TECHNICAL DATA LEAFLET

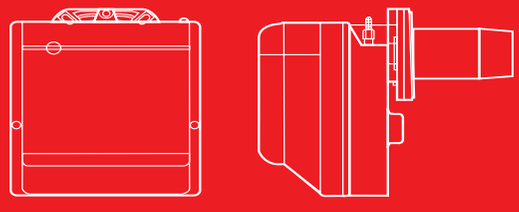
LIGHT OIL



Gulliver RGF Series

One Stage Light Oil Burners

RG1F	32,0	÷	60,0	kW
RG2F	47,0	÷	119,0	kW
RG3F	83,0	÷	178,0	kW
RG4F	118,5	÷	237,0	kW



www.riello.com

Energy For Life

ПРОМЭЛЕКТРОНИКА / sales@prom-elec.com

The Riello Gulliver RGF series of one stage light oil burners, is a complete range of products developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications which require a reliable, user-friendly industrial product with enhanced performance and specific functions.
The Gulliver RGF series is available in four different models, with an output ranging from 32 to 237 kW, divided in three different structures.
All the models use the same components designed by Riello for the Gulliver series and have the same ventilation system and overall dimensions as the previous one stage light oil models.
This new series can operates on 50 or 60 Hz and a Voltage 220 - 230 Volt (dual frequency).
All these burners are conform to the EN 267 Standard (Forced draught oil burners) and to European Directives for EMC, Low Voltage and Machinery. For depressurised working field see EN 746-2 Standard.
All the Gulliver RGF 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			RG1F	RG2F	RG3F	RG4F
Burner operation mode			One stage			
Modulation ratio at max. output			===			
Servomotor		type	===			
		run time s	===			
Heat output		kW	32 ÷ 60	47 ÷ 119	83 ÷ 178	118,5 ÷ 237
		Mcal/h	27,5 ÷ 51,6	40,4 ÷ 102,3	71,4 ÷ 153,1	102 ÷ 203,8
		Kg/h	2,7 ÷ 5	4 ÷ 10	7 ÷ 15	10 ÷ 20
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		Riello made by SUNTEC			
	delivery	Kg/h	30 (at 12 bar)			
Atomised pressure		bar	8 - 15			
Fuel temperature		max. °C	50			
Fuel pre-heater			NO			
Fan		type	Centrifugal with forward curve blades			
Air temperature		max. °C	40			
ELECTRICAL DATA						
Electrical supply		Ph/Hz/V	1/50-60/220-230 ± 10%			
Auxiliary electrical supply		Ph/Hz/V	===			
Control box		type	MO 550			
Total electrical power		kW	0,155 (at 50Hz) 0,200 (at 60 Hz)	0,165 (at 50Hz) 0,220 (at 60 Hz)	0,380 (at 50Hz) 0,520 (at 60 Hz)	0,370 (at 50Hz) 0,510 (at 60 Hz)
Auxiliary electrical power		kW	===			
Heaters electrical power		kW	===			
Protection level		IP	X0D (IP 40)			
Fan motor	electrical power	kW	0,09	0,09	0,15	0,15
	rated current	A	0,7 (at 50 Hz) 0,9 (at 60 Hz)	0,75 (at 50 Hz) 1,0 (at 60 Hz)	1,7 (at 50 Hz) 2,35 (at 60 Hz)	1,65 (at 50 Hz) 2,3 (at 60 Hz)
	start up current	A	2,8 (at 50 Hz) 3,6 (at 60 Hz)	3,0 (at 50 Hz) 4,0 (at 60 Hz)	6,8 (at 50 Hz) 9,4 (at 60 Hz)	6,6 (at 50 Hz) 9,2 (at 60 Hz)
	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 24h)			
EMISSIONS						
Noise levels	Sound pressure	dB (A)	60	61	64	64
	Sound power	W	===			
Light oil	CO emission	mg/kWh	15	5	6	6
	grade of smoke indicator	N° Bacharach	< 1			
	CxHy emission	mg/kWh	< 10 (after the first 20s)			
	NOx emission	mg/kWh	220	137	180	150
APPROVAL						
Directive			2006/42/EC - 2009/142/EC - 2014/30/UE - 2014/35/UE			
Conforming to				EN 267 - EN 746-2		
Certification			CE 0036 0341/03	CE 0036 0344/03	CE 0036 0348/04	CE 0036 0348/04

* 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.

