

**ONE STAGE LIGHT OIL BURNERS**

► **GULLIVER RG SERIES**

► <b>RG0.R</b>	16,6 ÷ 27,3 kW
► <b>RG0.1</b>	22,5 ÷ 35,6 kW
► <b>RG0.1R</b>	21,3 ÷ 36,7 kW
► <b>RG1</b>	32,0 ÷ 60,0 kW
► <b>RG1R</b>	20,0 ÷ 60,0 kW
► <b>RG1RK</b>	15,0 ÷ 60,0 kW
► <b>RG2</b>	47,0 ÷ 119,0 kW
► <b>RG3</b>	83,0 ÷ 178,0 kW
► <b>RG4S</b>	118,5 ÷ 237,0 kW
► <b>RG5S</b>	160,0 ÷ 309,5 kW



The Riello Gulliver RG one stage light oil burners series, is a complete range of products developed to respond to any request for home heating. The Gulliver RG series is available in ten different models, with an output ranging from 16,6 to 309,5 kW, divided in five different structures.

All the models use the same components designed by Riello for the Gulliver series. The high quality level guarantees safe working.

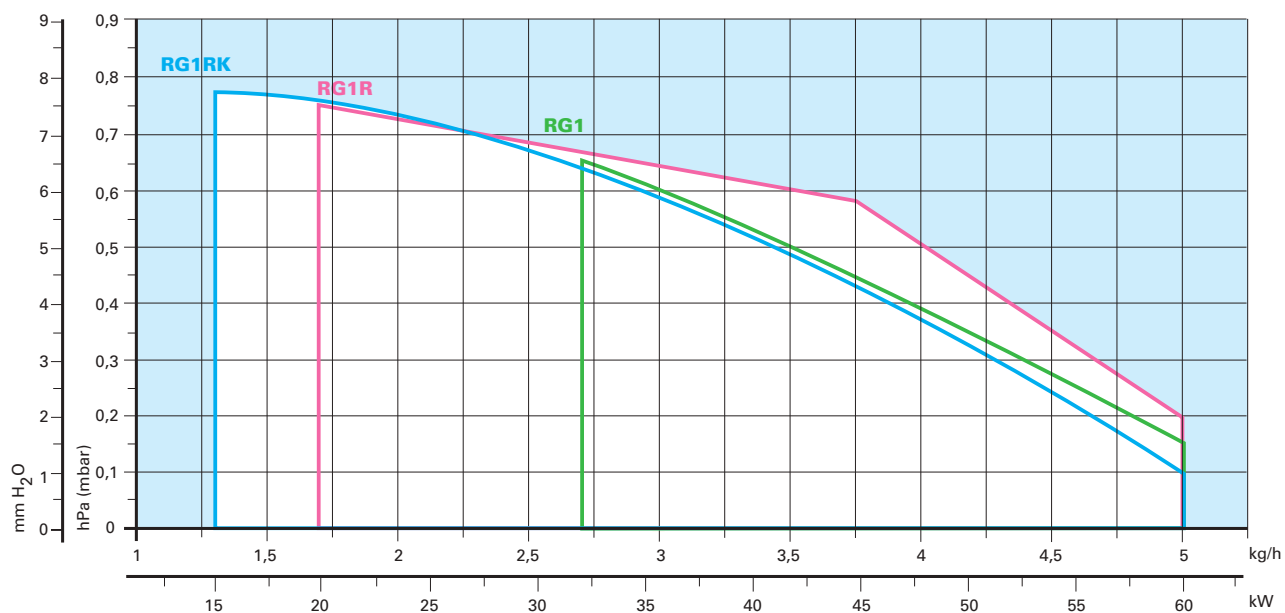
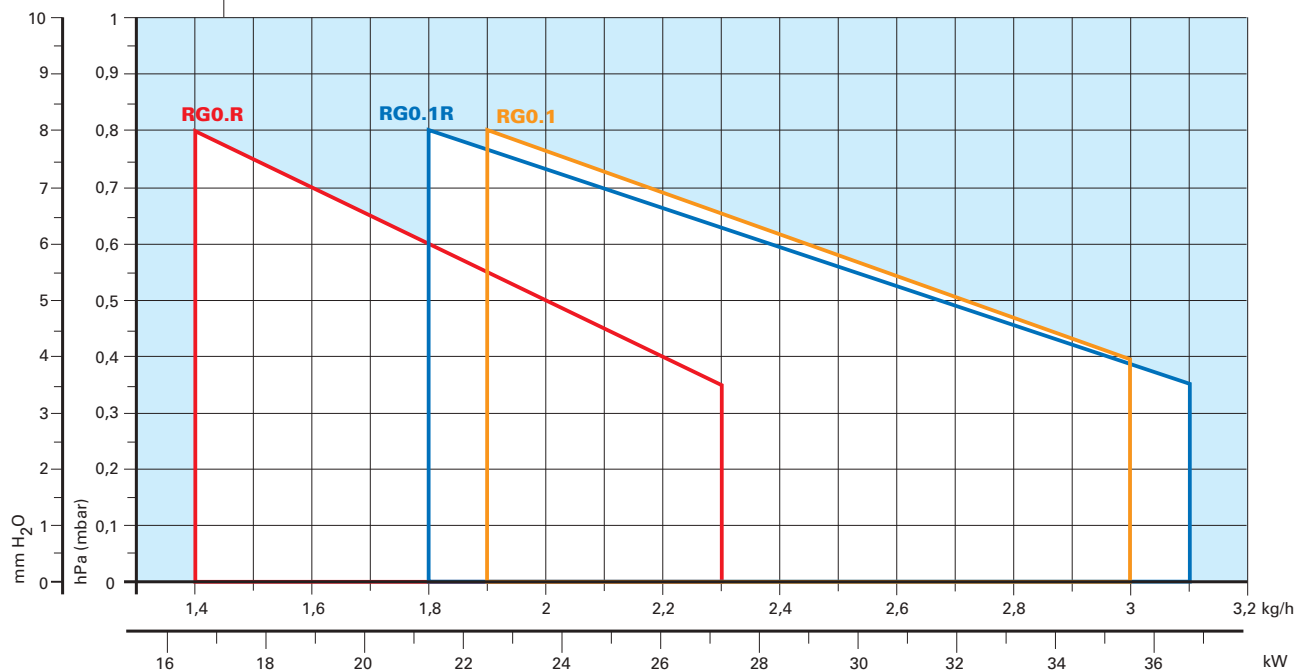
In developing these burners, special attention was paid to reducing noise, to the easiness of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.

