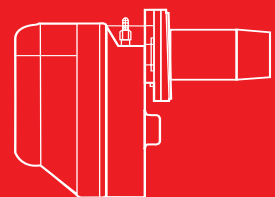
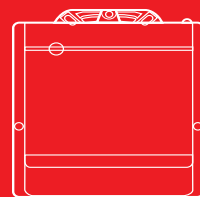




Gulliver RG Series

One Stage Light Oil Burners

RG0.R	16.6 ÷ 27.3	kW
RG0.1	22.5 ÷ 35.6	kW
RG0.1R	21.3 ÷ 36.7	kW
RG1	32.0 ÷ 60.0	kW
RG1R	20.0 ÷ 60.0	kW
RG01RK	15.0 ÷ 60.0	kW
RG2	47.0 ÷ 119.0	kW
RG3	83.0 ÷ 178.0	kW
RG4S	118.5 ÷ 237.0	kW
RG5S	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.

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. This document contains confidential and proprietary information of RIELLO S.p.A. Unless authorised, this information shall not be divulged, nor duplicated in whole or in part.

Technical Data

MODEL			RG0.R	RG0.1	RG0.1R
Burner operation mode				One stage	
Modulation ratio at max. output				===	
Servomotor	type			===	
	run time s			===	
Heat output	kW		16.6 ÷ 27.3	22.5 ÷ 35.6	21.3 ÷ 36.7
	Mcal/h		14.3 ÷ 23.4	19.4 ÷ 30.6	18.3 ÷ 31.6
	Kg/h		1.4 - 2.3	1.9 - 3	1.8 - 3.1
Working temperature		°C min./max.		0/40	
FUEL/AIR DATA					
Light oil	net calorific value	kWh/kg		11.8	
		kcal/kg		10200	
	viscosity at 20°C	mm ² /s (cSt)		4 - 6 (at 20°C)	
Pump	type			R.B.L	
	delivery	Kg/h		30 (at 12 bar)	
Atomised pressure		bar		8 - 15	
Fuel temperature		max. °C		50	
Fuel pre-heater			YES	NO	YES
Fan		type	Centrifugal with forward curve blades		
Air temperature		max. °C		40	
ELECTRICAL DATA					
Electrical supply		Ph/Hz/V		1/50/230 ± 10%	
Auxiliary electrical supply		Ph/Hz/V		===	
Control box		type	RBL 553 SE* or MO 550	RBL 552 SE	RBL 553 SE
Total electrical power		kW	0.290	0.170	0.290
Auxiliary electrical power		kW		===	
Heaters electrical power		kW	0.07 (PTC)	===	0.07 (PTC)
Protection level		IP		XOD (IP 40)	
Fan motor	electrical power	kW		0.09	
	rated current	A		0.85	
	start up current	A		3.4	
	protection level	IP		20	
Pump motor	electrical power	kW		===	
	rated current	A		===	
	start up current	A		===	
	protection level	IP		===	
Ignition transformer		type	Incorporated in the control box		
		V1 - V2		(-) - 8 Kv	
		I1 - I2		(-) - 30 mA	
Operation			Intermittent (at least one stop every 24h)		
EMISSIONS					
Noise levels	Sound pressure	dB (A)	56	57	57
	Sound power	W		===	
Light oil	CO emission	mg/kWh	28	19	10
	grade of smoke indicator	N° Bacharach		< 1	
	CxHy emission	mg/kWh		< 10 (after the first 20s)	
	NOx emission	mg/kWh	200	181	190
APPROVAL					
Directive			2006/42/EC - 2009/142/EC - 2014/30/UE - 2014/35/UE		
Conforming to			EN 267		
Certification			CE-00360272/99	CE-00360294/99	CE-00360273/99

* For this model are available different codes, according to the control box type.
Contact Riello Burners for further details.

Reference conditions:

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.

MODEL		RG1	RG1R	RG1RK
Burner operation mode			One stage	
Modulation ratio at max. output			===	
Servomotor	type		===	
	run time s		===	
Heat output	kW	32 ÷ 60	20 ÷ 60	15 ÷ 60
	Mcal/h	27.5 ÷ 51.6	17.2 ÷ 51.6	13 ÷ 51.6
	Kg/h	2.7 - 5	1.7 - 5	1.3 - 5
Working temperature	°C min./max.		0/40	
FUEL/AIR DATA				
Light oil	net calorific value	kWh/kg	11.8	
		kcal/kg	10200	
	viscosity at 20°C	mm ² /s (cSt)	4 - 6 (at 20°C)	
Pump	type		R.B.L	
	delivery	Kg/h	30 (at 12 bar)	
Atomised pressure		bar	8 - 15	
Fuel temperature		max. °C	50	
Fuel pre-heater			NO	YES
Fan		type	Centrifugal with forward curve blades	
Air temperature		max. °C	40	
ELECTRICAL DATA				
Electrical supply		Ph/Hz/V	1/50/230 ± 10%	
Auxiliary electrical supply		Ph/Hz/V	===	
Control box		type	RBL 552 SE	RBL 553 SE
				RBL 553 SE* or MO 550
Total electrical power		kW	0.170	0.290
Auxiliary electrical power		kW		===
Heaters electrical power		kW	===	0.12 (PTC)
Protection level		IP		X0D (IP 40)
Fan motor	electrical power	kW		0.09
	rated current	A		0.85
	start up current	A		3.4
	protection level	IP		20
Pump motor	electrical power	kW		===
	rated current	A		===
	start up current	A		===
	protection level	IP		===
Ignition transformer	type		Incorporated in the control box	
	V1 - V2		(-) - 8 Kv	
	I1 - I2		(-) - 30 mA	
Operation			Intermittent (at least one stop every 24h)	
EMISSIONS				
Noise levels	Sound pressure	dB (A)	60	
	Sound power	W	===	
Light oil	CO emission	mg/kWh	15	13
	grade of smoke indicator	N° Bacharach	< 1	
	CxHy emission	mg/kWh	< 10 (after the first 20s)	
	NOx emission	mg/kWh	220	180
APPROVAL				
Directive			2006/42/EC - 2009/142/EC - 2014/30/UE - 2014/35/UE	
Conforming to			EN 267	
Certification			CE-00360341/03	CE-00360341/03
				CE-00360341/03

