TECHNICAL DATA LEAFLET

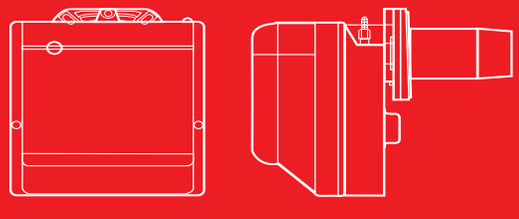
LIGHT OIL



Gulliver RGDF Series

Two Stage Light Oil Burners

RG5DF 95/142 ÷ 296 kW



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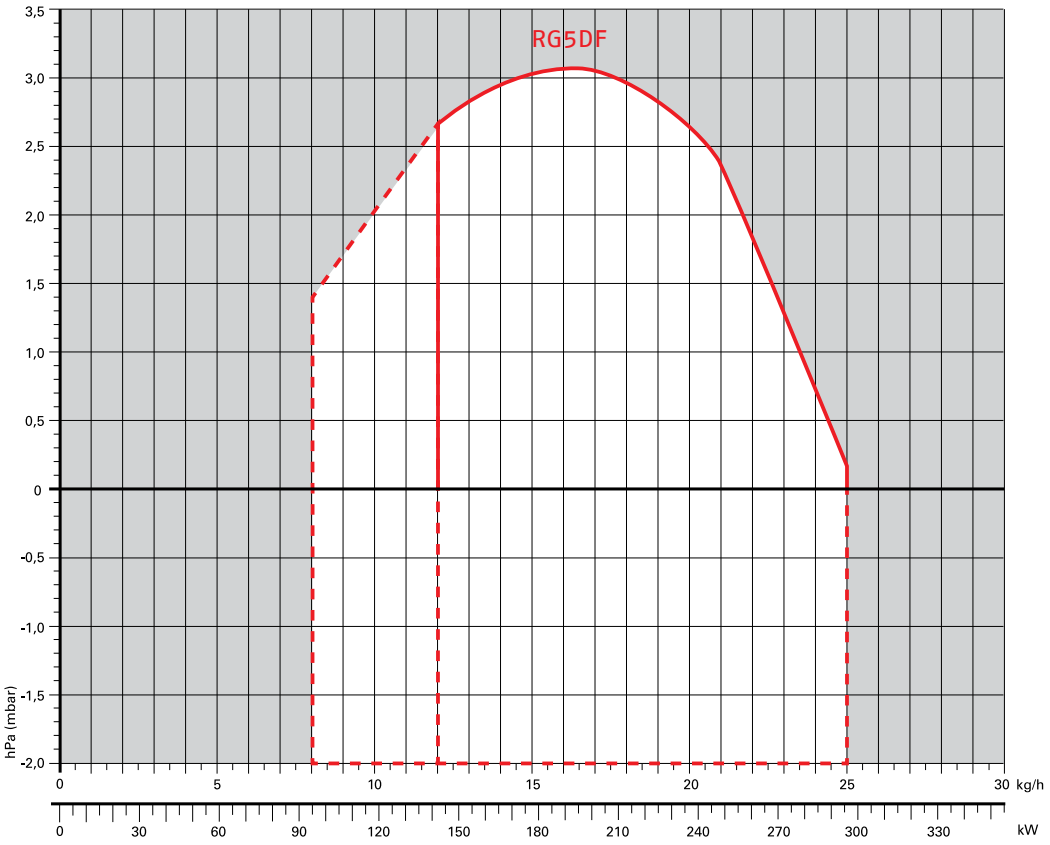
The Riello Gulliver RG5DF is a new model of one stage light oil burner, developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications which require a reliable, user-friendly industrial product with enhanced performance and specific functions.
This model uses the same components designed by Riello for the Gulliver series and has the same ventilation system and overall dimensions as the previous two stage light oil model.
This new burner can operates on 50 or 60 Hz and a Voltage 220-230 Volt (dual frequency). It is 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.
The Gulliver RG5DF burner is fired before leaving the factory.