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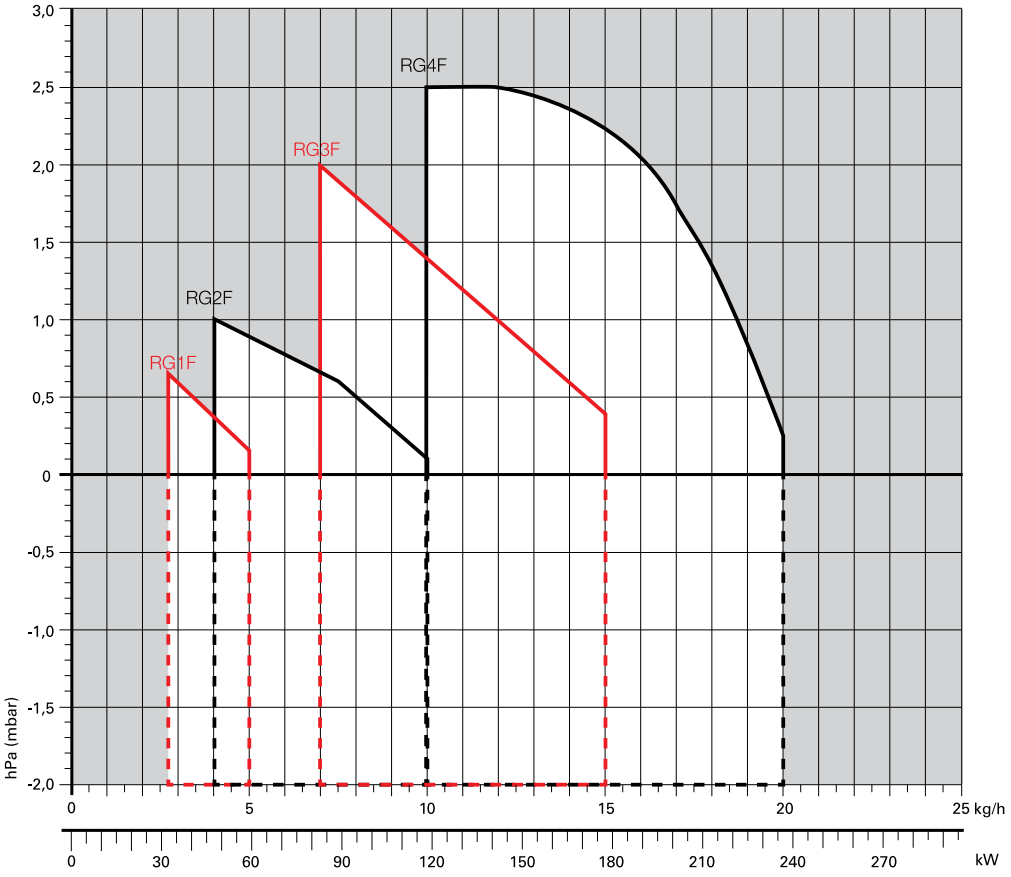
Firing Rates



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.

IMPORTANT:
For the part of the working field that is depressurised, refer to EN 746-2 Standard.