* For this model are available different codes, according to the control box type. Contact Riello Burners for further details.

Reference conditions:

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.

MODEL		RG2	RG3	RG4S	RG5S	
Burner operation mode		One stage				
Modulation ratio at max. output		===				
Servomotor	type	===				
	run time s	===				
Heat output	kW	47 ÷ 119	83 ÷ 178	118.5 ÷ 237	160 ÷ 309.5	
	Mcal/h	40.4 ÷ 102.3	71.4 ÷ 153	102 ÷ 203.8	137.6 ÷ 266.2	
	Kg/h	4 - 10	7 - 15	10 ÷ 20	13.5 - 26.1	
Working temperature	°C min./max.	0/40				
FUEL/AIR DATA						
Light oil	net calorific value	kWh/kg	11.8			
		kcal/kg	10200			
	viscosity at 20°C	mm ² /s (cSt)	4 - 6 (at 20°C)			
Pump	type		R.B.L			
	delivery	Kg/h	30 (at 12 bar)			
Atomised pressure		bar	8 - 15			
Fuel temperature		max. °C	50			
Fuel pre-heater			NO	NO	NO	NO
Fan		type	Centrifugal with forward curve blades			
Air temperature		max. °C	40			
ELECTRICAL DATA						
Electrical supply		Ph/Hz/V	1/50/230 ± 10%			
Auxiliary electrical supply		Ph/Hz/V	===			
Control box		type	RBL 552 SE* or MO 550	RBL 552 SE* or MO 550	RBL 552 SE* or MO 550	RBL 552 SE*
Total electrical power		kW	0.180	0.390	0.390	0.470
Auxiliary electrical power		kW	===			
Heaters electrical power		kW	===	===	===	===
Protection level		IP	X0D (IP 40)			
Fan motor	electrical power	kW	0.09	0.15	0.15	0.25
	rated current	A	0.9	1.9	2	2.1
	start up current	A	3.6	7.6	8	8.4
	protection level	IP	20			
Pump motor	electrical power	kW	===			
	rated current	A	===			
	start up current	A	===			
	protection level	IP	===			
Ignition transformer		type	Incorporated in the control box			
		V1 - V2	(-) - 8 Kv			
		I1 - I2	(-) - 30 mA			
Operation		Intermittent (at least one stop every 24h)				
EMISSIONS						
Noise levels	Sound pressure	dB (A)	61	64	64	71
	Sound power	W	===			
Light oil	CO emission	mg/kWh	5	6	6	38
	grade of smoke indicator	N° Bacharach	< 1			
	CxHy emission	mg/kWh	< 10 (after the first 20s)			
	NOx emission	mg/kWh	137	180	150	150
APPROVAL						
Directive		2006/42/EC - 2009/142/EC - 2014/30/UE - 2014/35/UE				
Conforming to		EN 267				
Certification		CE-00360344/03	CE-00360348/04	CE-00360348/04	CE-00360310/01	

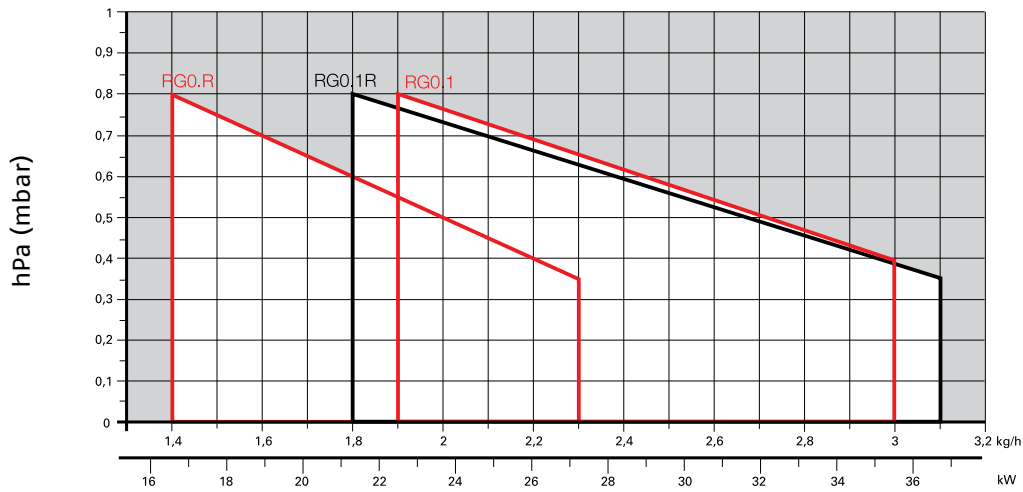
* For this model are available different codes, according to the control box type. Contact Riello Burners for further details.

Reference conditions:

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.