Technical Data

MODEL			RG5DF
Burner operation mode			Two stage
Modulation ratio at max. output			--
Servomotor		type	--
		run time s	--
Heat output		kW	95/142 ÷ 296
		Mcal/h	87,1/122,1 ÷ 254,5
		Kg/h	8/12 ÷ 25
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
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	RBL 552 SE
Total electrical power		kW	0,4 (at 50 Hz) - 0,575 (at 60 Hz)
Auxiliary electrical power		kW	--
Heaters electrical power		kW	--
Protection level		IP	40
Fan motor	electrical power	kW	0,25
	rated current	A	1,8 (at 50 Hz) - 2,6 (at 60 Hz)
	start up current	A	7,2 (at 50 Hz) - 10,4 (at 60 Hz)
	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	(-) - 16 mA
Operation			Intermittent (at least one stop every 24h)
EMISSIONS			
Noise levels	Sound pressure	dB (A)	71
	Sound power	dB (A)	82
Light oil	CO emission	mg/kWh	10
	grade of smoke indicator	N° Bacharach	< 1
	CxHy emission	mg/kWh	< 10 (after the first 20s)
	NOx emission	mg/kWh	190
APPROVAL			
Directive			2006/42/EC - 92/42/EC - 2014/30/UE - 2014/35/UE
Conforming to			EN 267
Certification			CE-00360325/01

Reference conditions:
Temperature: 20°C - Pressure: 1013.5 mbar - Altitude: 0 m a.s.l. - Sound pressure measured in manufacturer's combustion laboratory, with burner operating on test boiler and at maximum rated output. The sound power is measured with the "Free Field" method, as per EN 15036, and according to an "Accuracy: Category 3" measuring accuracy, as set out in EN ISO 3746.

Firing Rate



Useful working field for choosing the burner

1st stage operation range

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.

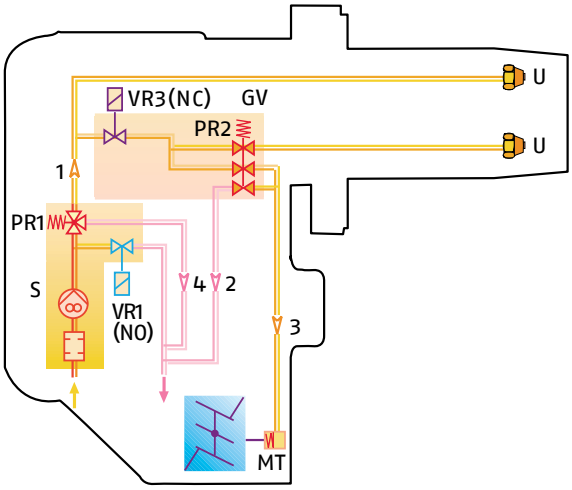
Fuel Supply

HYDRAULIC CIRCUIT

The burner has a geared pump R.B.L. with double safety valve on the return circuit.



Fuel pump



S	Pump with filter and pressure regulator on the delivery pipework
VR1 (NO)	1st stage oil return valve normally open
VR3 (NC)	2nd stage oil return valve normally closed
1	Oil delivery pipe to the nozzle/s
2	Oil return pipe from the 2nd stage regulator
3	Oil delivery pipe to the air damper hydraulic jack
4	Oil return pipe from the 1st stage regulator
MT	Air damper hydraulic jack for the 2nd stage
PR1	1st stage oil regulator
PR2	2nd stage oil regulator
GV	Valve unit
U	Nozzle