Fuel Supply

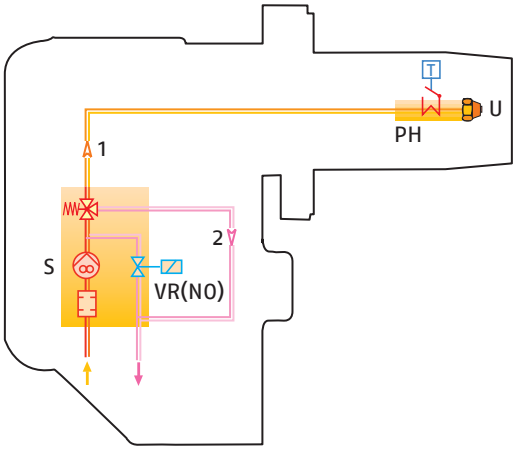
Hydraulic Circuit

All the burners have a geared pump with safety valve on the return circuit.
The RG1F, RG2F, RG3F and RG4F models are fitted with a Riello pump made by Suntec.



Fuel pump

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



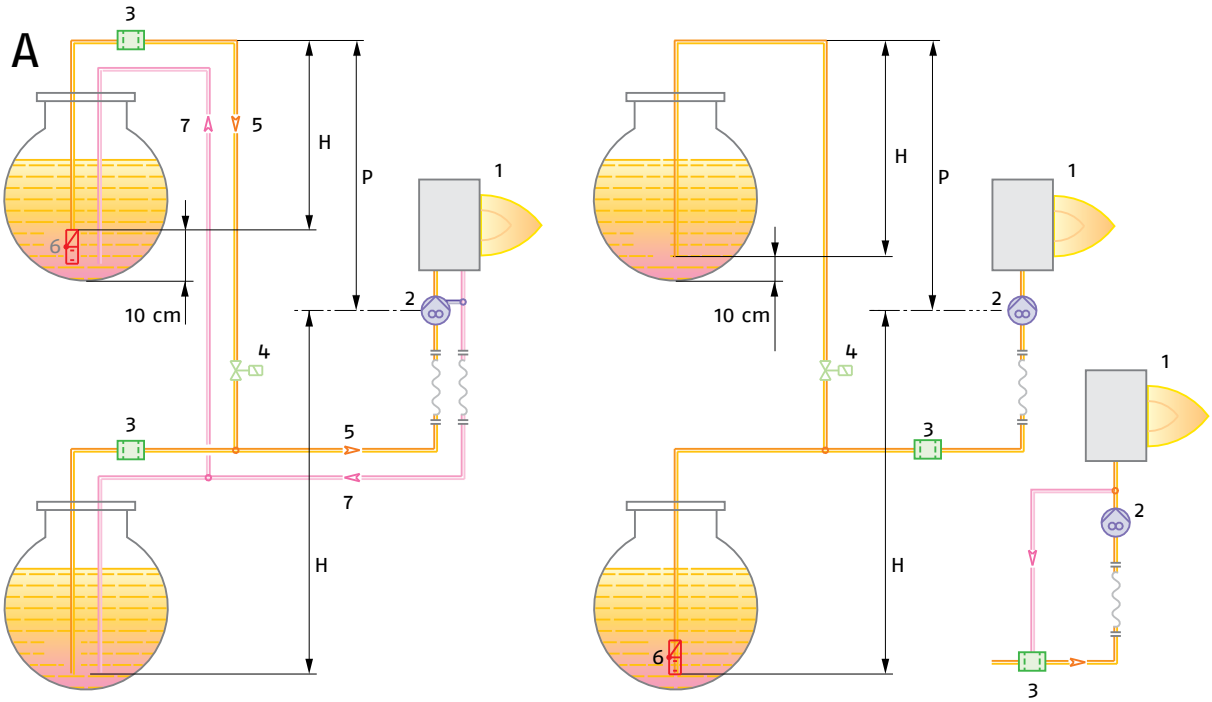
S	Pump with filter and pressure regulator on the delivery pipe
VR (NO)	Oil return valve on the delivery pipe
1	Oil input pipe to the nozzle
2	Oil return pipe from the regulator
3	Oil delivery pipe to the air damper hydraulic jack
PH	Oil pre-heater with thermostat (where provided)
U	Nozzle