Firing Rates

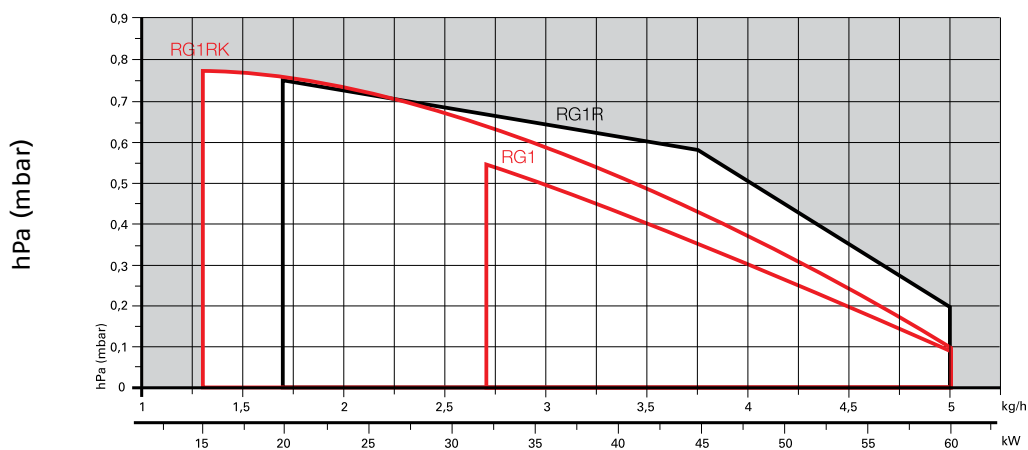
GULLIVER RG0.R - RG0.1R - RG0.1



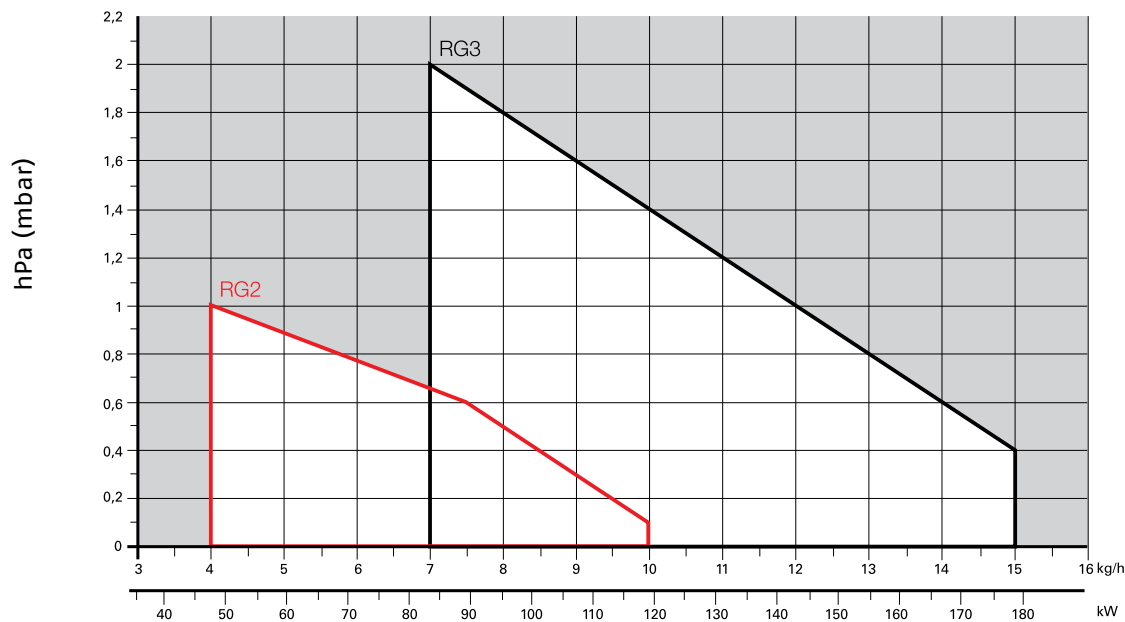
Useful working field for choosing the burner

Test conditions conforming to EN267
 Temperature: 20°C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

GULLIVER RG1RK - RG1R - RG1



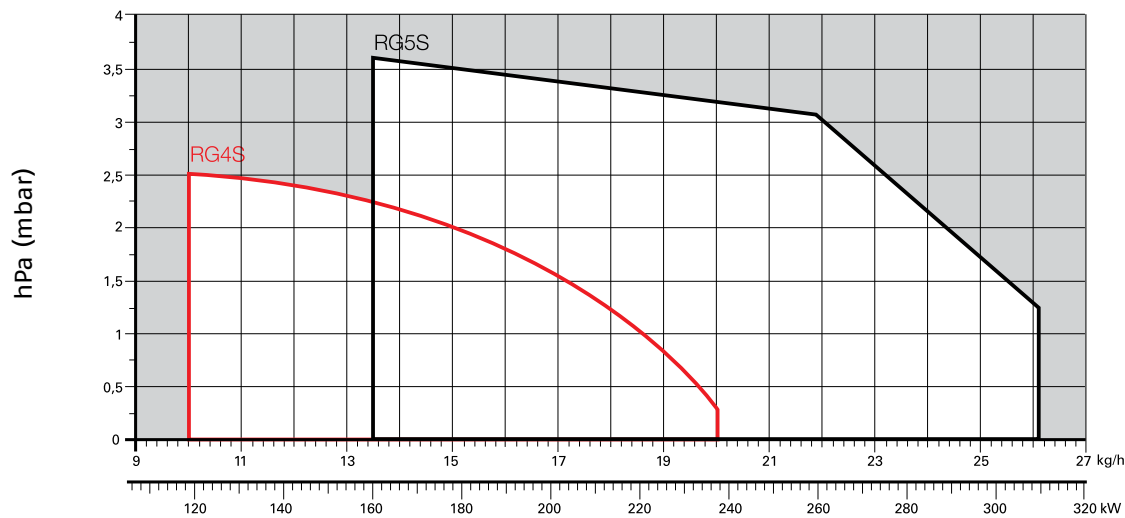
GULLIVER RG2 - RG3



Useful working field for choosing the burner

Test conditions conforming to EN267
 Temperature: 20°C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