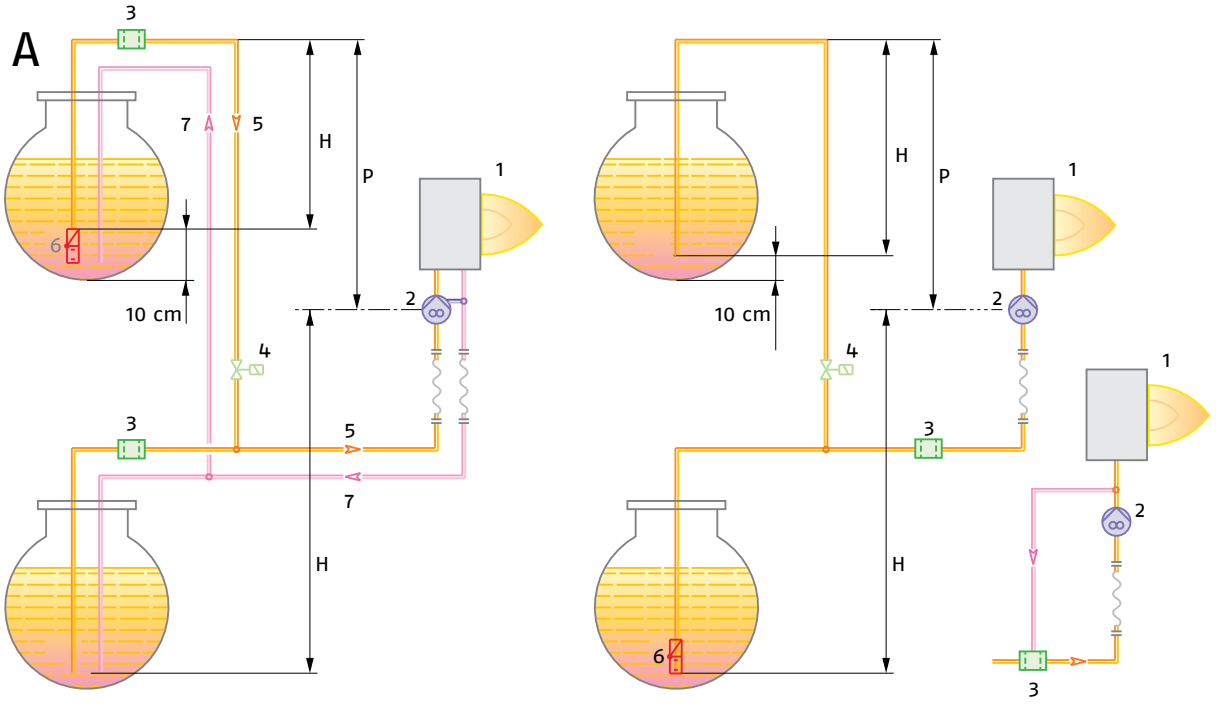
Fuel feed to the burner can be from the right or the left side on all models.

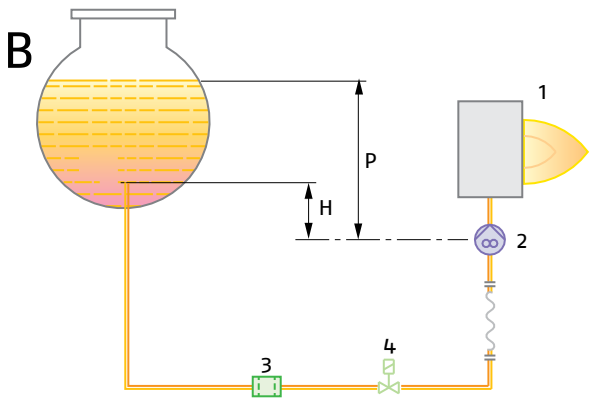
SELECTING THE FUEL SUPPLY LINES

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	-	-





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

The RGDF burner allows 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.

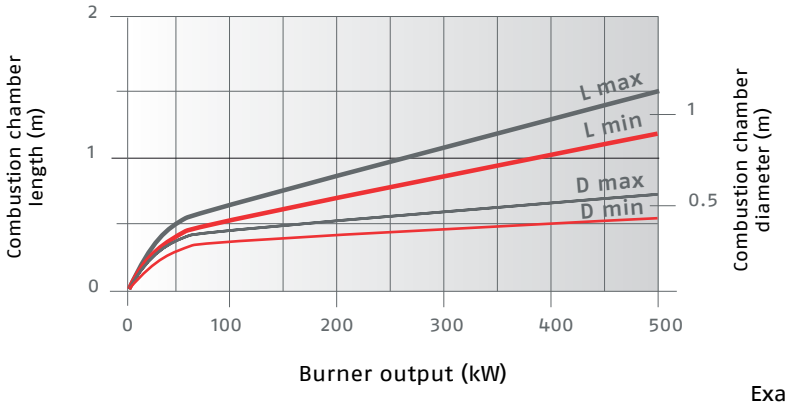


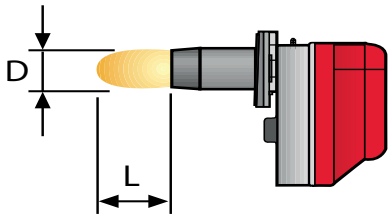
Combustion head



Combustion head

SUGGESTED COMBUSTION CHAMBER DIMENSIONS





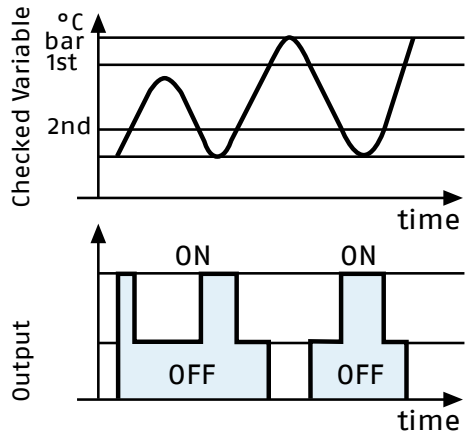
Example:
Burner thermal output = 350 kW;
L Combustion Chamber (m) = 1.2 m (medium value);
D Combustion Chamber (m) = 0.6 m (medium value)