All the models are approved by the EN 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.

All the Gulliver RG burners are fired before leaving the factory.



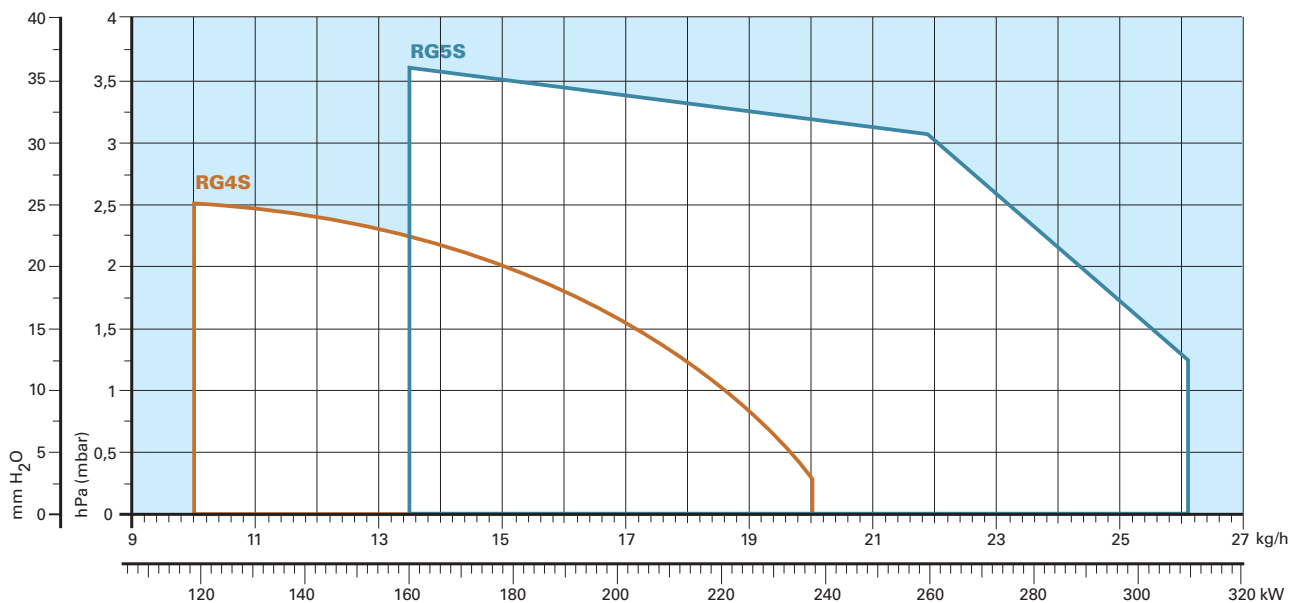
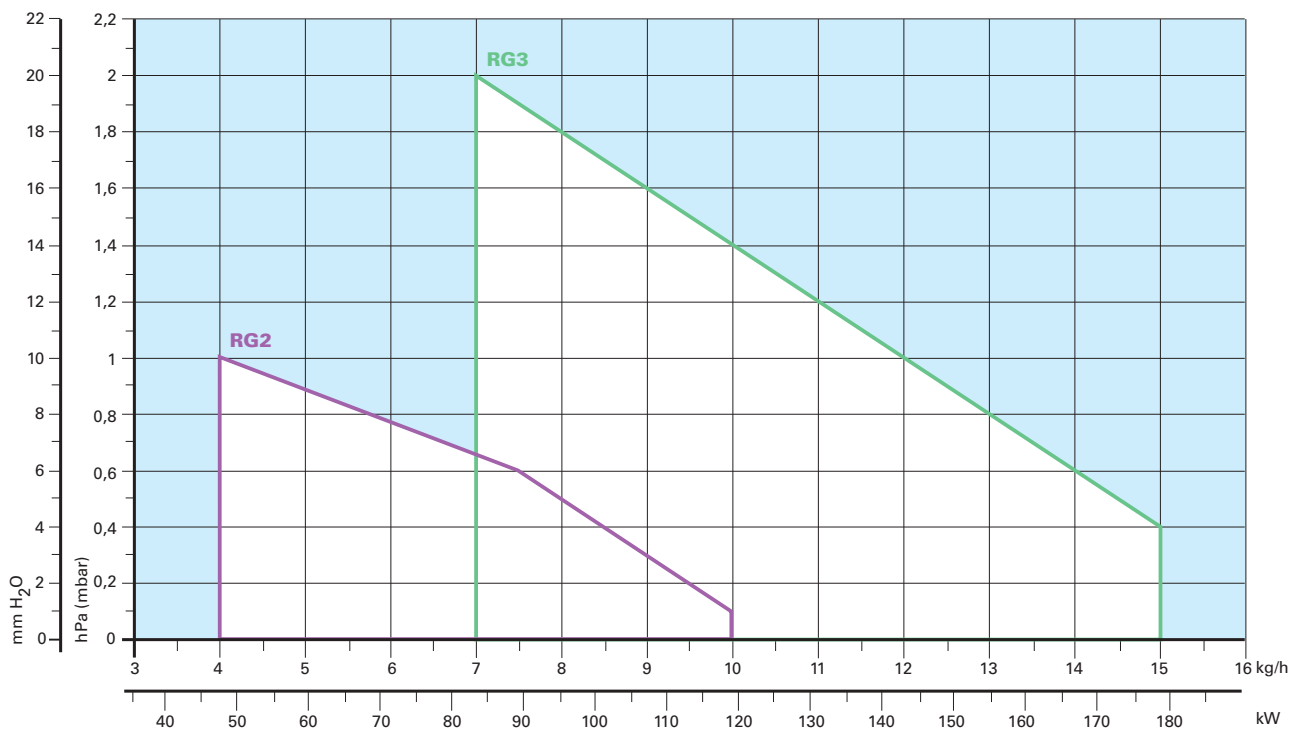
# FIRING RATES