GULLIVER RG4S - RG5S



Fuel Supply

Hydraulic Circuit

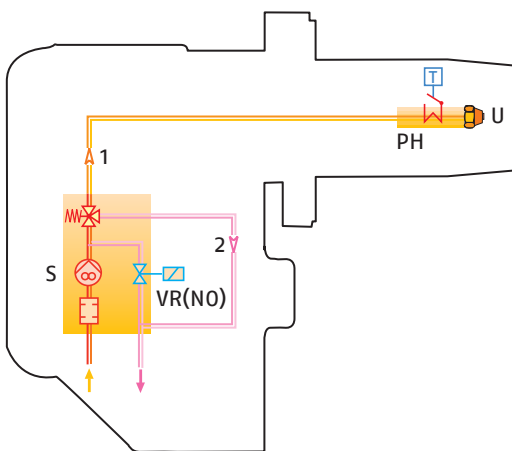
All the burners have a geared pump with safety valve on the return circuit.
 All models are fitted with Riello R.B.L. pump.

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

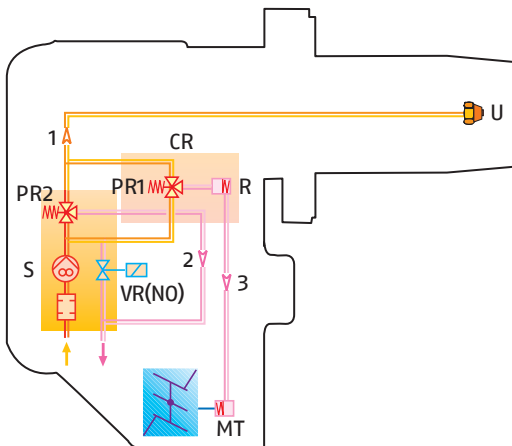
RG0.R - RG0.1 - RG0.1R - RG1 - RG1R - RG1RK - RG2 - RG3



Fuel pump



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.