Adjustment

BURNER OPERATION MODE

This model has two stage operation. The RG5DF model has 2 nozzles (one for each stage) that work at the same pressure.

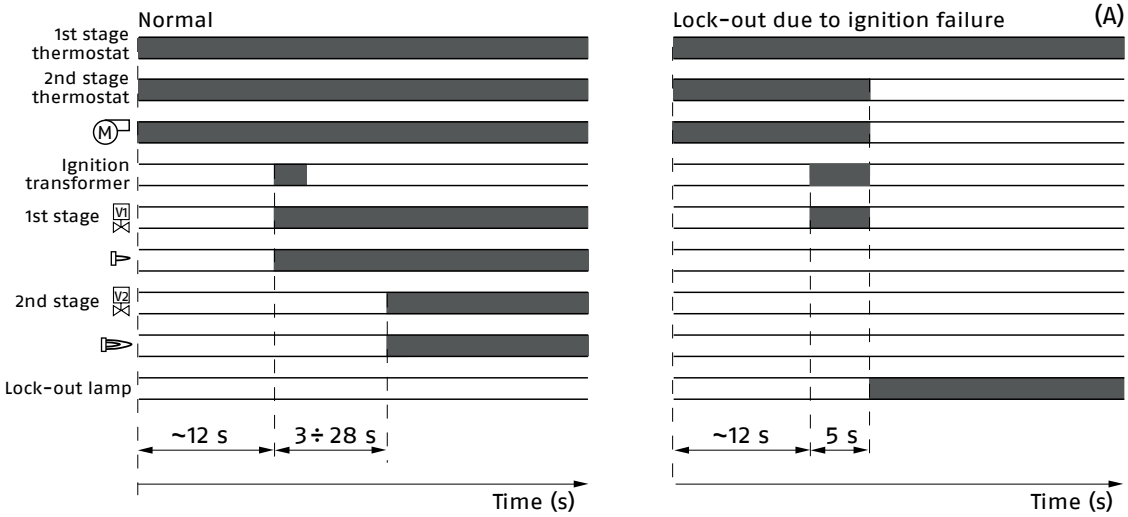
"TWO STAGE" OPERATION





2nd stage 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	1st ignition.
15s-40s	2nd ignition.