Selecting the fuel supply lines

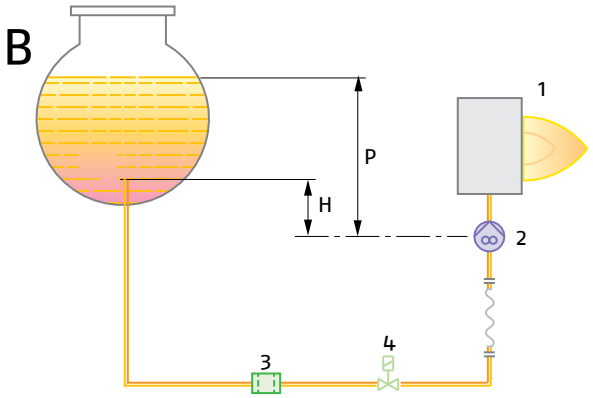
The fuel feed must be completed with the safety devices required by the local regulations in force.

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 lenght of the pipework L (m)				
	Type A system		Type B system	
Pipe size	Ø 8 mm	Ø 10 mm	Ø 8 mm	Ø 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
Ø	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 ventilation circuits always ensure low noise levels with high performance of pressure and air delivery, inspite of their compact size.



Air suction

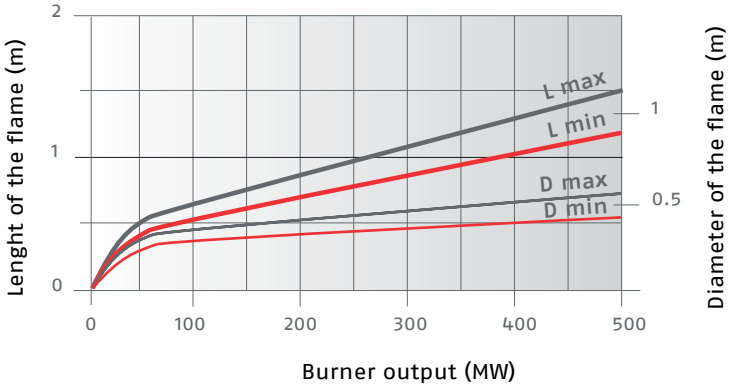
Combustion Head

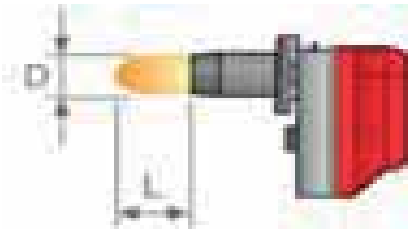
All models allow you to choose the length of the combustion head.
This choice depends on the thickness of the front wall and the type of the boiler.
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.
Simple adjustment to the combustion head allows adapting internal geometry of the head to the maximum rated output of the burner.



Combustion head

DIMENSION OF THE FLAME



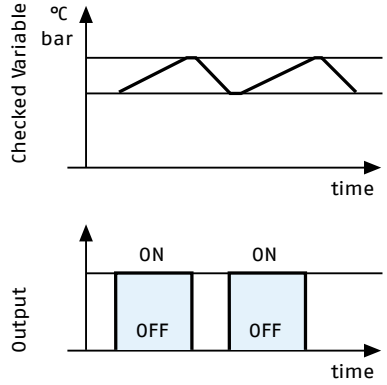


Example:
Burner thermal output = 350 kW;
L_{flame} (m) = 1.2 m (medium value);
D_{flame} (m) = 0.6 m (medium value)

Adjustment

BURNER OPERATION MODE

All these models are one stage operation.

