

ONE STAGE LIGHT OIL BURNERS • RIELLO 40 G SERIES • G3 23

▶ G3	23,8	÷	35,9	kW
▶ G3R	23,8	÷	35,9	kW
▶ G3RK	15,0	÷	35,0	kW
▶ G5	28,0	÷	60,0	kW
▶ G5R	28,0	÷	60,0	kW
▶ G5K	29,0	÷	60,0	kW
▶ G5RK	12,0	÷	60,0	kW
▶ G7	29,0	÷	69,0	kW
▶ G10	54,0	÷	120,0	kW
▶ G20	95,0	÷ 2	213,0	kW
▶ G20S	95,0	÷ź	240,0	kW



The Riello 40 G series of one stage light oil burners, is a complete range of products developed to respond to any request for home heating. The Riello 40 G series is available in eleven different models, whit an output ranging from 12 to 240 kW, divided in four different structures.

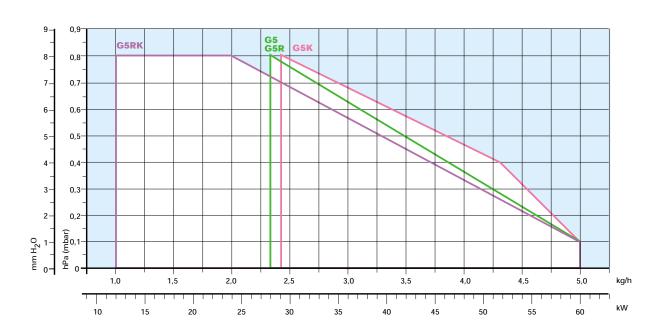
All the models use the same components designed by Riello for the Riello 40 G series. The high quality level guarantees safe working.

In developing these burners, special attention was paid to reducing noise, to the ease 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 Riello 40 G burners are fired before leaving the factory.



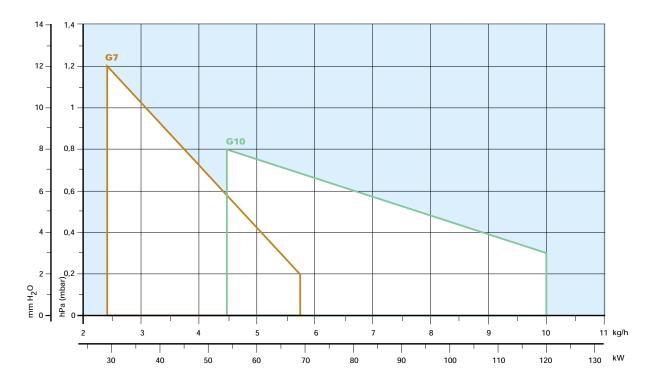


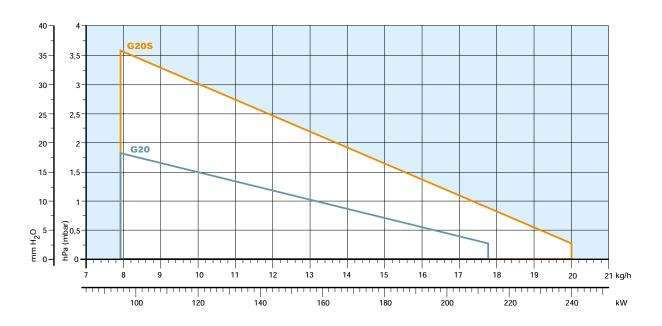
Useful working field for choosing the burner

Test conditions conforming to EN 267:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.







Useful working field for choosing the burner

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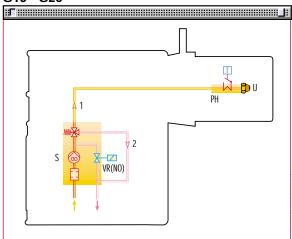
FUEL SUPPLY



HYDRAULIC CIRCUIT

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

G3 - G3R - G3RK - G5 - G5R - G5K - G5RK - G7 - G10 - G20

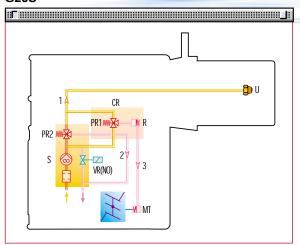




Fuel pump

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

G20S



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 models "R" have light oil pre-heater which is located next to the nozzle, operated by the control box which delays burner ignition before each start in order to adequately pre-heat the oil.



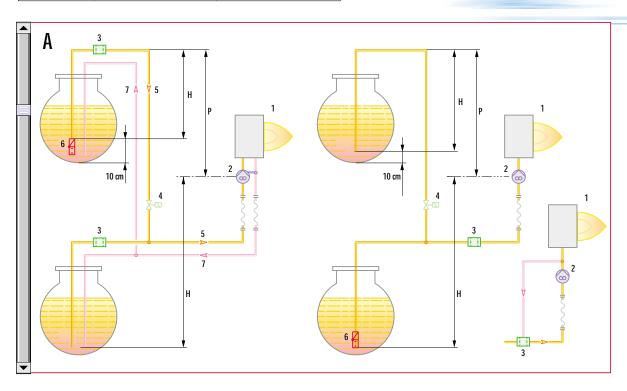


SELECTING THE FUEL SUPPLY LINES

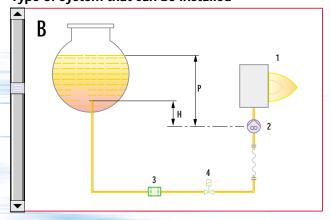
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]						
	▼ Type /	A system	▼ Type	B system			
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm			
H (m)	Lmax (m)	L _{max} (m)	L _{max} (m)	Lmax (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



Н	Difference in height
Ø	Internal pipe diameter
Р	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 G3 and G3R models all have fixed heads. Certain models allows you to choose the length of the combustion head.

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

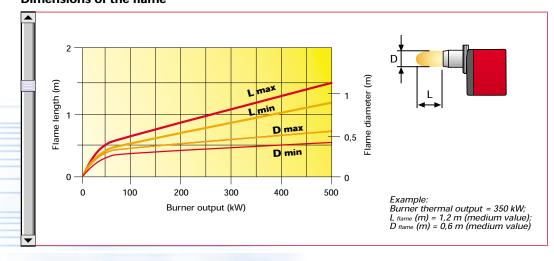
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.

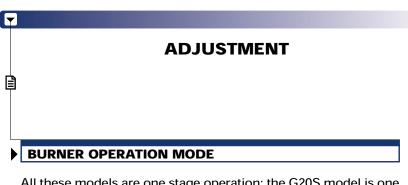
Simple adjustment to the combustion head allows adapting internal geometry of the head to the maximum rated output of the burner.



Combustion head

Dimensions of the flame

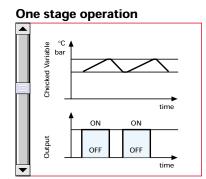




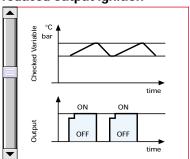


All these models are one stage operation; the G20S model is one stage operation with reduced output firing.

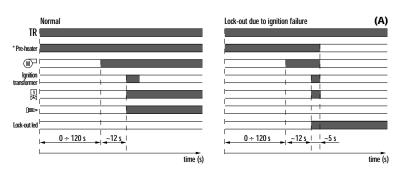




One stage operation with reduced output ignition



START UP CYCLE



^{*} Only model with pre-heater.

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

Correct operation

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

* If the pre-heater is fitted (G...R series), there is a further delay before pre-purge; this delay can reach 120s 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

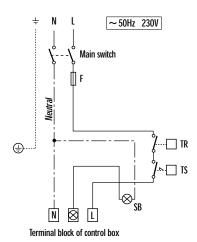
Electrical connections must be made by qualified and skilled personnel in conformity with the local regulations in force.



Control box fitted with an ignition transformer

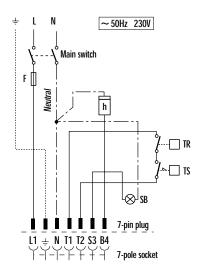
ONE STAGE" OPERATION

G3 - G3R - G5 - G5R - G7 - G20 - G20S



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

G3RK - G5K - G5RK - G10

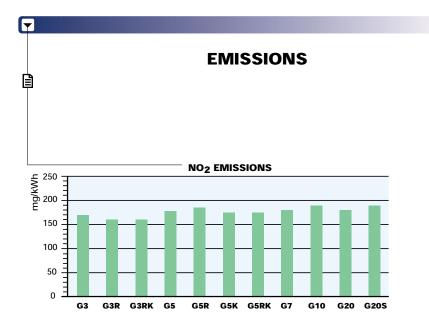


TR - Regulating thermostat TS - Safety thermostat (with manual resetting) SB - Remote lock-out lamp (230V 0,5A max)

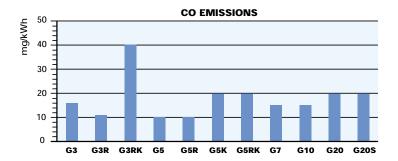
h - Hour meterF - Fuse

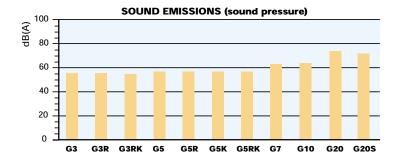
The following table shows the supply lead sections and types of fuse to be used.

Mo	odel	▼ G3	▼ G3R	▼ G3RK	▼ G5	▼ G5R	▼ G5K	▼ G5RK	▼ G7	▼ G10	▼ G20	▼ G20S
		230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V
F	Α	6	6	6	6	6	6	6	6	6	T6	T6
L	mm²	1	1	1	1	1	1	1	1	1	1	1









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 sounddeadening material inside the cover.





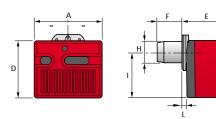


OVERALL DIMENSIONS (mm)



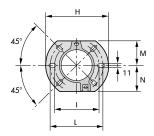
These models are distinguished by their reduced size, in relation to their outputs, which means they can be fitted to any boiler on the market.

BURNER



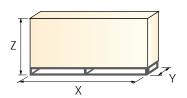
Model	D	Α	F	Е	Н	ı	L
▶ G3	215	252	86	203	89	164	19
▶ G3R	215	252	86	203	89	164	19
→ G3RK	215	252	97÷115	203	89	164	19
▶ G5	233	272	107	236	89	180	37
▶ G5R	233	272	107	236	89	180	37
▶ G5K	233	272	94÷112	236	89	180	37
→ G5RK	233	272	94÷112	236	89	180	37
→ G7	262	305	73	261	89	204	40
→ G10	262	305	108	261	105	204	40
▶ G20	298	350	118	295	125	230	41
▶ G20S	298	350	118	295	125	230	41

BURNER-BOILER MOUNTING FLANGE



Model	Н	I	L	М	N
► G3 - G3R - G3RK - G5 - G5R - G5K - G5RK	180	130	150	72	75
▶ G7 - G10	189	140	170	83	83
▶ G20 - G20S	213	160	190	99	99

PACKAGING



Model	X	Υ	Z	kg
→ G3	353	285	300	10
→ G3R	353	285	300	10
▶ G3RK	353	285	300	10,5
▶ G5	373	305	315	12
▶ G5R	373	305	315	12
▶ G5K	373	305	315	12
▶ G5RK	373	305	315	12
→ G7	413	338	330	13
→ G10	413	338	330	13,5
→ G20	473	383	367	16
▶ G20S	473	383	367	17.5



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 in accordance with the technical handbook supplied with the burner.



BURNER SETTING

Air damper and head adjustment area are easily accessible and the operationis simple thanks to a graduated scale and following the manual instruction.





▶ The pressure regulator is carried out by setting the adjustment scrow.



ELECTRICAL CONNECTIONS AND MAINTENANCE

▶ Electrical wirings are easily thanks to plug and socket connections. The 7 pin plug is supplied for connection to the boiler.



▶ The maintenance position is easily carried out by hinge that joins the body of burner to the flange.



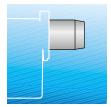




BURNER ACCESSORIES

Extended head kit

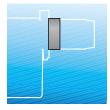
Kits of extended heads are available.



Extended head kit					
Burner	Standard head length (mm)	Extended head length (mm)	Kit code		
G5, G5R	107	121	3000686		
G5, G5R	107	121 INOX	3000687		
G5, G5R	STANDARD	CONIC HEAD	3000726		
G5K	CONIC	107 CILINDRIC HEAD	3000728		
G10	108	168	3000643		
G10	108	250	3000770		
G20, G20S	118	178	3000644		
G20, G20S	118	260	3000771		

Spacer kit

Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.



Spacer kit				
Burner	Spacer thickness S (mm)	Kit code		
G3, G3R, G3RK, G5, G5K, G5R, G5RK, G7	25	3007642		
G10	25	3000672		
G20, G20S	25	3000673		

Light oil filter

	Light oil filter	
Burner	Filtering degree (μm)	Filter code
All the models		3000926

Biodiesel kit

Biodiesel kit				
Burner	Kit code			
G3, G3R, G3RK, G5, G5K, G5R, G5RK, G7, G10, G20	3000978			
G20S	3000979			



Remote control release kit for the 530 - 531 SE control box

The 530 - 531 SE control box can be remotely released using an electric command kit. This kit must be installed in conformity with current regulations in force.



Remote control rele	ase kit
Burner	Kit code
All the models	3001030

BALANCED FLUE VERSION

The Riello 40 series balanced flue oil burner has been specifically designed to meet the increasing trend towards the use of balanced flue, otherwise known as room sealed appliances, which avoids the necessity of having a chimney to discharge the products of combustion.

Balanced flue products are completely sealed from the environment in which they are installed, drawing air for combustion directly from the outside, thereby ensuring no unwelcome smells from combustion of the oil.

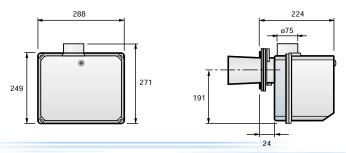
As a result of the burner components such as motor, oil pump etc. being completely enclosed this provides an additional benefit of low sound levels.

The Riello 40 balanced flue range has been designed and manufactured to meet the latest European and OFTEC test requirement and are manufactured under quality assurance standards. Riello 40 balanced flue version is available for the following models: G3, G3R, G3RK, G5, G5R, G5K, G5RK.



Riello 40 balanced flue version

Overall dimensions (mm)





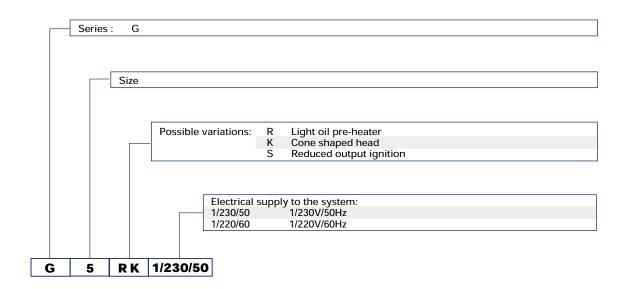


SPECIFICATION

A special index will help you choose the right burner from the Riello 40 G models available.

There is also a clear and detailed product specification and description.

DESIGNATION OF SERIES



AVAILABLE BURNER MODELS

G3 G3R G3RK G5 G5R G5K G5RK G7 G10 G20	1/230/50 1/230/50 1/230/50 1/230/50 1/230/50 1/230/50 1/230/50 1/230/50 1/230/50 1/230/50	G10 G20 G20S	1/220/60 1/220/60 1/220/60
G20 G20S	1/230/50 1/230/50		



PRODUCT SPECIFICATION

Burner:

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

- Fan with forward inclined blades
- Metallic cover lined with sound-deadening material
- Air damper, completely closed in stand by, with adjustment
- 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 40 protection level
- 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 89/392/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
- Light oil filter
- Biodiesel kit
- Remote resetting kit
- Balanced flue version.







RIELLO s.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

 $Internet: http://www.rielloburners.com \ - \ E-mail: rburners@rielloburners.com$

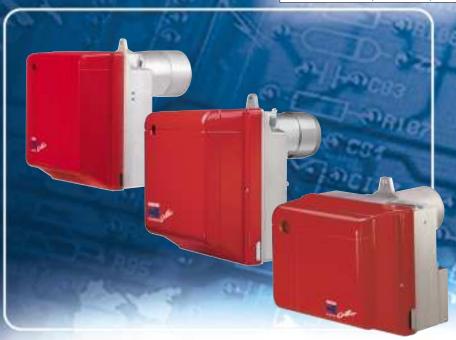
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SINGLE-STAGE LIGHT OIL BURNERS > GULLIVER RG SERIES > RG0.R 16,6

CE

▶ 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
▶ RG1RK	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 series of single-stage light oil burners, 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 ease 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.

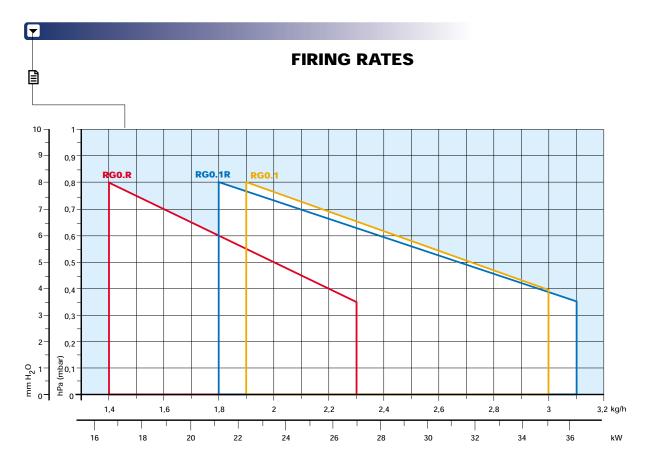
TECHNICAL DATA

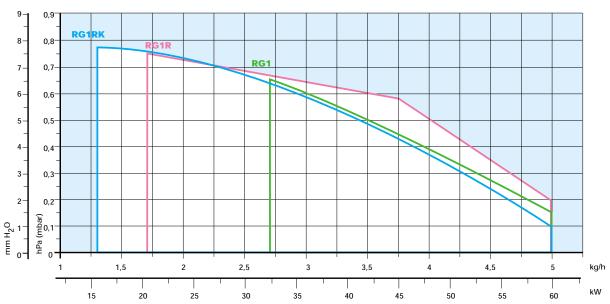
Model	el .		▼ RG0.R	▼ RG0.1	▼ RG0.1R	▼ RG1	▼ RG1R	▼ RG1RK	▼ RG2	▼ RG3	▼ RG4S	▼ RG5S
Settin				Single	stage				Single	stage		
	type			-					-			
motor		S		-					-			
Heat		kW	16,6 - 27,3	22,5 - 35,6	21,3 - 36,7	32 - 60	20 - 60	15 - 60	47 - 119	83 - 178	118,5 - 237	160 - 309,5
outpu	ıt	Mcal/h	14 - 23	19 - 31	18 - 32	28 - 52	17 - 52	13 - 52	40 - 102	72 - 153	102 - 204	138 - 267
		kg/h	1,4 - 2,3	1,9 - 3,0	1,8 - 3,1	2,7 - 5	1,7 - 5	1,3 - 5	4 - 10	7 - 15	10 - 20	13,5 - 26,1
Worki	ing temperature			0/4						40		
Net ca		kWh/kg		11					11			
		kcal/kg		10.2					10.			
Viscos	sity at 20°C	mm ² /s (cSt)		4 ÷					4 -	⊦ 6		
Pump	type			Riello made				Riello made	e by Suntec		R.B.	L.
į	delivery	kg/h at 12 bar		30)				3	0		
-	-	bar		8 ÷					8 ÷			
	oil temperature	max. °C		50					50			
Fuel p	ore-heater		YES	NO	YES	NO	YES	YES	NO	NO	NO	NO
Fan		type		forward till	ed blades			forward tilted blades				
Air ter	mperature	max. °C		40)			40				
		Ph/Hz/V		1/50/23	0 ±10%			1/50/230±10%				
Aux. e	electrical supply	Ph/Hz/V								•		
Contro	ol 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*	R.B.L.552 SE
Total e	electrical output	kW	0,29	0,17	0,29	0,17	0,29	0,29	0,18	0,39	0,39	0,47
Total r	rated current	A	1,3	0,8	1,3	0,8	1,3	1,3	0,9	1,9	2	2,1
Protec	ction level	IP		40)				. 4	0		
Electri	ic motor output	kW	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,39	0,39	0,47
Rated	motor current	Α	0,8	0,8	0,8	0,8	0,8	0,8	0,9	1,9	2	2,1
Motor	r take-off current	A	3	3	3	3	3	3	3	8,5	8,5	9
Motor	r protection level	IP		20)				2	0		
Ignitio	on transformer			incorporated in	the control box				incorporated in	the control box		
Opera	ation			intermittent (at least	one halt every 24 h)				intermittent (at least	one halt every 24 h)		
Sound	d pressure	dB(A)	56	57	57	60	60	60	61	64	64	71
CO En	nissions	mg/kWh		<6	0				<	60		
Grade	of smoke indicator	N° Bach.	<1						<	1		
E C _x H _y E	Emissions	mg/kWh	<10 AFTER THE FIRST 20 s						<10 AFTER TI	HE FIRST 20 s		
		mg/kWh		<2	50				<2	50		
Direct	tives			89/336/CEE, 73/23/CEE,	98/37/CEE, 92/42/CEE				89/336/CEE, 73/23/CEE	, 98/37/CEE, 92/42/CEE		
Confo	orming to:			EN	267				EN	267		
	ications		CE - 0036 0272/99	CE - 0036 0294/00	CE - 0036 0273/99	DIN - RegNr.5G148/98	DIN - RegNr.5G149/98	DIN - RegNr.5G059/97	DIN - RegNr.5G060/97	DIN - RegNr.5G264/98	DIN - RegNr.5G265/98	CE - 0036 0310/01

^{*} R.B.L. 550 SMD for German Market.

Reference conditions: Temperature: 20 °C Pressure: 1013.5 mbar Altitude: 100 m a.s.1. Noise was measured in the boiler room behind the burner at a distance of 1 meter.





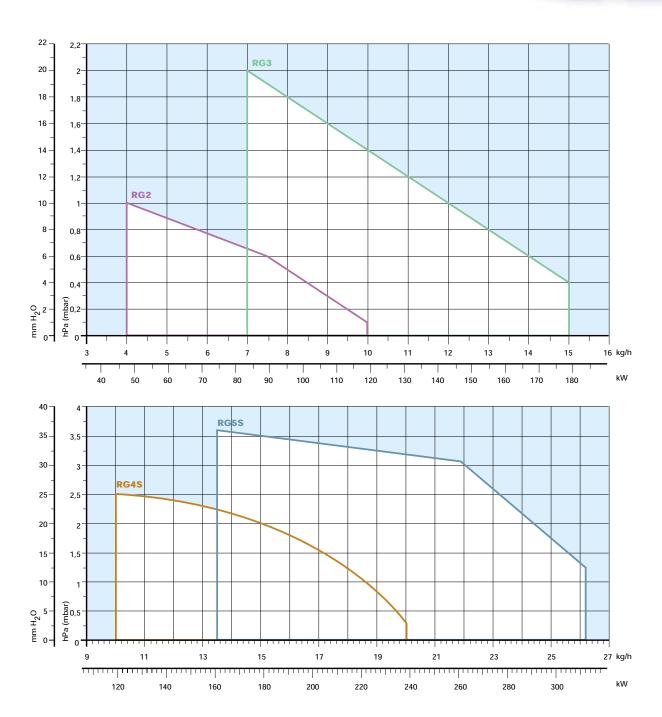


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Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.







FUEL SUPPLY

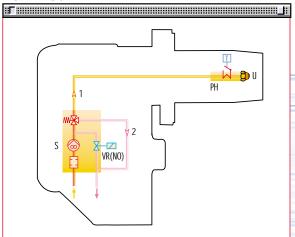
HYDRAULIC CIRCUITS

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.

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

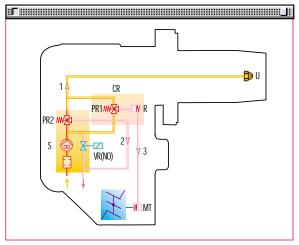




Fuel pump

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.

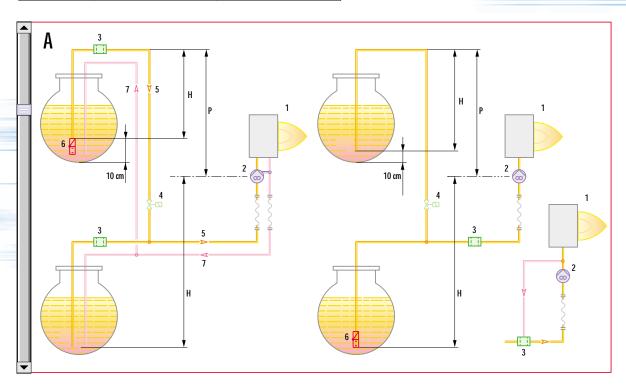


DIMENSIONING OF THE FUEL SUPPLY LINES

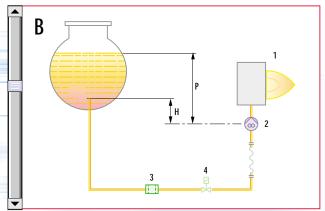
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]											
	▼ Type /	A system	▼ Type	B system								
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm								
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	-									



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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.

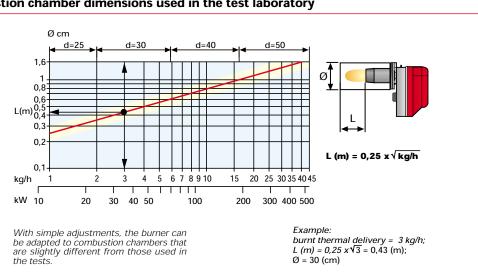
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.

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

Combustion chamber dimensions used in the test laboratory



Y

ADJUSTMENT

BURNER OPERATION MODE

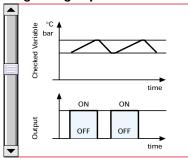
All these models are single-stage working; the RG4S and RG5S models are single-stage working with reduced output firing.



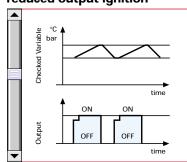
Air damper adjustment (Gulliver RG0)

Air damper adjustment (Gulliver RG)

Single-stage operation



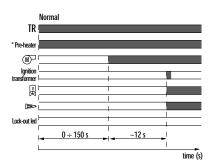
Single-stage operation with reduced output ignition

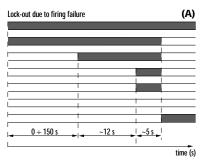




Reduced output ignition device (RG5S)

FIRING





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

Correct operations

Os The burner begins the firing 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 firing failure

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



^{*} Only model with pre-heater.



ELECTRICAL CONNECTIONS to be made by the installer

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



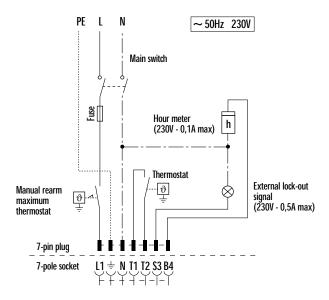
Appliance fitted with an ignition transformer

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



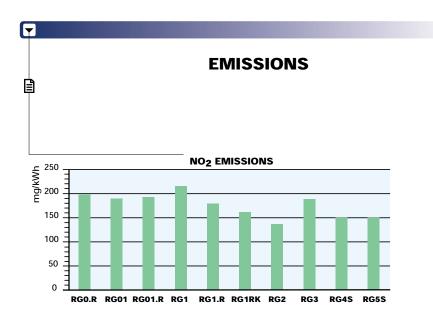
7-pole socket incorporated in the control box

" SINGLE-STAGE" OPERATIONS

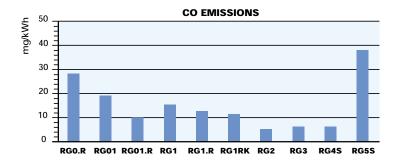


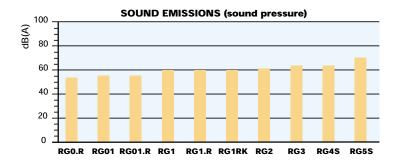
The following table shows the supply lead sections and types of fuse to be used.

Model	▼RG0.R	▼RG0.1	▼RG0.1R	▼RG1	▼RG1R	▼RG1RK	▼RG2	▼RG3	▼RG4S	▼RG5S
	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V
F A	6	6	6	6	6	6	6	T6	T6	T6
L mm ²	1	1	1	1	1	1	1	1	1	1









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-deadening material inside the cover.





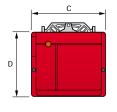
OVERALL DIMENSIONS (mm)

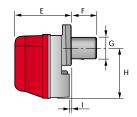


These models are distinguished by their reduced size, in relation to their outputs, which means they can be fitted to any boiler on the market.

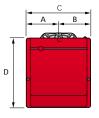
BURNER

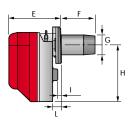
GULLIVER RG0





GULLIVER RG



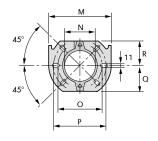


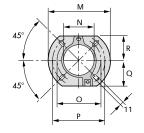
Model	А	В	С	D	Е	F	G	Н	1	L
▶ RG0.R	-	-	255	210	205	93	84	168	5	-
▶ RG0.1R	-	-	255	210	205	93	84	168	5	-
▶ RG0.1	-	-	255	210	205	93	84	168	5	-
▶ RG1	122	112	234	254	196	93	84	210	4	22
▶ RG1R	122	112	234	254	196	93	84	210	4	22
▶ RG1RK	122	112	234	254	196	111	84	210	4	22
▶ RG2	-	-	255	280	202	115	95	230	10	28
▶ RG3	-	-	300	345	228	142	123	285	12	36
▶ RG4S	-	-	300	345	228	142	123	285	12	36
▶ RG5S	-	-	300	345	247	155	125	285	12	36

BURNER-BOILER MOUNTING FLANGE

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

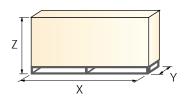
RG3 - RG4S - RG5S





Model	М	N	Ο	Р	Q	R
► RG0.R - RG0.1R RG0.1 - RG1 RG1R - RG1RK	180	91	130	150	72	72
▶ RG2	189	106	140	168	83	83
▶ RG3 - RG4S - RG5S	213	127	160	190	99	99

PACKAGING



Model	Х	Υ	Z	kg
▶ RG0.R	398	290	290	9
▶ RG0.1R	348	290	290	11
▶ RG0.1	348	290	290	9
▶ RG1	343	268	310	13
▶ RG1R	343	268	310	13
▶ RG1RK	343	268	310	13
▶ RG2	353	288	340	13
▶ RG3	420	335	420	15
▶ RG4S	420	335	420	18
▶ RG5S	500	335	420	18



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. 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 SETTINGS

- In models RG0.R, RG0.1 and RG0.1R, the opening for 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

▶ The maintenance position is easily carried out by hooking the burner to the flange after removing it from the fixing screw.



▶ 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.







ACCESSORIES

Extended heads

Kits of extended heads are available.



Kit of extended combustion head								
Burner	Standard head length (mm)	Long head version length (mm)	Kit code					
RG1 - RG1R	93	163	3000963					
RG1RK	111	181	3000982					
RG2	114	180	3000964					
RG2	142	300	3000967					
RG3	142	210	3000965					
RG3	142	300	3000968					
RG4S	142	210	3000966					
RG4S	142	300	3000969					
RG5S	155	300	3001068					

Burner withdrawal

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



Burner withdrawal				
Burner	Accessory	Withdrawal (mm)	Kit code	
RG0.R - RG0.1R - RG0.1 RG1 - RG1R - RG1RK	Enlarged flange	15	3007931	
RG2	Spacer	25	3000672	
RG3 - RG4S - RG5S	Spacer	25	3000673	

Control box 550 SMD

On request, we can supply the control box can be supplied that is 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/recyclingLeds signalling the various working stages
- Post-combustion lock-out
- Socket for remote resetting.



Control box 550 SN	ИD
Burner	Kit code
RG0.R - RG0.1R - RG0.1 RG1 - RG1R - RG1RK RG2 - RG3 - RG4S - RG5S	3001168



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	3087211



Direct testing	Measurements	
M MOTOR	V L1-N	
The switch feeds the motor.	Main voltage (230 V)	
VALVE	\widehat{A} $\neg \sqcap \sqcap$	
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	(V) (M)	
The switch feeds the light oil pre-heater; a green led signals the thermostat cut-in.	Secondary voltage (low voltage)	
TRANSFORMER	(A) [
The switch feeds the firing transformer inside the control box and excites the oil valve.	Photo-resistance current consumption	

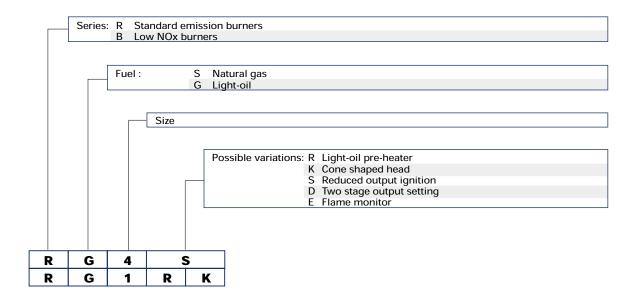




SPECIFICATION

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



LIST OF AVAILABLE MODELS

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
RG1RK	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



SPECIFICATION DESCRIPTION

Burner:

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

- Fan with forward inclined blades
- Cover lined with sound-deadening 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
- Protective filter against radio interference
- IP 40 protection level
- PTC fuel pre-heater (optional)
- Reduced output ignition mechanism (optional).

Approval:

- EN 267 standard.

Conforming to:

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

Supplied materials:

- 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 heads
- Burner withdrawal
- 550 SMD control box with socket for remote resetting
- Tester for checking the various components.