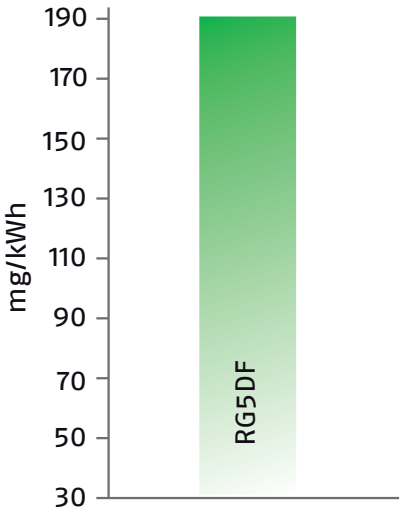
Lock-out due to ignition failure

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

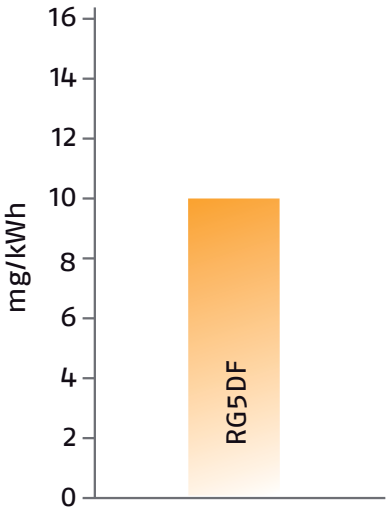
Emissions

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

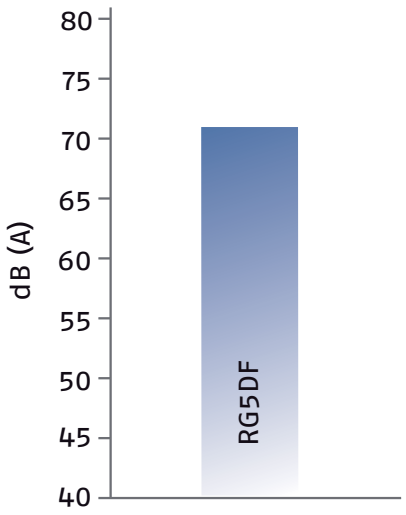
NO_2 EMISSIONS



CO EMISSIONS



NOISE EMISSIONS

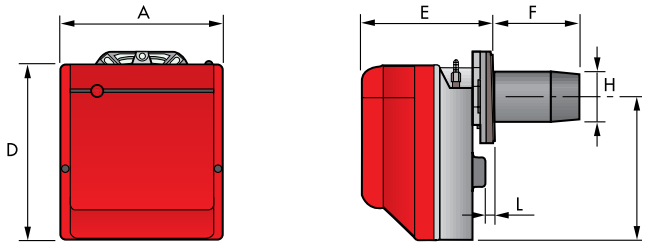


Special attention has been paid to noise reduction.
All models are fitted with soundproofing material inside the cover.
In order to protect the components from environment dust special seals have been fitted on the cover.



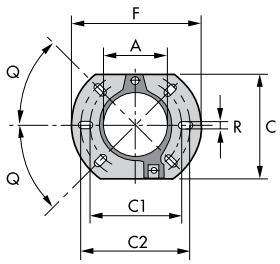
Overall Dimensions (mm)

BURNER



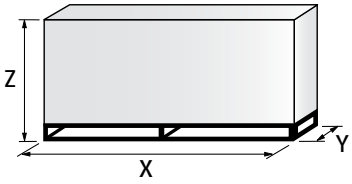
Model	A	D	E	F	H	I	L
RG5DF	300	345	247	159	125	285	12,5

BURNER – BOILER MOUNTING FLANGE



Model	A	C	C1	C2	F	Q	R
RG5D	127	198	160	190	213	45°	11

PACKAGING



Model	X	Y	Z	Kg
RG5D	510	345	440	18

Installation Description

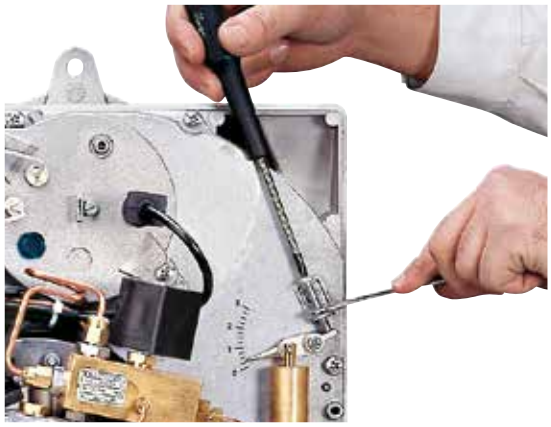
Skilled and qualified personnel must perform installation, start up and maintenance. Nozzles are fitted to the burner and used for fire tests in the factory. If necessary, change the nozzle on the basis of the maximum output of the boiler.
All operations must be carried out as described in the technical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

BURNER SETTING

2nd stage air damper position adjustment can be made without removing the burner casing.



1st sage air damper position adjustment.



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



MAINTENANCE AND ELECTRICAL CONNECTIONS

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 4-pole socket is already connected.
The 4 and 7-pin plugs are also supplied for connection to the boiler.





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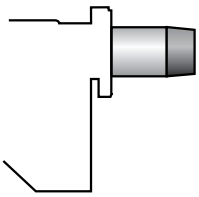
Burner accessories

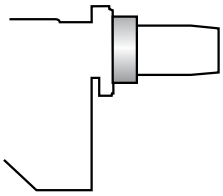
EXTENDED HEAD KIT



"Standard head" burner can be transformed into "extended head" version by using the special kit. Below the KIT available for the RG5DF burner, showing the original and the extended length.