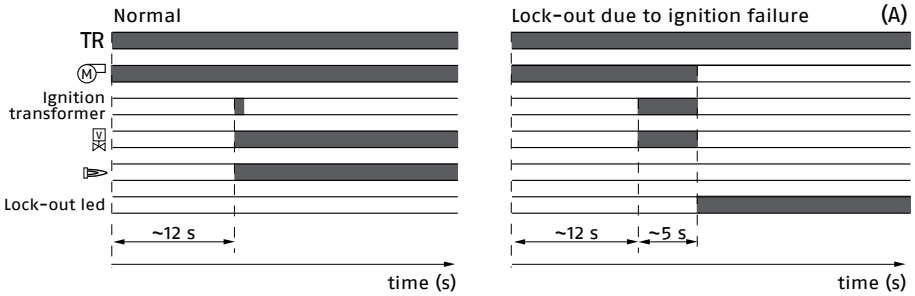


"One stage" operation



Air damper adjustment

START UP CYCLE



(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.

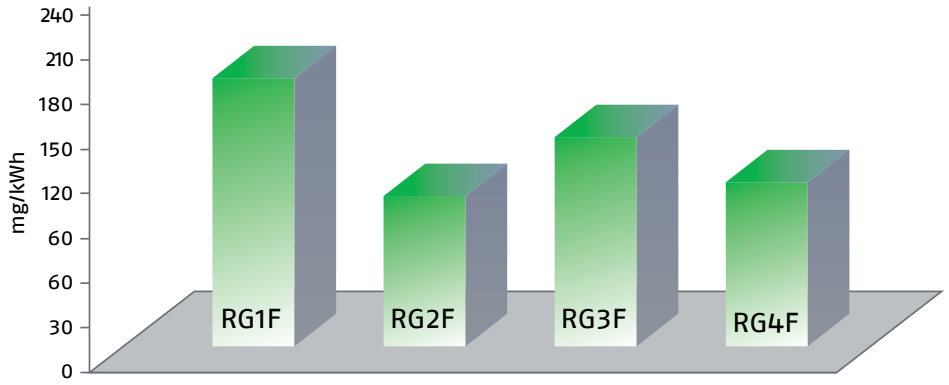
Lock-out due to ignition failure

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

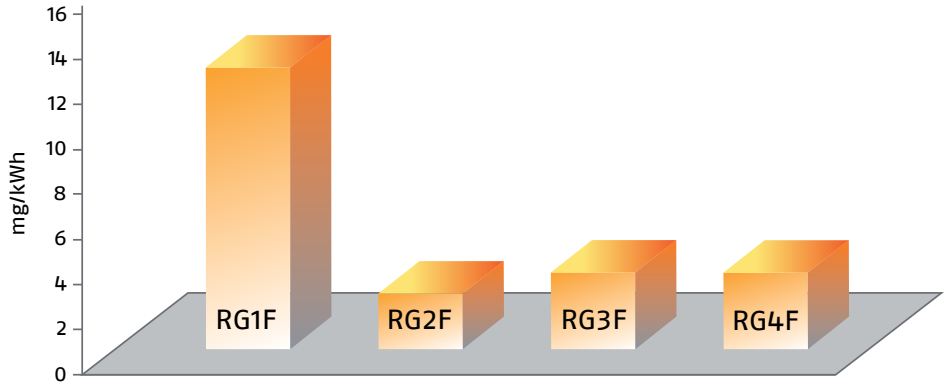
Emissions

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

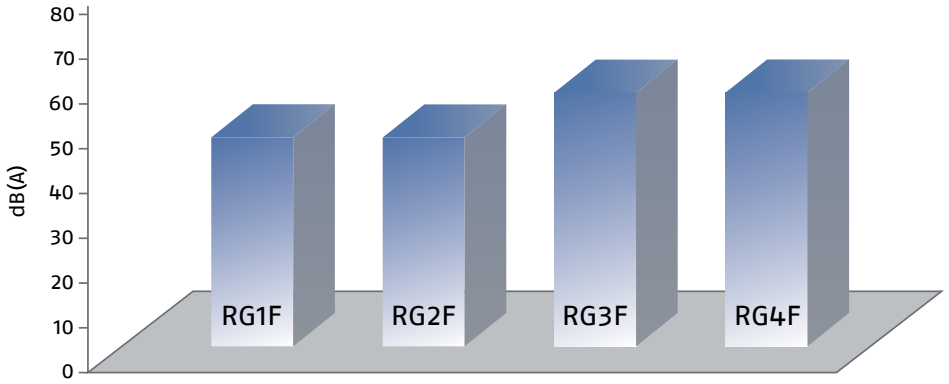
NO2 EMISSIONS



CO EMISSIONS



NOISE EMISSIONS



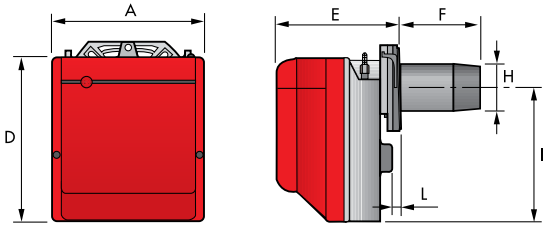
Special attention has been paid to noise reduction. All models are fitted with sound-proofing material inside the cover.
In order to protect the components from environment dust special seals have been fitted on the cover.



Overall Dimensions (mm)

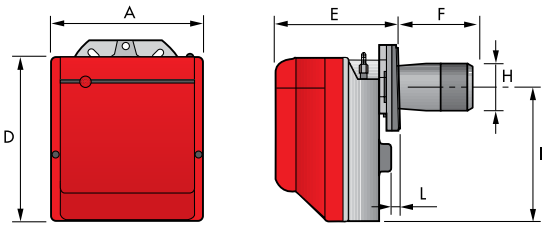
BURNER

GULLIVER RG1F



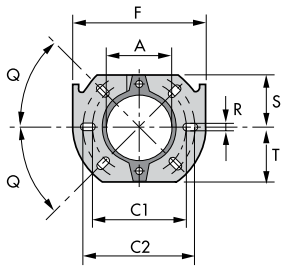
Model	A	D	E	F	H	I	L
RG1F	234	254	196	93 - 163	84	210	4
RG2F	255	280	202	115 -180	95	230	10
RG3F	300	345	228	142	123	285	12