RIELLO s.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

 $Internet: http://www.rielloburners.com \ - \ E-mail: rburners@rielloburners.com$

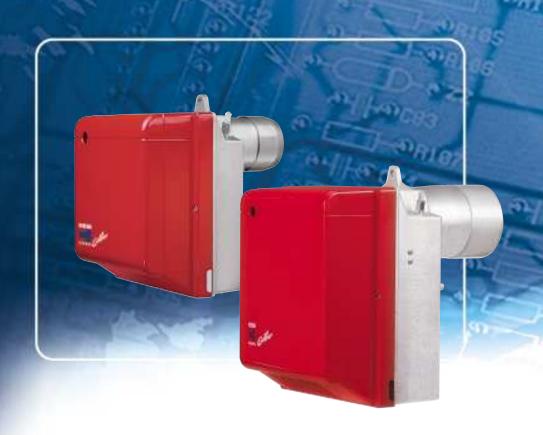


TWO-STAGE LIGHT OIL BURNERS

GULLIVER RGD SERIES

CE

▶ RG1RKD	14/17	÷	60	kW
▶ RG2D	42/49	÷	118	kW
▶ RG3D	65/83	÷	178	kW
▶ RG4D	106/130	÷	237	kW
▶ RG5D	95/142	÷	296	kW



The Riello Gulliver RGD series of two-stage light oil burners, is a complete range of products developed to respond to any request for home heating. The Gulliver RGD series is available in five different models, with an output ranging from 14 to 296 kW, divided in four 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 ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.

The two-stage working guarantees high level of thermal unit efficiency.

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

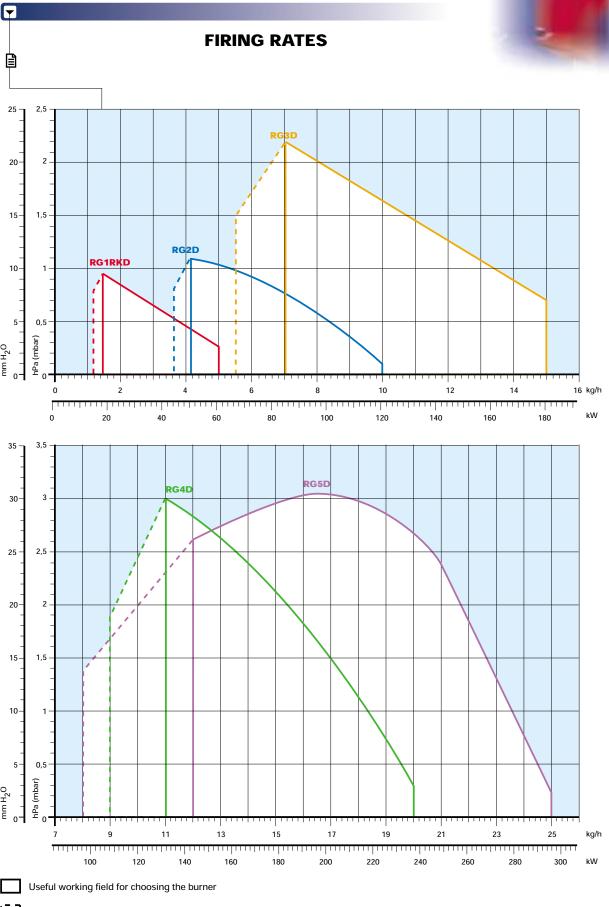
All the Gulliver RGD burners are fired before leaving the factory.



TECHNICAL DATA

Model			▼ RG1RKD	▼ RG2D	▼ RG3D	▼ RG4D	▼ RG5D
Setting					Two-stage		
Servo-	type						
motor	run time	s			-		
		kW	14/17 - 60	42/49 - 118	65/83 - 178	106/130 - 237	95/142 - 296
Heat		Mcal/h	12/14,8 - 51	36,7/41,8 - 102	56,1/71,4 - 153	91,8/112,2 - 204	81,7/122 - 255
output		kg/h	1,2/1,45 - 5	3,6/4,1 - 10	5,5/7 - 15	9/11 - 20	8/12 - 25
Working temperature °C min./max		°C min./max.			0/40		
		kWh/kg			11,8		
Net cale	orific value	kcal/kg	10.200				
Viscosit	y at 20°C	mm ² /s (cSt)		4 ÷ 6			
D	type				R.B.L.		
Pump	delivery	kg/h at 12 bar		30	0		35
Atomis	ed pressure	bar	8 ÷ 15				
Light oi	l temperature	max. °C	50				
Fuel pre	-heater		YES		N	0	
Fan		type	forward tilted blades				
Air tem	perature	max. °C	40				
Electric	al supply	Ph/Hz/V	1/50/230 ±10%				
Aux. ele	ctrical supply	Ph/Hz/V	-				
Control	box	type	R.B.L.553 SE	R.B.L.552 SE	R.B.L.552 SE	R.B.L.552 SE	R.B.L.552 SE
Total ele	ectrical output	kW	0,29	0,18	0,39	0,39	0,47
Total rat	ted current	Α	1,3	0,9	1,9	2	2,1
Protecti	on level	IP			40		
Electric	motor output	kW	0,17	0,17	0,39	0,39	0,47
Rated m	notor current	Α	0,8	0,9	1,9	2	2,1
Motor ta	ake-off current	Α	3	3	8,5	8,5	9
Motor p	rotection level	IP			20		
Ignition	transformer		incorporated in the control box				
Operation	on		intermittent (at least one halt every 24 h)				
Sound p	oressure	dB(A)	60	61	64	64	71
CO Emi	ssions	mg/kWh	<60				
Grade of	smoke indicator	N° Bach.	<1				
C _x H _y En	nissions	mg/kWh	<10 AFTER THE FIRST 20s				
NOx En	nissions	mg/kWh	<250				
Directiv	es			89/336/CEE,	73/23/CEE, 98/37/CEE	E, 92/42/CEE	
Conform	ning to:				EN 267		
Certifica	ntions				0036 0298/00		

Reference conditions: Temperature: 20 °C Pressure: 1013.5 mbar Altitude: 100 m a.s.l. Noise was measured in the boiler room behind the burner at a distance of 1 meter.





Test conditions conforming to EN 267: Temperature: 20 °C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.



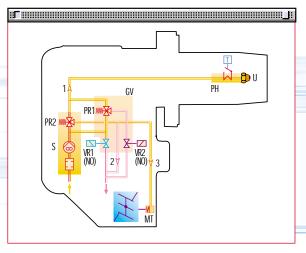


FUEL SUPPLY

HYDRAULIC CIRCUITS

All the burners have a geared pump R.B.L. with double safety valve on the return circuit; the model RG1RKD is equipped by light oil preheater PTC type.

RG1RKD - RG2D - RG3D - RG4D



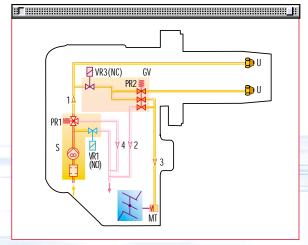


Fuel pump



Fuel pump (RG5D)

RG5D



S	Pump with filter and pressure regulator on the delivery pipework
VR1(NO) 1 st stage oil return valve normally open
VR2(NO) 2 nd stage oil return valve normally open
VR3(NC) 2 nd stage oil return valve normally closed
1	Oil delivery pipe to the nozzle/s
2	Oil return pipe from the 2 nd stage regulator
3	Oil delivery pipe to the air damper hydraulic jack
4	Oil return pipe from the 1 st stage regulator
MT	Air damper hydraulic jack for the 2 nd stage
PR1	1 st stage oil regulator
PR2	2 nd stage oil regulator
PH	Oil pre-heater with thermostat (where provided)
GV	Valve unit
U	Nozzle

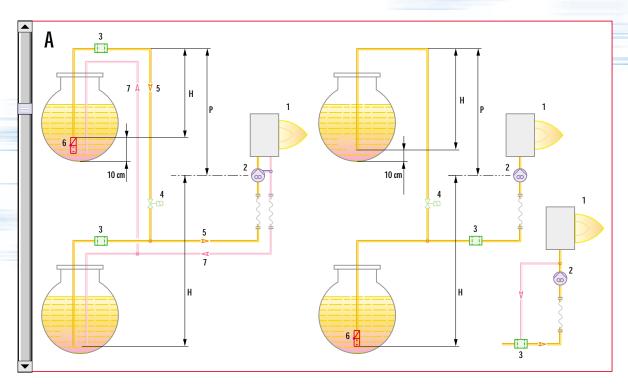
Fuel feed to the burner can be from the right or the left side on all models.

DIMENSIONING OF THE FUEL SUPPLY LINES

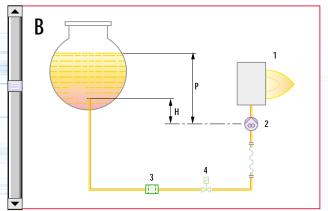
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	Ø8mm	Ø10mm	Ø8mm	Ø10mm			
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	-				



Type of system that can be installed



Н	Difference in height			
Ø	Internal pipe diameter			
Р	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.



Combustible air suction



COMBUSTION HEAD

The RGD series of burners 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.

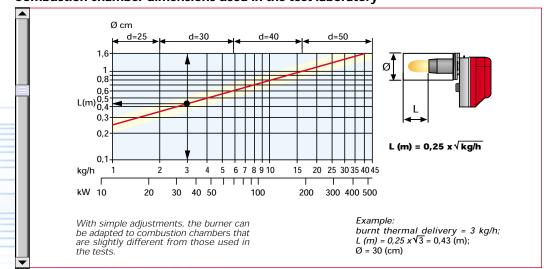


Combustion head



Combustion head (RG5D)

Combustion chamber dimensions used in the test laboratory



T

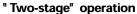
ADJUSTMENT

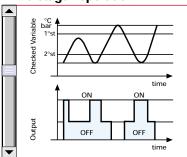




All these models have two-stage output adjustment at 2 pressure levels (each having its respective pressure regulator) except for the RG5D model, which has 2 nozzles (one for each stage) that work at the same pressure.











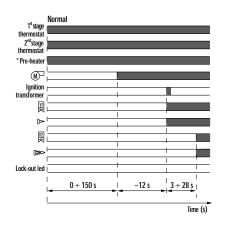


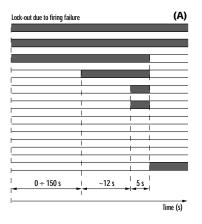
1st stage air damper adjustment



Light oil pressure adiustment

FIRING





* Only for RG1RKD.

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

Correct operations

Os The burner begins the firing cycle.
Os-12s Pre-purge with the air damper open.

12s 1st stage ignition. 15s-40s 2nd stage ignition.

Lock-out due to firing failure

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



^{*} If the pre-heater is fitted (RG1RKD model), there is a further delay before pre-purge; this delay can reach 150s depending on room and fuel temperatures.



ELECTRICAL CONNECTIONS to be made by the installer

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

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.



Appliance fitted with an ignition transformer

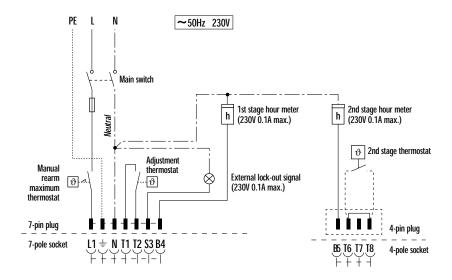






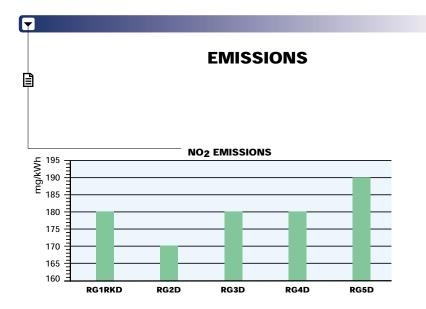
7-pole socket incorporated in the control box

"TWO-STAGE" OPERATIONS

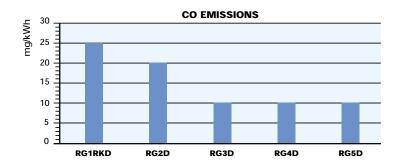


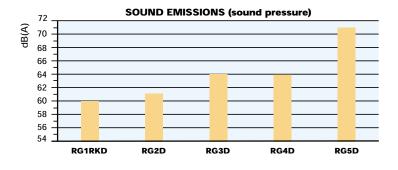
The following table shows the supply lead sections and types of fuse to be used.

Mc	odel	▼RG1RKD	▼RG2D	▼RG3D	▼RG4D	▼RG5D
		230V	230V	230V	230V	230V
F	Α	6	6	T6	T6	T6
L	mm²	1	1	1	1	1









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-deadening material inside the cover.



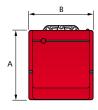


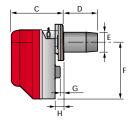


OVERALL DIMENSIONS (mm)

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.

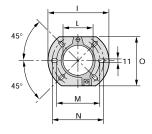
BURNER





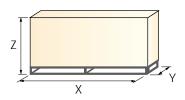
Model	Α	В	С	D	Е	F	G	Н
▶ RG1RKD	254	234	196	111	84	210	4	22
▶ RG2D	280	255	202	114	95	230	10	28
▶ RG3D	345	300	228	142	123	285	12	36
▶ RG4D	345	300	228	142	123	285	12	36
▶ RG5D	345	300	247	159	125	285	12,5	36

BURNER-BOILER CONNECTING FLANGE



Model		L	М	N	0
▶ RG1RKD	180	91	130	150	144
▶ RG2D	189	106	140	165	166
▶ RG3D	213	127	160	190	198
▶ RG4D	213	127	160	190	198
▶ RG5D	213	127	160	190	198

PACKING



Model	X	Υ	Z	kg
▶ RG1RKD	343	268	310	12
▶ RG2D	353	288	340	13
▶ RG3D	420	335	420	13
▶ RG4D	420	335	420	13
▶ RG5D	500	335	430	18



INSTALLATION DESCRIPTION

Skilled and qualified personnel must perform installation, start up and maintenance. A nozzle (2 for the RG5D) is fitted to the burner 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 SETTINGS

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



▶ 1st stage air damper position adjustment



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



MAINTENANCE

▶ The maintenance position is easily carried out by hooking the burner to the flange after removing it from the fixing screw.



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





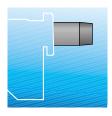


ACCESSORIES



Extended heads

Kits of extended heads are available.



Kit for extended combustion head						
Burner	Standard head length (mm)	Kit code				
RG1RKD	111	181	3000982			
RG2D	114	180	3000964			
RG2D	114	300	3000967			
RG3D	142	210	3000965			
RG3D	142	300	3000968			
RG4D	142	210	3000966			
RG4D	142	300	3000969			
RG5D	159	300	3000981			

Burner withdrawal

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



Burner withdrawal							
Burner	Accessory	Withdrawal (mm)	Kit code				
RG1RKD	Enlarged flange	15	3007931				
RG2D	Spacer	25	3000672				
RG3D - RG4D - RG5D	Spacer	25	3000673				

Control box 550 SMD

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

This control box has the following features:

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



Control box 550 SMD	
Burner	Kit code
RG1RKD - RG2D - RG3D - RG4D - RG5D	3001168



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
RG1RKD - RG2D	
RG3D - RG4D	3087211
RG5D	



	Direct testing	Measurements
	M MOTOR	V L1-N
	The switch feeds the motor.	Main voltage (230 V)
,	VALVE VALVE	$(A) \neg \sqcap \sqcap$
	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	(V) (M)
	The switch feeds the light oil pre-heater; a green led signals the thermostat cut-in.	Secondary voltage (low voltage)
	TRANSFORMER	(A) [
	The switch feeds the firing transformer inside the control box and excites the oil valve.	Photo-resistance current consumption

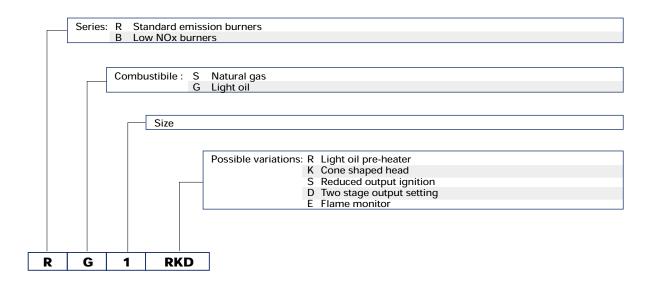




SPECIFICATION

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

DESIGNATION OF SERIES



LIST OF AVAILABLE MODELS

RG1RKD	14/17	÷	60	kW
RG2D	42/49	÷	118	kW
RG3D	65/83	÷	178	kW
RG4D	106/130	÷	237	kW
RG5D	95/142	÷	296	kW



SPECIFICATION DESCRIPTION

Burner:

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

- Fan with forward inclined blades
- Cover lined with sound-deadening material
- Air damper completely closed in stand by
- Air damper, with 1st and 2nd stage adjustment (2nd stage adjustment without removing the casing)
- 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
- Protective filter against radio interference
- IP 40 protection level
- PTC fuel pre-heater (optional).

Approval:

- EN 267 standard

Conforming to:

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

Supplied materials:

- 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
- 4-pin plug
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Extended heads
- Burner withdrawal
- 550 SMD control box with socket for remote resetting
- Tester for checking the various components.







RIELLO S.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

 $Internet: http://www.rielloburners.com \ - \ E-mail: rburners@rielloburners.com \\$



CE

SINGLE-STAGE LIGHT OIL AND KEROSENE BURNERS

► RDB SERIES

▶ RDB1-1R	16,8	÷	59,3	kW
▶ RDB2-2R	23,8	÷	59,3	kW
▶ RDB3	35,6	÷	68,7	kW
▶ RDB4	55,7	÷	113,0	kW



The Riello RDB series of single stage light oil and kerosene burners is available in 6 basic models, with an output ranging from 16,8 to 113 kW, in two different structures. The models are available in light oil and kerosene versions, conventional flue and balanced flue, with or without the fuel pre-heater fitted.

These models are distinguished by their compact size.

All the models use the same components designed by Riello for the RDB series. The high

quality level guarantees safe working.

In developing these burners, special attention was paid to reducing noise, to the ease 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 RDB burners are fired before leaving the factory.



TECHNICAL DATA

Model			▼ RDB1	▼ RDB1R	▼ RDB2	▼ RDB2R	▼ RDB3	▼ RDB4
Setting					Single	e-stage		
Servo-	type					-		
motor	run time					-		
		kW	16,8	- 59,3	23,8	- 59,3	35,6 - 68,7	55,7 - 113
Heat		Mcal/h	14,4	- 51	20,5	i - 51	30,6 - 59	48 - 97,2
output		kg/h	1,4	- 5	2	- 5	3 - 5,8	4,7 - 9,5
Working	g temperature	°C min/max			0/	40		
		kWh/kg			11	1,8		
Net calc	orific value	kcal/kg			10.	200		
Viscosit	y at 20°C	mm²/s (cSt)		4 ÷ 6 (ight oil models) /	1,5 ÷ 6 (kerosene m	odels)	
_	type	kg/h at 12 bar			R.I	3.L.		
Pump	delivery	bar			3	0		
Atomise	ed pressure	°C			8 ÷	- 15		
Light oi	l temperature				5	i0		
Fuel pre	e-heater	type	NO	YES	NO	YES	NO	NO
Fan		°C max			forward t	ilted blades		
Air tem	perature	Ph/Hz/V			4	10		
Electrica	al supply	Ph/Hz/V			1/50/23	30 ±10%		
Aux. ele	ctrical supply	type						
Control	box	kW	R.B.L.535 SE/LD	R.B.L.535R SE/LD	R.B.L.535 SE/LD	R.B.L.535R SE/LD	R.B.L.535 SE/LD	R.B.L.535 SE/L
Total ele	ectrical output	Α	0,115	0,165	0,125	0,175	0,27	0,27
Total rat	ted current	IP	0,7	1	0,7	1	1,3	1,3
Protecti	on level	kW		40				
Electric	motor output	Α	0,115	0,115	0,125	0,125	0,27	0,27
Rated m	notor current	Α	0,7	0,7	0,7	0,7	1,3	1,3
Motor t	ake-off current	IP	3	3	3	3	8,5	8,5
Motor p	rotection level				2	20		
Ignition	transformer				incorporated in	the control box		
Operation	on	dB(A)	intermittent (at least one halt every 24 h)					
Sound pressure mg/kWh		60	60	61,5	61,5	63	66	
CO emis	ssions	N° Bach.	<60					
Grade of	smoke indicator	mg/kWh	∢1					
C _x H _y em	nissions	mg/kWh		<10 AFTER THE FIRST 20"				
NOx em	nissions				<2	250		
Directiv	es			89/3	36/CEE, 73/23/CEE	, 98/37/CEE, 92/42	CEE	
Conform	ning to:				EN	267		
Certifica	ations			jn nro	gress		0036 0274/99	0036 0275/99

Reference conditions:

Temperature: 20 °C Pressure: 1013.5 mbar

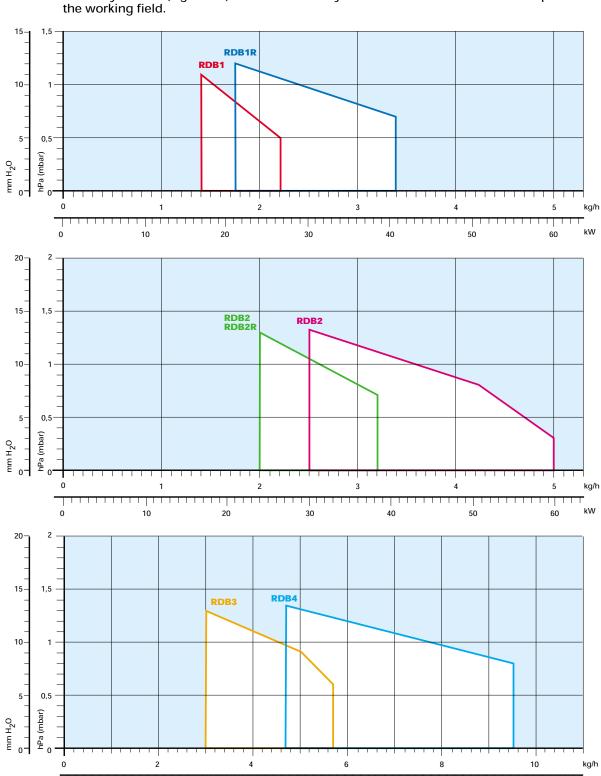
Altitude: 100 m a.s.l.

Noise was measured in the boiler room behind the burner at a distance of 1 meter.





For every models (e.g. RDB1) are available many combustion heads that allows to optimize the working field.



Useful working field for choosing the burner

20

40

60

80

100

Test conditions conforming to EN 267:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.

0



kW

120



FUEL SUPPLY



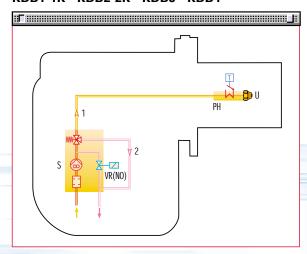
HYDRAULIC CIRCUITS

All the models have a Riello geared pump with safety valve on the return circuit, and some are fitted with a fuel pre-heater. The kerosene models have a special kerosene pump, which guarantees reliable operations with this type of fuel.



Fuel pump

RDB1-1R - RDB2-2R - RDB3 - RDB4



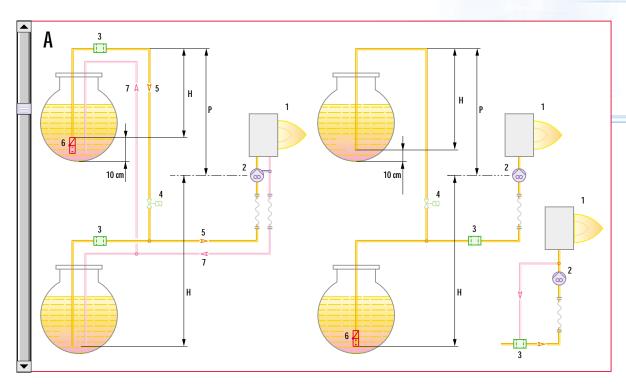
S	Pump with filter and pressure regulator on the delivery pipe
VR(NO)	Oil return valve normally open
1	Oil input pipe to the nozzle
2	Oil return pipe from the regulator
PH	Oil pre-heater with thermostat (where provided)
U	Nozzle

DIMENSIONING OF THE FUEL SUPPLY LINES

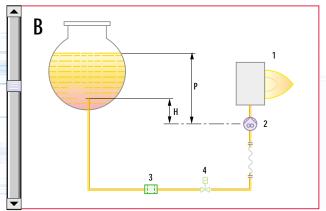
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	Ø8mm	Ø10mm	Ø8mm	Ø10mm		
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	-			



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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 RDB series has been designed and developed paying special attention to reducing noise levels, while guaranteeing high performance of pressure and air delivery, inspite of their compact size.

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.

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



Air suction



COMBUSTION HEAD

There are several types of available combustion heads, to optimise all the various burner-boiler matchings.

A simple adjustment to the combustion head (where fitted) allows adapting secondary air to the burner output.

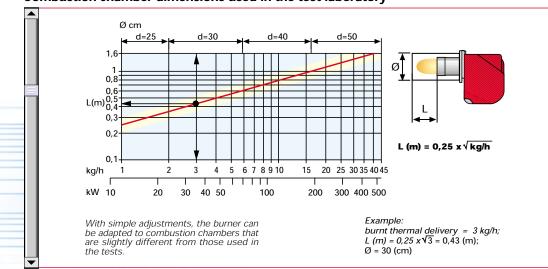


Adjustable combustion head



Fixed combustion head

Combustion chamber dimensions used in the test laboratory



ADJUSTMENT

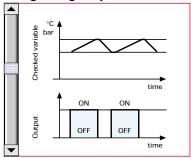




All these models are single stage working; the special profile on the air-damper and its micrometric adjustment, ensure precise working even at the lowest output levels of the burner.



" Single-stage" operation



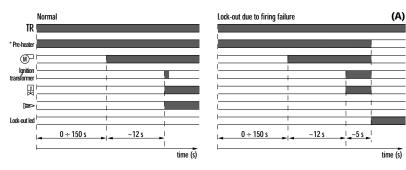




Air damper

Air damper adjustment

FIRING



^{*} only model with pre-heater

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

Correct operations

0s The burner begins the firing cycle.

0s-12s Pre-purge with the air damper open.

12s Ignition.

If the pre-heater is fitted there is a further delay before pre-purge; this delay can reach 150s depending on room and fuel temperatures.

Lock-out due to firing failure

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





ELECTRICAL CONNECTIONS to be made by the installer

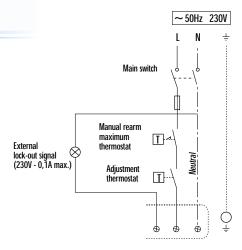
Electrical connections must be made by qualified and skilled personnel in conformity with the local regulations in force.

The terminal board is incorporated in the burner control box and connection is easy following the clear instructions that are given.



Appliance fitted with an ignition transformer

▶ "SINGLE-STAGE" OPERATIONS

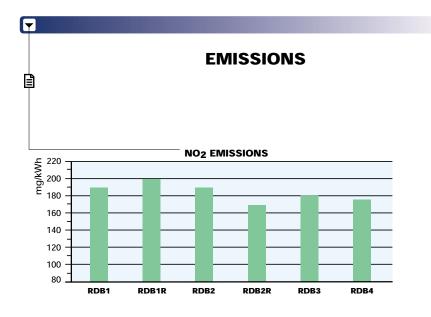


The following table shows the supply lead sections and types of fuse to be used.

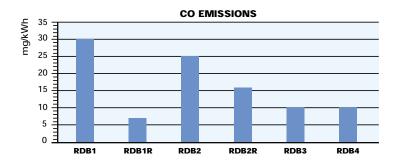
Mo	del	▼RDB1-1R	▼RDB2-2R	▼RDB3	▼RDB4
		230V	230V	230V	230V
F	Α	6	6	T6	T6
L	mm ²	1	1	1	1

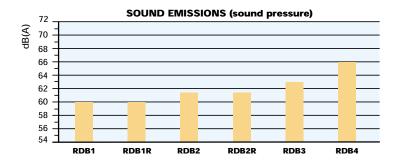
F = Fuse

L = Lead section









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





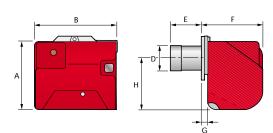
OVERALL DIMENSIONS (mm)

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.

BURNERS

RDB1-1R - RDB2-2R

RDB3 - RDB4



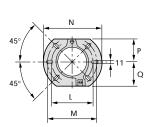
Model	Α	В	С	D	D1	Е	E1	F	G	Н	I
▶ RDB1-1R	223,5	276	230	90	89	76	86	202	20	168	75
▶ RDB2-2R	223,5	276	230	90	89	76	86	202	20	168	75
▶ RDB3	268	325	-	88	-	78	-	253	30	204	-
▶ RDB4	268	325	-	105	-	111	-	253	30	204	-

D - E = Adjustable combustion head.

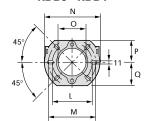
D1 - E1 = Fixed combustion head.

BURNER-BOILER MOUNTING FLANGE

RDB1-1R - RDB2-2R

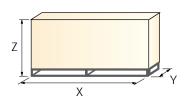


RDB3 - RDB4



Model	L	М	N	0	Р	Q
▶ RDB1-1R	130	150	180	-	72	72
▶ RDB2-2R	130	150	180	-	72	72
▶ RDB3	140	168	189	106	83	83
▶ RDB4	140	168	189	106	83	83

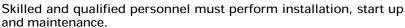
PACKAGING



Model	Х	Υ	Z	kg
▶ RDB1-1R	373	305	315	11
▶ RDB2-2R	373	305	315	11
▶ RDB3	435	360	355	15
▶ RDB4	435	360	355	15

Ţ

INSTALLATION DESCRIPTION



A nozzle is fitted to the burner 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 SETTINGS

▶ RDB series burners can be adjusted from the back of the burner just using a single tool; the air damper is easily adjustable (thanks to a micrometric screw and a position indicator) without removing the burner cover.



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



MAINTENANCE

- ▶ In models RDB3 and RDB4, the maintenance position is easily carried out by hooking the burner to the flange, after removing it from the fixing screws.
- ▶ Maintenance is easy because all the components, including the combustion head, are easily accessed by just unscrewing a single nut.
- ▶ The main components the control box, motor and pump - are outside the air circuit, thus avoiding any risk of oil build up inside the circuit.
- ▶ All the electrical components are connected by socketplugs and they are easy to reach for controls.











ACCESSORIES

Balanced-conventional flue conversion kit

All the RDB series models are easily converted from conventional flue to balanced flue, by replacing the plastic screen on the air intake with the connector for the air supply pipe.

The reverse operation can be carried out on all the models from balanced flue to conventional flue burner, by replacing the connector on the air supply pipe with the plastic screen on the air intake.



Balanced-conventional flue conversion kit				
Burner	Balanced flue kit code	Conventional flue kit code		
RDB1 - RDB2	3062774	3062775		
RDB3 - RDB4	3062774	3062876		

Tester

The tester controls the correct working of the burner components in the RDB series. It can be fitted to all the 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.



Tester				
Burner	Kit code			
RDB1-1R - RDB2-2R - RDB3 - RDB4	3087216			



Direct testing	Measurements
M MOTOR	V L1-N
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	(V) (M)
The switch feeds the light oil pre-heater; a green led signals the thermostat cut-in.	Secondary voltage (low voltage)
TRANSFORMER	(A)
The switch feeds the firing transformer inside the control box and excites the oil valve.	Photo-resistance current consumption

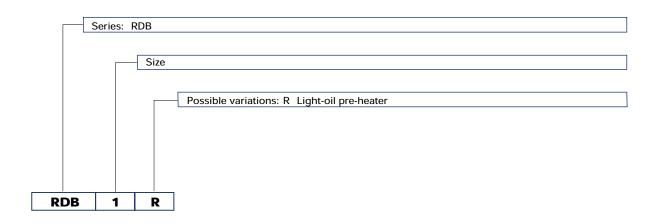




A special index will help you choose the right burner from the available RDB models.

There is also a clear and detailed product specification and description.

DESIGNATION OF SERIES



LIST OF AVALABLE MODELS

RDB1-1R	16,8	÷	59,3	kW
RDB2-2R	23,8	÷	59,3	kW
RDB3	35,6	÷	68,7	kW
RDB4	55.7	÷	113.0	kW



SPECIFICATION DESCRIPTION

Burner

Completely automatic monobloc light oil and kerosene burners, with single-stage operation fitted with:

- Fan with forward inclined blades
- Air damper with external adjustment, with no need to remove the cover
- Air-tight air circuit, also available in the balanced flue version
- 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 (specific version for kerosene) 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
- Protective filter against radio interference
- IP 40 protection level
- Fuel pre-heater (optional).

Approval:

- EN 267 standard.

Conforming to:

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

Supplied materials:

- 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
- Instruction handbook for installation, use and maintenance
- Spare parts list.

Available accessories to be ordered separately:

- Conventional flue-balanced flue conversion kit
- Tester for checking the various components.







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CE

SINGLE-STAGE LIGHT OIL BURNERS • REG SERIES • REG 35.3 2

▶ REG 35.3	21	÷	38	kW
▶ REG 35.3 R	21	÷	38	kW
▶ REG 35.5	27	÷	60	kW
▶ REG 35.5 R	27	÷	60	kW



The REG series of single stage light oil burners, is available in two models with an output ranging from 21 to 60 kW, in a single structure.

The models are available with or without casing and with or without pre-heater. These models are distinguished by their compact size.

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

In developing these burners, special attention was paid to reducing noise, to ease of installation and editatement to obtaining the minimum size possible to allow fitting to any

installation and adjustment, to obtaining the minimum size possible to allow fitting to any sort of boiler available on the market.

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

All the REG series of burners are fired before leaving the factory.