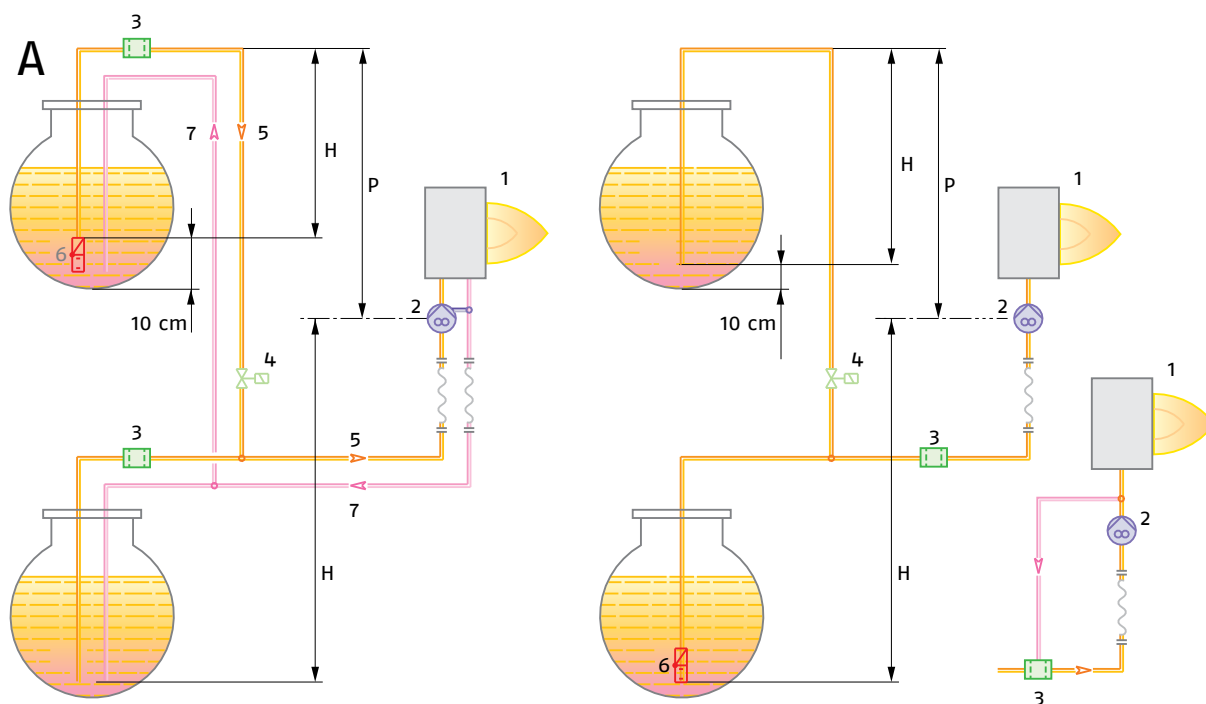
Pre-heater

Selecting the fuel supply lines

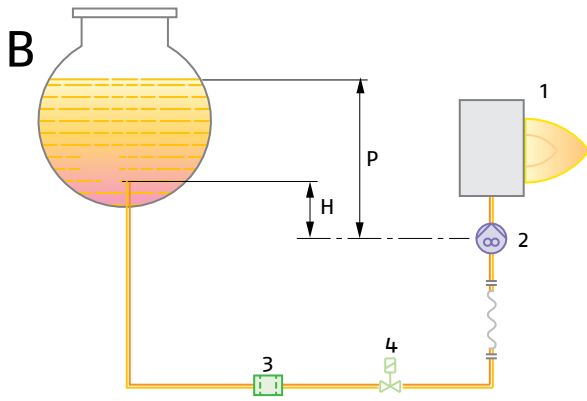
The fuel feed must be completed with the safety devices required by the local regulations in force.

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)				
	Type A system		Type B system	
Pipe size	∅ 8 mm	∅ 10 mm	∅ 8 mm	∅ 10 mm
H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (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	-	-



SELECTING THE FUEL SUPPLY LINES



H	Pump/Foot valve height difference
∅	Inside 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 type of the boiler.

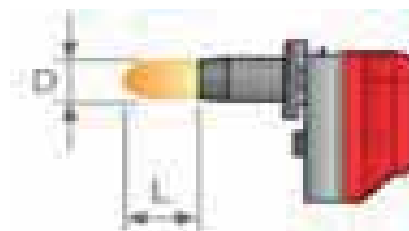
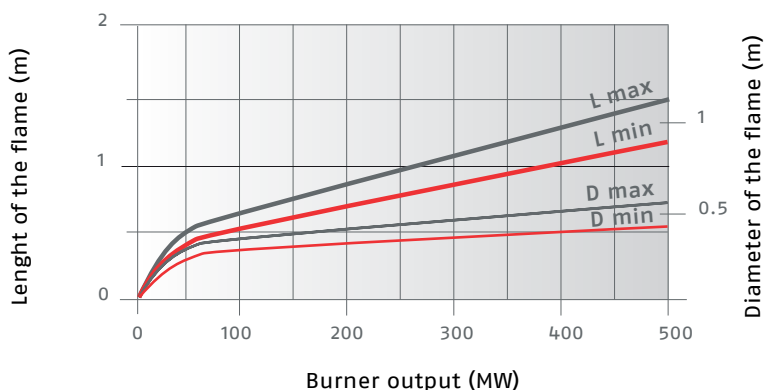
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.

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



Combustion head

DIMENSION OF THE FLAME



Example:

Burner thermal output = 350 kW;

L_{flame} (m) = 1.2 m (medium value);

D_{flame} (m) = 0.6 m (medium value)

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 (RG0)

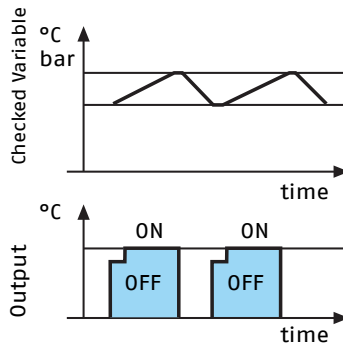
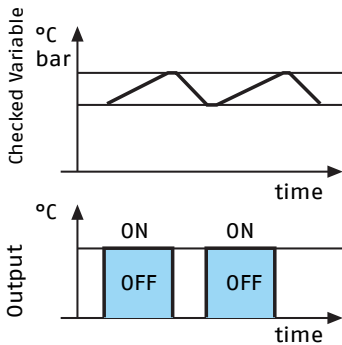


Air damper adjustment (RG)

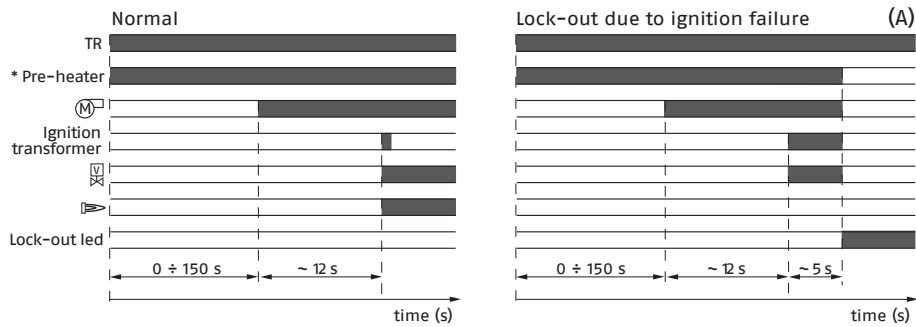
"ONE STAGE" OPERATION

"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 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.