RG4F	300	345	228	142	125	285	12

GULLIVER RG2F - RG3F - RG4F

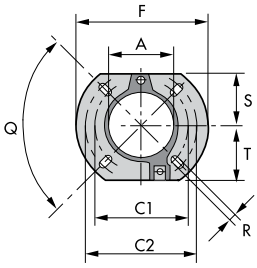


BURNER - BOILER MOUNTING FLANGE

GULLIVER RG1F - RG2F

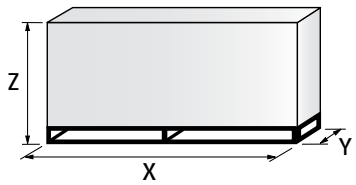


GULLIVER RG3F - RG4F



Model	A	C1	C2	F	Q	R	S	T
RG1F	91	130	150	180	45°	11	72	72
RG2F	106	140	168	189	45°	11	83	83
RG3F	127	160	190	213	90°	11	99	99
RG4F	127	160	190	213	90°	11	99	99

PACKAGING



Model	X	Y	Z	kg
RG1F	353	278	320	13
RG2F	363	298	350	13
RG3F	430	345	430	15
RG4F	430	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

The air damper can be regulated 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 RG3F and RG4F models).



The nozzle holder can be serviced through the rear cover without detaching the burner from the boiler.

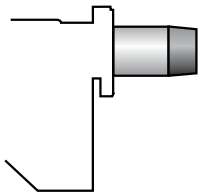


The 7-pole socket is incorporated in the control box.
The 7-pin plug is also supplied for connection to the boiler.



Burner accessories

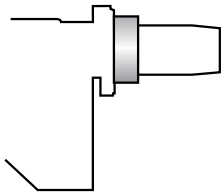
EXTENDED HEAD KIT



Kits of extended heads are available.