TECHNICAL DATA

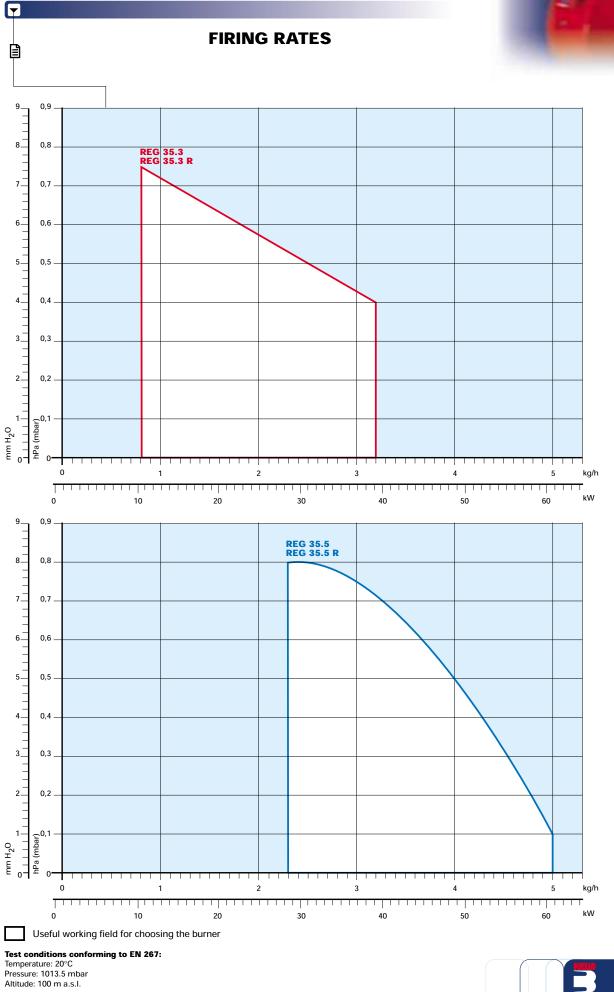
Model			▼ REG 35.3	▼ REG 35.3 R	▼ REG 35.5	▼ REG 35.5 R
Setting				Single-	stage	
Servo- type					•	
motor	run time	s	-			
Heat		kW	21 - 38	21 - 38	27 - 60	27 - 60
		Mcal/h	18 - 32,7	18 - 32,7	23,2 - 51,6	23,2 - 51,6
output		kg/h	1,8 - 3,2	1,8 - 3,2	2,3 - 5	2,3 - 5
Working temperature °C min/max		°C min/max	0/40			
Net calorific value		kWh/kg	11,8			
		kcal/kg	10.200			
Viscosit	y at 20°C	mm²/s (cSt)	4 ÷ 6			
D	type	kg/h at 12 bar	R.B.L.			
Pump	delivery	bar	30			
Atomise	ed pressure	°C	8 ÷ 15			
Light oi	temperature		50			
Fuel pre	-heater	type	NO	YES	NO	YES
Fan		°C max	forward tilted blades			
Air tem	perature	Ph/Hz/V	40			
Electrica	al supply	Ph/Hz/V	1/50/230 ±10%			
Aux. ele	ctrical supply	type		-		
Control box kW		kW	R.B.L.535 SE	R.B.L.535R SE	R.B.L.535 SE	R.B.L.535R SE
Total ele	ectrical output	Α	0,17	0,22	0,17	0,22
Total rat	ed current	IP	0,7	1,1	0,7	1,1
Protecti	on level	kW		40	0	
Electric	motor output	Α	0,17	0,17	0,17	0,17
Rated m	otor current	A	0,7	0,7	0,7	0,7
Motor ta	ake-off current	IP	3	3	3	3
Motor p	rotection level		20			
Ignition	transformer		incorporated in the control box			
Operation	on	dB(A)	intermittent (at least one halt every 24 h)			
Sound p	ressure	mg/kWh	53	54	53	54
CO emis	ssions	N° Bach.	<60			
Grade of	smoke indicator	mg/kWh	<1			
C _x H _v em		mg/kWh	<10 AFTER THE FIRST 20"			
NOx em		-	<250			
Directiv	es		89/336/CEE, 73/23/CEE, 98/37/CEE, 92/42/CEE			
Conforn	ning to:		EN 267			
Certifications			5G098/97	5G098/97	5G097/97	5G097/97

Reference conditions:

Temperature: 20 °C Pressure: 1013.5 mbar

Altitude: 100 m a.s.l.

Noise was measured in the boiler room behind the burner at a distance of 1 meter.







FUEL SUPPLY



HYDRAULIC CIRCUITS

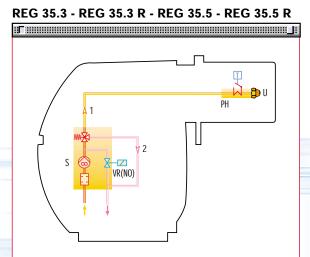
All the burners have a Riello geared pump, with a safety valve on the return circuit, and are available with or without the light oil preheater.



Fuel pump



Model with pre-heater



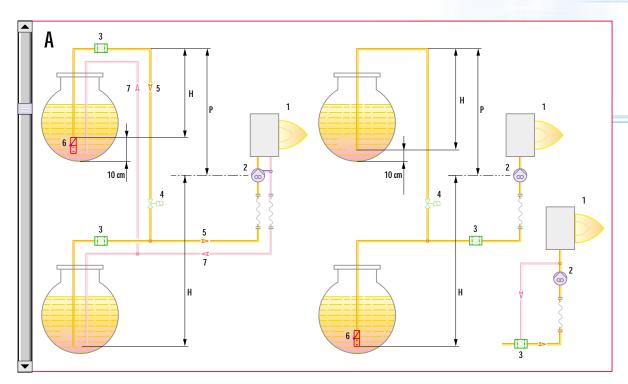
S	Pump with filter and pressure regulator on the delivery pipe
VR(NO)	Oil return valve normally open
1	Oil input pipe to the nozzle
2	Oil return pipe from the regulator
PH	Oil pre-heater with thermostat (where provided)
U	Nozzle



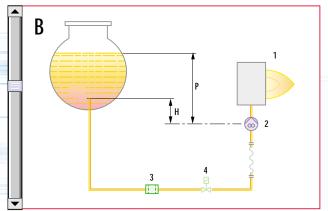
The fuel feed must be completed with the safety devices required by the local regulations in force.

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

MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]				
	▼ Type A system		▼ Type	B system
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm
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	-	-



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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 circuit always ensures low noise levels with high performance concerning pressure and air delivery, although the size is very compact.



Air suction



COMBUSTION HEAD



Different lengths of the combustion head can be chosen for the REG series of burners.

The choice depends on the thickness of the front panel and the type of boiler.

Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct. Simple adjustment to the combustion head allows adapting internal geometry of the head to the working output of the burner.

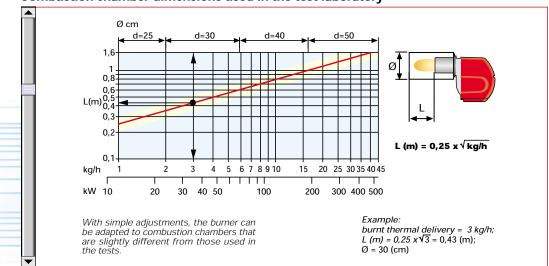


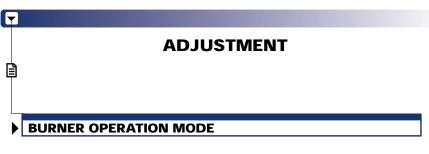
Coupling flange



Combustion head

Combustion chamber dimensions used in the test laboratory

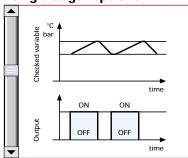




All these models are single-stage working.



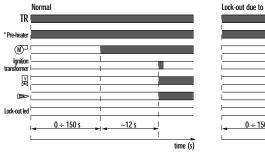


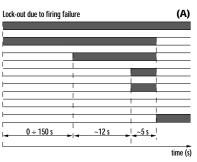




Air damper adjustment

FIRING





- * Only model with pre-heater.
- (A) Lock-out is shown by a led on the appliance.

Correct operations

- 0s The burner begins the firing cycle.
- 0s-12s Pre-purge with the air damper open.
- 12s Ignition.
- * If the pre-heater is fitted there is a further delay before pre-purge; this delay can reach 150s depending on room and fuel temperatures.

Lock-out due to firing failure

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





ELECTRICAL CONNECTIONS to be made by the installer

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

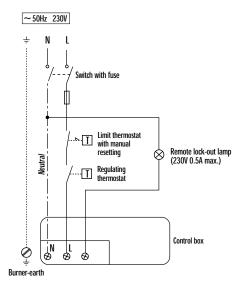
The burners are connected electrically through the terminal board incorporated in the control box which is easily accessible.

The wiring diagram is printed on the lid of the control box.



Appliance fitted with an ignition transformer

" SINGLE-STAGE" OPERATIONS

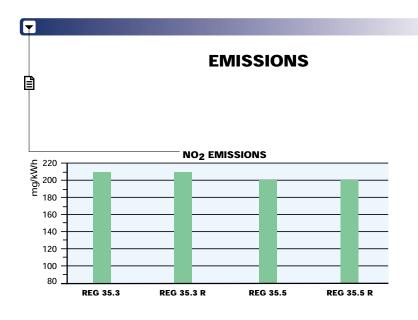


The following table shows the supply lead sections and types of fuse to be used.

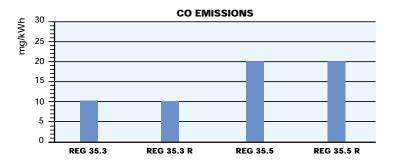
	Мо	del	▼REG 35.3	▼REG 35.3 R	▼REG 35.5	▼REG 35.3 R
I			230V	230V	230V	230V
	F	Α	6	6	6	6
	L	mm ²	1	1	1	1

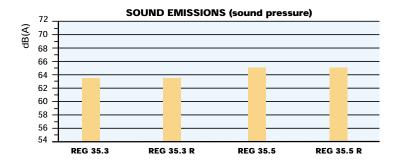
F = Fuse

L = Lead section









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



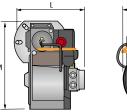
OVERALL DIMENSIONS (mm)

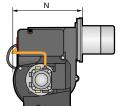
These models are distinguished by their reduced size, in relation to the outputs achieved, which means they can be fitted to any boiler actually on the market.

BURNERS

REG 35.3 - REG 35.3 R

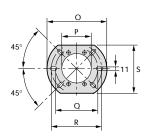
REG 35.5 - REG 35.5 R





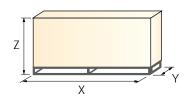
Model	A *	B *	C *	D *	E *	F **	G	Н	*	L	М	N
▶ REG 35.3	301/304	84/84	140/140	280/283	243/243	82-112	89	121.5	212/215	215,5	279	211
▶ REG 35.3 R	301/304	84/84	140/140	280/283	243/243	82-112	89	121.5	212/215	215,5	279	211
▶ REG 35.5	301/304	84/84	140/140	280/283	243/243	80-110	89	121.5	212/215	215,5	279	211
▶ REG 35.5 R	301/304	84/84	140/140	280/283	243/243	80-110	89	121.5	212/215	215,5	279	211

BURNER-BOILER MOUNTING FLANGE



Model	0	Р	Q	R	S
▶ REG 35.3	170	95	130	150	130
▶ REG 35.3 R	170	95	130	150	130
▶ REG 35.5	170	95	130	150	130
▶ REG 35.5 R	170	95	130	150	130

PACKAGING



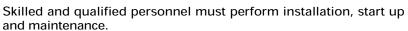
Model	X	Υ	Z	kg
▶ REG 35.3	337	300	210	9,5
▶ REG 35.3 R	337	300	210	9,5
▶ REG 35.5	337	300	210	9,5
▶ REG 35.5 R	337	300	210	9,5

^{*} Top cover only / Top and bottom cover.

** The combustion head is available in 2 different lengths.



INSTALLATION DESCRIPTION



A nozzle is fitted to the burner 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 in accordance with the technical handbook supplied with the burner.



BURNER SETTINGS

▶ The head setting area is easily accessible and the operation is aided by a graduated scale.



▶ The air damper is easy to set; if the casing is fitted it makes no difference to air delivery.



MAINTENANCE

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







ACCESSORIES



Cover

Besides the basic version, the boilers are also available with a plastic protective cover.

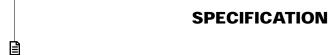
Two models of cover are available (they can be ordered separately):
- for burners installed in the standard position (a single piece)
- for burners installed upside down (two pieces)



Со	ver
Version	Kit code
Standard installation	3008900
Upside down installation	3008900 + 3008902





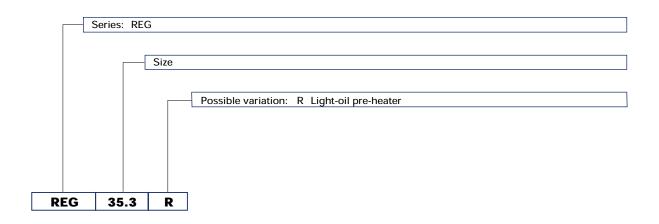




A special index will help you choose the right burner from the REG models available.

There is also a clear and detailed product specification and description.

DESIGNATION OF REG BURNERS



LIST OF AVAILABLE MODELS

REG 35.3	21 ÷	38	kW
REG 35.3 R	21 ÷	38	kW
REG 35.5	27 ÷	60	kW
REG 35.5 R	27 ÷	60	kW



SPECIFICATION DESCRIPTION

Burner

Monoblock fully automatic light oil burners, with single stage operations.

Fitted with:

- Fan with forward inclined blades
- Adjustable air damper
- Single phase electric motor 230 V, 50 Hz
- Combustion head, fitted with:
 - 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 vacuometer
 - Internal by-pass for preparing for single pipe installation
- Fuel feed solenoid incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Protective filter against radio interference
- IP 40 protection level
- Fuel heater (optional).

Approval:

- EN 267 standards.

Conforming to:

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

Supplied materials:

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

Available accesories to be ordered separately:

- Cover kit (specify if the boiler is installed in the standard position or rotated by 180°).





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The Riello 40 H series of one stage light oil burners, has been designed to be used friendly and to respond to any request for hotel kitchen applications. The Riello 40 H series is available in a single model with an output ranging from 21 to 65 kW. The high quality level guarantees safe working.

In developing this burner, special attention was paid to the ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of application. This burner can work in two stages, choosing the output required according with the heat input that the application needs. This results in very economical operation of the system and a decrease of the cyclic phases of ignition/shut down, less thermal stress of the plant and a significant decrease in emissions.

The model is approved by the EN 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and boiler Efficiency.

All the Riello 40 H burners are fired before leaving the factory.



TECHNICAL DATA

Model			▼ H5
_			
	operation mode		One stage
Modula	tion ratio at max. output		-
Servo-	type		-
motor	run time	s	
Heat		kW	21 - 65
output		Mcal/h	18,4 - 56
		kg/h	1,8 - 5,5
Workin	g temperature	°C min./max.	0/40
Not ool	orific value	kWh/kg	11,8
ivet car	ornic value	kcal/kg	10200
Viscosi	ty	mm ² /s (cSt)	4 - 6 (at 20°C)
_	type		R.B.L.
Pump	delivery	kg/h	30 (at 12 bar)
Atomis	ed pressure	bar	7 - 15
	nperature	max. °C	50
	e-heater		NO
Fan	ricutor	type	centrifugal with forward curve blades
Air temperature		max. °C	40
	-		
		Ph/Hz/V	1/50/230±10%
	y electrical supply	Ph/Hz/V	-
Control		type	R.B.L. 530 SE
	ectrical power	kW	0,13
Auxilia	y electrical power	kW	
Heaters	electrical power	kW	
Protect	ion level	IP	40
Pump n	notor electrical power	kW	
Rated p	ump motor current	Α	-
Pump motor electrical power Rated pump motor current Pump motor start up current Pump motor protection level		Α	
Pump motor start up current		IP	
-		kW	0,1
		Α	0,75
	tor start up current	Α	3
	tor protection level	IP	20
i un mo	tor proteotion level	type	Incorporated in the control box
lanition	transformer	V1-V2	8 kV
igilition	i transionnei	11-12	22 mA
0		11-12	
Operati		-ID(A)	intermittent (at least one stop every 24h)
	pressure	dB(A)	59
Sound		W	-
CO emi		mg/kWh	<60
	f smoke indicator	N° Bach.	<1
	nissions	mg/kWh	<10 (after the first 20s)
NOx En	nissions	mg/kWh	<250
Directiv	re		89/336/EEC, 73/23/EEC, 98/37/EEC, 92/42/EEC
Conform	ming to		EN 267

Reference conditions: Temperature: 20 °C

Certification

Pressure: 1013.5 mbar Altitude: 100 m a.s.l.

Noise measured at a distance of 1 meter.



Useful working field for choosing the burner

Test conditions conforming to EN 267: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





FUEL SUPPLY

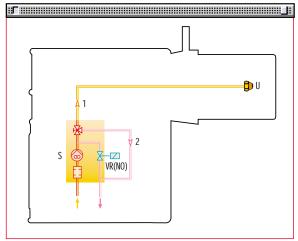
HYDRAULIC CIRCUIT

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



Fuel pump





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
U	Nozzle

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

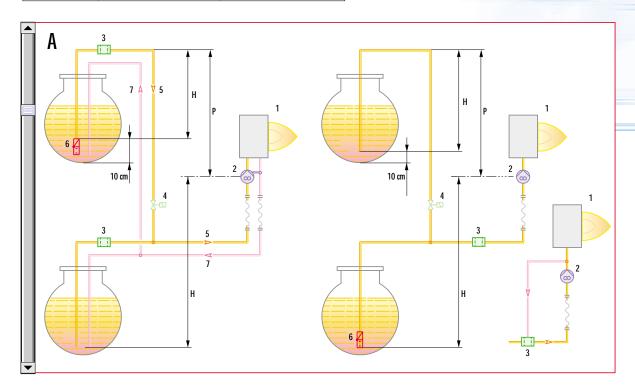


SELECTING THE FUEL SUPPLY LINES

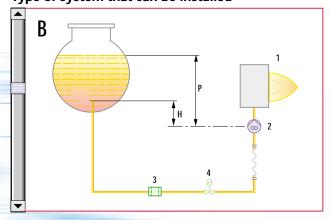
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]									
	▼ Type A	A system	▼ Type B system							
Pipe size	Ø8mm Ø10mm		Ø8mm	Ø10mm						
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	-							



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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 circuit always ensure low noise levels with high performance of pressure and air delivery, inspite of its compact size.



Air suction



COMBUSTION HEAD



The burner is fitted with adjustable combustion head.

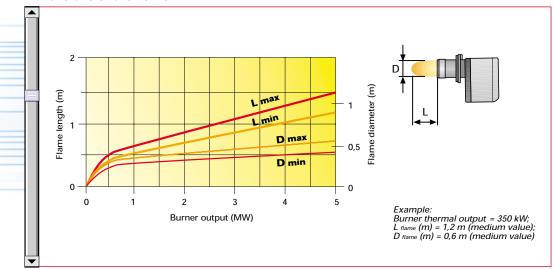
Simple adjustment to the combustion head allows adapting internal geometry of the head to the maximum rated output of the burner.

The following diagram shows the flame dimensions in relation to the burner output. The length and diameter shown in the diagram below should be employed for a preliminary check: it is required a more careful investigation if combustion chamber dimensions are much different from the above reported values.



Combustion head

Dimensions of the flame





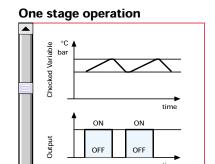


BURNER OPERATION MODE

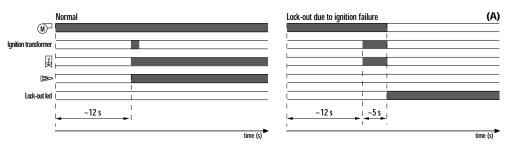
The H5 model is one stage operation. The output firing can be adjusted by hand.



Air damper



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.

12s Ignition.

Lock-out due to ignition failure

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







WIRING DIAGRAMS

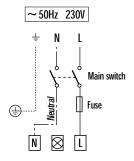
Electrical connections must be made by qualified and skilled personnel in conformity with the local regulations in force.



Control box fitted with an ignition transformer

"ONE STAGE" OPERATION

H5



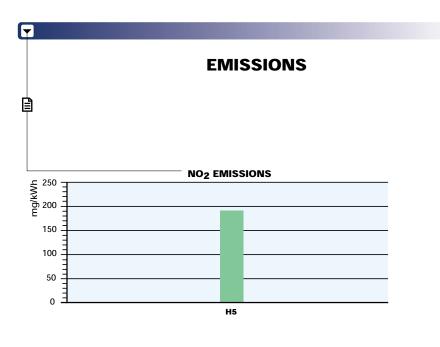
Terminal block of control box

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

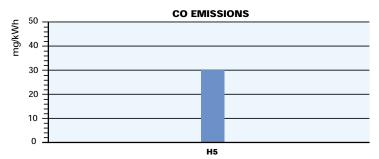
М	odel	▼ H5
		230V
F	Α	6
L	mm²	1

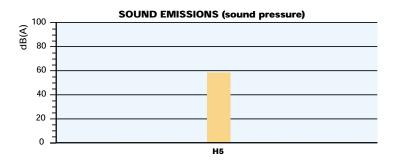
F = Fuse

L = Lead section









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. The model is fitted with sound-deadening material inside the cover.





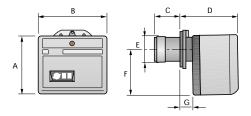


OVERALL DIMENSIONS (mm)



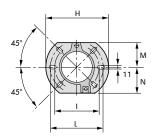
The model is distinguished by its reduced size, in relation to its output.

BURNER



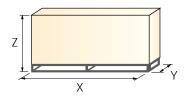
Mode	el	А	В	С	D	Е	F	G
▶ H5		233	272	107	238	89	180	37

BURNER-BOILER MOUNTING FLANGE



Model	Н	I	L	М	N
▶ H5	180	130	150	72	75

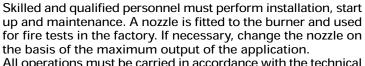
PACKAGING



Model	Х	Υ	Z	kg
→ H5	373	305	315	12



INSTALLATION DESCRIPTION



All operations must be carried in accordance with the technical handbook supplied with the burner.



BURNER SETTING

▶ Air damper and head adjustment area are easily accessible and the operation is simple thanks to a graduated scale and following the manual instruction.





▶ The burner is supplied with a hand control to choose the suitable output, and electrical switch including a start button to operate the burner.



MAINTENANCE

▶ The maintenance position is easily carried out by hinge that joins the body of burner to the flange.







BURNER ACCESSORIES



Light oil filter

Light o	il filter
Burner	Kit code
H5	3000926

Protection kit

Prot	ection kit
Burner	Kit code
H5	3000925

End cone without turbolator ring

	End cone without turbolator ring
Burner	Kit code
H5	3006040





A special index guides your choice of boiler according to this model. Below there is a clear and detailed specification description of the product.

DESIGNATION OF SERIES



AVAILABLE BURNER MODELS

H5 21 ÷ 65 kW



PRODUCT SPECIFICATION

Burner:

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

- Fan with forward curve blades
- Metallic cover
- Air damper with manual adjustment
- 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, setting manually, fitted with:
 - filter
 - manual 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
- Photoresistance for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP 40 protection level.

Approval:

- EN 267 standard.

Conforming to:

- Directive 89/336/EEC (electromagnetic compatibility)
- Directive 73/23/EEC (low voltage)
- Directive 98/37/EEC 89/392/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
- Hinge
- Grommet
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Light oil filter
- Protection kit
- End cone without turbolator ring.









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TWO STAGE LIGHT OIL BURNERS • RIELLO 40 GI SERIES • G5IR 19,0/2

CE

▶ G5IR	19,0/26,0 ÷ 60,0	kW
▶ G10I	44,0/54,0 ÷ 120,0	kW
▶ G20I	71,0/95,0 ÷ 240,0	kW
▶ G20D	71,0/95,0 ÷ 240,0	kW



The Riello 40 GI series of two stage light oil burners, is a complete range of products developed to respond to any request for home heating. The Riello 40 GI series is available in four different models, whit an output ranging from 19 to 240 kW, divided in three different

All the models use the same components designed by Riello for the Riello 40 GI series. The high quality level guarantees safe working.

In developing these burners, special attention was paid to reducing noise, to the ease 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 Riello 40 GI burners are fired before leaving the factory.



TECHNICAL DATA

Model		▼G5IR	▼ G10I	▼ G20I	▼ G20D			
Setting			Two stage					
Servo-	type		-					
motor	run time	s		-				
Heat		kW	19/26 - 60	44/54 - 120	71/95 - 240	71/95 - 240		
output		Mcal/h	16,3/22,3 - 51,6	37,8/46,4 - 103,2	61/81,7 - 206,4	61/81,7 - 206,4		
output		kg/h	1,6/2,2 - 5	3,7/4,5 - 10	6/8 - 20	6/8 - 20		
Working	g temperature	°C min./max.		0/4	10			
Not calc	orific value	kWh/kg		11,	8			
ivet care	Jillic value	kcal/kg		10.2	00			
Viscosit	y at 20°C	mm ² /s (cSt)		4 ÷	6			
Pump	type			R.B	.L.			
rump	output	kg/h at 12 bar		30)			
Atomise	ed pressure	bar		8 ÷	15			
Fuel ten	nperature	max. °C		50)			
Fuel pre	-heater		YES	NO	NO	NO		
Fan		type	forward tilted blades					
Air tem	perature	max. °C	40					
Electrica	al supply	Ph/Hz/V	1/50/230 ±10%					
Aux. ele	ctrical supply	Ph/Hz/V	<u></u>					
Control	box	type	531 SE	530 SE	530 SE	530 SE		
Total ele	ectrical power	kW	0,185	0,17	0,33	0,33		
Total rat	ed current	Α						
Protecti	on level	IP		40)			
Motor e	lectrical power	kW	0,1	0,14	0,30	0,30		
Rated m	notor current	Α	0,75	0,85	1,5	1,5		
Motor s	tart current	Α	3	3,5	6	6		
Motor p	rotection level	IP		20				
Ignition	transformer			incorporated i	n the control box			
Operation	on			intermittent (at leas	t one halt every 24 h)			
Sound p	oressure	dB(A)						
CO Emissions mg/kWh N° Bach. C_xH_y Emissions mg/kWh			<60					
			<1					
				<10 AFTER TH	IE FIRST 20s			
NOx Em	nissions	mg/kWh		<25	50			
Directive	es		89/336/EEC, 73/23/EEC,	89/336/EE	C, 73/23/EEC, 98/37/EEC, 9	92/42/EEC		
Conforn	ning to		89/392/EEC, 92/42/EEC	EN 2	067			
COITIOFF	ations			6 0258/99	CE-0036			

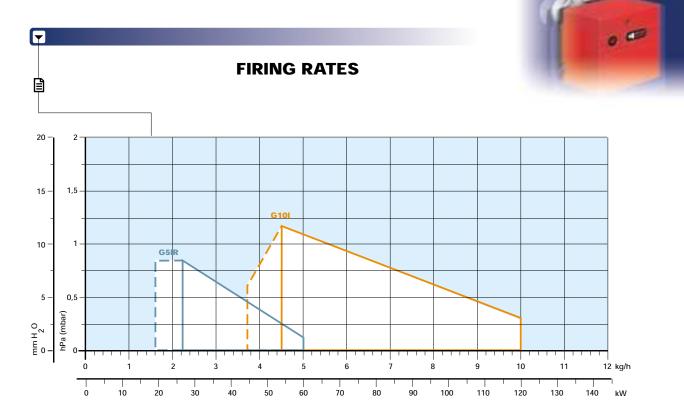
Reference conditions: Temperature: 20 °C Pressure: 1013.5 mbar

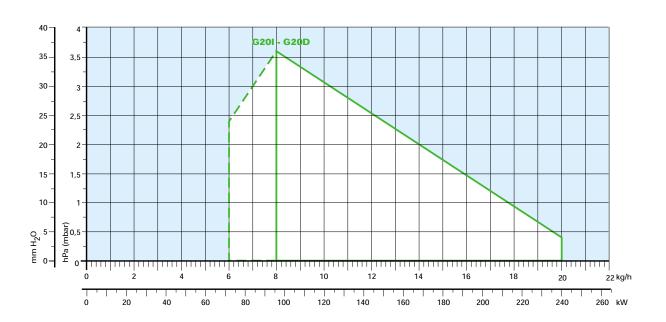
Altitude: 100 m a.s.l.

Noise was measured in the boiler room behind the burner at a distance of 1 meter.

Hot air generation version: all these models, except G20D, can be used on hot air generator, using different control box.

G5IR uses 539 SE control box type, G10l and G20l use 479 SE and 539 SE control box type.





Useful working field for choosing the burner

1st stage operating rate

Test conditions conforming to EN 267 standards: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





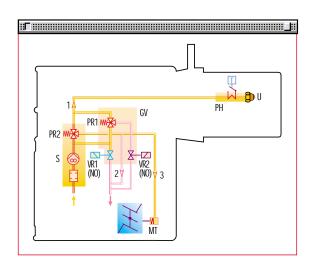
FUEL SUPPLY

HYDRAULIC CIRCUITS

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



Fuel pump



S	Pump with filter and pressure regulator on the delivery pipework
VR1(NO)	1 st stage oil return valve normally open
VR2(NO)	2 nd stage oil return valve normally open
1	Oil delivery pipe to the nozzle/s
2	Oil return pipe from the 2 nd stage regulator
3	Oil delivery pipe to the air damper hydraulic jack
MT	Air damper hydraulic jack for the 2 nd stage
PR1	1 st stage oil regulator
PR2	2 nd stage oil regulator
PH	Oil pre-heater with thermostat (where provided)
GV	Valve unit
U	Nozzle

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

LIGHT OIL PRE-HEATER

The model G5IR has light oil pre-heater which is located next to the nozzle, operated by the control box which delays burner ignition before each start in order to adequately pre-heat the oil.



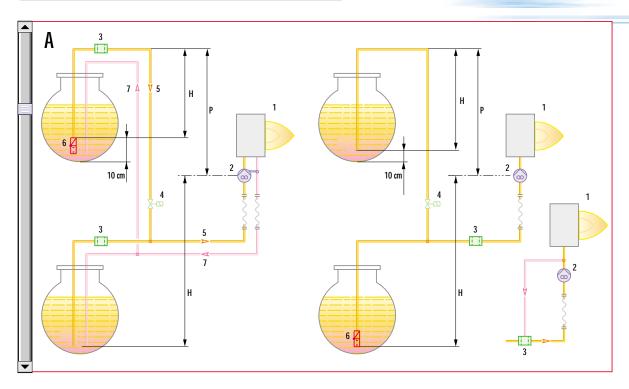


DIMENSIONING OF THE FUEL SUPPLY LINES

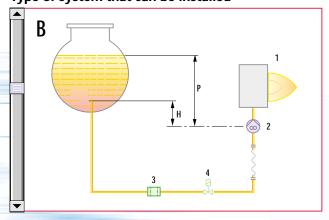
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]							
	▼ Type A	A system	▼ Type B system					
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm				
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	-					



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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 models allows you to choose the length of the combustion head.

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

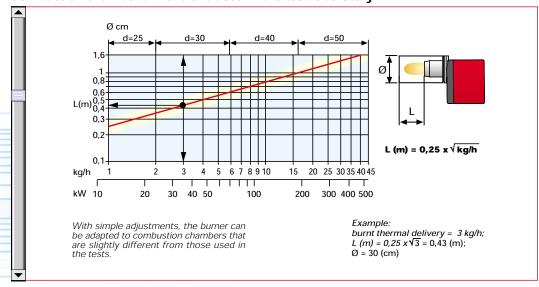
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.

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



Combustion head

Combustion chamber dimensions used in the test laboratory



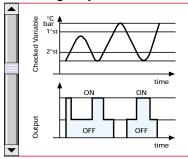
ADJUSTMENT



BURNER OPERATION MODE

All these models have two stage output operation and they are fitted of a special electrical advice which permits to optimize burner operation by external temperature detection.

"Two stage" operation



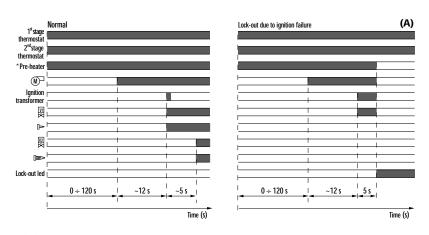




Air damper

Economizer

IGNITION



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

Correct operation

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

12s 1st stage ignition. 17s-40s 2nd stage ignition.

* If the pre-heater is fitted, there is a further delay before pre-purge; this delay can reach 120s 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.





ELECTRICAL CONNECTIONS to be made by the installer

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



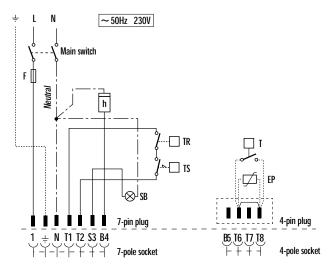
7-pole socket wiring with 7-pin plug



Control box fitted with an ignition transformer

TWO STAGE" OPERATION

G5IR - G10I - G20I - G20D



- TR Regulating thermostat
 TS Safety thermostat (with manual resetting)
 SB Remote lock-out lamp (230V 0,5A max), if required
 h Hour meter

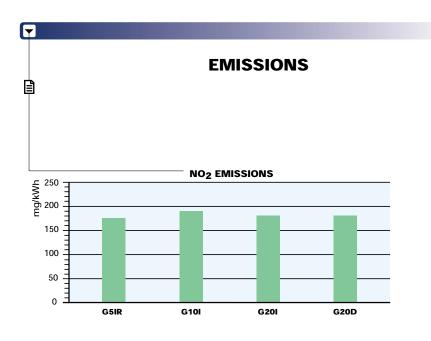
- F Fuse
 T 2nd stage thermostat
 EP External probe ("I" models)

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

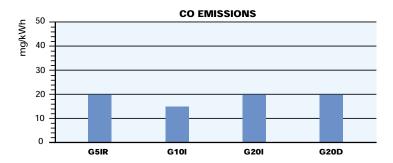
Мо	del	▼ G5IR	▼ G10I	▼ G20I	▼ G20D
		230V	230V	230V	230V
F	Α	6	6	T6	T6
L	mm ²	1	1	1	1

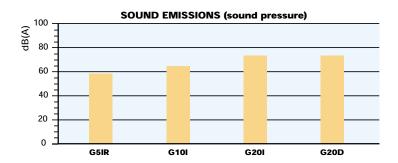
F = Fuse

L = Lead section









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-deadening material inside the cover.