Burner wiring

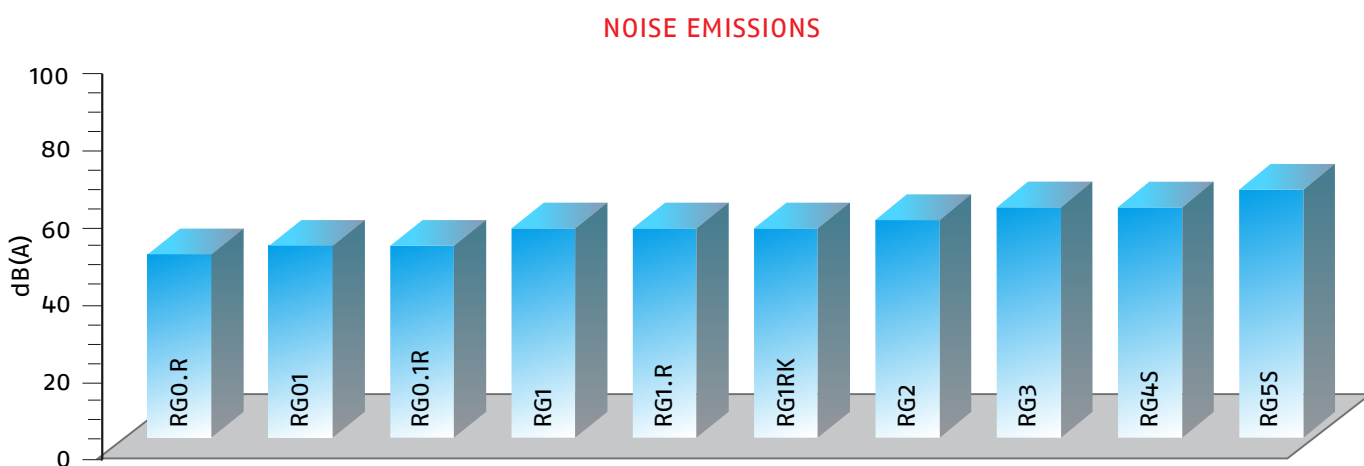
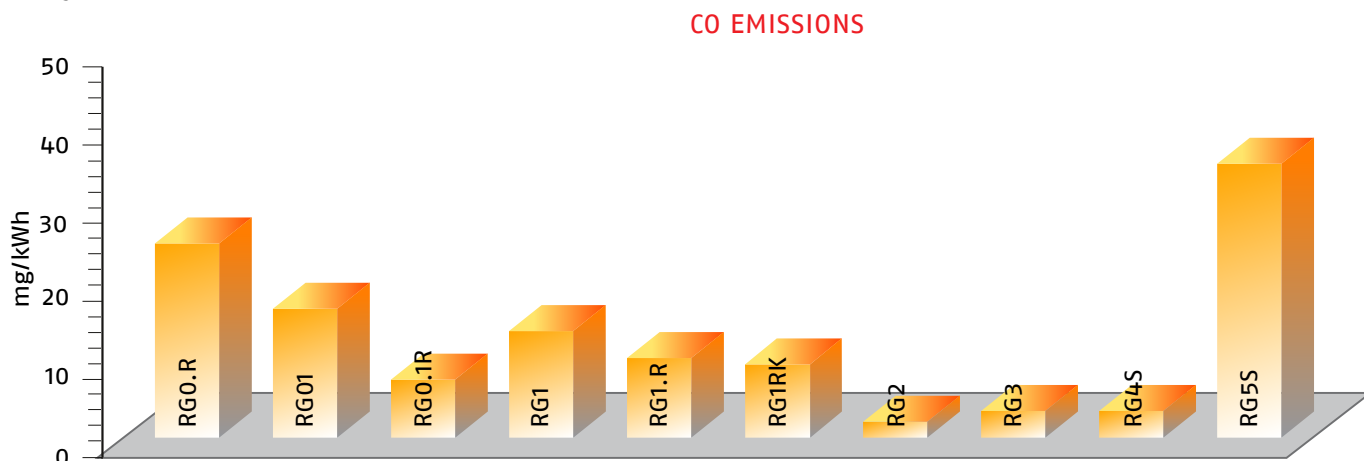
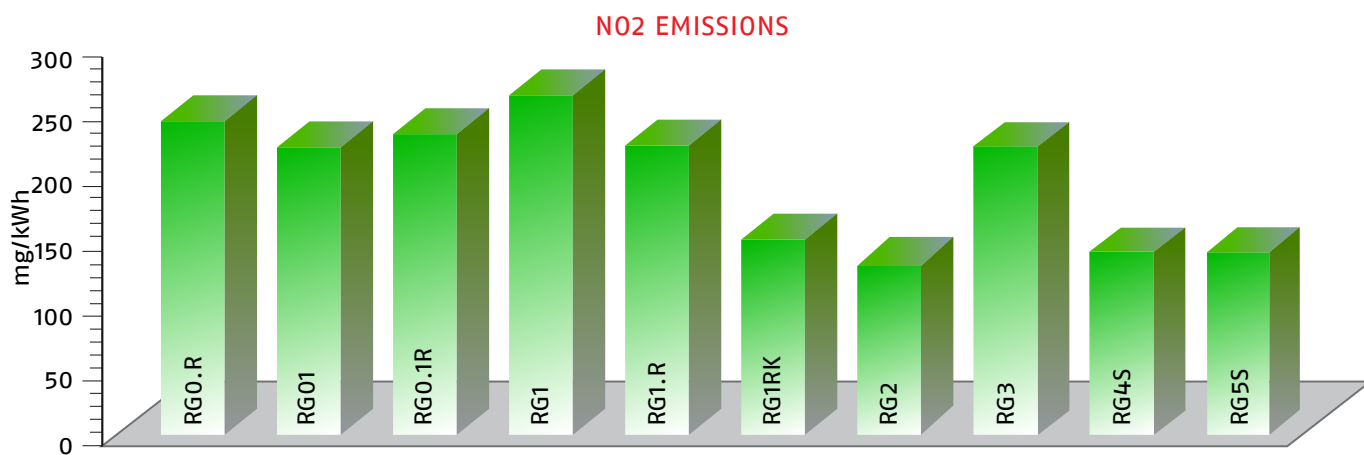
Electrical connections must be made by qualified and skilled personnel in conformity with the local regulations in force.