 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.



Useful working field for choosing the burner

**Test conditions conforming to EN 267:**

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# TECHNICAL DATA

Model	▼ RG0.R	▼ RG0.1	▼ RG0.1R	▼ RG1	▼ RG1R	▼ RG1RK	▼ RG2	▼ RG3	▼ RG4S	▼ RG5S	
Burner operation mode	One stage					One stage					
Modulation ratio at max. output	--					--					
Servomotor	run time	type	--					--			
		s	--					--			
Heat output	kW	16,6 - 27,3	22,5 - 35,6	21,3 - 36,7	32 - 60	20 - 60	15 - 60	47 - 119	83 - 178	118,5 - 237	160 - 309,5
	Mcal/h	14,3 - 23,4	19,4 - 30,6	18,3 - 31,6	27,5 - 51,6	17,2 - 51,6	13 - 51,6	40,4 - 102,3	71,4 - 153	102 - 203,8	137,6 - 266,2
	kg/h	1,4 - 2,3	1,9 - 3	1,8 - 3,1	2,7 - 5	1,7 - 5	1,3 - 5	4 - 10	7 - 15	10 - 20	13,5 - 26,1
Working temperature	°C min./max.	0/40					0/40				
Net calorific value	kWh/kg	11,8					11,8				
	kcal/kg	10200					10200				
Viscosity	mm <sup>2</sup> /s (cSt)	4 ÷ 6 (at 20°C)					4 ÷ 6 (at 20°C)				
Pump	delivery	type	Riello made by SUNTEC					Riello made by SUNTEC		R.B.L.	SUNTEC AS57
		kg/h	30 (at 12 bar)					30 (at 12 bar)			
Atomised pressure	bar	8 ÷ 15					8 ÷ 15				
Fuel temperature	max. °C	50					50				
Fuel pre-heater		YES	NO	YES	NO	YES	YES	NO	NO	NO	NO
Fan	type	Centrifugal with forward curve blades					Centrifugal with forward curve blades				
Air temperature	max. °C	40					40				
Electrical supply	Ph/Hz/V	1/50/230 ±10%					1/50/230 ±10%				
Auxiliary electrical supply	Ph/Hz/V	--					--				
Control box	type	R.B.L.553 SE*	R.B.L.552 SE	R.B.L.553 SE	R.B.L.552 SE	R.B.L.553 SE	R.B.L.553 SE*	R.B.L.552 SE*	R.B.L.552 SE*	R.B.L.552 SE	
Total electrical power	kW	0,290	0,170	0,290	0,170	0,290	0,290	0,180	0,390	0,390	0,470
Auxiliary electrical power	kW	--					--				
Heaters electrical power	kW	0,07 (PTC)	--	0,07 (PTC)	--	0,12 (PTC)	0,12 (PTC)	--	--	--	--
Protection level	IP	X0D (IP 40)					X0D (IP 40)				
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	0,09	0,09	0,09	0,09	0,09	0,09	0,15	0,15	0,25
Rated fan motor current	A	0,85	0,85	0,85	0,85	0,85	0,85	0,9	1,9	2	2,1
Fan motor start up current	A	3,4	3,4	3,4	3,4	3,4	3,4	3,6	7,6	8	8,4
Fan motor protection level	IP	20					20				
Ignition transformer	type	Incorporated in the control box					Incorporated in the control box				
	V1 - V2	(-) - 8 kV					(-) - 8 kV				
	I1 - I2	(-) - 30 mA					(-) - 30 mA				
Operation		Intermittent (at least one stop every 24 h)					Intermittent (at least one stop every 24 h)				
Sound pressure	dB (A)	56	57	57	60	60	60	61	64	64	71
Sound power	W	--					--				
CO emission	mg/kWh	28	19	10	15	13	12	5	6	6	38
Grade of smoke indicator	N° Bacharach	<1					<1				
C <sub>x</sub> H <sub>y</sub> emission	mg/kWh	<10 (after the first 20 s)					<10 (after the first 20 s)				
NO <sub>x</sub> emission	mg/kWh	200	181	190	220	180	160	137	180	150	150
Directive		89/336/EEC, 73/23/EEC, 98/37/EEC, 92/42/EEC					89/336/EEC, 73/23/EEC, 98/37/EEC, 92/42/EEC				
Conforming to		EN 267					EN 267				
Certification		CE - 0036 0272/99	CE - 0036 0294/99	CE - 0036 0273/99	CE - 0036 0341/03	CE - 0036 0341/03	CE - 0036 0341/03	CE - 0036 0344/03	DIN - Reg.-Nr.5G264/98	DIN - Reg.-Nr.5G265/98	CE - 0036 0310/01

\* R.B.L. 550 SMD for German Market.