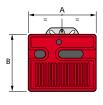


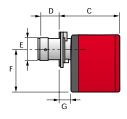
OVERALL DIMENSIONS (mm)



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.

BURNERS

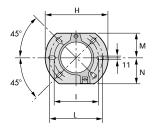




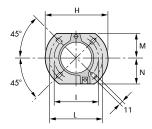
Model	Α	В	С	D	Е	F	G
▶ G5IR	272	233	236	94÷112	89	180	37
▶ G10I	305	262	261	108	105	204	40
▶ G20I	350	298	295	118	125	230	41
▶ G20D	350	298	295	118	125	230	41

BURNER-BOILER MOUNTING FLANGE

G5IR - G10I

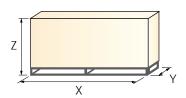


G20I - G20D



Model	Н	I	L	М	N
▶ G5IR	180	130	150	72	75
▶ G10I	189	140	170	83	83
▶ G20I	213	160	190	99	99
▶ G20D	213	160	190	99	99

PACKAGING



Model	X	Υ	Z	kg
▶ G5IR	373	305	315	11
▶ G10I	413	338	330	12
▶ G20I	473	383	367	14
▶ G20D	473	383	367	15



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 in accordance with the technical handbook supplied with the burner.



BURNER SETTINGS

• Air damper and head adjustment area are easily accessible and the operation is simple thanks to a graduated scale and following the manual instruction.





▶ Changing the position of the small plug in the economizer, the burner can remain permanently in the 1st stage, 2nd stage or works in two stage operation.



MAINTENANCE

▶ The maintenance position is easily carried out by hinge that joins the body of burner to the flange.





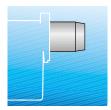


BURNER ACCESSORIES



Extended head kit

Kits of extended heads are available.



Kit of extended combustion head			
Burner	Standard head length (mm)	Long head version length (mm)	Kit code
G10I	108	168	3000643
G20I	118	178	3000644
G20D	118	260	3000771

Spacer kit

Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.



Head lenght reduction kit			
Burner	Accessory	Pulling back (mm)	Kit code
G5IR	Spacer	25	3000642
G10I	Spacer	25	3000672
G20I	Spacer	25	3000673
G20D	Spacer	25	3000673

Light oil filter

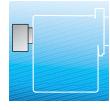
Light oil filter		
Burner	Kit code	
G5IR - G10I - G20I - G20D	3000926	

Biodiesel kit

Kit to use biodiesel		
Burner	Kit code	
G5IR - G10I - G20I - G20D	3000978	

Remote control release kit for the 530 - 531 SE control box

The 530 - 531 SE control box can be remotely released using an electric command kit. This kit must be installed in conformity with current regulations in force.



Remote control release kit for the 530 - 531 SE control box		
Burner	Kit code	
G5IR - G10I - G20I - G20D	3001030	



BALANCED FLUE VERSION

The Riello 40 series balanced flue oil burner has been specifically designed to meet the increasing trend towards the use of balanced flue, otherwise known as room sealed appliances, which avoids the necessity of having a chimney to discharge the products of combustion.

Balanced flue products are completely sealed from the environment in which they are installed, drawing air for combustion directly from the outside, thereby ensuring no unwelcome smells from combustion of the oil.

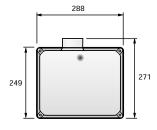
As a result of the burner components such as motor, oil pump etc. being completely enclosed this provides an additional benefit of low sound levels.

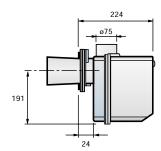
The Riello 40 balanced flue range has been designed and manufactured to meet the latest European and OFTEC test requirement and are manufactured under quality assurance standards.



Riello 40 G5IR BF

Overall dimensions (mm)







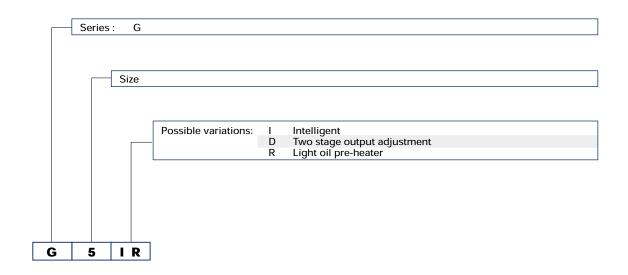


SPECIFICATION

A special index will help you choose the right burner from the Riello 40 GI models available.

There is also a clear and detailed product specification and description.

DESIGNATION OF SERIES



AVAILABLE BURNER MODELS

G5IR 19,0/26,0 ÷ 60,0 kW G10I 44,0/54,0 ÷ 120,0 kW G20I 71,0/95,0 ÷ 240,0 kW G20D 71,0/95,0 ÷ 240,0 kW



SPECIFICATION DESCRIPTION

Burner:

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

- Fan with forward inclined blades
- Cover lined with sound-deadening material
- Air damper, completely closed in stand by, with adjustment
- 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 40 protection level
- Fuel pre-heater (optional)
- Reduced output ignition mechanism (optional)
- Electronic economizer.

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
- 4-pin plug
- Hinge
- External probe ("I" models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Extended head kit
- Spacer kit
- Light oil filter
- Biodiesel kit
- Remote release kit
- Balanced flue version.







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 $Internet: http://www.rielloburners.com \ - \ E-mail: rburners@rielloburners.com$



ONE STAGE LIGHT OIL BURNERS • RIELLO 40 F SERIES • F5 31

▶ F5	30	÷	60	kW
▶ F10	54	÷	107	kW
▶ F20	95	÷	202	kW



The Riello 40 F series of one stage light oil burners, is a complete range of products developed to respond to any request for light industrial applications. The Riello 40 F series is available in three different models, whit an output ranging from 30 to 202 kW, divided in three different structures.

All the models use the same components designed by Riello for the Riello 40 F series. The high quality level guarantees safe working.

In developing these burners, special attention was paid to reducing noise, to the ease 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 Riello 40 F burners are fired before leaving the factory.

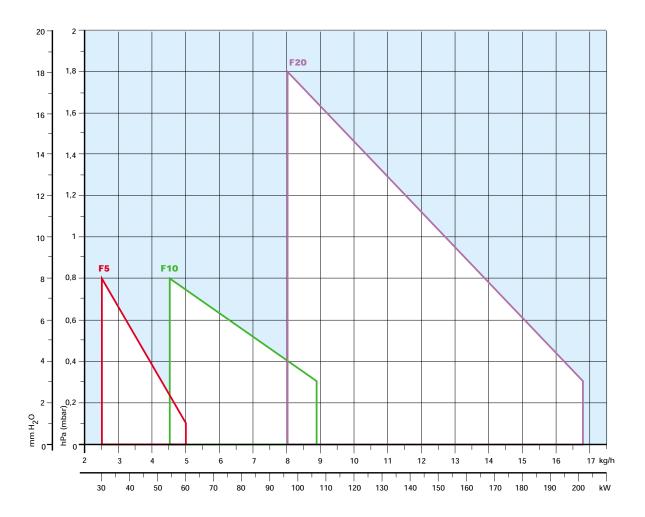


TECHNICAL DATA

Model			▼ F5	▼ F10	▼ F20	
Setting			One stage			
Servo-	type		-			
motor	run time	S		-		
Heat		kW	30 - 60	54 - 107	95 - 202	
output		Mcal/h	25,8 - 51,6	46,4 - 92	81,7 - 173,7	
output		kg/h	2,5 - 5	4,5 - 9	8 - 17	
Working	g temperature	°C min./max.		0/40		
Not cole	orific value	kWh/kg		11,8		
Net care	ornic value	kcal/kg		10.200		
Viscosit	y at 20°C	mm ² /s (cSt)		4 ÷ 6		
Pump	type			R.B.L.		
rump	output	kg/h at 12 bar		30		
Atomis	ed pressure	bar		7 - 15		
Fuel ter	nperature	max. °C	50			
Fuel pre	-heater		NO NO NO			
Fan		type	forward tilted blades			
Air tem	perature	max. °C	40			
Electric	al supply	Ph/Hz/V	1/50/230 ±10%			
Aux. ele	ctrical supply	Ph/Hz/V		-		
Control	box	type		530 SE		
Total ele	ectrical power	kW	0,13	0,17	0,33	
Total rat	ted current	Α	0,75	0,85	1,5	
Protecti	on level	IP		40		
Motor e	lectrical power	kW	0,1	0,14	0,30	
Rated n	notor current	A	0,75	0,85	1,5	
Motor s	tart current	Α	3	3,5	6	
Motor p	rotection level	IP		20		
Ignition	transformer			incorporated in the control box		
Operation	on		i	ntermittent (at least one halt every 24	h)	
Sound p	oressure	dB(A)	60 66		73	
CO Emi	ssions	mg/kWh		<60		
Grade of	smoke indicator	N° Bach.		<1		
C _x H _y En	nissions	mg/kWh		<10 AFTER THE FIRST 20s		
NOx En	nissions	mg/kWh		<250		
Directiv	es		89/3	336/EEC, 73/23/EEC, 98/37/EEC, 92/42	/EEC	
Conform	ning to			EN 267		
Certifica	ations		_	_		

Reference conditions: Temperature: 20 °C Pressure: 1013.5 mbar Altitude: 100 m a.s.l. Noise was measured in the boiler room behind the burner at a distance of 1 meter.





Useful working field for choosing the burner

Test conditions conforming to EN 267 standards: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





FUEL SUPPLY

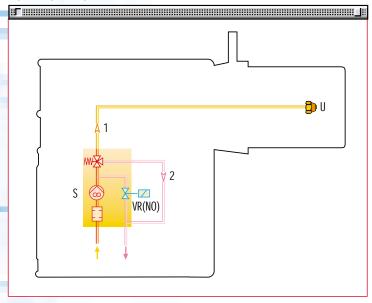
HYDRAULIC CIRCUITS

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



Fuel pump

F5 - F10 - F20



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
U	Nozzle

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

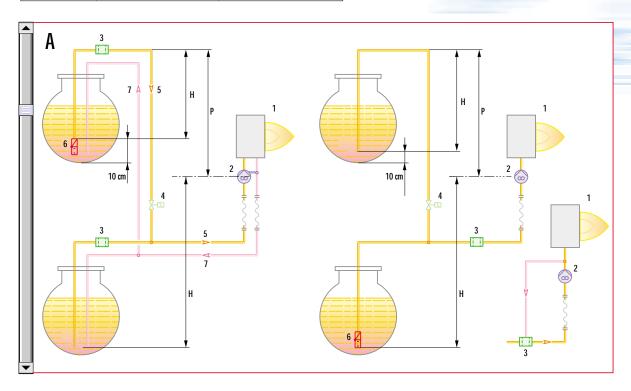


DIMENSIONING OF THE FUEL SUPPLY LINES

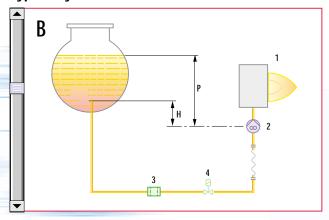
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]				
	▼ Type /	A system	▼ Type	B system	
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm	
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	-		



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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



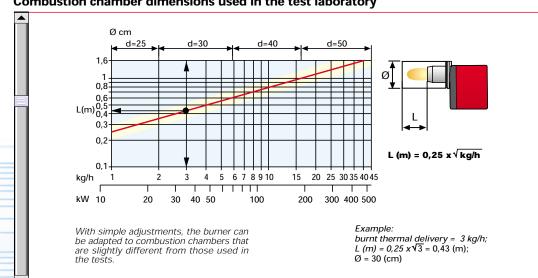
All the models have adjustable combustion heads.

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



Combustion head

Combustion chamber dimensions used in the test laboratory





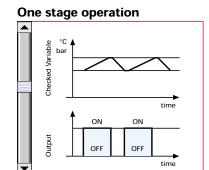


BURNER OPERATION MODE

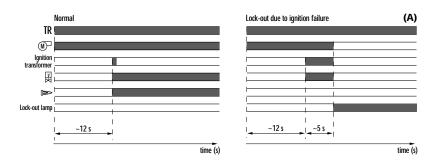
All these models are one stage operation.



Air damper



IGNITION



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

Correct operation

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

12s Ignition.

Lock-out due to ignition failure

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





ELECTRICAL CONNECTIONS to be made by the installer

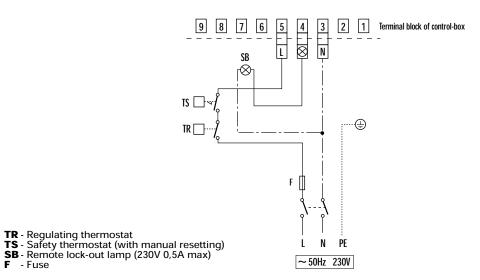
Electrical connections must be made by qualified and skilled personnel in conformity with the local regulations in force.



Control box fitted with an ignition transformer

"ONE STAGE" OPERATION

F5 - F10 - F20

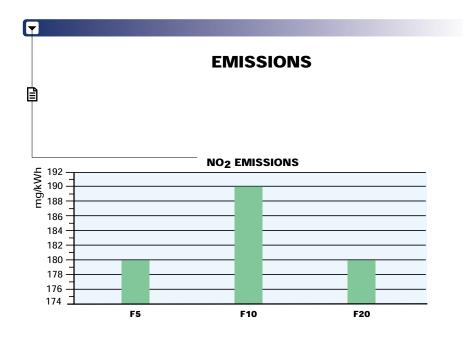


The following table shows the supply lead sections and types of fuse to be used.

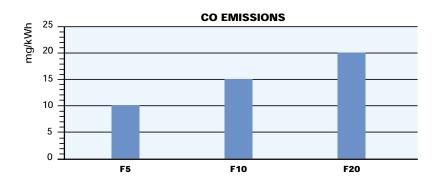
Мо	del	▼F5	▼ F10	▼ F20
		230V	230V	230V
F	Α	6	6	T6
L	mm ²	1	1	1

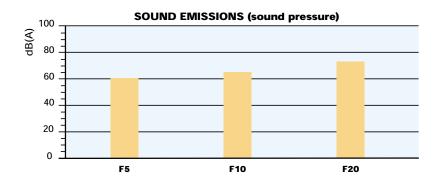
F = Fuse

L = Lead section









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

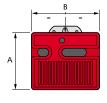


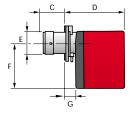


OVERALL DIMENSIONS (mm)

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.

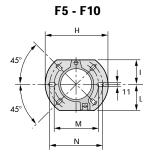
BURNERS

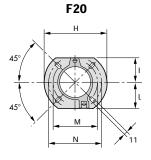




Model	Α	В	С	D	Е	F	G
▶ F5	233	272	76	240	89	180	41
▶ F10	262	305	108	265	105	204	44
▶ F20	298	350	118	299	125	230	45

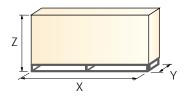
BURNER-BOILER MOUNTING FLANGE





Model	Н	I	L	М	N
▶ F5	180	72	75	130	150
▶ F10	189	83	83	140	170
▶ F20	213	99	99	160	190

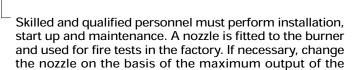
PACKAGING



Model	Х	Υ	Z	kg
▶ F5	373	305	315	11
▶ F10	413	338	330	12
▶ F20	473	383	367	15

boiler.

INSTALLATION DESCRIPTION



All operations must be carried in accordance with the technical handbook supplied with the burner.



BURNER SETTINGS

Air damper and head adjustment area are easily accessible and the operationis simple thanks to a graduated scale and following the manual instruction.





MAINTENANCE

▶ The maintenance position is easily carried out by hinge that joins the body of burner to the flange.



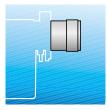




BURNER ACCESSORIES

Extended head kit

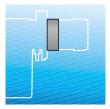
Kits of extended heads are available.



Kit for extended combustion head					
Burner	Standard head length (mm)	Long head version length (mm)	Kit code		
F5	76	90	3006001		
F5	76	90 INOX	3000688		
F5	76	107	3000638		
F5	76	121	3000686		
F5	76	121 INOX	3000687		
F5	STANDARD	CONIC HEAD	3000726		
F5	CONIC	107 CILINDRIC HEAD	3000728		
F10	108	168	3000643		
F10	108	250	3000770		
F20	118	178	3000644		
F20	118	260	3000771		

Spacer kit

Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.



Head length reduction kit					
Burner	Accessory	Pulling back (mm)	Kit code		
F5	Spacer	25	3007642		
F10	Spacer	25	3000672		
F20	Spacer	25	3000673		

Light oil filter

Light oil filter			
Burner	Kit code		
F5 - F10 - F20	3000926		

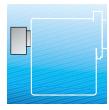
Biodiesel kit

Kit to use biodiese	el .
Burner	Kit code
F5 - F10 - F20	3000978



Remote control release kit for the 530 SE control box

The 530 SE control box can be remotely released using an electric command kit. This kit must be installed in conformity with current regulations in force.



Remote control release kit for the 530 SE control box						
Burner	Kit code					
F5 - F10 - F20	3001030					

BALANCED FLUE VERSION

The R40 series balanced flue oil burner has been specifically designed to meet the increasing trend towards the use of balanced flue, otherwise known as room sealed appliances, which avoid the necessity of having a chimney to discharge the products of combustion.

Balanced flue products are completely sealed from the environment in which they are installed, drawing air for combustion directly from the outside, thereby ensuring no unwelcome smells from combustion of the oil.

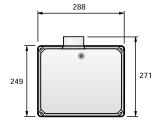
As a result of the burner components such as motor, oil pump etc. being completely enclosed this provides an additional benefit of low sound levels.

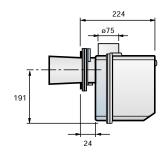
The R40 balanced flue range has been designed and manufactured to meet the latest European and OFTEC test requirement and are manufactured under quality assurance standards.



Riello 40 F5 BF

Overall dimensions (mm)









SPECIFICATION

A special index will help you choose the right burner from the Riello 40 F models available.

There is also a clear and detailed product specification and description.

DESIGNATION OF SERIES



AVAILABLE BURNER MODELS

F5 30 ÷ 60 kW **F10** 54 ÷ 107 kW **F20** 95 ÷ 202 kW



SPECIFICATION DESCRIPTION

Burner:

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

- Fan with forward inclined blades
- Metallic cover
- Fixed air damper with adjustment
- 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 40 protection level.

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
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Extended head kit
- Spacer kit
- Light oil filter
- Biodiesel kit
- Remote resetting kit
- Balanced flue version.







RIELLO s.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

 $Internet: http://www.rielloburners.com \ - \ E-mail: rburners@rielloburners.com$



CE

TWO STAGE LIGHT OIL BURNERS RI SERIES RL 28 95/

▶ RL 28	95/166 ÷ 332	kW
▶ RL 38	118/237 ÷ 450	kW
▶ RL 50	148/296 ÷ 593	kW
▶ RL 70	255/474 ÷ 830	kW
▶ RL 100	356/711 ÷ 1186	kW
▶ RL 130	486/948 ÷ 1540	kW
▶ RL 190	759/1423 ÷ 2443	kW



The RL series of burners covers a firing range from 95 to 2443 kW, and they have been designed for use in hot or superheater water boilers, hot air or steam generators, diathermic

Operation is "two stage"; the burners are fitted with an electronic device STATUS PANEL, which supplies complete diagnostic: hour meter, ignition meter, identification of trouble shooting.

Optimisation of sound emissions is guaranteed by the use of fans with forward inclined blades and sound deadening material incorporated in the air suction circuit. The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.

The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.



TECHNICAL DATA

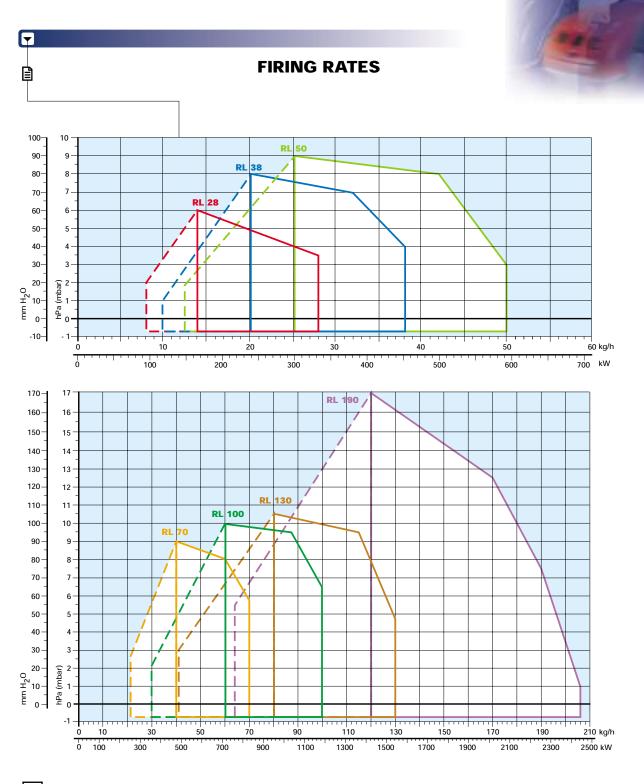


Model			▼ RL 28	▼ RL 38	▼ RL 38	▼ RL 50	▼ RL 70	▼ RL 100	▼ RL 130	▼ RL 190				
						_								
	peration mod		Two stage											
Modulat	tion ratio to ma	ax. output				2 ÷	1							
Servo- motor	type													
motor	run time	s												
		kW	95/166÷332	118/237÷450	118/237÷450	148/296÷593	255/474÷830	356/711÷1186	486/948÷1540	759/1423÷244				
Heat out	tput	Mcal/h	82/143÷286	101/204÷387	101/204÷387	127/255÷510	219/408÷714	306/612÷1020	418/816÷1325	653/1224÷210				
		Kg/h	8/14÷28	10/20÷38	10/20÷38	12,5/25÷50	21,5/40÷70	30/60÷100	41/80÷130	64/120÷206				
Working	j temperature	°C min./max.		0/40										
Net calo	rific value	kWh/kg				11	,8							
ivet caro	illic value	Kcal/kg				102	00							
Viscosit	y at 20°C	mm ² /s (cSt)				4 ÷	6							
Pump	type		AN 57C	AL	65C	AL 75C	AL 95C	AJ 6	6CC	J7C				
rump	output	kg/h at 12 bar	45	6	7	88	107	16	64	230				
Atomise	ed pressure	bar				1:	2							
Oil temp	perature	Max. °C		50										
Fan		type		Centrifugal with reverse curve blades St										
Air temp	perature	Max. °C	60											
Electrica	al supply	Ph/Hz/V	1/50/23	1/50/230~(±10%)										
Auxiliary	electrical supply	Ph/Hz/V	1/50/230~(±10%)											
Control	box	type	RB0 522											
Total ele	ectrical power	kW	0,37	0,6	0,56	0,75	1,4	1,8	2,6	5,9				
Auxiliary	electrical power	kW	0,22	0,18	0,11	0,10	0,3	0,3	0,4	1,4				
Protection	on level	IP				4	4							
Power e	lectric motor	kW	0,25	0,42	0,45	0,65	1,1	1,5	2,2	4,5				
Rated m	notor current	Α	2,1	2,9	2 - 1,2	3 - 1,7	4,8 - 2,8	5,9 - 3,4	8,8 - 5,1	15,8 - 9,1				
Motor st	tart current	Α	4,8	11	9,5 - 5,5	13,8 - 8	25 - 14,6	27,7 - 16	57,2 - 33,2	126 - 73				
Motor pi	rotection level	IP				5-	4							
Ignition		V1 - V2				230V - 2x5 kV				230V - 2x5 kV				
transfor		I1 - I2				1,9A - 30 mA				1,9A - 35 mA				
Working	3				Inter	mittent (at least	one stop every	24 h)						
Sound p	ressure	dBA	68	70	70	75	75	77	78,5	83,9				
Sound o	output	w												
CO emis	ssion	mg/kWh				< 4	10							
Grade of	smoke indicator	N° Bach.				<	1							
C _X H _V en		mg/kWh				<10 (after th	e first 20 s.)							
NOx em		mg/kWh				< 2								
Directive	e	J		73/23 - 89/336 - 98/37 - 92/42 EEC										
Accordin						EN:								
Certification			DIN 50224/02	DIN 5G225/93	DIN 50225/02			DIN 50 405 (00	DIN 50 400 (00	DIN 50004 (0)				

Reference conditions:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.

Noise measured at a distance of 1 meter.



Useful working field for choosing the burner

1st stage operating rate

Test conditions conforming to EN 267:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





FUEL SUPPLY

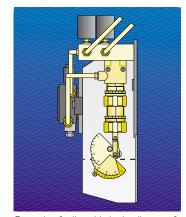
HYDRAULIC CIRCUITS

The burners are fitted with three valves (a safety valve and two oil delivery valves).

A control device, on the basis of required output, regulates oil delivery valves opening, allowing light oil passage trough the valves and the nozzle.

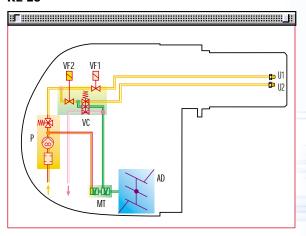
Delivery valves opening supplies the two-stage hydraulic ram which regulates air delivery in relation to the fuel burnt. The pumping group is fitted whit a pump, an oil filter and a regulating valve, that adjust atomised pressure.

Р	Pump with filter and pressure regulator on the output circuit
VS	Safety valve on the output circuit
VF1	1st stage valve
VF2	2nd stage valve
VC	2nd stage control device
MT	Hydraulic ram
AD	Air damper
U1	1st stage nozzle
U2	2nd stage nozzle

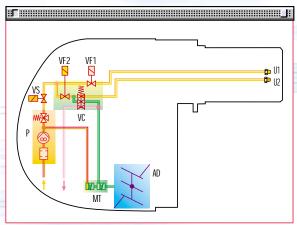


Example of adjustable hydraulic ram of RL 70 - 100 - 130 burners

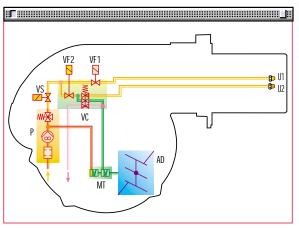
RL 28



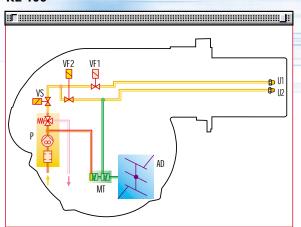
RL 38 - 50



RL 70 - 100 - 130



RL 190



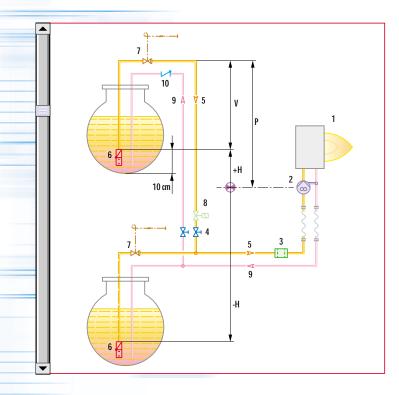


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

	MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]												
Model	Model ▼ RL 28			_	▼ RL 38 - 50			. 70 - 100 -	▼ RL 190				
Diameter piping	Ø10mm	Ø12mm	Ø14mm	Ø10mm	Ø12mm	Ø14mm	Ø12mm	Ø14mm	Ø16mm	Ø16mm	Ø18mm		
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)		
+4,0	63	144	150	51	112	150	71	138	150	60	80		
+3,0	55	127	150	46	99	150	62	122	150	50	70		
+2,0	48	111	150	39	86	150	58	106	150	40	60		
+1,5	44	102	150	35	79	147	51	98	150	35	55		
+1,0	40	94	150	32	73	144	44	90	150	30	50		
+0,5	37	86	150	29	65	132	40	82	150	25	45		
0	33	78	150	26	60	120	36	74	137	20	40		
-0,5	29	70	133	23	54	106	32	66	123	18	35		
-1,0	25	82	118	20	47	96	28	56	109	15	30		
-1,5	21	63	103	16	40	83	23	49	95	13	25		
-2,0	17	45	88	13	34	71	19	42	81	10	20		
-3,0	10	29	58	7	21	46	10	26	53	5	10		
-4,0	4	12	28	2	8	21	3	10	25	3	6		



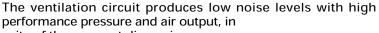
Н	Difference in height pump-foot valve
Ø	Internal pipe diameter
Р	Height 10 m
٧	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

▶ note

With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



VENTILATION



spite of the compact dimensions.

Except for the RL 190 model, the use of reverse curve blades and sound proofing material keeps noise level very low.

In the RL 190 model, sound has been reduced by the special design of the air suction circuit.

An hydraulic ram allows to have a right air flow in any operational moment and the closure of the air damper with burner in stand-by.



Example of the air damper on RL 28 - 38 - 50 burners



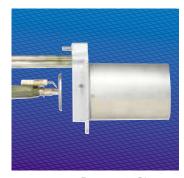
COMBUSTION HEAD

Different lengths of the combustion head can be chosen for the RL series of burners.

The choice depends on the thickness of the front panel and the type of boiler.

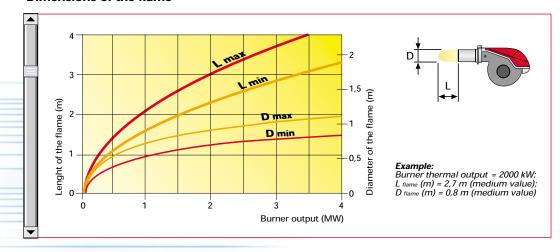
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal position of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.



Example of a RL burner combustion head

Dimensions of the flame





ADJUSTMENT



BURNER OPERATION MODE

With two stage operation, the RL burners can follow the temperature load requested by the system. A modulation ratio of 2:1 is reached, thanks to the "two nozzles" technique; the air is adapted to the hydraulic ram positions.

On "two stage" operation, the burner gradually adjusts output to the requested level, by varying between the two pre-set levels (see figure A).

Two stage operation

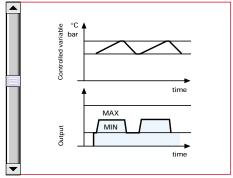
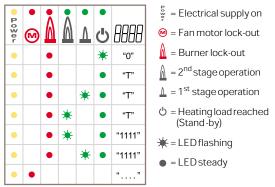


Figure A

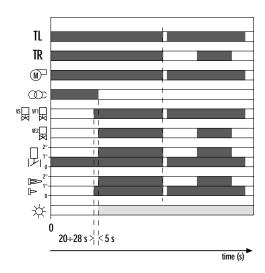


Layout of "Status Panel"

The RL burners are equipped of an exclusive electronic device "Status Panel" or "Led Panel" that, in every moments, shows all burners operational modes and finds eventual anomalies during the operational cycle.

FIRING

RL 28 - 38 - 50 - 70 - 100 - 130 - 190



0"

20-28"

The burner begins the firing cycle: the motor and transformer are supplied; the hydraulic ram opens in the pre-purge position.

Ignition: the VS and VF1 valves are supplied.

5 s after firing:

The ignition transformer switches

If the control device TR is closed or has been replaced by a jumper wire, the 2nd stage valve VF2 opens; the fuel is sprayed out through the 2nd stage nozzle and the hydraulic ram opens the air damper in the 2nd stage position.





ELECTRICAL CONNECTIONS to be made by the installer

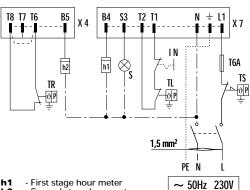
Electrical connections must be made by qualified and skilled personnel, according to the local norms.



Example of the terminal board for electrical connections on RL 28 - 38 burners

"TWO STAGE" OPERATION

RL 28 - 38 single-phase electrical connection

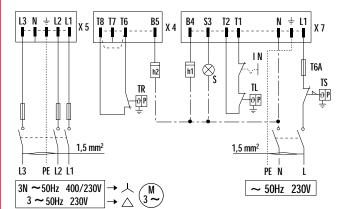


First stage hour meterSecond stage hour meterManual switch

h1 h2 IN X4 X7 S TL TR TS

Manual switch
4 pin plug
7 pin plug
External lock-out signal
Threshold thermostat
High/low flame setting thermostat
Safety thermostat
6a fuse

RL 38 - 50 three-phase electrical connection



First stage hour meterSecond stage hour meterManual switch h2 IN

- 4 pin plug

- 5 pin plug - 7 pin plug

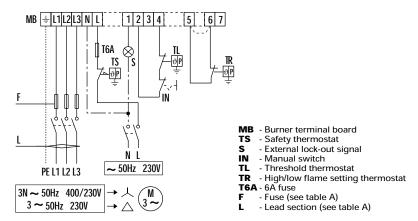
External lock-out signal
 Threshold thermostat
 High/low flame setting thermostat

TR

- Safety thermostat

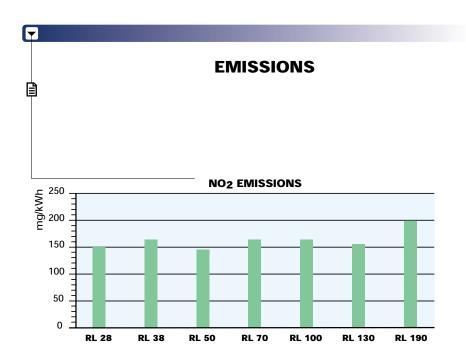
- 6a fuse

RL 70 - 100 - 130 - 190 three-phase electrical connection

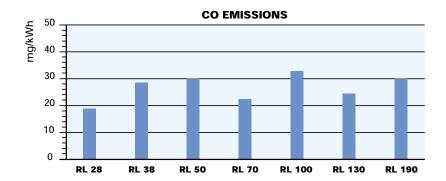


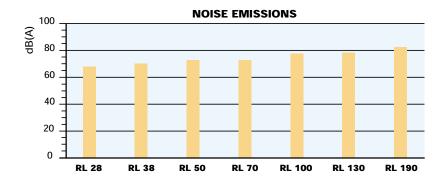
The following table shows the supply lead sections and the type of fuse to be used.