Control box fitted with ignition transformer

Emissions

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

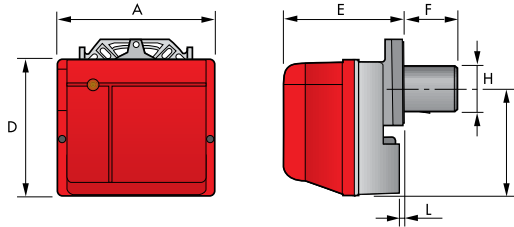


Special attention has been paid to noise reduction. All models are fitted with sound-proofing material inside the cover.

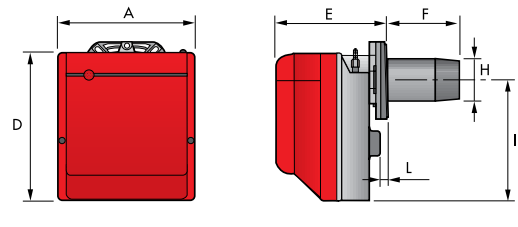


Overall Dimensions (mm)

GULLIVER RGO



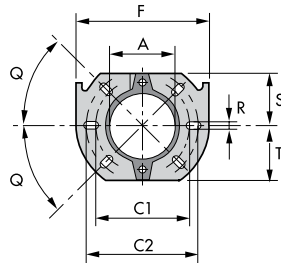
GULLIVER RG



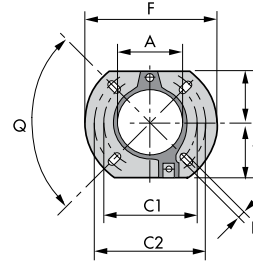
Model	A	D	E	F	H	I	L
RG0.R	255	210	205	93	84	168	5
RG0.1R	255	210	205	93	84	168	5
RG0.1	255	210	205	93	84	168	5
RG1	234	254	196	93	84	210	4
RG1R	234	254	196	93	84	210	4
RG1RK	234	254	196	111	84	210	4
RG2	255	280	202	115 - 185	95	230	10
RG3	300	345	228	142 - 300	123	285	12
RG4S	300	345	228	142 - 212	123	285	12
RG5S	300	345	247	155 - 395	125	285	12.5

BURNER - BOILER MOUNTING FLANGE

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



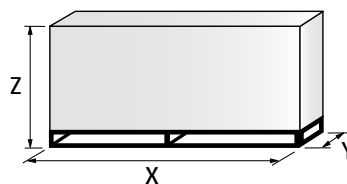
RG3 - RG4S
RG5S



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.

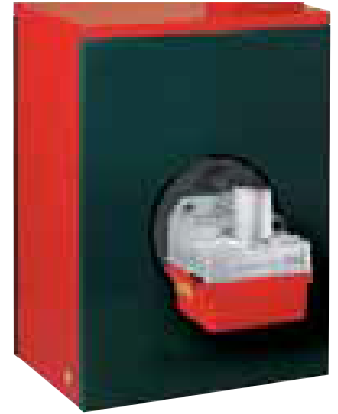


Head setting area is easily accessible and the operation is simple thanks to a graduated scale.



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.

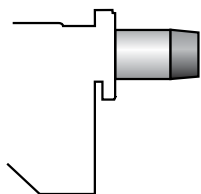


The 7-pole socket is incorporated in the control box.
The 7-pin plug is also supplied for connection to the boiler.



Burner accessories

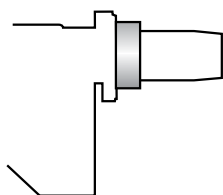
EXTENDED HEAD KIT



Kits of extended heads are available.

BURNER	STANDARD HEAD LENGTH (mm)	EXTENDED HEAD LENGTH (mm)	KIT CODE
RG1 - RG1R	93	163	3000963
RG1RK	111	181	3000982
RG2	115	180	3000964
RG2	115	300	3000967
RG3	142	210	3000965
RG3	142	300	3000968
RG4S	142	210	3000966
RG4S	142	300	3000969
RG5S	155	300	3001068

SPACER KIT



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

BURNER	SPACER THICKNESS S (mm)	KIT CODE
RG0.R - RG0.1R - RG0.1	15	3007931
RG1 - RG1R - RG1RK		
RG2	25	3000672
RG3 - RG4S - RG5S	25	3000673

PRE-HEATER KIT

This kit is used only for Gulliver RG1 burner. It can be installed in particular weather conditions and with viscous oil.

BURNER	KIT CODE
RG1	3001083

7-PIN PLUG KIT

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

BURNER	KIT CODE
ALL MODELS	3000945

CONTROL BOX MO 550, SENSOR FLAME AND SHORT CIRCUIT PLUG



On request, we can supply a more efficient control box with following features:

- Digital technology.
- Post-ignition of 3 seconds after safety time (total ignition time of 8 seconds).
- Multi-color LED signalling the various working stage.
- Visual or PC interface diagnostic functions through multi-color LED device.
- Remote lock-out reset (the connection is supplied with the M0 550 accessory).
- Recycling for 3 attempts if there is flame failure during operation.
- Programmable post-purge (up to 6 minutes), continuous purge, long prepurge (2 minutes).
- Post-combustion lock-out.
- Logging of burner operation parameters (for example operating time, number and type of lock-outs).