BURNER	STANDARD HEAD LENGTH (mm)	EXTENDED HEAD LENGTH (mm)	KIT CODE
RG5DF	159	300	3000981

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
RG5DF	15	20103452

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
RG5DF	60	3006561

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

BURNER	FILTERING DEGREE (µm)	KIT CODE
RG5DF	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
RG5DF	100	3000926

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 MO 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
RG5DF	3001168+3007492+3007792

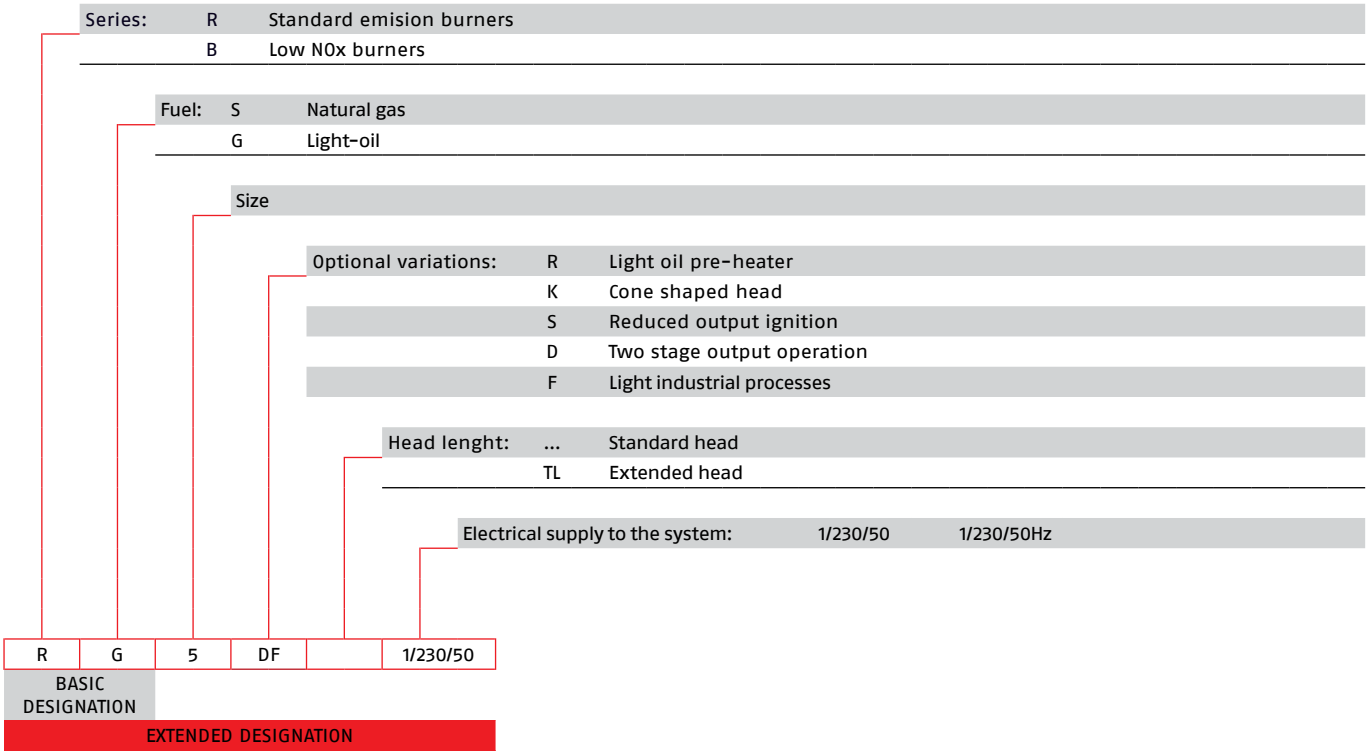
7-PIN PLUG KIT

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

BURNER	KIT CODE
RG5DF	3000945

Specification

DESIGNATION OF SERIES



STATE OF SUPPLY

Completely automatic monobloc light oil burners, with two stage operation fitted with:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Air damper always open in stand-by
- Air damper, with 1st and 2nd stage adjustment (2nd stage adjustment without removing the casing)
- 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.

Conforming to:
- 2014/30 UE Directive (electromagnetic compatibility)
- 2014/35 UE Directive (low voltage)
- 2006/42 EC Directive (machine)
- EN 267 (liquid fuel burners)

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

Available accessories to be ordered separately:
- extended head
- spacer kit
- light oil
- degassing unit
- 7-oin plug
- control box M0 550, sensor flame and short circuit

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

06/2016

TS0063UK01



[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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