## 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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## FUEL SUPPLY

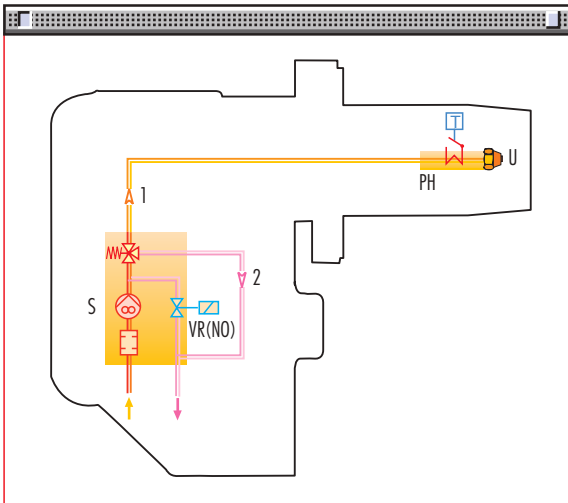
### HYDRAULIC CIRCUIT

All the burners have a geared pump with safety valve on the return circuit.  
 The RG0.R, RG0.1, RG0.1R, RG1, RG1R, RG1RK, RG2, RG3 models are fitted with a Riello pump made by Suntec.  
 The RG4S and RG5S models are equipped with R.B.L. pump.



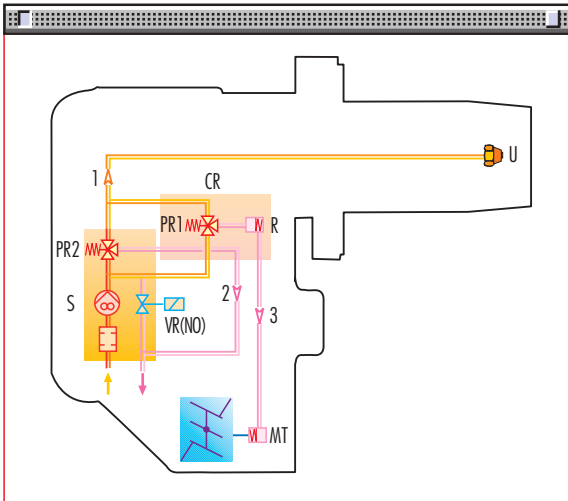
Fuel pump

#### RG0.R - RG0.1 - RG0.1R - RG1 - RG1R RG1RK - RG2 - RG3



Fuel feed to the burner can be from the right or the left side on all models.

#### RG4S - RG5S



S	Pump with filter and pressure regulator on the delivery pipe
VR(NO)	Oil return valve on the delivery pipe
1	Oil input pipe to the nozzle
2	Oil return pipe from the regulator
3	Oil delivery pipe to the air damper hydraulic jack
MT	Air damper hydraulic jack for high pressure working
PR1	Low pressure oil regulator
PR2	High pressure oil regulator
R	Delayer
CR	Delayer casing
PH	Oil pre-heater with thermostat (where provided)
U	Nozzle

### LIGHT OIL PRE-HEATER

The light oil pre-heater is a PTC type.  
 On the RG0.R and RG0.1R models, the pre-heater can be accessed by just removing the burner cover. In the other models, the rear cover inside the burner must also be removed.