BURNER	KIT CODE
RG0.R - RG0.1R - RG0.1 - RG1R - RG1RK	3001168+3007492
RG1 - RG2 - RG3 - RG4S - RG5S	3001168+3007492+3007792

LIGHT OIL FILTER



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

BURNER	FILTERING DEGREE (µm)	KIT CODE
ALL MODELS	60	3006561

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

BURNER	FILTERING DEGREE (µm)	KIT CODE
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.

BURNER	FILTERING DEGREE (µm)	KIT CODE
ALL MODELS	100	3000926

PC INTERFACE KIT

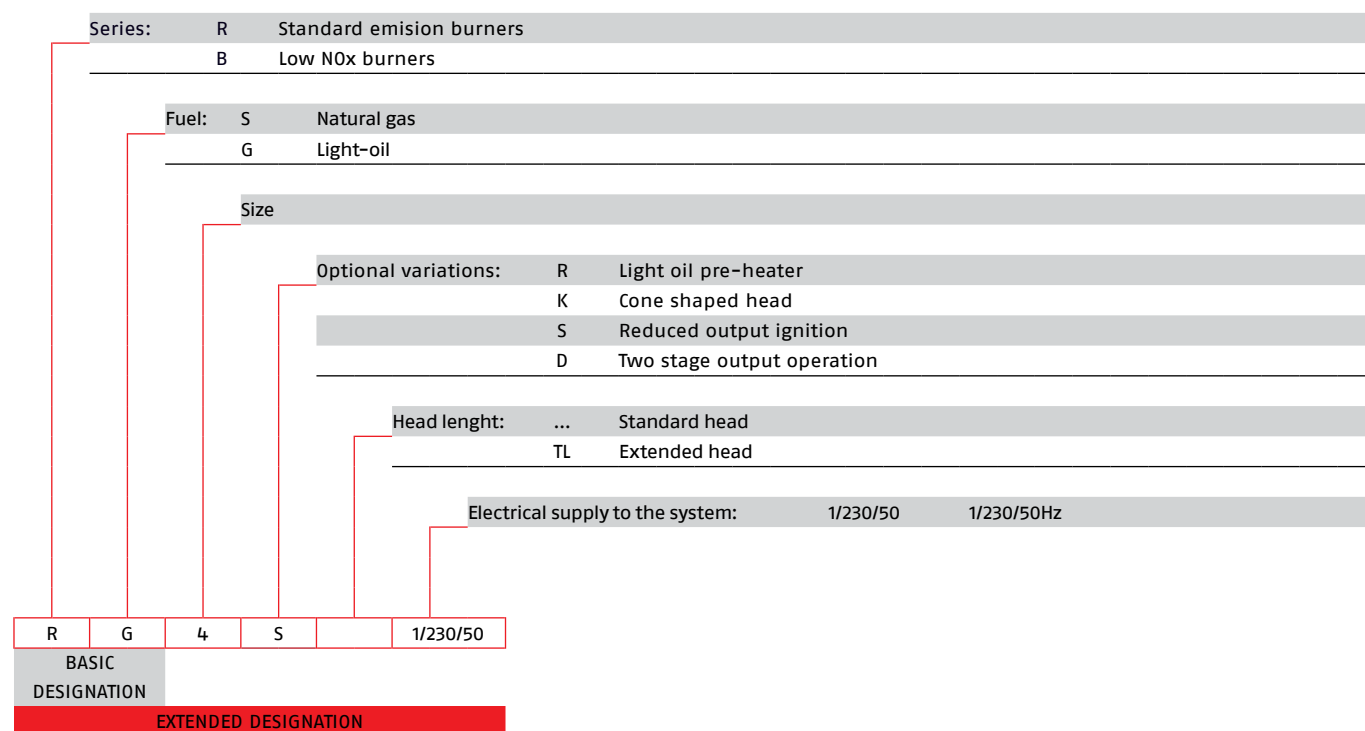


To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.

BURNER	KIT CODE
RG0.R - RG1RK - RG2 - RG3 - RG4S	3002731

Specification

DESIGNATION OF SERIES



STATE OF SUPPLY

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

- Fan with forward curve 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).

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 (not included in models with digital control box M0 550)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Riello Burners a world of experience in every burner we sell.

05/2016

TS0001UK05



[1]

Across the world, Riello sets the standard in reliable and high efficiency burner technology.

With burner capacity from 5 kW to 48 MW, Riello gas, oil, dual fuel and Low Nox burners deliver unbeatable performance across the full range of residential and commercial heating applications, as well as in industrial processes.

With headquarter in Legnago, Italy, Riello has been manufacturing premium quality burners for over 90 year. The manufacturing plant is equipped with the most innovative systems of assembling lines and modern manufacturing cells for a quick and flexible response to the market.



[2]

Besides, the Riello Combustion Research Centre, located in Angiari, Italy, represents one of the most modern facility in Europe and one of the most advanced in the world for the development of the combustion technology.

Today, the company's presence on worldwide markets is distinguished by a well-constructed and efficient sales network, alongside many important Training Centres located in various countries to meet its customers' needs. Riello has 13 operational branches abroad (in Europe, America and Asia), with customers in over 60 countries.

[1] BURNERS PRODUCTION PLANT
S. PIETRO, LEGNAGO (VERONA) - ITALIA

[2] HEADQUARTER BURNERS DIVISION
S. PIETRO, LEGNAGO (VERONA) - ITALIA

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