BURNER	STANDARD HEAD LENGTH (mm)	EXTENDED HEAD LENGTH (mm)	KIT CODE
RG1F	93	163	3000963
RG2F	115	180	3000964
RG2F	115	300	3000967
RG3F	142	210	3000965
RG3F	142	300	3000968
RG4F	142	210	3000966
RG4F	142	300	3000969

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
RG1F	15	3007931
RG2F	25	3000672
RG3F - RG4F	25	3000673

PRE-HEATER KIT

This kit is used only for Gulliver RG1F burner. It can be installed in special atmospheric conditions (low temperatures), with high diesel oil viscosity and with low deliveries.

BURNER	KIT CODE
RG1F	3001083

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 attemps 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
All models	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
All models	3002731

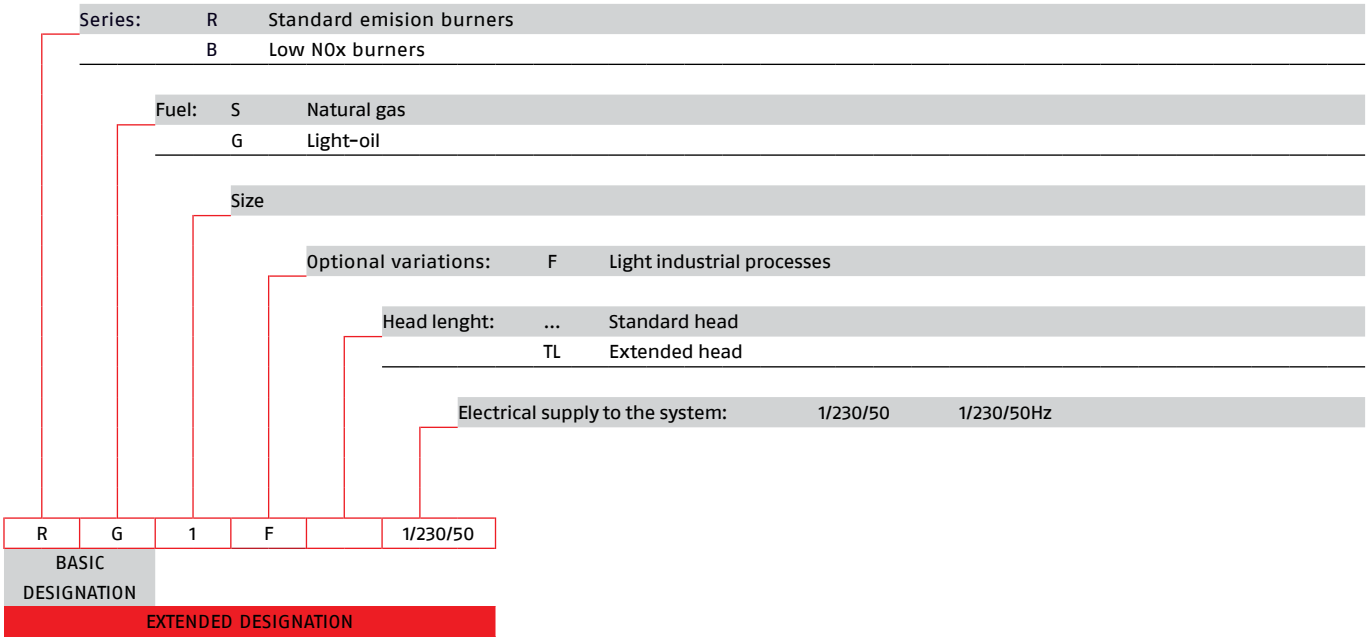
7-PIN PLUG KIT

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

BURNER	KIT CODE
All models	3000945

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 220-230 V, 50-60 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)

Standard equipment:
- Flange with insulating gasket
- Screw and nuts for flange
- 7-pin plug
- Screw and nuts for flange to be fixed to the heat generator
- Flexible oil pipes with nipples
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

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

05/2016
TS0061UK01



[1]



[2]

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

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

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.
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.

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