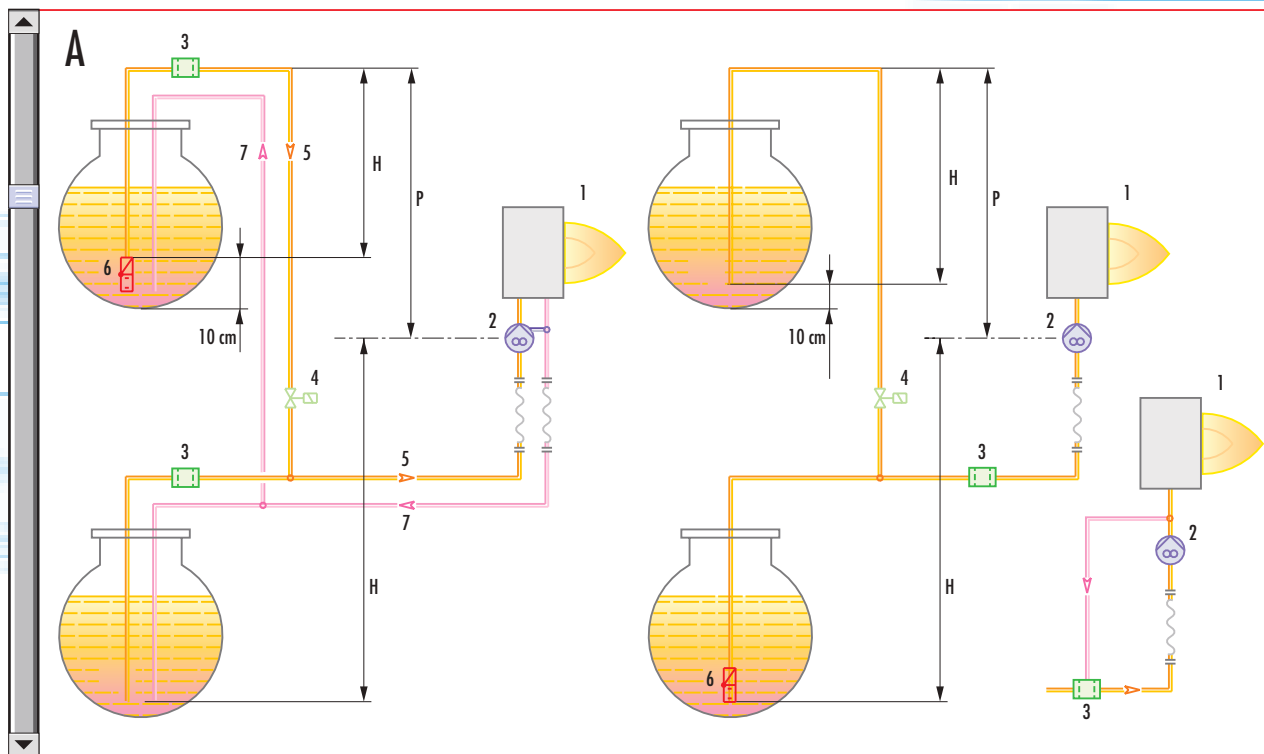


## SELECTING THE FUEL SUPPLY LINES

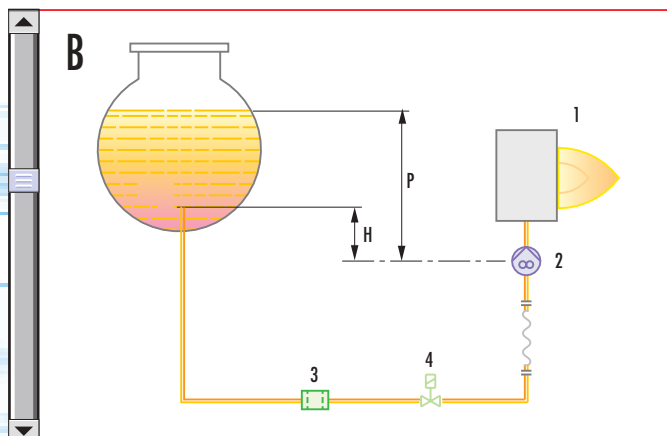
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	-	-



Type of system that can be installed



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 different ventilation circuits always ensure low noise

levels with high performance of pressure and air delivery, inspite of their compact size.



*Air suction (RG0.R)*



*Air suction (RG5S)*



## COMBUSTION HEAD

The RG0.R, RG0.1 and RG0.1R models all have fixed heads. Certain models allow you to choose the length of the combustion head.

This choice depends on the thickness of the front wall and the type of the boiler.

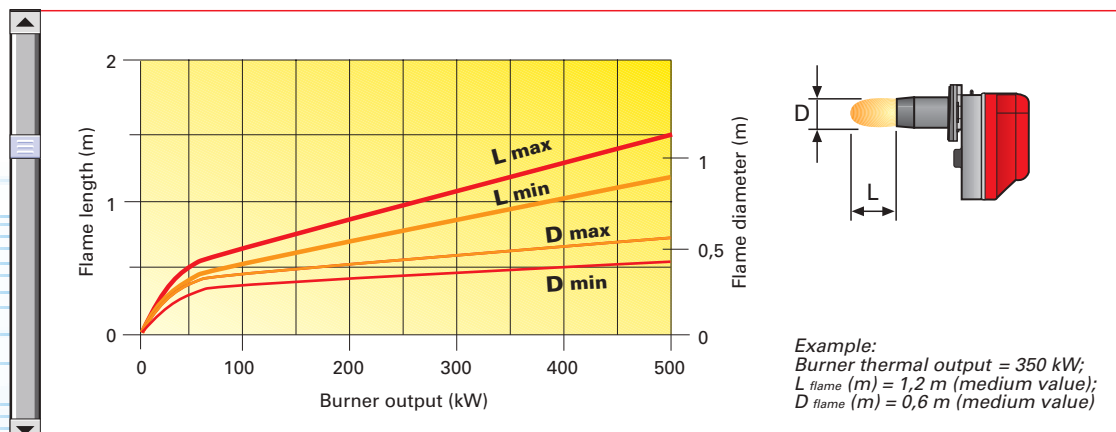
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.

Simple adjustment to the combustion head allows adapting internal geometry of the head to the maximum rated output of the burner.



*Gulliver burner combustion head*

### Dimensions of the flame



# ADJUSTMENT



## BURNER OPERATION MODE

All these models are one stage operation; the RG4S and RG5S models are one stage operation with reduced output ignition.

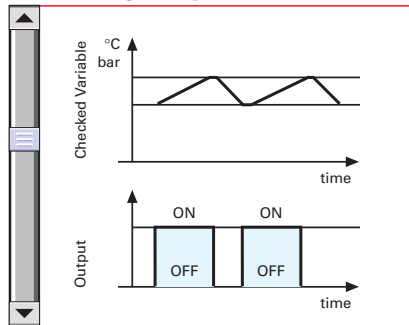


Air damper adjustment (Gulliver RG0)

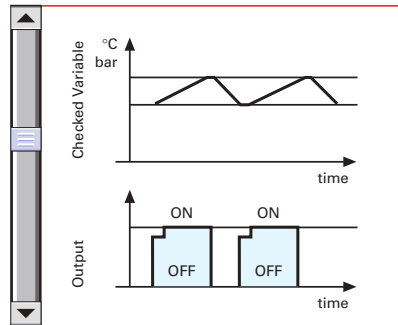


Air damper adjustment (Gulliver RG)