Mc	odel	▼ RL 28	▼ RL 38	▼ RI	L 38	▼ RI	_ 50	▼ RI	₋ 70	▼ RL	100	▼ RL	130	▼ RL	190
		230V	230V	230V	400V	230V	400V	230V	400V	230V	400V	230V	400V	230V	400V
F	Α	T6	T6	T6	T6	T6	T6	T10	T6	T16	T10	T16	T10	T25	T25
L	mm²	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	2,5	2,5









The emission data has been measured in the various models at maximum output, according to EN 267 standard.



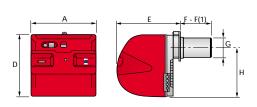


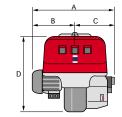


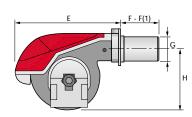


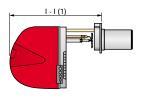
BURNERS

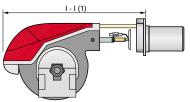
RL 28 - 38 - 50









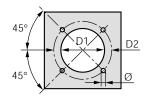


RL 70 - 100 - 130 - 190

Model	А	В	С	D	Е	F - F(1)	G	Н	I - I (1)
▶ RL 28	476	-	-	474	468	216 - 351	140	352	672 - 807
▶ RL 38	476	-	-	474	468	216 - 351	140	352	672 - 807
▶ RL 50	476	-	-	474	468	216 - 351	140	352	672 - 807
▶ RL 70	580	296	284	555	680	250 - 385	179	430	951 - 1086
▶ RL 100	599	312	287	555	680	250 - 385	179	430	951 - 1086
▶ RL 130	625	338	287	555	680	250 - 385	189	430	951 - 1086
▶ RL 190	756	366	390	555	696	370 -	222	430	1102 -

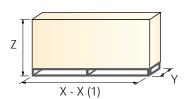
⁽¹⁾ dimension with extended head

BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	Ø
▶ RL 28	160	224	M8
▶ RL 38	160	224	M8
▶ RL 50	160	224	M8
▶ RL 70	185	275-325	M12
▶ RL 100	185	275-325	M12
▶ RL 130	195	275-325	M12
▶ RL 190	230	325-368	M16

PACKAGING



Model	X - X (1)	Υ	Z	kg
▶ RL 28	760 - 895	540	550	36
▶ RL 38	760 - 895	540	550	38
▶ RL 50	760 - 895	540	550	39
▶ RL 70	960 - 1150	652	600	60
▶ RL 100	960 - 1150	652	600	63
▶ RL 130	960 - 1150	652	600	66
▶ RL 190	1250	725	785	75

INSTALLATION DESCRIPTION

Installation, start up and maintenance must be carried out by qualified and skilled personnel. All operations must be performed in accordance with the technical handbook supplied with the



BURNER SETTING

burner.

- ▶ All the burners have slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- ▶ Adjust the combustion head.
- ▶ Refit the burner casing to the slide bars.
- Install the nozzle, choosing this on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.





HYDRAULIC AND ELECTRICAL CONNECTIONS AND START UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- ▶ Prime the pump by turning the motor.
- On start up, check:
 - Pressure pump (to max. and min.)
 - Combustion quality, in terms of unburned substances and excess air.







ACCESSORIES



Nozzles

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

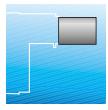


	No	zzles type	60° B		
Burner	GPH	Rate at 10 bar	ed output (k at 12 bar	g/h) at 14 bar	Nozzle code
RL 28	2,00	7,7	8,5	9,2	3042126
RL 28-38	2,50	9,6	10,6	11,5	3042140
RL 28-38-50	3,00	11,5	12,7	13,8	3042158
RL 28-38-50	3,50	13,5	14,8	16,1	3042162
RL 38-50	4,00	15,4	17	18,4	3042172
RL 38-50	4,50	17,3	19,1	20,7	3042182
RL 38-50-70	5,00	19,2	21,2	23	3042192
RL 50-70	5,50	21,1	23,3	25,3	3042202
RL 50-70	6,00	23,1	25,5	27,7	3042212
RL 50-70	6,50	25	27,6	30	3042222
RL 70-100	7,00	26,9	29,7	32,3	3042232
RL 70-100	7,50	28,8	31,8	34,6	3042242
RL 70-100	8,00	30,8	33,9	36,9	3042252
RL 70-100	8,50	32,7	36,1	39,2	3042262
RL 70-100-130	9,50	36,5	40,3	43,8	3042282
RL 70-100-130-190	10,00	38,4	42,4	46,1	3042292
RL 70-100-130-190	11,00	42,3	46,7	50,7	3042312
RL 100-130-190	12,00	46,1	50,9	55,3	3042322
RL 100-130-190	13,00	50	55,1	59,9	3042332
RL 100-130-190	14,00	53,8	59,4	64,5	3042352
RL 100-130-190	15,00	57,7	63,6	69,2	3042362
RL 100-130-190	16,00	61,5	67,9	73,8	3042382
RL 130-190	17,00	65,4	72,1	78,4	3042392
RL 130-190	18,00	69,2	76,4	83	3042412
RL 130-190	19,00	73	80,6	87,6	3042422
RL 130-190	20,00	76,9	84,8	92,2	3042442
RL 190	22,00	84,6	93,3	101,4	3042462
RL 190	24,00	92,2	101,8	110,6	3042472
RL 190	26,00	99,9	110,3	119,9	3042482
RL 190	28,00	107,6	118,8	129,1	3042492



Extended heads

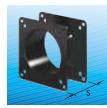
"Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kits available for the various burners, giving the original and the extended lengths, are listed below.



Combustion head extension kits									
Burner	'Standard' head length (mm)	'Extended' head length (mm)	Kit code						
RL 28	216	351	3010073						
RL 38	216	351	3010074						
RL 50	216	351	3010075						
RL 70	250	385	3010114						
RL 100	250	385	3010115						
RL 130	250	385	3010116						
RL 190	370	-	-						

Spacer kit

If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:



Head length reduction kit								
Burner	Spacer thickness S (mm)	Kit code						
RL 28 - 38 - 50	90	3010095						
RL 70 - 100 - 130	135	3010129						
RL 190	110	3000722						

Sound proofing box

If noise emission needs reducing even further, sound-proofing boxes are available, as given in the following table:



Sound proofing box							
Burner	Box type	Box code					
RL 28 - 38 - 50	C1	3000776					
RL 70 - 100 - 130	C3	3000778					
RL 190	C4	3000779					

Degasing unit

With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal.

To solve this problem, we recommend fitting a degasing unit near the burner. Two versions are available with or without filter:



Degasing unit							
Burner	Degasing unit with filter Code	Degasing unit without filter Code					
RL 28 - 38 - 50 RL 70 - 100 - 130 - 190	3010055	3010054					

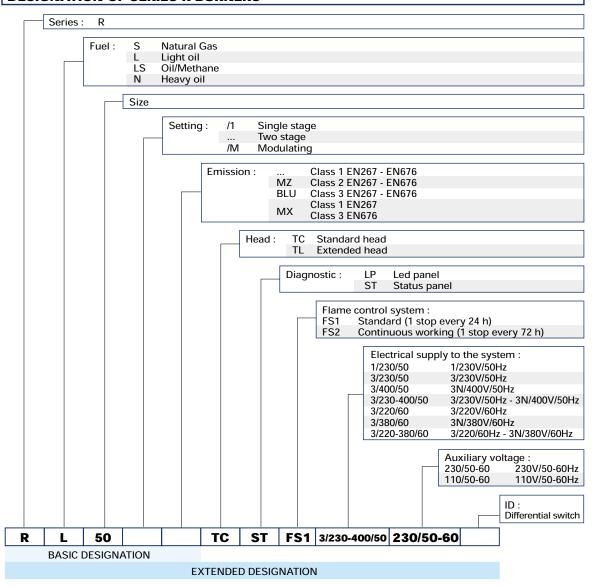




SPECIFICATION

A specific index guides your choice of burner from the various models available in the RL series. Below is a clear and detailed specification description of the product.

DESIGNATION OF SERIES R BURNERS



LIST OF AVAILABLE MODELS

RL 28	TC	ST	FS1	1/230/50	230/50-60	RL	70	TC	ST	FS1	3/230-400/50	230/50-60
RL 28	TL	ST	FS1	1/230/50	230/50-60	RL	70	TL	ST	FS1	3/230-400/50	230/50-60
RL 28	TC	LP	FS1	1/230/50	230/50-60	RL	70	TC	LP	FS1	3/230-400/50	230/50-60
RL 28	TL	LP	FS1	1/230/50	230/50-60	RL	70	TL	LP	FS1	3/230-400/50	230/50-60
RL 38	TC	ST	FS1	1/230/50	230/50-60	RL	100	TC	ST	FS1	3/230-400/50	230/50-60
RL 38	TL	ST	FS1	1/230/50	230/50-60	RL	100	TL	ST	FS1	3/230-400/50	230/50-60
RL 38	TC	LP	FS1	1/230/50	230/50-60	RL	100	TC	LP	FS1	3/230-400/50	230/50-60
RL 38	TL	LP	FS1	1/230/50	230/50-60	RL	100	TL	LP	FS1	3/230-400/50	230/50-60
RL 38	TC	ST	FS1	3/230-400/50	230/50-60	RL	130	TC	ST	FS1	3/230-400/50	230/50-60
RL 38	TL	ST	FS1	3/230-400/50	230/50-60	RL	130	TL	ST	FS1	3/230-400/50	230/50-60
RL 38	TC	LP	FS1	3/230-400/50	230/50-60	RL	130	TC	LP	FS1	3/230-400/50	230/50-60
RL 38	TL	LP	FS1	3/230-400/50	230/50-60	RL	130	TL	LP	FS1	3/230-400/50	230/50-60
RL 50 RL 50 RL 50 RL 50	TC TL TC TL	ST ST LP LP	FS1 FS1 FS1 FS1	3/230-400/50 3/230-400/50 3/230-400/50 3/230-400/50	230/50-60 230/50-60 230/50-60 230/50-60	RL Oth	190 er ve	TC rsior	ST s are	FS1	3/230-400/50 able on reques	





▶ PRODUCT SPECIFICATION

Burner:

Monoblock forced draught oil burner with two stage operation, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the 190 model) high performance with low sound emissions
- Air damper for air setting controlled by an adjustable hydraulic ram
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V and 50Hz for the 28 38 models)
- Combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuometer
 - internal by-pass for single pipe installation
- Valve unit with an oil safety valve and two delivery oil valves on the output circuit
- Photocell for flame detection
- Flame control panel, with lock-out pilot light and lock-out reset button
- Electronic control device: status panel or led panel
- Burner on/off switch
- Flame inspection window
- 1st 2nd stage manual switch
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.

Conforming to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- Fairleads for electrical connections (RL 28 38 50 models)
- 2 slide bar extensions (for the extended head models and the RL 190 model)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Nozzles
- Head extension kit (except for the RL 190 model)
- Head length reduction kit
- Sound-proofing box
- Degasing unit (with or without filter).







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CE

MODULATING OIL BURNERS

▶ RL/M SERIES

▶ RL 28/M	90 ÷	332 kW
▶ RL 38/M	101 ÷	450 kW
▶ RL 50/M	130 ÷	593 kW
▶ RL 70/M	202 ÷	1043 kW
▶ RL 100/M	332 ÷	1482 kW
▶ RL 130/M	498 ÷	1779 kW
▶ RL 190/M	474 ÷	2431 kW



The RL/M series of burners covers a firing range from 90 to 2340 kW, and they have been designed for use in hot or superheater water boilers, hot air or steam generators, diathermic oil boilers.

Setting can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator and respective probes.

RL/M series burners guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.

Optimisation of sound emissions is guaranteed by the use of fans with forward inclined blades and sound deadening material incorporated in the air suction circuit.

The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.



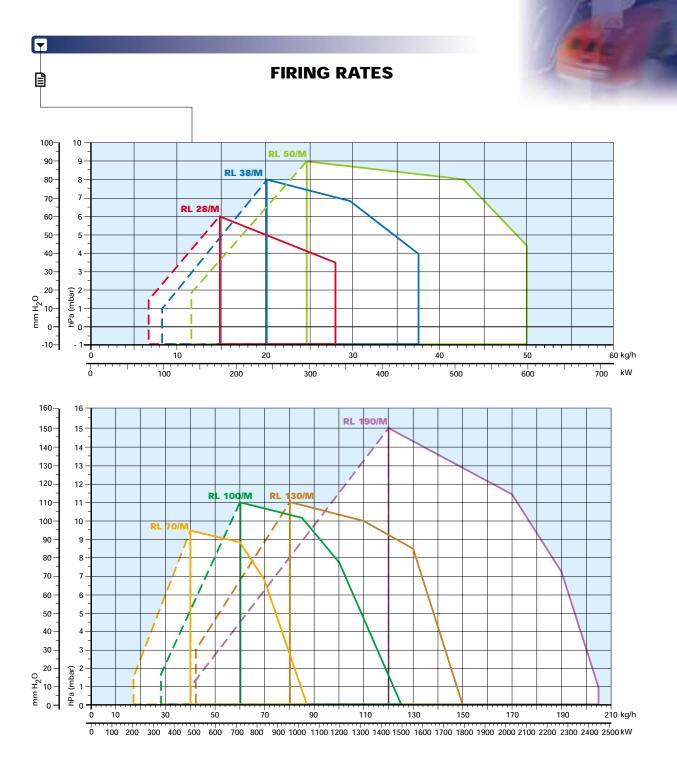
TECHNICAL DATA

Model			▼ RL28/M	▼ RL38/M	▼ RL50/M	▼ RL70/M	▼ RL100/M	▼ RL130/M	▼ RL190/M	
Setting	type				Modulating (with	regulator and pr	obes accessories	s)		
Modulat	ion ratio to m	ax. output		3 ÷ 1						
Servo-	type			SQN90			SQ	N31		
motor	run time	s		24			4	12		
		kW	90/166÷332	101/237÷450	130/296÷593	202/474÷1043	332/711÷1482	498/948÷1779	474/1423÷243	
Heat out	tput	Mcal/h	76,5/143÷286	87/204÷387	112/255÷510	173/408÷897	286/612÷1275	428/816÷1530	408/1224÷209	
		Kg/h	7,5/14÷28	8,5/20÷38	11/25÷50	17/40÷88	28/60÷125	42/80÷150	40/120÷205	
Working	temperature	°C min./max.				0/40				
Not colo	rific value	kWh/kg				11,8				
ivet caro	rilic value	Kcal/kg				10200				
Viscosit	y at 20°C	mm²/s (cSt)				4 ÷ 6				
D	type		AL 75C	AL	95C		J 7C		TA 3	
Pump	output	kg/h at 20 bar	74	9	9		190		665	
Atomise	d pressure	bar				20			'	
Oil temp	erature	Max. °C				50				
Fan		type		С	entrifugal with re	everse curve blad	es		Straight blade	
Air temp	erature	Max. °C	lax. °C 60							
Electrica	ıl supply	Ph/Hz/V	1/50/230~(±10%)		3N/	50/400~(±10%)	√ 3/50/230~(±10	l%) △		
Auxiliary	electrical supply	Ph/Hz/V				1/50/230~(±10%)				
Control	box	type		LAL 1.25		LAL 1.25 (Inter	mittent working	- LOK 16 (Cont	inuous working	
Total ele	ctrical power	kW	0,4	0,6	0,8	1,4	2,1	2,6	5,5	
Auxiliary	electrical power	kW	0,15	0,15	0,15	0,3	0,3	0,4	1	
Protection	on level	IP				44				
Power e	lectric motor	kW	0,25	0,45	0,65	1,1	1,8	2,2	4,5	
Rated m	otor current	А	2,1	2 - 1,2	3 - 1,7	4,8 - 2,8	7,3 - 4,2	8,8 - 5,1	15,8 - 9,1	
Motor st	tart current	Α	4,8	9,5 - 5,5	13,8 - 8	25 - 14,6	37,6 - 21,8	57,2 - 33,2	126 - 73	
Motor pi	rotection level	IP				54				
Ignition		V1 - V2			230V -	2x5 kV			230V - 2x5 kV	
transfor	mer	I1 - I2			1,9A -	30 mA			1,9A - 35 mA	
Operation	on		Intermittent	(at least one sto	p every 24 h)	Intermittent (at lea	st one stop every 24 h)	- Continuous (at leas	st one stop every 72 h	
Sound p	ressure	dBA	68	70	75	75	77	78,5	84,9	
Sound o		w								
Emission	n CO	mg/kWh			1	< 40		1		
Grade of smoke indicator N° Bach.						< 1				
C _X H _V en	nission	mg/kWh			<10) (after the first 2	0 s.)			
NOx em		mg/kWh				< 200	•			
Directive	,	3			73/23 - 8	39/336 - 98/37 - 9	2/42 EEC			
Accordin						EN 267				
Certifica				_			in progress	(DIN Nr)		

Reference conditions:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 meters a.s.l.

Noise measured at a distance of 1 meter.



Useful rate for the choice of the burner

Modulating rate

Test conditions conforming to EN 267:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 meters a.s.l.





FUEL SUPPLY

HYDRAULIC CIRCUITS

Various hydraulic circuits are available, depending on fuel output asset according to local norms of steam generators.

The burners are fitted with two valves for oil output from the pump: a pressure regulator on the return circuit from the nozzle allows varying the quantity of burnt fuel.

A safety valve on the return circuit impedes oil leakage from the nozzle when the burner is in stand by and pre-purge phases.

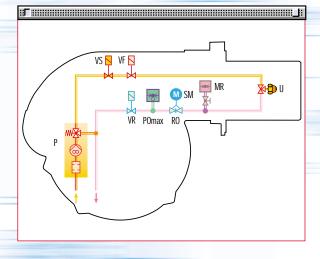
Beginning with the RL 100/M model, the burners have a double safety valve on the return circuit.

The models fitted with a minimum pressure switch on the oil delivery circuit can be installed on steam generators according to TRD 604 standard (Germany) and NBN standard (Belgium).



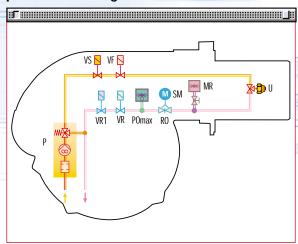
Example of the hydraulic circuit on RL70/M burners

EN 267 < 100 Kg/h

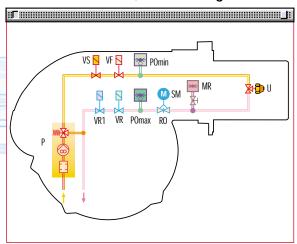


Р	Pump with filter and pressure regulator on the output circuit
VS	Safety valve on the output circuit
VF	Working valve on the output circuit
PO min	Min. Oil pressure switch on the output circuit
U	Nozzle
MR	Pressure gauge on the return circuit
SM	Servomotor
RO	Pressure regulator on the return circuit
PO max	Max. Oil pressure switch on the return circuit
VR	1st safety valve on the return circuit
VR1	2nd safety valve on the return circuit

prEN 267 > 100 Kg/h



Versions for TRD 604, NBN steam generators



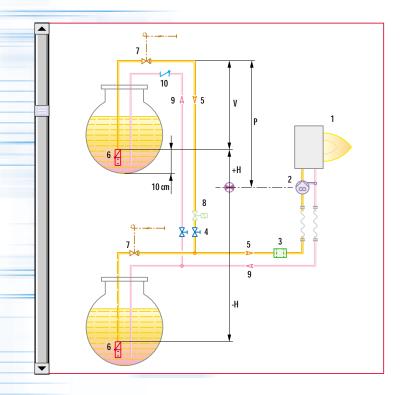


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

	MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]										
Model	I ▼ RL28/M			▼ RL38-50/M			▼ RL70-100-130/M			▼ RL190/M	
Diameter piping	Ø10mm	Ø12mm	Ø14mm	Ø10mm	Ø12mm	Ø14mm	Ø12mm	Ø14mm	Ø16mm	Ø16mm	Ø18mm
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)
+4,0	83	144	150	51	112	150	71	138	150	60	80
+3,0	55	127	150	46	99	150	62	122	150	50	70
+2,0	48	111	150	39	86	150	58	106	150	40	60
+1,5	44	102	150	35	79	147	51	98	150	35	55
+1,0	40	94	150	32	73	144	44	90	150	30	50
+0,5	37	86	150	29	65	132	40	82	150	25	45
0	33	78	150	26	60	120	36	74	137	20	40
-0,5	29	70	133	23	54	106	32	66	123	18	35
-1,0	25	82	118	20	47	96	28	56	109	15	30
-1,5	21	63	103	16	40	83	23	49	95	13	25
-2,0	17	45	88	13	34	71	19	42	81	10	20
-3,0	10	29	58	7	21	46	10	26	53	5	10
-4,0	4	12	28	2	8	21	3	10	25	3	6



Н	Difference in height pump-foot valve					
Ø	Internal pipe diameter					
Р	Height 10 m					
V	Height 4 m					
1	Burner					
2	Burner pump					
3	Filter					
4	Manual shut off valve					
5	Suction pipework					
6	Bottom valve					
7	Remote controlled rapid manual shut off valve (compulsory in Italy)					
8	Type approved shut off solenoid valve (compulsory in Italy)					
9	Return pipework					
10	10 Check valve					

▶ note

With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



VENTILATION

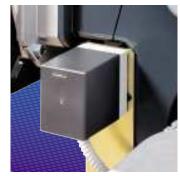
The ventilation circuit produces low noise levels with high performance pressure and air output, in

spite of the compact dimensions.

Except for the RL 190/M model, the use of reverse curve blades and sound proofing material keeps noise level very low.

In the RL 190/M model, sound has been reduced by the special design of the air suction circuit.

A variable profile cam connects fuel and air setting, ensuring high fuel efficiency in all firing ranges.



Example of the servomotor for air/oil setting



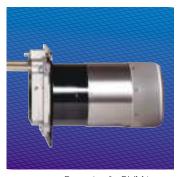
COMBUSTION HEAD

Different lengths of the combustion head can be chosen for the RL/M series of burners.

The choice depends on the thickness of the front panel and the type of boiler.

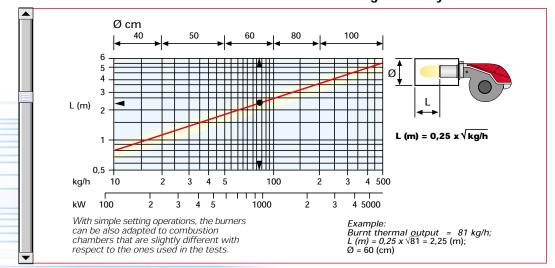
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal position of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.



Example of a RL/M burner combustion head

Dimensions of the combustion chambers used in the testing laboratory



SETTING



OUTPUT SETTING

The RL/M series of burners can have "two-stage progressive" or "modulating" setting.

On "two-stage progressive" setting, the burner gradually adapts the output to the requested level, by varying between two pre-set levels (see figure A).

Example of a regulator

" Two-stage progressive" setting

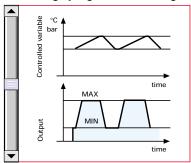


Figure A

On "modulating" setting, normally required in steam generators, in superheater boilers or diathermic oil burners, a specific regulator and probes are required. These are supplied as accessories that must be ordered separately. The burner can work for long periods at intermediate output levels (see figure B).

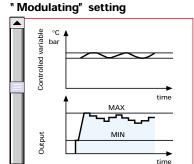
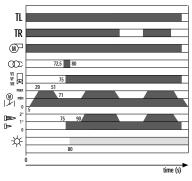


Figure B

FIRING

RL 28/M - 38/M - 50/M



0" The burner begins the firing cycle: the motor starts turning.

5"-29" The servomotor opens the air damper.

29"-51" Pre-purge with the air damper open.

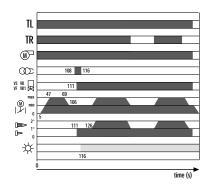
 $51\ensuremath{^{\prime\prime}}\xspace-71\ensuremath{^{\prime\prime}}\xspace$ The servomotor takes the air damper to the firing position.

72.5" Pre-ignition.

75" Firing: all the oil solenoid valves are supplied.

90" Output can be increased.

RL 70/M - 100/M - 130/M - 190/M



0" The burner begins the firing cycle: the motor starts turning.

5"-47" The servomotor opens the air damper.

47"-69" Pre-purge with the air damper open.

69"-106" The servomotor takes the air damper to the firing position.

108" Pre-ignition.

111" Firing: all the oil solenoid valves are supplied.

126" Output can be increased.





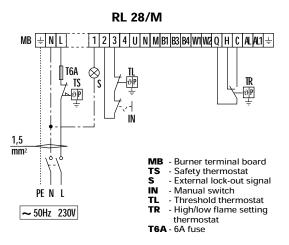
ELECTRICAL CONNECTIONS to be made by the installer

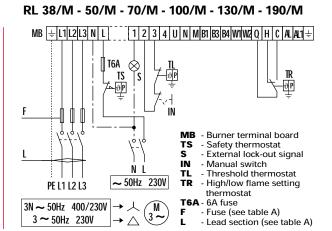
Electrical connections must be made by qualified and skilled personnel, according to the local norms.



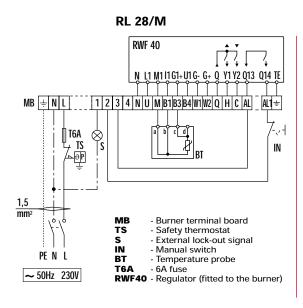
Example of the terminal board for electrical connections for the RL 70-100-130-190/M models

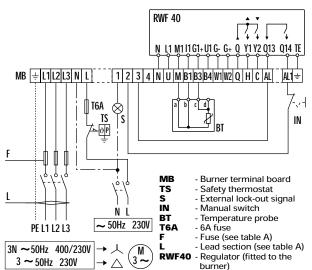
"TWO-STAGE PROGRESSIVE" SETTING





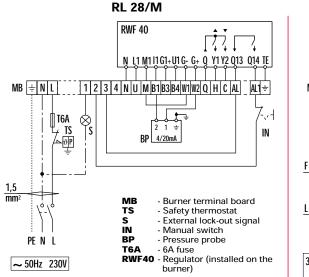
" MODULATING" SETTING - temperature probe

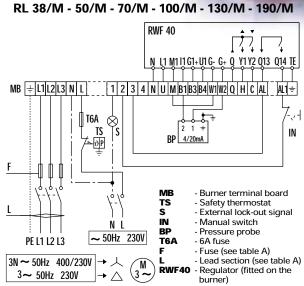




RL 38/M - 50/M - 70/M - 100/M - 130/M - 190/M

" MODULATING" SETTING - pressure probe

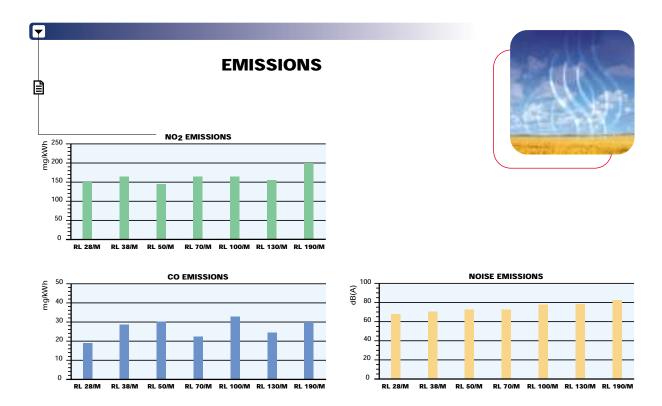




The following table shows the supply lead sections and the type of fuse to be used.

М	odel	▼RL 28/M	▼ RL	38/M	▼ RL	50/M	▼ RL	70/M	▼ RL	100/M	▼ RL ·	130/M	▼ RL	190/M
		230V	230V	400V	230V	400V	230V	400V	230V	400V	230V	400V	230V	400V
F	Α	T6	T6	T6	T6	T6	T10	T6	T16	T10	T16	T10	T25	T25
L	mm²	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	2,5	2,5

Table A



The emission data has been measured in the various models at maximum output, according to EN 267 standard.





OVERALL DIMENSIONS (mm)



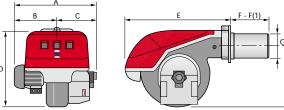


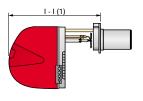
BURNERS

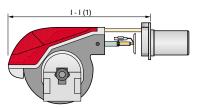
RL 28/M - 38/M - 50/M



RL 70/M - 100/M - 130/M - 190/M



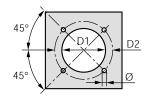




Model	А	В	С	D	E	F - F(1)	G	Н	I - I (1)
▶ RL 28/M	476	-	-	474	468	241 - 351	140	352	672 - 807
▶ RL 38/M	476	-	-	474	468	241 - 351	140	352	672 - 807
▶ RL 50/M	476	-	-	474	468	241 - 351	152	352	672 - 807
▶ RL 70/M	663	296	367	555	680	272 - 385	179	430	951 - 1086
▶ RL 100/M	679	312	367	555	680	272 - 385	179	430	951 - 1086
▶ RL 130/M	705	338	367	555	680	272 - 385	189	430	951 - 1086
▶ RL 190/M	813	366	447	555	696	370 -	222	430	1102 -

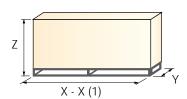
⁽¹⁾ dimension with extended head

BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	Ø
▶ RL 28/M	160	224	M8
▶ RL 38/M	160	224	M8
▶ RL 50/M	160	224	M8
▶ RL 70/M	185	275-325	M12
▶ RL 100/M	185	275-325	M12
▶ RL 130/M	195	275-325	M12
▶ RL 190/M	230	325-368	M16

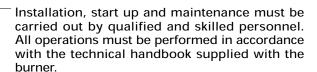
PACKAGING



Model	X - X (1)	Υ	Z	kg
▶ RL 28/M	1000	540	550	39
▶ RL 38/M	1000	540	550	41
▶ RL 50/M	1000	540	550	42
▶ RL 70/M	1180	792	600	65
▶ RL 100/M	1180	792	600	68
▶ RL 130/M	1180	792	600	71
▶ RL 190/M	1200	800	850	95

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INSTALLATION DESCRIPTION





FIXING THE BURNER TO THE BOILER AND INITIAL SETTINGS

- All the burners have slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- Adjust the combustion head.
- ▶ Refit the burner casing to the slide bars.
- Install the nozzle, choosing this on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.





HYDRAULIC AND ELECTRICAL CONNECTIONS AND START UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor (after checking rotation direction if it is a three phase motor).
- ▶ On start up, check:
 - Pressure pump and valve unit regulator (to max. and min.)
 - Combustion quality, in terms of unburned substances and excess air.









ACCESSORIES



Return nozzles

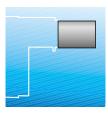
The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.



N	Nozzles type A3 45°								
Burner	Rated output kg/h	Nozzle code							
RL 28/M	15	3009850							
RL 28/M - 38/M	20	3009851							
RL 28/M - 38/M - 50/M	30	3009852							
RL 38/M - 50/M - 70/M	40	3009853							
RL 50/M - 70/M	50	3009854							
RL 70/M - 100/M	60	3009855							
RL 70/M - 100/M	70	3009856							
RL 100/M - 130/M	80	3009857							
RL 100/M - 130/M	90	3009858							
RL 100/M - 130/M	100	3009859							
RL 130/M	110	3009860							
RL 130/M - 190/M	120	3009861							
RL 130/M - 190/M	130	3009862							
RL 190/M	140	3009863							
RL 190/M	160	3009864							
RL 190/M	180	3009865							
RL 190/M	200	3009866							

Extended heads

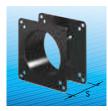
"Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kits available for the various burners, giving the original and the extended lengths, are listed below.



Combustion head extension kits									
Burner	'Standard' head length (mm)	'Extended' head length (mm)	Kit code						
RL 28/M	241	351	3010120						
RL 38/M	241	351	3010121						
RL 50/M	241	351	3010122						
RL 70/M	272	385	3010159						
RL 100/M	272	385	3010160						
RL 130/M	272	385	3010161						
RL 190/M	370	-	-						

Spacer kit

If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:



Head length reduction kit									
Burner	Spacer thickness S (mm)	Kit code							
RL 28/M - 38/M - 50/M	90	3010095							
RL 70/M - 100/M - 130/M	135	3010129							
RL 190/M	110	3000722							



Sound proofing box

If noise emission needs reducing even further, sound-proofing boxes are available, as given in the following table:



Sound proofing box							
Burner Box type Box code							
RL 28/M - 38/M - 50/M	C2	3000777					
RL 70/M - 100/M - 130/M	C3	3000778					
RL 190/M	C4	3000779					

Head kit for "reverse flame chamber"

In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder.



Head kit for " reverse flame chamber"							
Burner	'Standard' head length with cylinder (mm)	'Extended' head length with cylinder(mm)	Kit code				
RL 28/M - 38/M	319	429	3010178				
RL 50/M	319	429	3010179				
RL 70/M - 100/M	375	488	3010180				
RL 130/M	375	488	3010183				
RL 190/M	493	-	3010241				

Accessories for modulating setting

To obtain modulating setting, the RL/M series of burners requires a regulator with three point outlet controls. The relative temperature or pressure probes fitted to the regulator, must be chosen on the basis of the application.

