	45	11
▶ RC2.1-46R	144	130	150	180	45	11

### PACKAGING



Model	X	Y	Z	kg
▶ RC2-26R	363	295	310	10
▶ RC2-38R	363	295	310	10
▶ RC2-46R	363	295	310	10
▶ RC2.1-46R	363	295	310	10

## INSTALLATION DESCRIPTION

Skilled and qualified personnel must perform installation, start up and maintenance. A nozzle is fitted to the burner used for fire tests in the factory.  
All operations must be carried out as described in the technical handbook supplied with the burner.



### BURNER SETTING

#### ► Air damper adjustment:

Conventional flue version: rotate the manual knob to regulate the air quantity



If necessary, the air pressure can be regulated loosening the three screws on the air suction control and rotating to select fan output.



Balanced flue version: rotate the manual knob on the plastic external air suction inlet to select air quantity.





## BURNER ACCESSORIES

### Tester






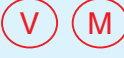


The tester controls the correct working of the burner components in the RC2-R burners. It is made up of two parts: a control instruments and a "control box" which replaces and simulates the one on the burner.

This tester is very simple to use: just replace the burner control box with the tester to check correct working of the motor, valve, pre-heater and flame probe.

This device has a display showing the levels that have been measured, a selection switch for selecting the component to be tested and four switches to be used in the various working stages of the burner.



Tester	
<b>Burner</b>	<b>Kit code</b>
All models	3087215

Direct testing	Measurements
 MOTOR The switch feeds the motor.	 Main voltage (230 V)
 VALVE The switch feeds electromagnetic winding of the coil. A red led signals excitation stage, and a green led signals retainer stage.	 Pre-heater current consumption
 PRE-HEATER The switch feeds the light oil pre-heater; a green led signals the thermostat cut-in.	 Secondary voltage (low voltage)
 TRANSFORMER The switch feeds the firing transformer inside the control box and excites the oil valve.	 Photo-resistance current consumption

### Light oil filter

For cleaning light oil from dirty particles and impurities filters with the following features are available:



Light oil filter		
<b>Burner</b>	<b>Filtering degree (µm)</b>	<b>Code</b>
All models	60	3006561

Filter made up of aluminium body and stainless steel filtering cartridge; available singularly.

Light oil filter		
<b>Burner</b>	<b>Filtering degree (µm)</b>	<b>Code</b>
All models	60	3075011

Filter made up of aluminium cover, plastic tank and nylon filtering cartridge; available in packaging of 50 pieces.



### Light oil filter/degassing unit

To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly.



Light oil filter/degassing unit		
Burner	Filtering degree (µm)	Code
All models	100	3000926

### Balanced flue conversion kit

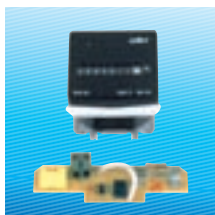
The RC2-R models are easily converted from conventional flue to balanced flue version, by replacing the plastic air intake with the connector for the air supply pipe.



Balanced flue conversion kit	
Burner	Kit code
RC2-26R/38R/46R	3002721
RC2.1-46R	3020132

### Hour counter kit for 530 SE and 531 SE control boxes

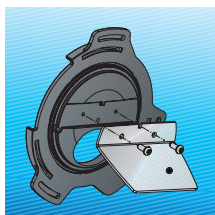
To measure the burner working time a hour counter kit is available.



Hour counter kit for 530 SE and 531 SE control boxes	
Burner	Kit code
All models	3000904

### Baffle plate kit

To improve the burner ventilation performances a baffle plate kit is available.



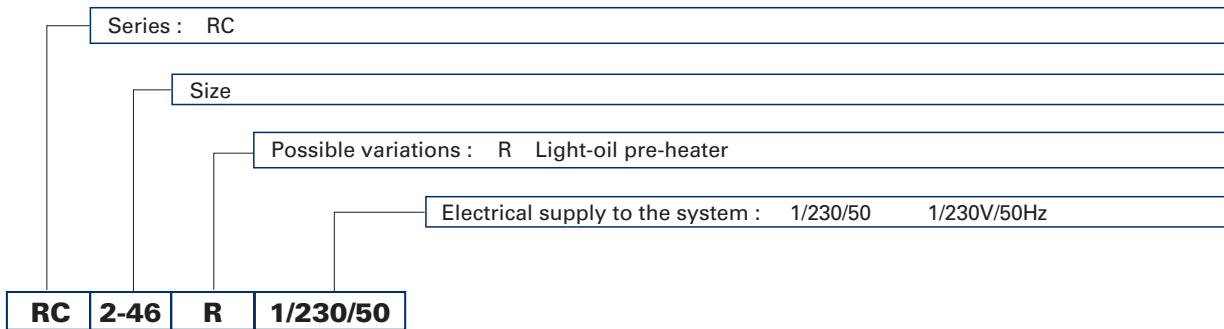
Baffle plate kit	
Burner	Kit code
RC2-26R/38R/46R	3002720
RC2.1-46R	3020130



## SPECIFICATION

There is a clear and detailed product specification and description.

### DESIGNATION OF SERIES



### AVAILABLE BURNER MODELS

RC2-26R	1/230/50
RC2-38R	1/230/50
RC2-46R	1/230/50
RC2.1-46R	1/230/50



## ▶ PRODUCT SPECIFICATION

### **Burner:**

Completely automatic monobloc light oil burners, with one stage operation made up of:

- Forward blades fan and airtight fan house for high performance
- Air damper with adjustment for conventional flue version
- Single phase electric motor 230 V, 50 Hz
- Combustion head made up of:
  - stainless steel end cone resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - connectors for installing a pressure gauge and vacuumeter
  - inner by-pass for preparing for single pipe installation
- Fuel feed solenoid incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- Fuel pre-heater.

### **Approval to:**

- EN 267

### **Conforming to:**

- 89/336/EEC (electromagnetic compatibility)
- 73/23/EEC (low voltage)
- 98/37/EEC (machinery)
- 92/42/EEC (efficiency).

### **Standard equipment:**

- Two flexible pipes and two connectors
- Flange, screen screws and nuts for fixing
- Cable with 6-pole socket
- Technical instruction
- Spare parts catalogue.

### **Available accessories to be ordered separately:**

- Tester
- Light oil filter
- Light oil filter/degassing unit
- Balanced-conventional flue conversion kit
- Baffle plate kit
- Hour counter kit for 530 SE and 531 SE control boxes.



RIELLO S.p.A. - Via Ing. Pilade Riello, 5 - 37048 San Pietro di Legnago (VR) Italy  
Tel. ++39.0442630111 - Fax ++39.044221980

Internet: <http://www.rielloburners.com> - E-mail: [info@rielloburners.com](mailto:info@rielloburners.com)

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