### "One stage" operation

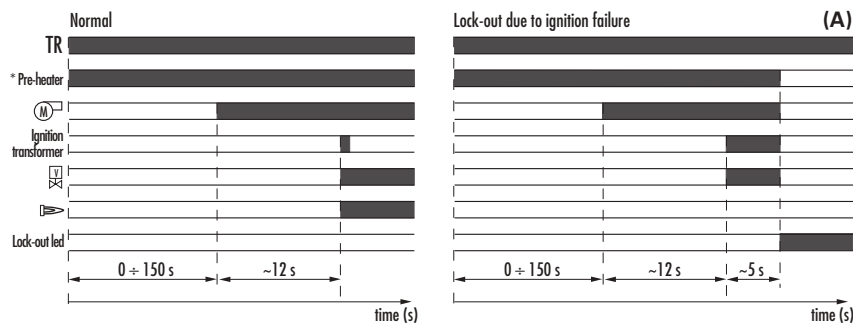


### "One stage" operation with reduced output ignition



Reduced output ignition device (RG5S)

## START UP CYCLE



\* Only model with pre-heater.

(A) Lock-out is shown by a led on the appliance.

### Correct operation

- 0s The burner begins the ignition cycle.
- 0s-12s Pre-purge with the air damper open.
- 12s Ignition.

\* If the pre-heater is fitted (RG...R series), there is a further delay before pre-purge; this delay can reach 150s depending on room and fuel temperatures.

### Lock-out due to ignition failure

If the flame does not light within the safety limit (~ 5s) the burner locks-out.





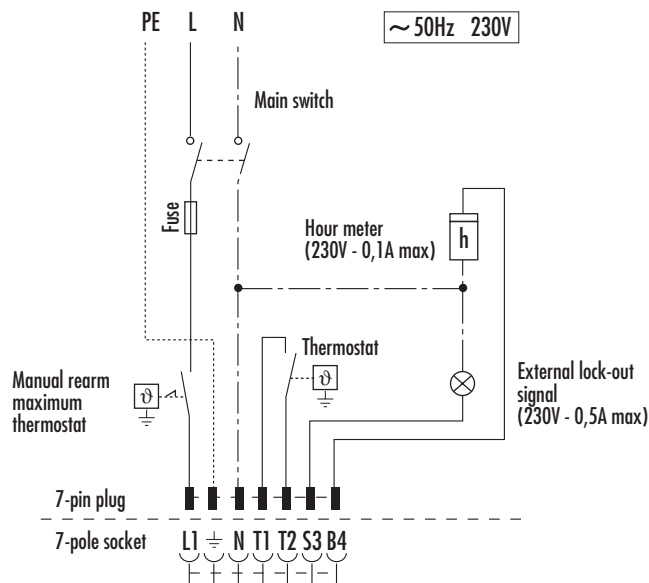
## WIRING DIAGRAMS

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



Control box fitted with ignition transformer

### “ONE STAGE” OPERATION



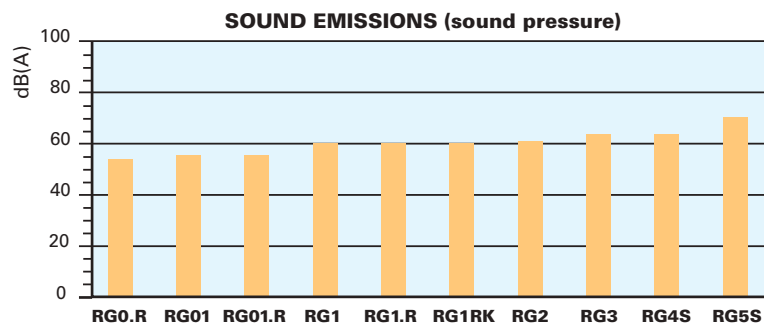
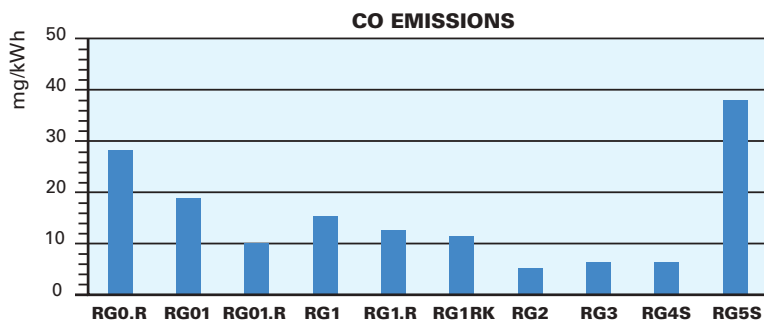
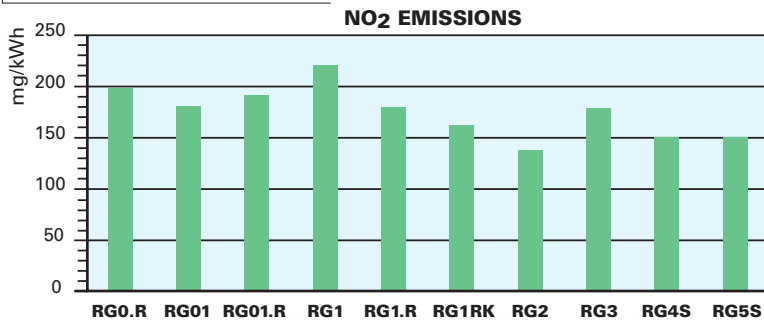
The following table shows the supply lead sections and types of fuse to be used.

Model	▼RG0.R	▼RG0.1	▼RG0.1R	▼RG1	▼RG1R	▼RG1RK	▼RG2	▼RG3	▼RG4S	▼RG5S
F A	6	6	6	6	6	6	6	T6	T6	T6
L mm <sup>2</sup>	1	1	1	1	1	1	1	1	1	1

F = Fuse

L = Lead section

# EMISSIONS



The emission data have been measured in the various models at maximum output, in conformity with EN 267 standard.