The following table lists the accessories for modulating setting with their application range.



REGULATOR		PROBE				
Туре	Code	Туре	Range (°C) (bar)	Code		
RWF 40	3010212	Temperature PT 100	-100 ÷ 500°C	3010110		
		Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213		
		Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214		

Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor. The KITS available for the various burners are listed below.



Potentiometer kit					
Burner	Kit code				
RL 28/M - 38/M - 50/M	3010109				
RL 70/M - 100/M - 130/M - 190/M	3010021				

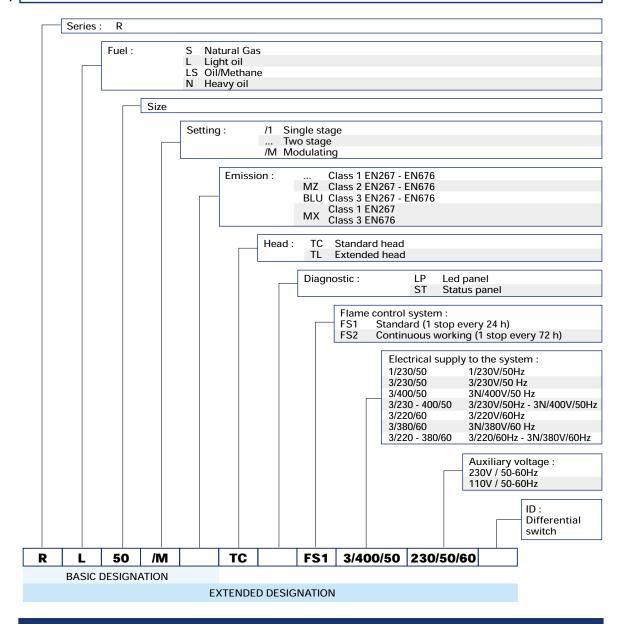




SPECIFICATION

A specific index guides your choice of burner from the various models available in the RL/M series. Below is a clear and detailed specification description

DESIGNATION OF SERIES R BURNERS



of the product.

LIST OF AVAILABLE MODELS

RL	28/M	TC	FS1	1/230/50	230/50/60	RL	100/M	TC	FS1	3/230-400/50	230/50/60
RL	28/M	TL	FS1	1/230/50	230/50/60	RL	100/M	TL	FS1	3/230-400/50	230/50/60
RL	38/M	TC	FS1	3/230-400/50	230/50/60	RL	100/M	TC	FS2	3/230-400/50	230/50/60
RL	38/M	TL	FS1	3/230-400/50	230/50/60	RL	100/M	TL	FS2	3/230-400/50	230/50/60
RL RL	50/M 50/M	TC TL	FS1 FS1	3/230-400/50 3/230-400/50	230/50/60 230/50/60	RL RL RL	130/M 130/M 130/M	TC TL TC	FS1 FS1 FS2	3/230-400/50 3/230-400/50 3/230-400/50	230/50/60 230/50/60 230/50/60
RL	70/M	TC	FS1	3/230-400/50	230/50/60	RL	130/M	TL	FS2	3/230-400/50	230/50/60
RL	70/M	TL	FS1	3/230-400/50	230/50/60	RI	190/M	TC	FS1	3/230-400/50	230/50/60
RL RL	70/M 70/M	TC TL	FS2 FS2	3/230-400/50 3/230-400/50	230/50/60 230/50/60	RL	190/M	ŤČ	FS2	3/230-400/50	230/50/60

Other versions are available on request.





▶ PRODUCT SPECIFICATION

Burner:

Monoblock forced draught oil burner with two stage progressive or modulating setting, with a specific kit, fully automatic, made up of:

- air suction circuit lined with sound-proofing material
- fan with reverse curve blades (straight blades on the 190/M model) high performance with low sound emissions
- air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V and 50Hz for the 28/M model)
- combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuometer
 - internal by-pass for single pipe installation
- valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit;
 double safety valve on the return circuit for models RL 100/M, RL 130/M, RL 190/M and for all models in the TRD 604, NBN version
- safety oil pressure switch for stop the burner in the case of problems in the return circuit
- minimum oil pressure switch in the output circuit for the TRD 604, NBN versions
- photocell for flame detection
- flame control panel, fitted with control function for the correct positioning of the servomotor and possibility of post-ventilation by just changing the electric wiring
- burner on/off switch
- flame inspection window
- manual or automatic output increase/decrease switch
- slide bars for easier installation and maintenance
- protection filter against radio interference
- IP 44 electric protection level.

According to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- wiring loom fittings for electrical connections
- 2 slide bar extensions (for the extended head models and the RL 190/M model)
- instruction handbook for installation, use and maintenance
- spare parts catalogue.

Available accessories to be ordered separately:

- return nozzles
- head extension kit (except for the RL 190/M model)
- head length reduction kit
- sound-proofing box
- head kit for "reverse flame chamber"
- RWF 40 output regulator
- pressure probe 0 2.4 bar
- pressure probe 0 16 bartemperature probe -100 500°C
- potentiometer kit for the servomotor.

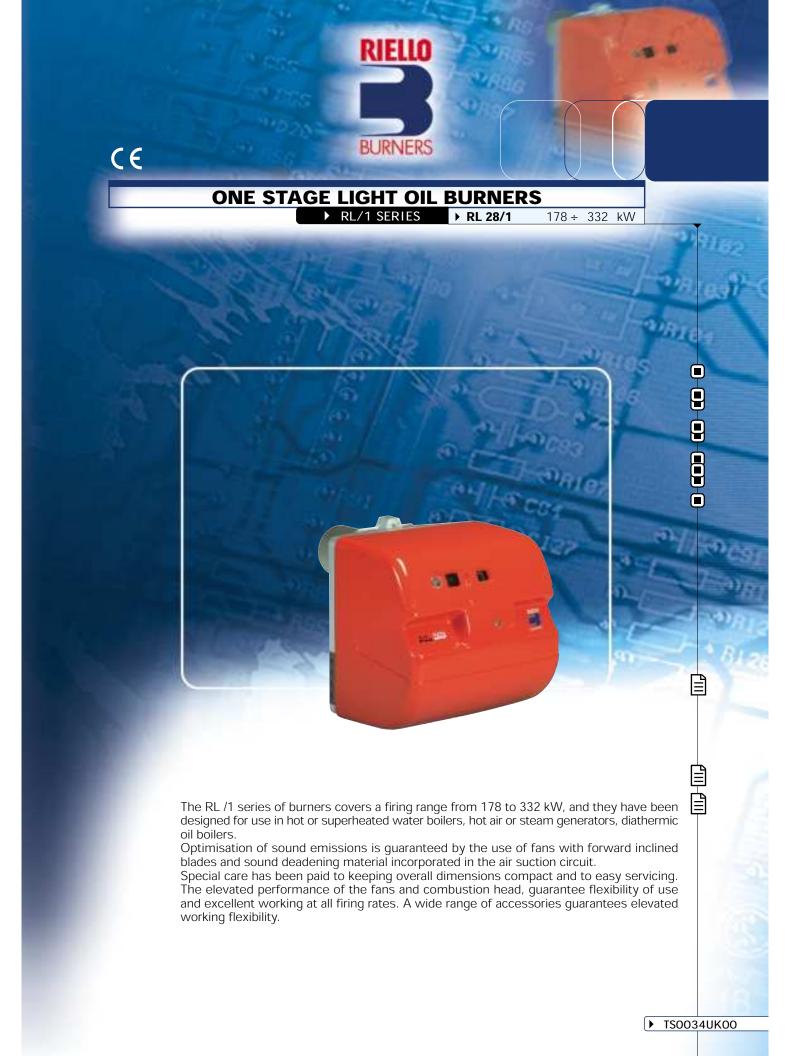






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Internet: http://www.rielloburners.com - E-mail: rburners@rielloburners.com





TECHNICAL DATA



Model			▼ RL 28/1
Burner o	operation mod	е	One stage
Modulat	tion ratio to m	ax. output	.
Servo-	type		-
motor	run time	s	
		kW	178 - 332
Heat out	tput	Mcal/h	153 - 286
		Kg/h	15 - 28
Working	g temperature	°C min./max.	0/40
Net calo	orific value	kWh/kg	11,8
ivet care	Jillic Value	kcal/kg	10.200
Viscosit	y at 20°C	mm ² /s (cSt)	4 ÷ 6
Pump	type		AN 57 C
· unip	output	kg/h at 12 bar	45
Atomise	ed pressure	bar	12
Fuel ten	nperature	Max. °C	50
Fan		type	centrifugal with reverse curve blades
Air temp	perature	Max. °C	60
Electrica	al supply	Ph/Hz/V	1/50/230~(±10%)
Auxiliary	electrical supply	Ph/Hz/V	1/50/230~(±10%)
Control	box	type	RBO 522
Total ele	ectrical power	kW	0,37
Auxiliary	electrical power	kW	0,12
Protecti	on level	IP	44
Motor el	lectrical power	kW	0,25
Rated m	notor current	A	2,1
	tart current	A	4,8
Motor p	rotection level		54
Ignition		V1 - V2	230V - 2x5 kV
transfor	mer	l1 - l2	1,9A - 30 mA
Working			intermittent (at least one stop every 24 h)
-	oressure	dBA	70
•		W	-
CO emission		mg/kWh	< 40
			<1
,		mg/kWh	<10 (after the first 20 s.)
NOx emission mg/kWh		mg/kWh	< 200
Directive			73/23 - 89/336 - 98/37 - 92/42 EEC
Accordi			EN 267
Certifica	ation		-

Reference conditions:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.

Noise measured at a distance of 1 meter.



Useful working field for choosing the burner

Test conditions conforming to EN 267: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





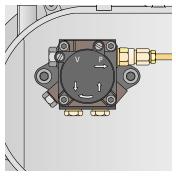
FUEL SUPPLY

HYDRAULIC CIRCUITS

The burner is fitted with a self-priming pump and two delivery valves along the oil line from the pump to the nozzles. The pump does not need calibrating, as it is set in the factory at 12 bar; however, pressure level can be changed if necessary, by adjusting the regulator fitted on the pump.

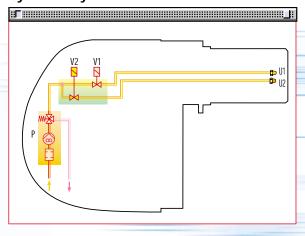
The delivery valves control the passage from starting to operating phase.

At the start, after pre-purging phase, the first delivery valve opens and the fuel is sprayed out through the first nozzle, igniting when it comes into contact with the spark; then the second delivery valve opens and the fuel is sprayed out through both nozzles.



Example of self-priming pump of RL 28/1

Hydraulic layout of RL 28/1 burner



Р	Pump with filter and pressure regulator
V1	1 st delivery valve
V2	2 nd delivery valve
U1	1 st nozzle
U2	2 nd nozzle

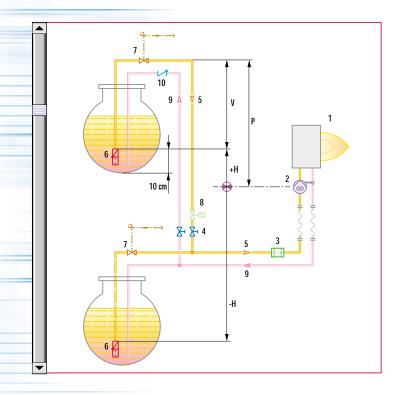


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]									
Model	▼ RL28/1								
Diameter piping	Ø10mm	Ø12mm	Ø14mm						
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)						
+4,0	63	144	150						
+3,0	55	127	150						
+2,0	48	111	150						
+1,5	44	102	150						
+1,0	40	94	150						
+0,5	37	86	150						
0	33	78	150						
-0,5	29	70	133						
-1,0	25	82	118						
-1,5	21	63	103						
-2,0	17	45	88						
-3,0	10	29	58						
-4,0	4	12	28						



Н	Difference in height pump-foot valve
Ø	Internal pipe diameter
Р	Height 10 m
V	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

note

With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



VENTILATION

The ventilation circuit produces low noise levels with high performance pressure and air output, in spite of the compact dimensions.

The use of reverse curve blades and soundproofing material keeps noise level very low.



Example of fan air gate valve indexed selector of RL 28/1 burner



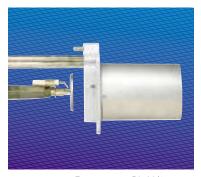
COMBUSTION HEAD

Different lengths of the combustion head can be chosen for the RL/1 series of burners.

The choice depends on the thickness of the front panel and the type of boiler.

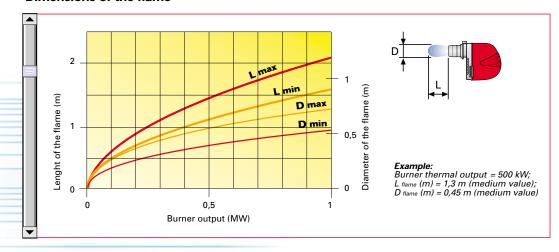
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal position of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.



Example of a RL 28/1 burner combustion head

Dimensions of the flame





ADJUSTMENT





BURNER OPERATION MODE

The burner of RL/1 series is one stage working.

On "one stage" operation, the burner adjusts output to the requested level, by varying between on-off phases (see figure A).

One stage operation

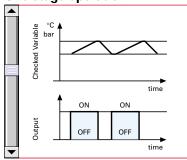
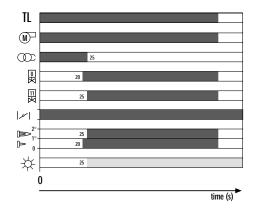


Figure A

▶ FIRING

RL 28/1



0" The burner begins the firing cycle:

the motor and transformer are

supplied.

Pre-purging begins with the max air delivery.

The 1st delivery valve opens and the fuel is ignited.

20÷28"

The ignition transformer switches off. The 2nd delivery valve opens. 5" after firing

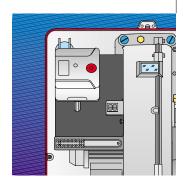
This is the operating flame.





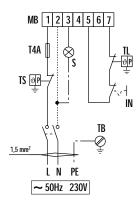
ELECTRICAL CONNECTIONS to be made by the installer

Electrical connections must be made by qualified and skilled personnel, according to the local norms.



Example of the terminal board for electrical connections and control panel on RL 28 /1

"ONE STAGE" OPERATION



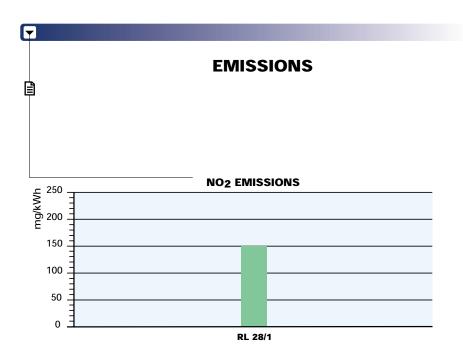
MB - Burner terminal board TS - Safety thermostat

- External lock-out signal IN - Manual switch
TL - Threshold thermostat
T4A - 4A fuse

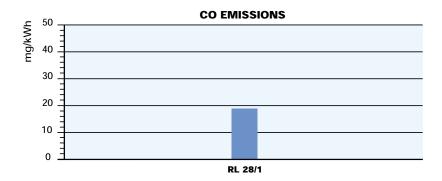
TB - Burner ground (earth) connection

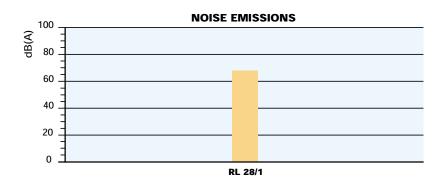
The following table shows the supply lead sections and the type of fuse to be used.

Mo	odel	▼ RL 28/1					
		230V					
F	Α	T4					
L	mm ²	1,5					









The emission data has been measured in the various models at maximum output, according to EN 267 standard.



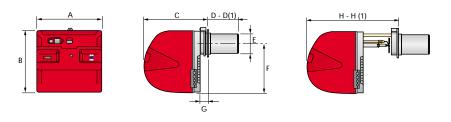


OVERALL DIMENSIONS (mm)



BURNERS

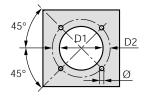
RL 28/1



Model	Α	В	С	D - D(1)	E	F	G	H - H (1)
▶ RL 28/1	476	474	468	216 - 351	140	352	52	672 - 807

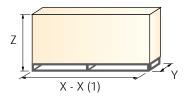
⁽¹⁾ dimension with extended head.

BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	Ø
▶ RL 28/1	160	224	M8

PACKAGING



Model	X - X (1)	Υ	Z	kg
▶ RL 28/1	760 - 895	540	550	35

(1) dimension with extended head.



INSTALLATION DESCRIPTION

Installation, start up and maintenance must be carried out by qualified and skilled personnel. All operations must be performed in accordance with the technical handbook supplied with the



BURNER SETTING

burner.

- All the burners have slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- ▶ Adjust the combustion head.
- ▶ Refit the burner casing to the slide bars.
- Install the nozzles, choosing these on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.





HYDRAULIC AND ELECTRICAL CONNECTIONS AND START UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- ▶ Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor.
- On start up, check:
 - Pressure pump
 - Combustion quality, in terms of unburned substances and excess air.





ACCESSORIES

Return nozzles

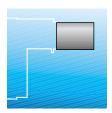
The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.



	Nozzles type 60°B	
GPH	Rated output [kg/h] at 12 [bar]	Nozzle code
1,5	6,3	3042107
1,75	7,3	3042110
2,0	8,4	3042126
2,5	10,5	3042140
3,0	12,6	3042158
3,5	14,7	3042162
4,0	16,7	3042172

Extended heads

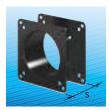
"Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.



	Combustion h	ead extension kits	
Burner	'Standard' head length (mm)	'Extended' head length (mm)	Kit code
RL 28/1	216	351	3010073

Spacer kit

If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:



Extended heads		
Burner	Spacer thickness S (mm)	Kit code
RL 28/1	90	3010095



Sound proofing box

If noise emission needs reducing even further, sound-proofing box is available, as given in the following table:



	Sound proofing box	
Burner	Box type	Box code
RL 28/1	C1	3000776

Degasing unit

With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself

due to negative pressure or to a faulty seal.

To solve this problem, we recommend fitting a degasing unit near the burner. Two versions are available with or without filter:



	Degasing unit	
Burner	Filter	Kit code
RL 28/1	With filter	3010055
RL 28/1	Without filter	3010054

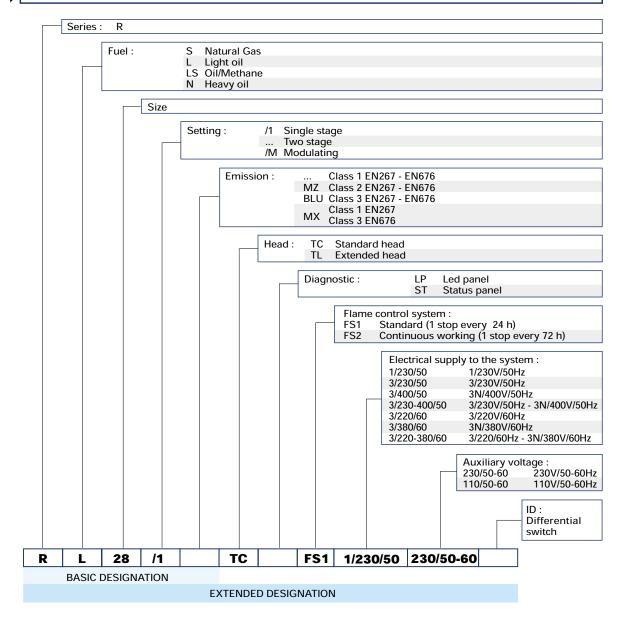






A specific index guides your choice of burner. Below is a clear and detailed specification description of the product.

DESIGNATION OF SERIES



LIST OF AVAILABLE MODELS

28/1 1/230/50 230/50-60 RL TC FS1 RL 28/1 FS1 1/230/50 230/50-60 TL

Other versions are available on request.





▶ PRODUCT SPECIFICATION

Burner:

Monoblock forced draught oil burner with one stage operation, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades high performance with low sound emissions
- Air damper for air setting
- Starting motor at 2800 rpm, single-phase, 50Hz
- Combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- Fan pressure test point
- Gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuometer
 - internal by-pass for single pipe installation
- Valve unit with a double oil delivery valve on the output circuit
- Photocell for flame detection
- Flame control panel, with lock-out pilot light and lock-out reset button
- Terminal strip for electrical connections
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.

According to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 1 thermal screen
- 2 slide bar extensions (for model with long blast tube)
- 4 screws for fixing the burner flange to the boiler
- 2 fairleads for electrical connections
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Nozzles
- Head extension kit
- Head length reduction kit
- Sound-proofing box
- Degasing unit.







RIELLO S.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

Internet: http://www.rielloburners.com - E-mail: rburners@rielloburners.com



280 kW

▶ PRESS GV 178 ÷ 356 kW



The PRESS G series of burners covers a firing range from 140 to 356 kW and they have been designed for use in civil installations of small dimensions or in industrial applications, like incinerators or dyer kilns.

Operation is "one stage"; the combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption. The main feature of these burners is their reliability due to a simple and strong construction, which permits operation without particular maintenance intervention.

Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head. All electrical components are easily accessible only by dismounting a protection panel, thus guaranteeing a quick and simple intervention on components.



TECHNICAL DATA

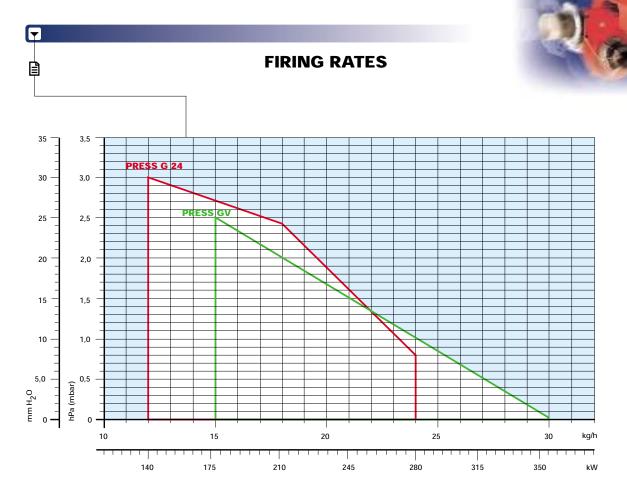


Model			▼ PRESS G24	▼ PRESS GV	
				_	
	peration mode			One stage	
	ion ratio to ma	x. output		-	
Servo- motor	type			-	
run time s					
		kW	140 - 280	178 - 356	
Heat out	put	Mcal/h	120 - 241	153 - 306	
		Kg/h	12 - 24	15 - 30	
Working	temperature	°C min./max.	0/40		
Net calo	rific value	kWh/kg		11,8	
		kcal/kg	10.200		
Viscosity	at 20°C	mm ² /s (cSt)		4 ÷ 6	
Pump	type		AS 47	AN 67 A	
· amp	output	kg/h at 12 bar	31	67	
Atomise	d pressure	bar		12	
Fuel tem	perature	Max. °C		50	
Fan type centrifugal with forward curve blades		th forward curve blades			
Air temp	erature	Max. °C	60		
Electrica	l supply	Ph/Hz/V	1/50/230~(±10%)		
Auxiliary 6	electrical supply	Ph/Hz/V	1/50	0/230~(±10%)	
Control I	юх	type	LOA 24	503 SE	
Total ele	ctrical power	kW	0,4	0,6	
Auxiliary 6	electrical power	kW	0,15	0,23	
Protection	n level	IP	40	44	
Motor ele	ectrical power	kW	0,25	0,37	
Rated m	otor current	A	1,85	3,4	
Motor st	art current	A	4,5	7,2	
Motor pr	otection level	IP	54	44	
Ignition		V1 - V2	220V - 1x8 kV	200V - 1x8 kV	
transform	ner	l1 - l2	1,6A - 30 mA	1,8A - 30 mA	
Working			intermittent (at least one stop every 24 h)		
Sound p	ressure	dBA		70	
Sound output CO emission		w		-	
		mg/kWh		< 40	
Grade of smoke indicator N° Bach.		N° Bach.		<1	
C _x H _y em	ission	mg/kWh	<10 (aft	ter the first 20 s.)	
NOx emi	ssion	mg/kWh		< 200	
Directive			73/23 - 89/3	36 - 98/37 - 92/42 EEC	
Accordin	g to			EN 267	
Certification					

Reference conditions:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.

Noise measured at a distance of 1 meter.



Useful working field for choosing the burner

Test conditions conforming to EN 267: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





FUEL SUPPLY

Ė

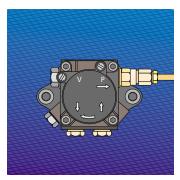
HYDRAULIC CIRCUITS

The burners are fitted with a self-priming pump and one (for PRESS GV) or two (for PRESS G24) delivery valves along the oil line from the pump to the nozzles.

The pump does not need calibrating, as it is set in the factory at 12 bar; however, pressure level can be changed if necessary, by adjusting the regulator fitted on the pump.

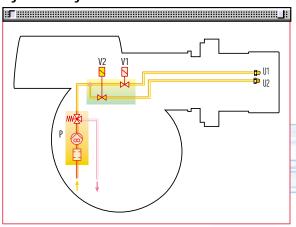
The delivery valves control the passage from starting to operating phase.

For PRESS G24, at the start, after pre-purging phase, the first delivery valve opens and the fuel is sprayed out through the first nozzle, igniting when it comes into contact with the spark; then the second delivery valve opens and the fuel is sprayed out through both nozzles.

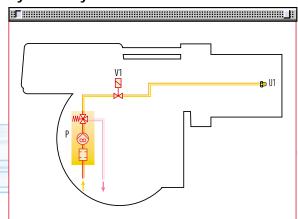


Example of self-priming pump of PRESS GV burners

Hydraulic layout of PRESS G24 burner



Hydraulic layout of PRESS GV burner



Р	Pump with filter and pressure regulator
V1	1 St delivery valve
V2	2 nd delivery valve
U1	1 St nozzle
U2	2 nd nozzle

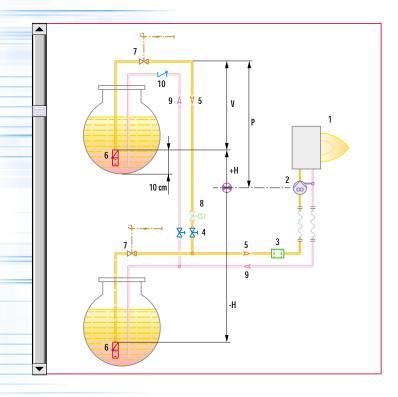


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

MAXIMUM EQ	MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]				
Model	▼ PRESS G24 - GV				
Diameter piping	Ø 8 mm	Ø10mm			
+H, -H (m)	L _{max} (m)	L _{max} (m)			
+4,0	63	130			
+3,0	55	115			
+2,0	48	100			
+1,5	44	92			
+1,0	40	85			
+0,5	36	78			
0	32	70			
-0,5	28	62			
-1,0	24	55			
-1,5	20	48			
-2,0	16	40			
-3,0	7	25			
-4,0	-	10			



Н	Difference in height pump-foot valve
Ø	Internal pipe diameter
Р	Height 10 m (max)
٧	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

note

With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



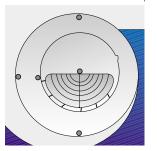


VENTILATION



The ventilation circuit produces low noise levels with high performance pressure and air output, in spite of the compact dimensions.

The air damper is easy to set; when fitted, it makes no difference to air delivery.



T

Example of fan air gate valve indexed selector of PRESS G24



COMBUSTION HEAD

For the PRESS G24 - GV series of burners a special kit for increasing combustion head length is available.

The choice of using it depends on the thickness of the front panel and the type of boiler.

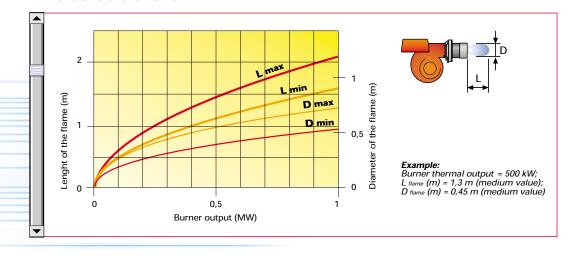
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal position of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.



Example of a PRESS G24 burner combustion head

Dimensions of the flame



ADJUSTMENT





BURNER OPERATION MODE

The burner of PRESS G24 - GV series is one stage working.

On "one stage" operation, the burner adjusts output to the requested level, by varying between on-off phases (see figure A).

"One stage" operation

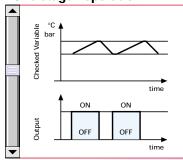
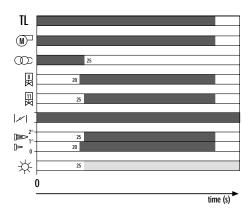


Figure A

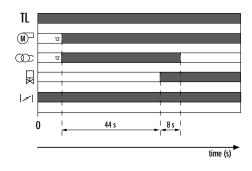
▶ FIRING

PRESS G24



- 0" The burner begins the firing cycle: the motor and transformer are supplied.
- Pre-purging begins with the max air delivery. 20 The 1st delivery valve opens and the fuel is
- 25" The ignition transformer switches off. The 2nd delivery valve opens. This is the operating flame.

PRESS GV



- 0" Control device TL closes.
- 12" The burner begins the firing cycle: the motor and transformer are supplied.
- The delivery valve opens and the fuel is 56" ignited.
- 64" The ignition transformer switches off. This is the operating flame.

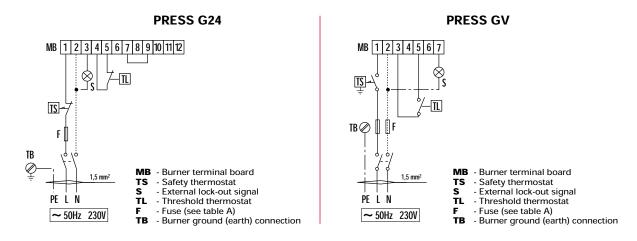




ELECTRICAL CONNECTIONS to be made by the installer

Electrical connections must be made by qualified and skilled personnel, according to the local norms.

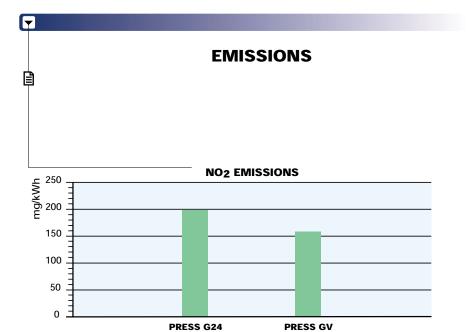
▶ "ONE STAGE" OPERATION



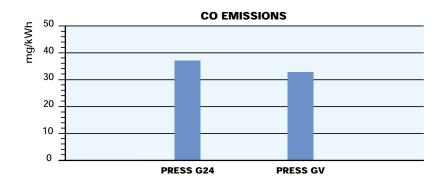
The following table shows the supply lead sections and the type of fuse to be used.

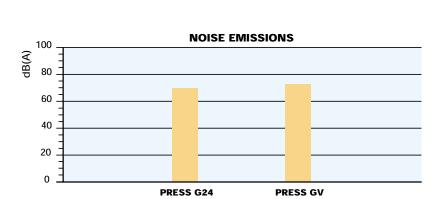
ľ	Vlodel	▼ PRESS G24	▼ PRESS GV
		230V	230V
ŀ	FΑ	T6	T6
ı	L mm ²	1,5	1,5

Table A









The emission data has been measured in the various models at maximum output, according to EN 267 standard.



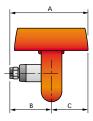


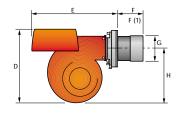


OVERALL DIMENSIONS (mm)

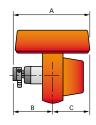
BURNERS

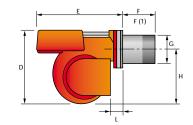
PRESS G24

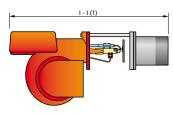




PRESS GV







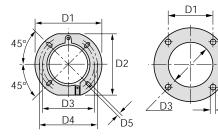
Model	А	В	С	D	E	F - F(1)	G	Н	I - I (1)	L
▶ PRESS G24	425	222	203	397	485	118 - 253	125	290		-
▶ PRESS GV	439	234	205	397	473	185 - 320	140	292	875 - 1010	59

⁽¹⁾ dimension with extended head

BURNER - BOILER MOUNTING FLANGE

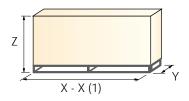
PRESS G24

PRESS GV



Model	D1	D2	D3	D4	D5	Ø
▶ PRESS G24	213	198	160	190	11	-
▶ PRESS GV	160	160	155	-	-	M10

PACKAGING



Model	X - X (1)	Υ	Z	kg
▶ PRESS G24	650	535	450	33
▶ PRESS GV	680	535	450	33

⁽¹⁾ dimension with extended head



INSTALLATION DESCRIPTION



Installation, start up and maintenance must be carried out by qualified and skilled personnel.

All operations must be performed in accordance with the technical handbook supplied with the burner.



BURNER SETTING

PRESS G24

- After drilling the boilerplate, using the supplied gasket as a template, fix the flange of burner to the boiler.
- Dismantle the blast tube from the burner and install the nozzles, choosing these on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- ▶ Adjust the combustion head and refit the blast tube to the burner casing.
- Install the burner to the flange.

PRESS GV

- ▶ The PRESS GV model has slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- Adjust the combustion head.
- ▶ Refit the burner casing to the slide bars.
- ▶ Install the nozzle, choosing this on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- Check the position of the electrodes.
- ▶ Close the burner, sliding it up to the flange.