Special attention has been paid to noise reduction. All models are fitted with sound-proofing material inside the cover.

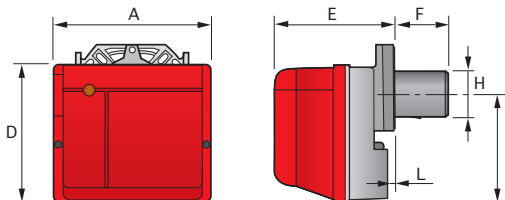


## OVERALL DIMENSIONS (mm)

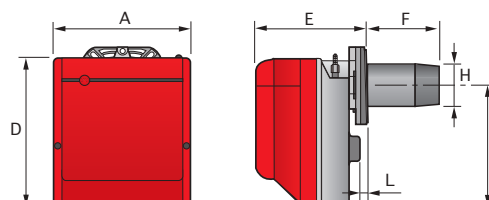
These models are distinguished by their reduced size, in relation to their outputs, which means they can be fitted to any boiler on the market.

### BURNER

GULLIVER RG0



GULLIVER RG

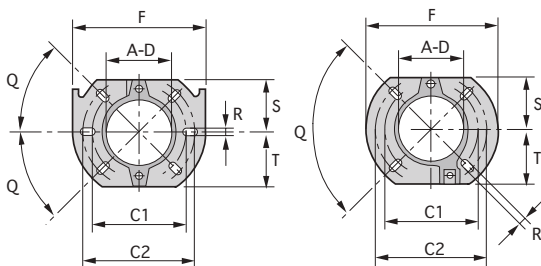


Model	A	D	E	F	H	I	L
▶ RG0.R	255	210	205	93	84	168	5
▶ RG0.1R	255	210	205	93	84	168	5
▶ RG0.1	255	210	205	93	84	168	5
▶ RG1	234	254	196	93	84	210	4
▶ RG1R	234	254	196	93	84	210	4
▶ RG1RK	234	254	196	111	84	210	4
▶ RG2	255	280	202	115	95	230	10
▶ RG3	300	345	228	142	123	285	12
▶ RG4S	300	345	228	142	123	285	12
▶ RG5S	300	345	247	155	125	285	12,5

### BURNER-BOILER MOUNTING FLANGE

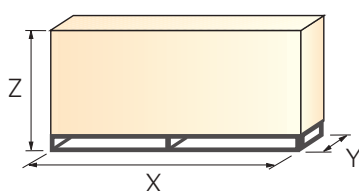
RG0.R - RG0.1R - RG0.1  
RG1 - RG1R - RG1RK - RG2

RG3 - RG4S  
RG5S



Model	A-D	C1	C2	F	Q	R	S	T
▶ RG0.R - RG0.1R RG0.1 - RG1 RG1R - RG1RK	91	130	150	180	45	11	72	72
▶ RG2	106	140	168	189	45	11	83	83
▶ RG3 - RG4S - RG5S	127	160	190	213	90	11	99	99

### PACKAGING



Model	X	Y	Z	kg
▶ RG0.R	358	300	300	9
▶ RG0.1R	358	300	300	9
▶ RG0.1	358	300	300	11
▶ RG1	353	278	320	13
▶ RG1R	353	278	320	13
▶ RG1RK	353	278	320	13
▶ RG2	363	298	350	13
▶ RG3	430	345	430	15
▶ RG4S	430	345	430	18
▶ RG5S	510	345	430	18



## INSTALLATION DESCRIPTION



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



### BURNER SETTING

- ▶ In models RG0.R, RG0.1 and RG0.1R, the air damper opening is easily adjusted without any special tools, thanks to the small wheel that can be turned by hand after releasing the protective flap. The air damper is held open by a special anti-banging device with an electromagnetic coil.
- ▶ The air damper can be opened without removing the burner cover.
- ▶ Head setting area is easily accessible and the operation is simple thanks to a graduated scale.



### MAINTENANCE AND ELECTRICAL CONNECTIONS

- ▶ The maintenance position is easily carried out by hooking the burner to the flange after removing it from the fixing screw (except for RG3, RG4S and RG5S models).
- ▶ Except for models RG0.R, RG0.1 and RG0.1R, the nozzle holder can be serviced through the rear cover without detaching the burner from the boiler.



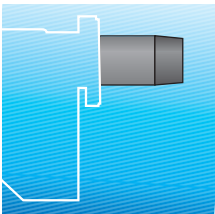
- ▶ The 7-pole socket is incorporated in the control box.  
The 7-pin plug is also supplied for connection to the boiler.



## BURNER ACCESSORIES

### Extended head kit

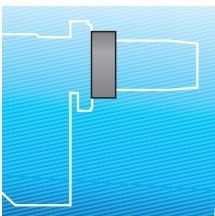
Kits of extended heads are available.



Extended head kit			
Burner	Standard head length (mm)	Extended head length (mm)	Kit code
RG1 - RG1R	93	163	<b>3000963</b>
RG1RK	111	181	<b>3000982</b>
RG2	115	180	<b>3000964</b>
RG2	115	300	<b>3000967</b>
RG3	142	210	<b>3000965</b>
RG3	142	300	<b>3000968</b>
RG4S	142	210	<b>3000966</b>
RG4S	142	300	<b>3000969</b>
RG5S	155	300	<b>3001068</b>

### Spacer kit

By using the special accessories, the burner can be withdrawn to reduce head penetration into the combustion chamber.