HYDRAULIC AND ELECTRICAL CONNECTIONS AND START UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor.
- On start up, check:
 - Pressure pump (to max. and min.)
 - Combustion quality, in terms of unburned substances and excess air.





ACCESSORIES



Nozzles

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.



Nozzles type 60°B						
Burner	GPH	Rated output [kg/h] at 12 [bar]	Nozzle code			
PRESS G24	1,50	6,3	3042107			
PRESS G24	1,75	7,3	3042110			
PRESS G24	2,00	8,5	3042126			
PRESS G24	2,50	10,6	3042140			
PRESS G24	3,00	12,7	3042158			
PRESS G24	3,50	14,8	3042162			
PRESS GV	4,00	17	3042172			
PRESS GV	4,50	19,1	3042182			
PRESS GV	5,00	21,2	3042192			
PRESS GV	5,50	23,3	3042202			
PRESS GV	6,00	25,5	3042212			
PRESS GV	6,50	27,6	3042222			
PRESS GV	7,00	29,7	3042232			
PRESS GV	7,50	31,8	3042242			

Extended heads

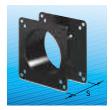
"Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kits available for the various burners, giving the original and the extended lengths, are listed below.



Combustion head extension kits					
Burner	'Standard' head length (mm)	'Extended' head length (mm)	Kit code		
PRESS G24	118	253	3010051		
PRESS GV	185	320	3000580		

Spacer kit

If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:



	Head length reduction kit	
Burner	Spacer thickness S (mm)	Kit code
PRESS GV	142	3000755



Sound proofing box

If noise emission needs reducing even further, sound-proofing box is available, as given in the following table:



	Sound proofing box	
Burner	Box type	Box code
PRESS GV	C1	3000776

Degasing unit

With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself

due to negative pressure or to a faulty seal.

To solve this problem, we recommend fitting a degasing unit near the burner. Two versions are available with or without filter:



	Degasing unit	
Burner	Filter	Kit code
PRESS GV	with filter	3010055
PRESS GV	without filter	3010054

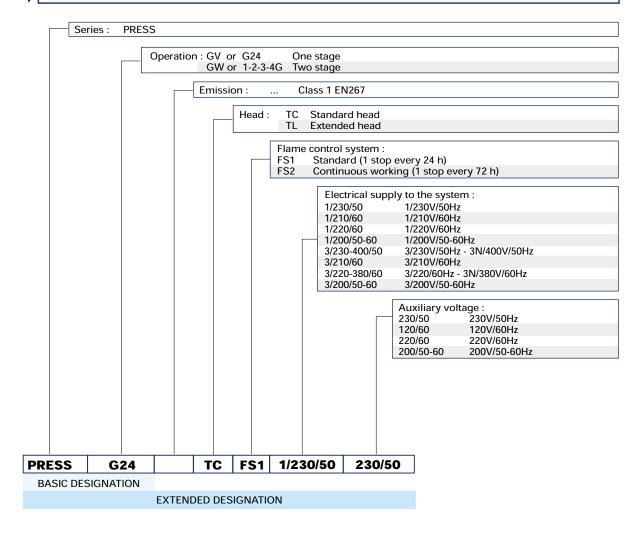




SPECIFICATION

A specific index guides your choice of burner from the various models available in the PRESS series. Below is a clear and detailed specification description of the product.

DESIGNATION OF SERIES



LIST OF AVAILABLE MODELS

PRESS G24	TC	FS1	1/230/50	230/50
PRESS G24	TC	FS1	1/220/60	220/60
PRESS GV	TC	FS1	1/200/50-60	200/50-60
PRESS GV	TC	FS1	1/230/50	230/50

Other versions are available on request.



▶ PRODUCT SPECIFICATION

Burner:

Monoblock forced draught oil burner with one stage operation, fully automatic, made up of:

- Air suction circuit
- Fan with forward curve blades with high performance concerning pressure and air delivery
- Air damper for air setting
- Starting motor at 2850 rpm, single-phase, 230V, 50Hz
- Combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuometer
 - internal by-pass for single pipe installation
- Oil valves on the output circuit
- Photocell for flame detection
- Flame control panel, with lock-out pilot light and lock-out reset button
- Slide bars for easier installation and maintenance (for GV model)
- Protection filter against radio interference
- IP 44 electric protection level.

According to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 2 Pipe fittings (for GV model)
- 2 Pipe fittings gasket (for GV model)
- 1 burner flange (for G24 model)
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Nozzles
- Head extension kit
- Head length reduction kit (for GV model)
- Sound-proofing box (for GV model)
- Degasing unit (for GV model).







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Internet: http://www.rielloburners.com - E-mail: rburners@rielloburners.com



TWO STAGE LIGHT OIL BURNERS

CE

▶ PRESS G SERIES ▶ PRESS GW 107/178 ÷ 356 kW ▶ **PRESS 1G** 130/190 ÷ 534 kW

PRESS 2G 214/356 ÷ 712 kW ▶ **PRESS 3G** 273/534 ÷ 1168 kW

PRESS 4G 415/830 ÷ 1660 kW



The PRESS G series of burners covers a firing range from 107 to 1660 kW and they have been designed for use in civil installations of average dimensions, like building areas and large apartment groups or for use in industrial applications, like small or medium plants. Operation is two stage; the combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption. The main feature of these burners is their reliability due to a simple and strong construction, that permits operation without particular maintenance intervention.

Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head. All electrical components are easily accessible only by dismounting a protection panel, thus guaranteeing a quick and simple intervention on components.

T

TECHNICAL DATA



Model			▼ PRESS GW	▼ PRESS 1G	▼ PRESS 2G	▼ PRESS 3G	▼ PRESS 4G			
					Two stage					
Burner operat					2 ÷ 1					
Modulation ra	tio at max. output				2 ÷ 1					
Servomotor	type				-					
	run time	s kW	407/470 050	400/400 504		070/504 4400	445 (000 400			
			107/178÷356 92/153÷306	130/190÷534	214/356÷712	273/534÷1168	415/830÷166			
Heat output		Mcal/h	92/153÷306 9/15÷30	112/163÷459	184/306÷612	235/459÷1004	357/714÷142			
		kg/h	9/15÷30	11/16÷45	18/30÷60 0/40	23/45÷100	35/70÷140			
Working temp	erature	°C min./max.			11.8					
Net calorific va	alue	kWh/kg			10200					
		kcal/kg								
Viscosity		mm²/s (cSt)	AN 67	AN 77	4 ÷ 6 (at 20°C) AN 77	J 6	J 7			
Pump	type	In /In					-			
	delivery	kg/h	65 (12 bar)	90 (12 bar)	90 (12 bar) 12	164 (12 bar)	244 (12 bar)			
Atomised pres		bar Max. °C			50					
Fuel temperat		Max. °C								
Fuel pre-heate	er		NO							
Fan		type Max. °C	Centrifugal with forward curve blades 60							
Air temperatu		Ph/Hz/V	4/50/000 (1400/)			(aaa (; aaa())				
Electrical supp		Ph/Hz/V	1/50/230~(±10%)							
Auxiliary elect	rical supply		1/50/230~(±10%) RMO							
Control box		type	0.42	0.0		2.05	2.0			
Total electrica	•	kW	0,43	0,6	1,07	2,05	3,8			
Auxiliary elect	•	IP	0,18 0,15 0,3 0,5 0,8 40							
Protection lev		kW	40							
•	electrical power	A								
Rated pump n		A	- -							
•	tart up current	IP			 					
	orotection level	kW	0.25	0.45	0.75	1,5	3			
Fan motor ele	•	A	2.1	1,9 - 1,1	2.9 - 1.7	6 - 3.5	10.5 - 6			
Rated fan mot		A	4.8	9,5 - 5,5	2,5 - 1,7	28 - 16	55 - 32			
Fan motor sta	•	IP IP	4,0	9,5 - 5,5	54	20 - 10	33 - 32			
Fan motor pro	ntection level	type			J4 					
lamitian turnet		V1 - V2			230 V - 8 kV					
Ignition transf	ormer	11 - 12			1,8 A - 30 mA					
Operation		11-12		Intermitte	nt (at least one stop	a every 24 h)				
Sound pressur	re	dBA	75.5	78	81.5	83	85			
Sound power		W	10,0	70		03	03			
CO emission		mg/kWh			 < 110					
Grade of smol	ke indicator	N° Bach.			< 1					
C _X H _V emission		mg/kWh	< 10 (after the first 20 s)							
NOx emission		mg/kWh	< 10 (after the first 20 s) < 250							
Directive		iiig/kwiii	< 250 73/23 - 89/336 - 98/37 - 92/42 EEC							
Conforming to	,		73/23 - 89/336 - 98/37 - 92/42 EEC EN 267							
Joinoining to	•				LIV ZU/					

Reference conditions:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.

Noise measured at a distance of 1 meter.



Useful working field for choosing the burner

1⁻ 1st stage operating rate

Test conditions conforming to EN 267:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





FUEL SUPPLY

HYDRAULIC CIRCUITS

The burners are fitted with two oil delivery valves. A control device, on the basis of required output, regulates oil delivery valves opening, allowing light oil passage trough the valves and the nozzles.

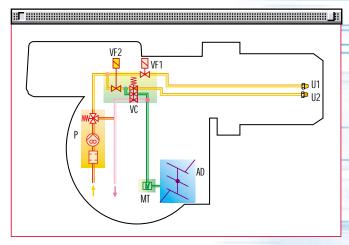
2nd stage delivery valve opening supplies the hydraulic ram which open the air damper in relation to the fuel burnt on 2nd stage.

All burners are fitted with a self-priming pump with filter and pressure regulator.

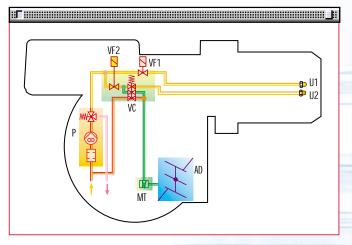


Example of self-priming pump of PRESS G burners

PRESS GW - 1G - 2G



PRESS 3G - 4G



Р	Pump with filter and pressure regulator on the output circuit
VF1	1st stage valve
VF2	2nd stage valve
VC	2nd stage control device
MT	Hydraulic ram
AD	Air damper
U1	1st stage nozzle
U2	2nd stage nozzle

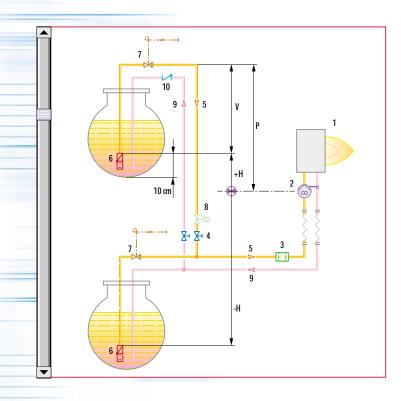


SELECTING THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

	MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]											
Model	_	PRESS G	w	▼ 1	PRESS 1G	- 2G	•	PRESS 3	G	_	PRESS 4	G
Ø piping	Ø8mm	Ø10mm	Ø12mm	Ø10mm	Ø12mm	Ø14mm	Ø12mm	Ø14mm	Ø16mm	Ø12mm	Ø14mm	Ø16mm
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)
+4,0	35	90	152	63	144	150	71	139	151	44	88	158
+3,0	30	80	152	55	127	150	62	123	151	38	77	140
+2,0	26	69	152	48	111	150	53	106	151	33	66	121
+1,0	21	59	130	40	94	150	45	90	151	27	56	103
+0,5	19	53	119	37	86	150	40	82	151	24	50	94
0	17	48	108	33	78	150	36	74	137	21	45	85
-0,5	15	43	97	29	70	133	32	66	123	18	40	76
-1,0	13	37	86	25	62	118	28	58	109	15	34	66
-2,0	9	27	64	17	45	88	19	42	81	9	23	48
-3,0	4	16	42	10	29	58	10	26	53	-	13	30
-4,0	-	6	20	-	12	28	-	10	25	-	-	12



Н	Difference in height pump-foot valve
Ø	Internal pipe diameter
Р	Height 10 m
V	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

▶ note

With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



Y

VENTILATION

The ventilation circuit of PRESS burners is inserted in a extremely

compact structure and it is provided with a forward blades centrifugal fan, which guarantees high pressure levels

at the required air deliveries and permits installation flexibility.

Delivery oil valves opening supplies the adjustable hydraulic ram which regulates air delivery in relation to the fuel burnt on 2nd stage.



Example of air damper indexed selector and hydraulic ram of PRESS G burners



COMBUSTION HEAD

For the PRESS G series of burners a special kit for increasing combustion head length is available.

The choice of using it depends on the thickness of the front panel and the type of boiler.

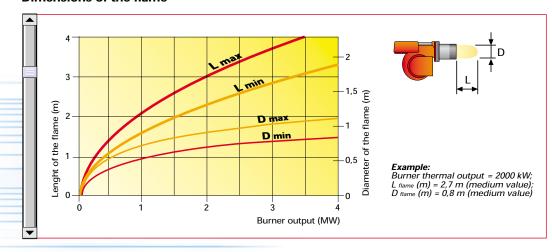
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal position of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw.



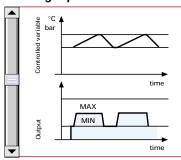
Example of a PRESS G burner combustion head

Dimensions of the flame



ADJUSTMENT BURNER OPERATION MODE

Two stage operation



With two stage operation, the PRESS G burners can follow the temperature load requested by the system.

A modulation ratio of 2:1 is reached, thanks to the "two nozzles" technique; the air is adapted to the hydraulic ram positions. On two stage operation, the burner gradually adjusts output to the requested level, by varying between the two pre-set levels (see figure A).

Figure A

All PRESS G series burners are fitted with a new microprocessor control panel for the supervision during intermittent operation.

For helping the commissioning and maintenance work, there are two main elements:

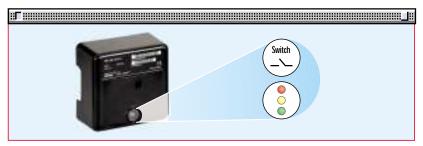


The lock-out reset button is the central **operating element** for resetting the burner control and for activating / deactivating the diagnostic functions.



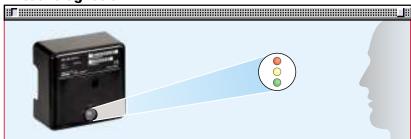
The multi-color LED is the central **indication element** for visual diagnosis and interface diagnosis.

Both elements are located under the transparent cover of lock-out reset button, as showed below.

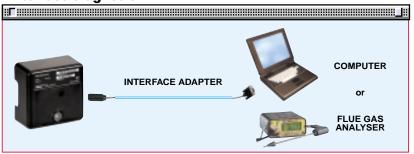


There are two diagnostic choices, for indication of operation and diagnosis of fault cause:

- visual diagnosis:



- interface diagnosis:



by the interface adapter and a PC with dedicated software or by a predisposed flue gas analyzer (see paragraph accessories).



Indication of operation:

In normal operation, the various statues are indicated in the form of colour codes according to the table below.

The interface diagnosis (with adapter) can be activated by pressing the lock-out button for > 3 seconds.

Color code table						
Operation statues	Color code table					
Stand-by	0000000					
Pre-purging	****					
Ignition phase	* 0 * 0 * 0 * 0					
Flame OK	******					
Poor flame	☀○☀○☀○					
Undervoltage, built-in fuse	****** ***					
Fault, alarm	*****					
Extraneous light	******					

O LED off

Diagnosis of fault causes:

After lock-out has occurred, the red signal lamp is steady on. In this status, the visual fault diagnosis according to the error code table can be activated by pressing the lock-out reset button for > 3 seconds. The interface diagnosis (with adapter) can be activated by pressing again the lock-out button for > 3 seconds.

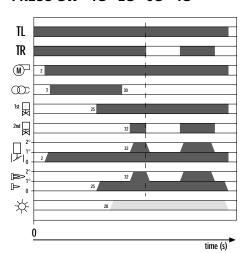
The blinkers of red LED are a signal with this sequence:

(e.g. signal with n° 3 blinks – faulty air pressure monitor)

Error code table	
Possible cause of fault	Blink code
No establishment of flame at the end of safety time : - faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner, no fuel - faulty ignition equipment	**
Faulty air pressure monitor	***
Extraneous light or simulation of flame on burner start up	***
Loss of flame during operation : - faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner	*****
Wiring error or internal fault	*****

START UP CYCLE

PRESS GW - 1G - 2G - 3G - 4G



- 0" The control device TL closes.
- 2" The motor starts.
- 3" The ignition transformer is connected. Pre-purging begins with the 1st stage air delivery.
- 25" Firing: 1st delivery valve is opened.
- 30" The ignition transformer switches off; output can be increased to 2nd stage.
- 39" The starting cycle comes to an end.

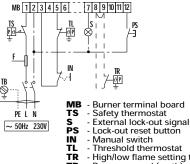
WIRING DIAGRAMS



Electrical connections must be made by qualified and skilled personnel, according to the local norms.

TWO STAGE OPERATION

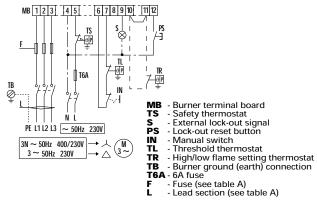
PRESS GW single-phase electrical connection



 Lock-out reset button
 Manual switch
 Threshold thermostat
 High/low flame setting thermostat - Burner ground (earth) connection - Fuse (see table A)

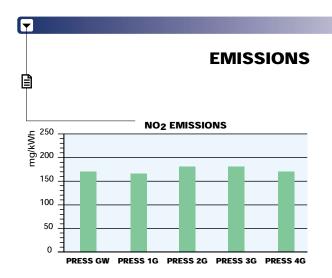
- Lead section (see table A)

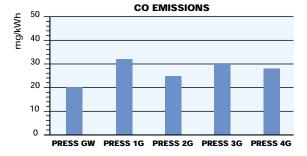
PRESS 1G - 2G - 3G - 4G three-phase electrical connection



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

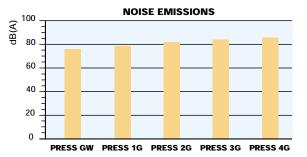
М	Model ▼PRESS GW		▼ PRE	SS 1G	▼ PRE	SS 2G	▼ PRE	SS 3G	▼ PRE	SS 4G
		230V	230V	400V	230V	400V	230V	400V	230V	400V
F	Α	gG6	T6	T6	T6	T6	T16	T10	T25	T16
L	mm ²	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	1.5







The emission data has been measured in the various models at maximum output, conforming to EN 267 standard.



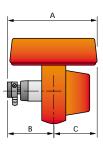


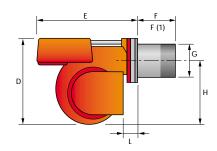


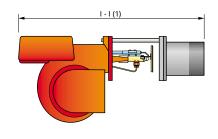


OVERALL DIMENSIONS (mm)

BURNER



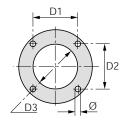




Model	А	В	С	D	Е	F - F(1)	G	Н	I - I (1)	L
▶ PRESS GW	439	234	205	397	473	185 - 320	140	292	930 - 1065	59
▶ PRESS 1G	475	270	205	397	473	237 - 370	150	292	980 - 1115	59
▶ PRESS 2G	475	270	205	437	506	245 - 403	155	332	1030 - 1190	89
▶ PRESS 3G	611	406	205	485	570	254 - 412	175	370	1100 - 1270	88
▶ PRESS 4G	675	354	316	590	720	266 - 426	205	445	1265 - 1425	175

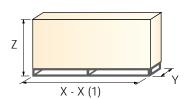
(1) Length with extended combustion head

BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	D3	Ø
▶ PRESS GW	160	160	155	M10
▶ PRESS 1G	160	160	165	M10
▶ PRESS 2G	160	160	165	M10
▶ PRESS 3G	195	195	185	M12
▶ PRESS 4G	230	230	210	M12

PACKAGING



Model	X - X (1)	Υ	Z	kg
▶ PRESS GW	695	542	468	37
▶ PRESS 1G	745	542	468	44
▶ PRESS 2G	800	542	515	44
▶ PRESS 3G	905	680	563	55
▶ PRESS 4G	1045	727	660	95

(1) Length with extended combustion head

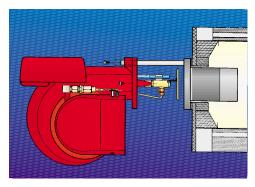
INSTALLATION DESCRIPTION

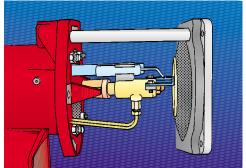
Installation, start up and maintenance must be carried out by qualified and skilled personnel. All operations must be performed in accordance with the technical handbook supplied with the burner.



BURNER SETTING

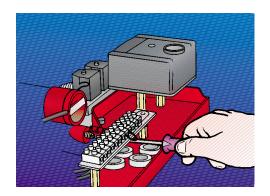
- ▶ All the burners have slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- ▶ Refit the burner casing to the slide bars.
- Install the nozzles, choosing these on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.
- ▶ Adjust the combustion head.





HYDRAULIC AND ELECTRICAL CONNECTIONS AND START UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor.
- ▶ On start up, check:
 - Pressure pump (to max. and min.)
 - Combustion quality, in terms of unburned substances and excess air.









ACCESSORIES



Nozzles

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.



	Nozzles type 60° B							
Burner	GPH	Rated output (kg/h)*	Nozzle code					
PRESS GW - 1G	2,00	8,5	3042126					
PRESS GW - 1G	2,50	10,6	3042140					
PRESS GW - 1G	3,00	12,7	3042158					
PRESS GW - 1G	3,50	14,8	3042162					
PRESS GW - 1G - 2G	4,00	17	3042172					
PRESS 1G - 2G	4,50	19,1	3042182					
PRESS 1G - 2G	5,00	21,2	3042192					
PRESS 1G - 2G	5,50	23,3	3042202					
PRESS 2G - 3G	6,00	25,5	3042212					
PRESS 2G - 3G	6,50	27,6	3042222					
PRESS 2G - 3G	7,00	29,7	3042232					
PRESS 3G	7,50	31,8	3042242					
PRESS 3G	8,00	33,9	3042252					
PRESS 3G	8,50	36,1	3042262					
PRESS 3G - 4G	9,50	40,3	3042282					
PRESS 3G - 4G	10,00	42,4	3042292					
PRESS 3G - 4G	11,00	46,7	3042312					
PRESS 3G - 4G	12,00	50,9	3042322					
PRESS 4G	13,00	55,1	3042332					
PRESS 4G	14,00	59,4	3042352					
PRESS 4G	15,00	63,6	3042362					
PRESS 4G	16,00	67,9	3042382					
PRESS 4G	17,00	72,1	3042392					
PRESS 4G	18,00	76,4	3042412					

^(*) Nozzles rated delivery is referred to atomised pressure

Extended head kit "Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kits available for the various burners, giving the original and the extended lengths, are listed below.



Extended head kit								
Burner	Standard head length (mm)	Extended head length (mm)	Kit code					
PRESS GW	185	320	3000581					
PRESS 1G	237	370	3000537					
PRESS 2G	245	403	3000538					
PRESS 3G	254	412	3000851					
PRESS 4G	266	426	3000555					



Spacer kit

If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:



Spacer kit						
Burner	Spacer thickness S (mm)	Kit code				
PRESS GW - 1G - 2G - 3G - 4G	142	3000755				

Sound proofing box

If noise emission needs reducing even further, sound-proofing boxes are available, as given in the following table:



Sound proofing box							
Burner	Box type	Box code					
PRESS GW - 1G - 2G	C1	3000776					
PRESS 3G	C3	3000778					
PRESS 4G	C4	3000779					

Degasing unit

With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal.

To solve this problem, we recommend fitting a degasing unit near the burner. Two versions are available with or without filter:



Degasing unit								
Burner	Filter	Degasing unit Code						
PRESS GW - 1G - 2G - 3G - 4G	With filter	3010055						
PRESS GW - 1G - 2G - 3G - 4G	Without filter	3010054						

Air damper complete closure kit

To minimize thermal dispersion caused by the stack draught sucking air from the fan's suction opening, an "air damper complete closure kit" is available.

This is composed by a hydraulic ram, which closes the air damper completely when the burner shuts down.



	Air damper complete closure kit	
Burner		Kit code
PRESS GW		3000853
PRESS 1G		3000854
PRESS 2G		3000855
PRESS 3G		3000856
PRESS 4G		3000857

Interface adapter kit

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



Interface adapter	
Burner	Kit code
PRESS GW - 1G - 2G - 3G - 4G	in progress

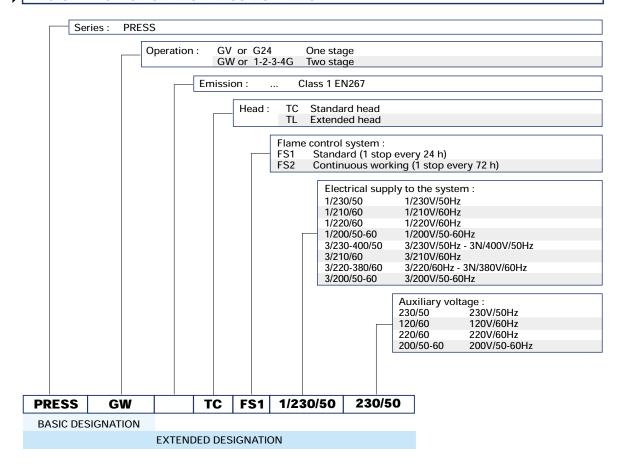




SPECIFICATION

A specific index guides your choice of burner from the various models available in the PRESS G series. Below is a clear and detailed specification description of the product.

DESIGNATION OF SERIES PRESS BURNERS



LIST OF AVAILABLE MODELS

PRESS GW PRESS GBW PRESS GW PRESS GW PRESS GW/35	TC TC TC TC TC	FS1 FS1 FS1 FS1 FS1 FS1	3/230-400/50 1/230/50 1/200/50-60 1/220/60 1/230/50 1/220/60	230/50 (1 230/50 200/50-60 220/60 230/50 (1 220/60		PRESS 3G PRESS 3G PRESS 3G PRESS 3G PRESS 3G	TC TC TC TC TC	FS1 FS1 FS1 FS1 FS1	3/200/50-60 3/230-400/50 3/210/60 3/220-380/60 3/230-400/50	200/50-60 230/50 120/60 220/60 230/50	(1)
PRESS 1G PRESS 1G PRESS 1G PRESS 1G PRESS 1G PRESS 1G	TC TC TC TC TC TC	FS1 FS1 FS1 FS1 FS1 FS1	3/230-400/50 3/200/50-60 1/210/60 3/210/60 3/220-380/60 3/230-400/50	230/50 200/50-60 120/60 120/60 220/60 230/50 (1	1)	PRESS 4G PRESS 4G PRESS 4G	TC TC TC	FS1 FS1 FS1	3/200/50-60 3/220-380/60 3/230-400/50	200/50-60 220/60 230/50	(1)
PRESS 2G PRESS 2G PRESS 2G PRESS 2G PRESS 2G PRESS 2G	TC TC TC TC TC TC	FS1 FS1 FS1 FS1 FS1 FS1	3/230-400/50 3/200/50-60 1/210/60 3/210/60 3/220-380/60 3/230-400/50	230/50 200/50-60 120/60 120/60 220/60 230/50 (1	1)	• •			bio diesel fue vailable on re		



▶ PRODUCT SPECIFICATION

Burner:

Monoblock forced draught oil burner with two stage operation, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Fan with forward curve blades with high performance concerning pressure and air delivery
- Air damper for air setting
- Hydraulic ram for air damper control
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V and 50Hz for the PRESS GW model)
- Combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- Fan pressure test point
- Gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuometer
 - internal by-pass for single pipe installation
- Valve unit with two delivery oil valves on the output circuit
- Photocell for flame detection
- Microprocessor-based flame control panel, with diagnostic function
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.

Conforming to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Nozzles
- Head extension kit
- Head length reduction kit
- Sound-proofing box
- Degasing unit (with or without filter)
- Air damper complete closure kit.







RIELLO S.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

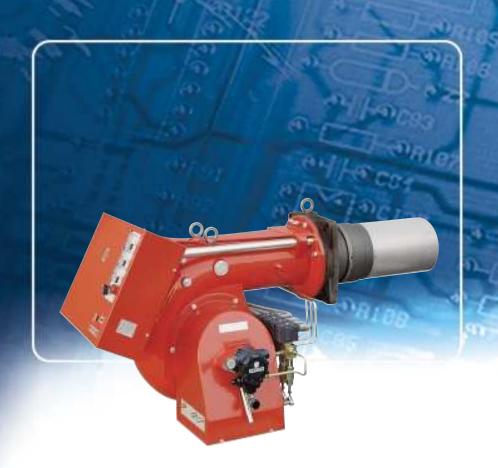
Internet: http://www.rielloburners.com - E-mail: rburners@rielloburners.com



▶ **P 200 T/G** 557/1186 ÷ 2372 kW

▶ **P 300 T/G** 712/1779 ÷ 3560 kW

▶ **P 450 T/G** 890/2670 ÷ 5340 kW



The PRESS T/G series of burners cover a firing range from 380 to 5340 kW. Available in 4 different models, they are particularly well suited for matching with pressurized chamber boilers.

For their characteristics, they find application in big civl plants for domestic heating or in industrial applications where thermal load is repetitive and predictable.

An hydraulic ram exclusive system, with 3 adjustable positions, regulates dampers opening, allowing air passage in relation to output required: in this way flame stability is optimized in every working point, with micro-regulation available.



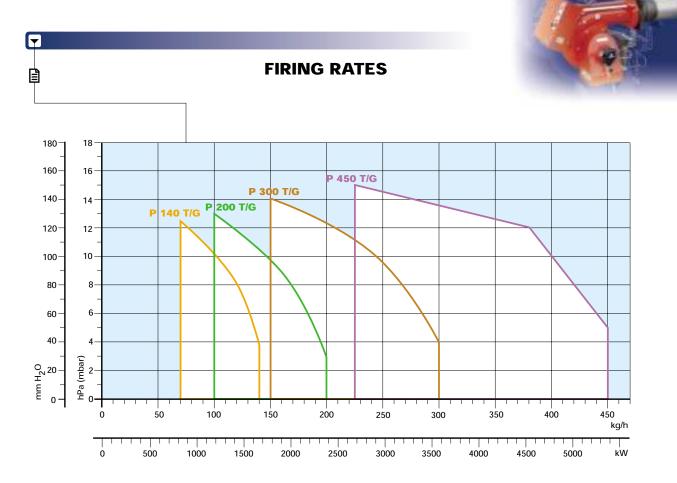
TECHNICAL DATA

Model			▼ P 140 T/G	▼ P 200 T/G	▼ P 300 T/G	▼ P 450 T/G			
Operati	on		Three stage						
Heat ou	tnut	kW	380/830÷1660	557/1186÷2372	712/1779÷3560	890/2670÷5340			
пеасоц	грис	Mcal/h	327/714÷1428	479/1020÷2040	612/1530÷3062	765/2296÷4592			
Working	g temperature	°C min./max.		0/	40				
NOV.	-1-4 0:1	kcal/kg		102	200				
NCV Li	jnt Oii	MJ/kg		42	2,7				
Viscosit	y at 20°C	mm²/s (cSt)		4 -	÷ 6				
Light oi	l delivery	kg/h	32/70÷140	47/100÷200	60/150÷300	75/225÷450			
_	type		SUNTEC J7	SUNTEC J7	SUNTEC TA2	SUNTEC TA3			
Pump	delivery	kg/h at 20 bar	190	190	340	525			
Atomis	ed pressure	bar		1	2				
Fuel ter	nperature	Max. °C		5	0				
Fan		type		Centrifugal - curv	ed forward blades				
Air tem	perature	Max. °C		6	0				
Electric	al supply	Ph/Hz/V	3N/50/230-400 (+10% -15%) 人 or 3/50/230 (+10% -15%) \triangle						
Electrical p	ower consumption	Max. kW	4,5	5,5	10	15			
Electric	al motor	kW	3	4	7,5	12			
Motor s	tart current	Α	51/86	48/83	113/195	151/261			
Motor r	unning current	Α	8/13,5	9,5/16,4	17,5/30	26/45			
Motor ele	ectrical protection	IP		55					
Auxiliary	electrical supply	Ph/Hz/V	1/50/230 (±10%)						
Auxiliary	electrical power	kW	1,5	1,5	2,5	3			
Electric	al protection	IP		4	0				
Control	box	type		503	BSE				
Ignition		V1 - V2	230 V - 2x6 kV						
transfo		l1 - l2		2,3 A - 35 mA					
Working	9			Intermittent (at least	one stop every 24 h)				
Sound	oressure	dB (A)	86,5	85,5	89,5	90			
Sound	oower	w		•	-	,			
CO emi	ssion	mg/kWh		<	70				
Grade of	smoke indicator	N° Bacharach		<	2				
C _x H _y eı	nission	mg/Nm³			-				
NOx en	nission level	mg/kWh		< 230		< 340			
Directiv	е		89	/336 - 73/23 - 92/42 - 98/37	EEC	89/336 - 73/23 - 98/37 E			
Conforr	ning to:			prEN					
Certifica	ation		DIN 5G455/2000	DIN 5G456/2000	DIN 5G457/2000				

Reference conditions:

Ambient temperature: 20°C

Barometric pressure: 1000 mbar
Altitude: 100 meters a.s.l.
Sound pressure level measured in manufacturers combustion laboratory, with burner operating on test boiler and at maximum rated output.



Useful working field for choosing the burner

Test conditions conforming to EN 267: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





FUEL SUPPLY



HYDRAULIC CIRCUITS

The burners are fitted with four valves (a safety valve and three oil delivery valves) and an oil filter along the oil line from the pump to the nozzle.