Spacer kit		
Burner	Spacer thickness S (mm)	Kit code
RG0.R - RG0.1R - RG0.1 RG1 - RG1R - RG1RK	15	<b>3007931</b>
RG2	25	<b>3000672</b>
RG3 - RG4S - RG5S	25	<b>3000673</b>

### Pre-heater kit

There is a special kit available (only for RG1 model) that, when installed in the combustion head, allows fuel to be heated so as to assure regular burner firing and operation. It can basically be used in special atmospheric conditions (low temperatures), with high diesel oil viscosity and with low deliveries. Refer to the instructions supplied with the "pre-heater kit" for installation.

This kit must be installed in conformity with laws and local regulations.

Pre-heater kit	
Burner	Kit code
RG1	<b>3001083</b>

## Light oil filter

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



Light oil filter		
Burner	Filtering degree (µm)	Code
All the models	60	3006561

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

Light oil filter		
Burner	Filtering degree (µm)	Code
All the 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 the models	100	3000926

## 7-pin plug kit

If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).

7-pin plug kit		
Burner		Kit code
All the models		3000945

## Remote control release kit for 550 SMD control box

There is a special kit available that, when mounted on the 550 SMD control box, lets you reset the burner by remote control.



Remote control release kit for 550 control box		
Burner		Kit code
All the models		3001072

## Control box 550 SMD, sensor flame and short circuit plug

On request, we can supply the control box used on the Low NOx models, which is interchangeable with the one fitted.

This control box has the following features:

- Spark restoration function
- Switch for burner post-ignition/recycling
- Leds signalling the various working stages
- Post-combustion lock-out
- Socket for remote resetting



Control box 550 SMD, sensor flame and short circuit plug		
Burner		Kit code
RG0.R - RG0.1R - RG0.1 - RG1R - RG1RK		3001168 + 3007492
RG1 - RG2 - RG3 - RG4S - RG5S		3001168 + 3007492 + 3007792



## Tester

The tester controls the correct working of the burner components in the GULLIVER series. It can be fitted to all the light-oil models, with or without pre-heater. It is made up of two parts: a control instrument 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 (only photo-resistance).

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.

The following control boxes can be tested:

- 550 SMD      - 553 SE      - 552 SE



Tester	
Burner	Kit code
RG0.R - RG0.1R - RG0.1 - RG1 - RG1R - RG1RK RG2 - RG3 - RG4S - RG5S	<b>3087211</b>

Direct testing	Measurements
MOTOR The switch feeds the motor.	L1-N 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

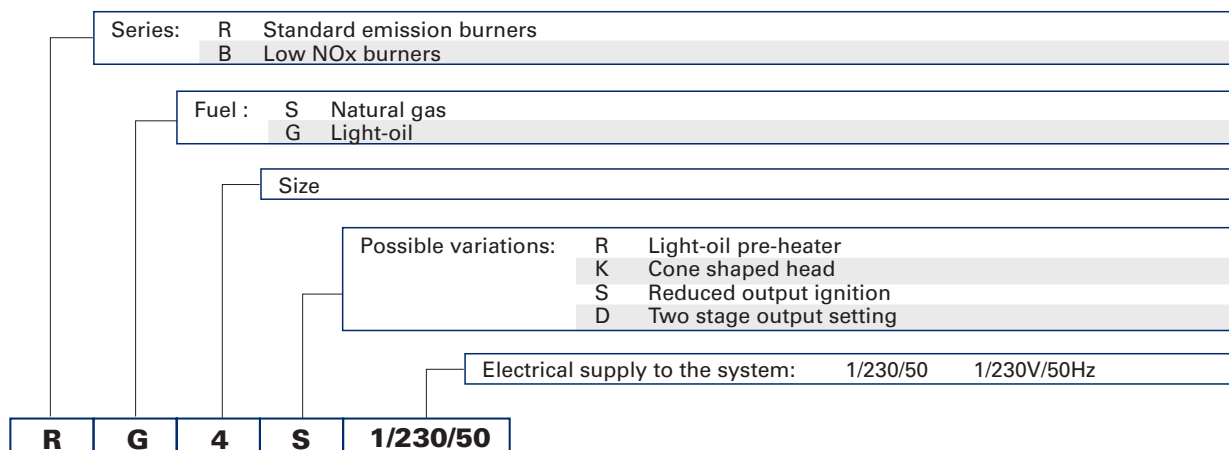


## SPECIFICATION

A special index will help you choose the right burner from the RG models available. There is also a clear and detailed product specification and description.



## DESIGNATION OF SERIES





## AVAILABLE BURNER MODELS

RG0.R	1/230/50
RG0.1	1/230/50
RG0.1R	1/230/50
RG1	1/230/50
RG1R	1/230/50
RG1RK	1/230/50
RG2	1/230/50
RG3	1/230/50
RG4S	1/230/50
RG5S	1/230/50

## PRODUCT SPECIFICATION

### **Burner:**

Completely automatic monobloc light oil burners, with one stage operation fitted with:

- Fan with forward inclined blades
- Cover lined with sound-proofing material
- Air damper, completely closed in stand by, with external adjustment, without need to remove the cover
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level
- PTC fuel pre-heater (optional)
- Reduced output ignition mechanism (optional).

### **Approval:**

- EN 267 standard.

### **Conforming to:**

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

### **Standard equipment:**

- Two flexible pipes for connection to the light oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal screen
- 7-pin plug
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

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

- Extended head kit
- Spacer kit
- Control box 550 SMD and sensor flame
- Remote control release kit for 550 SMD control box
- Tester
- Pre-heater
- Light oil filter
- 7-pin plug kit.





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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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