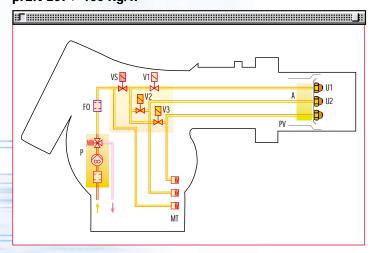
A thermostat, on the basis of required heat, regulates oil delivery valves opening, allowing or not light oil passage through the valves. Delivery valves opening supplies the three stage hydraulic ram which regulates air delivery in relation to fuel burnt.

The pumping group is fitted with a pump, an oil filter and a regulating valve, that adjusts atomised pressure. This value is pre-set at 12 bar in the factory, but it can be changed (it is reccomended not to overcome the pressure values of 10 and 14 bar) by adjusting pressure regulator fitted on the pump.



Example of the hydraulic circuit on PRESS 200 T/G

prEN 267 > 100 Kg/h



Р	Pump with oil filter and pressure regulator
FO	Oil filter
V1 - V2 - V3	Delivery oil valves
VS	Safety valve
MT	3 stage hydraulic ram
U1 - U2 - U3	Nozzles
PV	Nozzle holder
Α	Atomizer

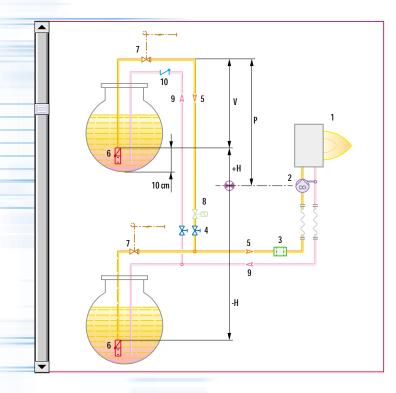


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

	MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]										
Model	▼ P 140 T/G		▼ P 200 T/G		▼ P 30	00 T/G	▼ P 45	▼ P 450 T/G			
Diameter piping	Ø14mm	Ø16mm	Ø16mm	Ø18mm	Ø16mm	Ø16mm Ø18mm		Ø18mm			
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)			
+2,0	71	118	84	132	57	90	40	60			
+1,5	66	110	78	123	53	83	35	55			
+1,0	61	102	72	114	49	77	32	50			
+0,5	55	94	66	105	44	70	30	48			
0	50	86	60	96	40	64	27	43			
-0,5	45	78	54	87	36	58	18	35			
-1,0	40	69	48	78	31	51	15	30			
-1,5	35	61	42	69	27	45	13	25			
-2,0	29	53	36	60	23	39	10	20			
-3,0	20	38	25	43	15	27	5	10			



Н	Difference in height pump-foot valve
	9 1 1
Ø	Internal pipe diameter
Р	Max. height 10 m
V	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

▶ note With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



VENTILATION

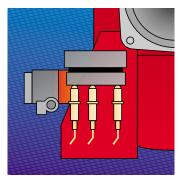
The ventilation circuit is provided with a forward blades centrifugal

fan, which guarantees high pressure levels at the required air deliveries and permits installation flexibility.

In spite of the remarkable output power and of the very high pressure performances, structures of PRESS models are extremely compact.

The use of sound proofing boxes help in reducing the noise level.

A variable profile cam connects fuel and air setting, ensuring fuel efficiency in all firing rates.



Example of three stage hydraulic ram



COMBUSTION HEAD

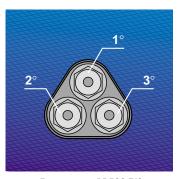
Two different lenghts of the combustion head can be chosen for the various models of the PRESS T/G series of burners.

The choice depends on the thickness of the front panel and the type of the boiler. Depending on the type of heat generator,

it is necessary to check the correct head penetration into the combustion chamber.

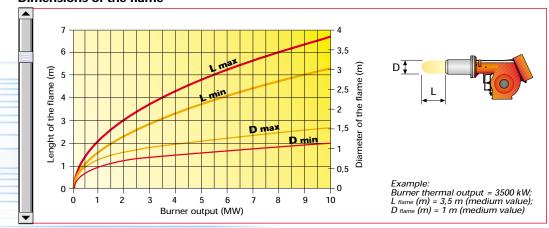
The internal position of the combustion head can easily be adjusted: refer to the burner instruction manual for the complete procedure.

The following diagram shows the flame dimensions in relation to the burner output. The length and diameter shown in the diagram below should be employed preliminary check: it is required a more careful investigation if combustion chamber dimensions are much different from the above reported values.



Example of a PRESS T/G burner combustion head

Dimensions of the flame



ADJUSTMENT

BURNER OPERATION MODE

With three stage operation, the PRESS T/G burners can follow the temperature load requested by the system.

A ratio between maximum and minimum working output of 3:1 is reached, thank to a three-hydraulic ram system: the air delivery is proportional to required output.

On three stage operation, the burner gradually adjusts output to the requested level, by varying between the three pre-set levels (see figure A).

Three stage operation

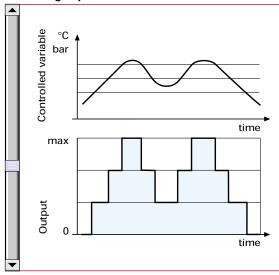
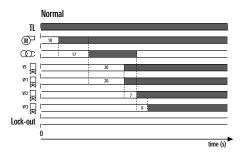


Figure A

In the table below operation, maximum output and fuel deliveries of the burners are shown.

Model	Stage	Max output (kW)	Max delivery (kg/h)	
	1st	545	46	
▶ P 140 T/G	2 nd	1103	93	
	3 rd	1660	140	
	1 st	794	67	
▶ P 200 T/G	2 nd	1576	133	
	3 rd	2372	200	
	1 st	1186	100	
▶ P 300 T/G	2 nd	2372	200	
	3 rd	3558	300	
	1 st	1780	150	
▶ P 450 T/G	2 nd	3560	300	
	3 rd	5340	450	

IGNITION



Start up procedure is referred to a three stage operation

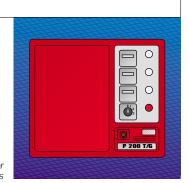
- 0s The burner begins the start-up cycle: thermostat TL closes.
- 10s The motor starts turning.
- 27s Ignition transformer turns on.
- 47s Solenoid security valve VS and 1st stage valve VF1 open: 1st stage flame. The 1st stage air damper is open.
- 52s Lock out takes place if flame is not revealed by the photoresistance.
- Ignition transformer switchwes off. 2nd stage solenoid valve VF2 opens: the pressure to the hydraulic ram raises and opens the 2nd stage air damper.
- 3^{rd} stage solenoid valve VF3 opens: the pressure to the hydraulic ram raises and opens the 3^{rd} stage air damper.





ELECTRICAL CONNECTIONS to be made by the installer

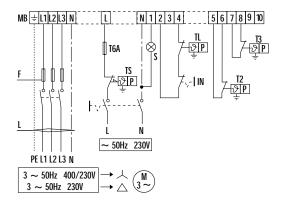
Electrical connections must be made by qualified and skilled personnel, according to the local norms.



Example of control panel for P 200 T/G models

"THREE STAGE" OPERATION

Direct start-up version P 140-200-300 T/G



IN - Burner manual stop switch
MA - Star-delta starter terminal strip

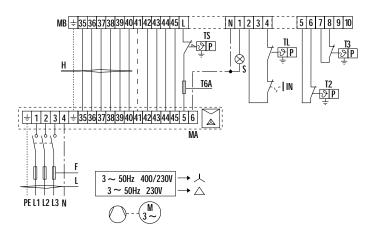
MB - Burner terminal strip
S - Remote lock-out signal
TL - Load limit remote control system:
shut down the burner when the boiler temperature or pressure reaches the maximum preset value

TS - Safety load control system: operateds when TL is faulty

T2 - 2 nd stage load control system

T3 - 3 nd stage load control system

Star delta start-up version P 300-450 T/G



IN - Burner manual stop switch

MA - Star-delta starter terminal strip
MB - Burner terminal strip
S - Remote lock-out signal
TL - Load limit remote control system: shut down the burner when the boiler temperature or pressure reaches the

remperature of pressure reach maximum preset value

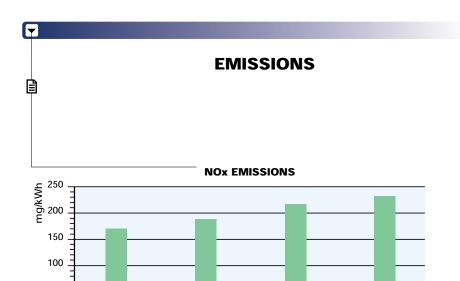
TS - Safety load control system: operateds when TL is faulty

T2 - 2 nd stage load control system

T3 - 3 rd stage load control system

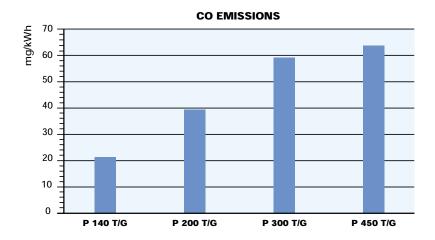
The following table shows the supply lead sections and the type of fuse to be used.

				Dir	ect		Star	delta			
Model ▼ P 140		10 T/G	▼ P 20	00 T/G	▼ P 300 T/G		▼ P 300 T/G		▼ P 450 T/G		
		230V	400V	230V	400V	230V	400V	230V	400V	230V	400V
F	Α	T25	T25	T35	T25	T63	T50	T50	T35	T63	T50
L	mm ²	2,5	2,5	4	2,5	6	4	6	4	10	6
Н	mm ²	-	-	-	-	-	-	4	2,5	6	4



P 140 T/G

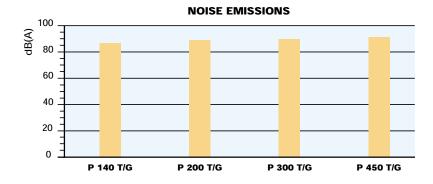




P 200 T/G

P 300 T/G

P 450 T/G



The emission data has been measured in the various models at maximum output, according to EN 267 standard.

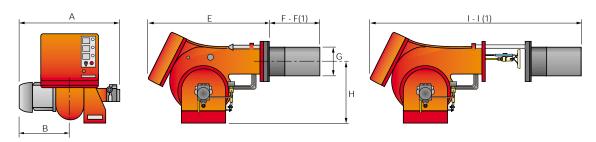






OVERALL DIMENSIONS (mm)

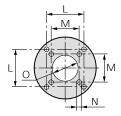
BURNERS



Model	А	В	Е	F - F(1)	G	Н	I - I (1)
▶ P 140 T/G	765	365	890	363 - 473	222	467	1250 - 1360
▶ P 200 T/G	796	396	890	391 - 501	250	467	1280 - 1390
▶ P 300 T/G	858	447	1000	444 - 574	295	496	1440 - 1570
▶ P 450 T/G	950	508	1070	476 - 606	336	525	1546 - 1676

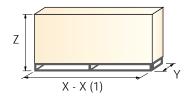
(1) dimension with extended head

BURNER - BOILER MOUNTING FLANGE



Model	L	М	NØ	0
▶ P 140 T/G	260	230	M14	225
▶ P 200 T/G	260	-	M16	255
▶ P 300 T/G	260	-	M18	300
▶ P 450 T/G	310	-	M20	340

PACKAGING



Model	X - X (1)	Υ	Z	kg
▶ P 140 T/G	1500	930	905	130
▶ P 200 T/G	1500	930	905	220
▶ P 300 T/G	1780	1085	990	238
▶ P 450 T/G	1780	1085	990	300

(1) dimension with extended head



INSTALLATION DESCRIPTION





Installation, start-up and maintenance must be carried out by qualified and skilled personnel.

All operations must be performed in accordance with the technical handbook supplied to the burner.

FIXING THE BURNER TO THE BOILER AND INITIAL SETTING

- ▶ All the burners have slide bars, for easier installation and maintenance.
- ▶ After removing the cover, the split pin and the pin, the nuts and the screws, dismantle the blast tube form the burner of approximatively 100-120mm and fix it to the boiler.
- Adjust the combustion head.
- Refit the burner casing to the slide bars.
- ▶ Install the nozzles, choosing it on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- ▶ Close the burner, fasten the screws, the nuts, the split pin and the pin.

HYDRAULIC AND ELECTRICAL CONNECTIONS AND START-UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- ▶ Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- ▶ Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- ▶ Prime the pump by turning the motor (after checking rotation direction if it is a three phase motor).
- On start up, check:
 - Pressure pump and valve unit regulator (to max. and min.)
 - Combustion quality, in terms of unburned substances and excess air.





ACCESSORIES

Nozzles

The nozzles are part of the standard equipment. The following table shows the features and codes on the basis of the required output. For the choice of the three related nozzles, refer to the burner handbook.

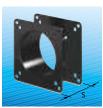


Nozzle	e without needle - 60° B	
Burner	Rated output GPH	Nozzle code
P 140 T/G	3,5	3042162
P 140 T/G	4	3042172
P 140 T/G	4,5	3042182
P 140 T/G - P 200 T/G	5	3042192
P 140 T/G - P 200 T/G	6	3042212
P 140 T/G - P 200 T/G	6,5	3042222
P 140 T/G - P 200 T/G	7	3042232
P 140 T/G - P 200 T/G	7,5	3042242
P 140 T/G - P 200 T/G	8	3042252
P 140 T/G - P 200 T/G	8,5	3042262
P 140 T/G - P 200 T/G	9	3042586
P 140 T/G - P 200 T/G	9,5	3042282
P 140 T/G - P 200 T/G	10	3042292
P 140 T/G - P 200 T/G	11	3042312
P 200 T/G	12	3042322
P 200 T/G	13	3042332
P 200 T/G - P 300 T/G	14	3042352
P 200 T/G - P 300 T/G	15	3042362
P 300 T/G	16	3042382
P 300 T/G	17	3042392
P 300 T/G - P 400 T/G	18	3042412
P 300 T/G - P 400 T/G	19	3042422
P 300 T/G - P 400 T/G	20	3042442
P 300 T/G - P 400 T/G	22	3042262
P 300 T/G - P 400 T/G	24	3042472
P 450 T/G	26	3042482
P 450 T/G	28	3042492
P 450 T/G	30	3042502
P 450 T/G	32	3042512
P 450 T/G	35	3042522



Spacers

If burner head penetration in the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table.



Spac	ers to make the combustion head sh	norter
Burner	Spacer thickness S (mm)	Spacer code
P 140 T/G	110	3000722
P 200 T/G	110	3000722
P 300 T/G	130	3000723
P 450 T/G	130	3000751

Sound proofing box

If noise emissions need reducing, sound proofing hoods are available, as given in the following table.



Soun	d proofing hood	
Burner	Box type	Box code
P 140 P/G - P 200 P/G	C5	3000780
P 300 P/G - P 450 P/G	C6	3000781

Burner support

For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.



Support	
Burner	Support code
P 300 P/G - P 450 P/G	3000731

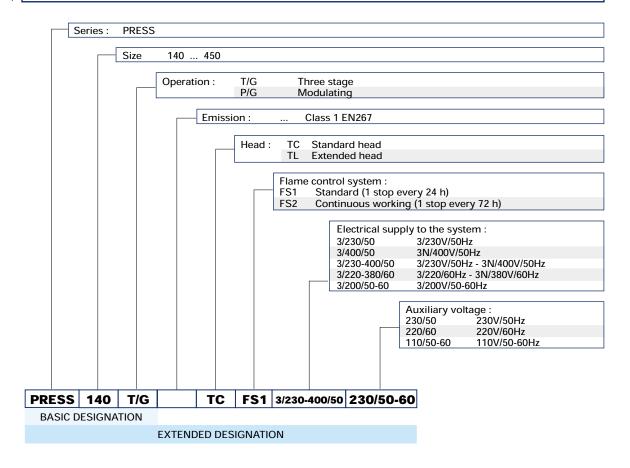




SPECIFICATION

A specific index guides your choice of burner from the various models available in the PRESS series. Below there is a clear and detailed specification description of the product.

DESIGNATION OF SERIES



AVAILABLE BURNER MODELS

P P		TC TI	3/230-400/50 3/230-400/50	230/50 230/50	F	300	T/G T/G	TL TC	3/230/50 3/400/50	230/50 230/50
D	200 T/G	TC	3/230-400/50	230/50	Ė	300		ŤĽ	3/400/50	230/50
-	200 T/G	ŤĽ	3/230-400/50	230/50	F	450	T/G	TC	3/230/50	230/50
P	300 T/G	TC	3/230-400/50	230/50	Ē			TL	3/230/50	230/50
P		TL	3/230-400/50	230/50		9 450 9 450		TC TL	3/400/50 3/400/50	230/50 230/50
Р	300 T/G	TC	3/230/50	230/50						

Other models are available on request.





SPECIFICATION DESCRIPTION

Burner

Monoblock forced draught oil burner with three stage setting, with a specific kit, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Fan with forward curved blades high performance pressure levels
- Air dampers for air setting controlled by a three hydraulic ram
- Starting motor at 2850 rpm, three-phase 400 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of the combustion output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuometer
 - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit;
- Triple hydraulic ram for air dampers control;
- Photocell for flame detection
- Flame control panel, fitted with a 4 positions commutator for start-up procedure and three nozzles hourcounters
- Burner on/off switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 40 electric protection level.

Conforming to:

- 89/336/EC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- 4 wiring looms fittings for electrical connections
- 4 screws for fixing the burner flange to the boiler
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue
- 2 slide bar extensions (for the extended head models of P 300 T/G and P 450 T/G)
- 3 nozzles
- Gasket for flange
- Starter (*)
- Diffuser disk (P 450 T/G).
- (*) For versions with star-delta starting.

Available accessories to be ordered separately:

- Nozzles
- Head lenght reduction kit (spacer)
- Sound-proofing box
- Burner support.







RIELLO S.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

Internet: http://www.rielloburners.com - E-mail: rburners@rielloburners.com

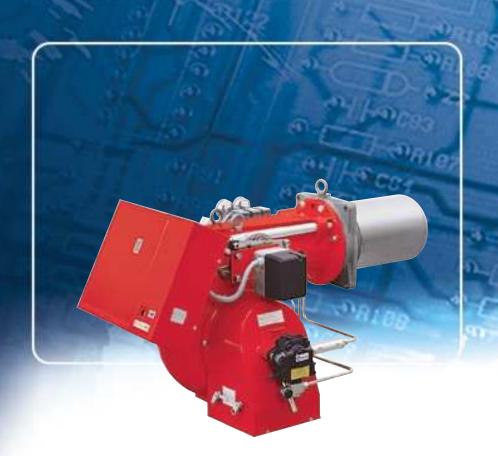


MODULATING LIGHT OIL BURNERS

▶ PRESS P/G SERIES ▶ P 140 P/G 415 ÷ 1660 kW

▶ **P 200 P/G** 590 ÷ 2370 kW ▶ **P 300 P/G** 890 ÷ 3560 kW

P 450 P/G 1190 ÷ 5340 kW



The PRESS P/G series of burners cover a firing range from 415 to 5340 kW. Setting can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator and respective probes, which guarantees a turn down ratio of 3:1. The versatility of this range makes the burner well suited for use on commercial or industrial applications where the load factor is subject to wide variations over a short period of time. Simplified maintenance is achieved by the Riello designed slide bar system, which allows easy access to all of the essential components of the combustion head.



TECHNICAL DATA

Model			▼ P 140 P/G	▼ P 200 P/G	▼ P 300 P/G	▼ P 450 P/G			
Setting	type		Modulating	(with regulator and probes		progressive			
Modula	tion ratio to ma	ax. output	3 ÷ 1						
Servo-	type			SQN	l 10				
motor	run time	s		42					
Heat ou	tnut	kW	415/830÷1660	590/1185÷2370	890/1780÷3560	1190/2670÷5340			
i ieat ou	Heat output Mcal/h		357/714÷1428	507/1019÷2038	765/1531÷3062	1023/2296÷4592			
Workin	g temperature	°C min./max.		0/4	10				
NCV Lig	-ha Oil	kcal/kg		102	00				
INCA TIÉ	jnt Oii	MJ/kg		42,	7				
Viscosit	y at 20°C	mm²/s (cSt)		4 ÷	6				
Light oi	l delivery	kg/h	35/70÷140	50/100÷200	75/150÷300	100/225÷450			
Duren	type		SUNTEC TA2	SUNTEC TA3	SUNTEC TA4	SUNTEC TA5			
Pump	delivery	kg/h at 25 bar	330	520	700	880			
Atomis	ed pressure	bar		25	•				
Fuel ter	nperature	Max. °C		50					
Fan		type	Centrifugal						
Air tem	perature	Max. °C	60						
	al supply	Ph/Hz/V	3N/50/400-230 (+10% -15%) 人 or 3/50/230 (+10% -15%) △						
Electrical p	ower consumption	Max. kW	4,5	5,5	10	15			
	al motor	kW	3	4	7,5	12			
Motor s	tart current	A	51/86	48/83	113/195	151/261			
	unning current	Α	8/13,5	9,5/16,4	17,5/30	26/45			
	ectrical protection	IP	,						
	electrical supply	Ph/Hz/V		1/50/230	(±10%)				
	Auxiliary electrical power kW		1,5	1,5	2,5	3			
	al protection	IP	.,0	40	· ·				
Control	•	type		LANDIS I					
Ignition		V1 - V2	230 V - 2x6 kV						
transfo		l1 - l2		2,3 A - :					
Operati	on			Interm					
	oressure	dB (A)	86,5	85,5	89.5	90			
Sound		w	00,0		00/0	00			
		mg/kWh		< 3	5				
CO emission mg/kWh Grade of smoke indicator N° Bacharach				< 0					
C _X H _V e		mg/Nm³		< 8 (after the fir	•				
,	nission level	mg/kWh	< 200	< 200	< 200	< 220			
Directiv		mg/RWII		336 - 73/23 - 92/42 - 98/37 E	. =	89/336 - 73/23 - 98/37 EI			
Accordi			09/.	prEN		03/330 - 73/23 - 30/37 EI			
Account	ng to			piciv					

Reference conditions: Ambient temperature: 20°C Barometric pressure: 1000 mbar Altitude: 100 meters a.s.l.

Sound pressure level measured in manufacturers combustion laboratory, with burner operating on test boiler and at maximum rated output.



Useful working field for choosing the burner

Modulation range

Test conditions conforming to EN 267: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.







FUEL SUPPLY

HYDRAULIC CIRCUITS

Various hydraulic circuit are available, depending on fuel output asset according to local norms of steam generators.

The burners are fitted with two valves (a safety valve and an operation valve) and an oil filter along the oil line from the pump to the nozzle.

A pressure regulator on the return circuit from the nozzle allows to vary the quantity of fuel burnt.

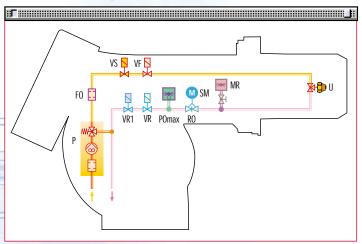
A double safety valve on the return circuit avoids oil leakage from the nozzle when the burner is in stand-by and prepurge phase.

The models are fitted with a maximum pressure switch on the oil return circuit.



Example of the hydraulic circuit on PRESS 200 P/G

prEN 267 > 100 Kg/h



Р	Pump with filter and pressure regulator on the output circuit
FO	Oil filter
VS	Safety valve on the output circuit
VF	Working valve on the output circuit
U	Nozzle
MR	Pressure gauge on the return circuit
SM	Servomotor
RO	Pressure regulator on the return circuit
PO max	Max. Oil pressure switch on the return circuit
VR	1st safety valve on the return circuit
VR1	2nd safety valve on the return circuit

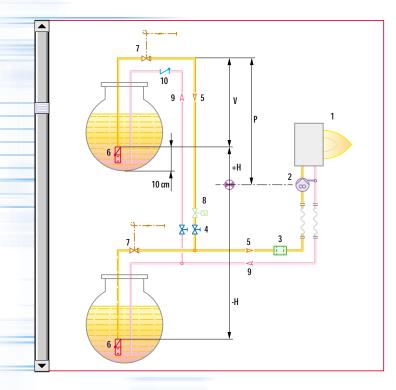


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

	MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]							
Model	▼ P 140 P/G		▼ P 200 P/G		▼ P 30	▼ P 300 P/G		0 P/G
Diameter piping	Ø14mm	Ø16mm	Ø16mm	Ø18mm	Ø1/2"	Ø 3/4"	Ø 3/4"	Ø1"
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)
+2,0	50	70	40	60	25	85	55	130
+1,5	45	65	35	55	23	80	50	120
+1,0	40	60	30	50	20	70	45	110
+0,5	35	50	25	45	18	65	40	100
0	30	45	20	40	15	60	35	90
-0,5	25	40	18	35	12	50	30	80
-1,0	20	35	15	30	10	45	25	70
-1,5	15	30	13	25	8	35	20	60
-2,0	10	25	10	20	5	30	15	45
-3,0	5	15	5	10	3	15	10	25



Н	Difference in height pump-foot valve
Ø	Internal pipe diameter
Р	Max. height 10 m
٧	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

▶ note With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



VENTILATION



The ventilation circuit is provided with a forward blades centrifugal

fan, which guarantees high pressure levels at the required air deliveries and permits installation flexibility.

In spite of the remarkable output power and of the very high pressure performances, structures of PRESS models are extremely compact.

The use of sound proofing boxes help in reducing the noise level.

A variable profile cam connects fuel and air setting, ensuring fuel efficiency in all firing rates.



Example of servomotor for air/light oil setting

COMBUSTION HEAD

Two different lenghts of the combustion head can be chosen for the various models of the PRESS P/G series of burners.

The choice depends on the thickness of the front panel and the type of the boiler.

Depending on the type of heat generator, it is necessary to check the correct head penetration into the combustion chamber.

These burners are equipped with a variable geometry combustion head. The chance to control air speed in combustion head is essential to gain the full advantage of a modulating burner. This function allows optimum combustion performance throught the working field, ensuring peak combustion efficiency thus saving on fuel consumption.

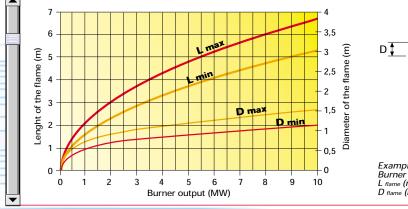
The following diagram shows the flame dimensions in relation to the burner output. The length and diameter shown in the diagram below should be employed

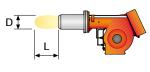


Example of a PRESS P/G burner combustion head

for a preliminary check: it is required a more careful investigation if combustion chamber dimensions are much different from the above reported values.

Dimensions of the flame





Example: Burner thermal output = 3500 kW; L flame (m) = 3,5 m (medium value); D flame (m) = 1 m (medium value)

ADJUSTMENT





The PRESS P/G series of burners can have "two-stage progressive" or "modulating" operation.

On "two-stage progressive" operation, the burner gradually adapts the output to the requested level, by varying between two pre-set levels (see figure A).

" Two-stage progressive" operation

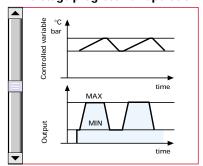
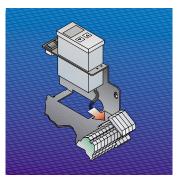


Figure A



Example of a regulator

On "modulating" operation, normally required in steam generators, in superheater boilers or diathermic oil burners, a specific regulator and probes are required. These are supplied as accessories that must be ordered separately. The burner can work for long periods at intermediate output levels (see figure B).

" Modulating" operation

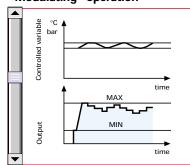
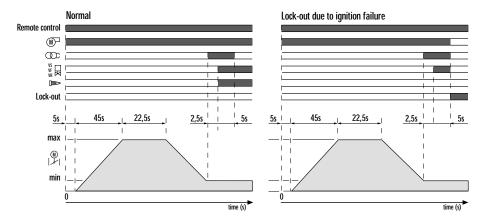


Figure B

FIRING



0" The burner begins the start-up cycle: the motor starts turning. 5"-50" The servomotor opens the air damper at the maximum position. 50"-72,5" Pre-purge phase with air damper open.

72,5"-92,5" The servomotor takes the air damper to the ignition position.

92,5" Ignition transformer turns on.

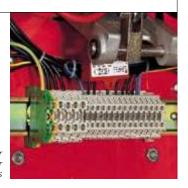
95" Oil solenoid valves open and flame detection with P.E. cell is activated. 100" After a safety time of 7,5" the ignition transformer turns off if there is the flame, otherwise lock-out happens.





ELECTRICAL CONNECTIONS to be made by the installer

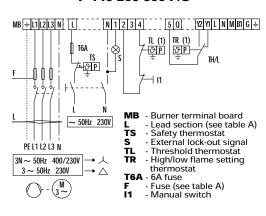
Electrical connections must be made by qualified and skilled personnel, according to the local norms.



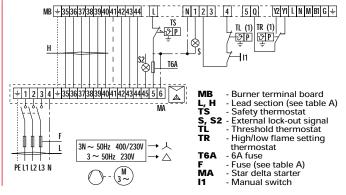
Example of the terminal board for electrical connections for P 140-200-300-450 P/G models

"TWO-STAGE PROGRESSIVE" OPERATION

Direct start-up version P 140-200-300 P/G

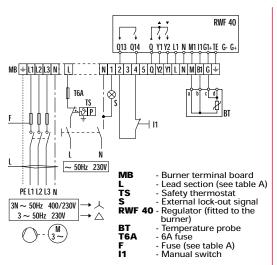


Star delta start-up version P 300-450 P/G

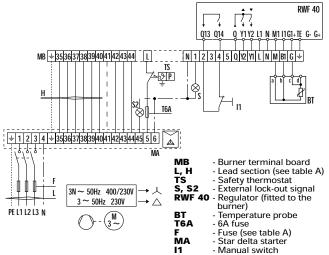


" MODULATING" OPERATION - temperature probe

Direct start-up version P 140-200-300 P/G

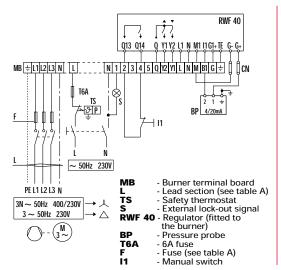


Star delta start-up version P 300-450 P/G

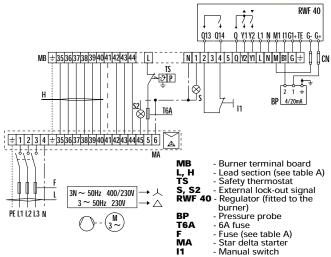


" MODULATING" OPERATION - pressure probe

Direct start-up version P 140-200-300 P/G



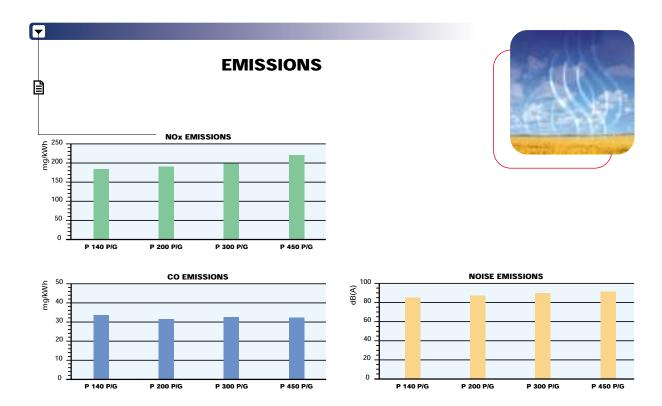
Star delta start-up version P 300-450 P/G



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

			Direct					Star delta			
Mc	del ▼ P 140 P/G		▼ P 200 P/G		▼ P 300 P/G		▼ P 300 P/G		▼ P 450 P/G		
		230V	400V	230V	400V	230V	400V	230V	400V	230V	400V
F	Α	T25	T25	T35	T25	T63	T50	T50	T35	T63	T50
L	mm ²	2,5	2,5	4	2,5	6	4	6	4	10	6
Н	mm ²	-	-	-	-	-	-	4	2,5	6	4

Table A



The emission data has been measured in the various models at maximum output, according to EN 267 standard.

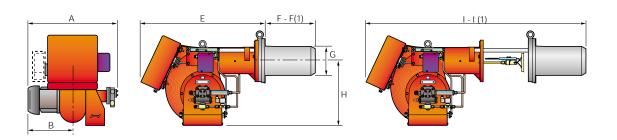






OVERALL DIMENSIONS (mm)

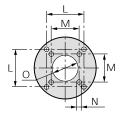
BURNERS



Model	Α	В	E	F - F (1)	G	Н	I - I (1)
▶ P 140 P/G	765	365	890	363 - 473	222	467	1250 - 1360
▶ P 200 P/G	796	396	890	391 - 501	250	467	1280 - 1390
▶ P 300 P/G	858	447	1000	444 - 574	295	496	1440 - 1570
▶ P 450 P/G	950	508	1070	476 - 606	336	525	1546 - 1676

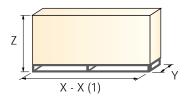
(1) dimension with extended head

BURNER - BOILER MOUNTING FLANGE



Model	L	М	NØ	0
▶ P 140 P/G	260	230	M14	225
▶ P 200 P/G	260	-	M16	255
▶ P 300 P/G	260	-	M18	300
▶ P 450 P/G	310	-	M20	340

PACKAGING



Model	X - X (1)	Υ	Z	kg
▶ P 140 P/G	1500	930	905	130
▶ P 200 P/G	1500	930	905	220
▶ P 300 P/G	1780	1085	990	238
P 450 P/G	1780	1085	990	300

(1) dimension with extended head

The values are indicatives.



INSTALLATION DESCRIPTION



Installation, start-up and maintenance must be carried out by qualified and skilled personnel.

All operations must be performed in accordance with the technical handbook supplied to the burner.



BURNER SETTINGS

- ▶ All the burners have slide bars, for easier installation and maintenance.
- ▶ After removing the cover, the split pin and the pin, the nuts and the screws, dismantle the blast tube form the burner of approximatively 100-120mm and fix it to the boiler.
- Adjust the combustion head.
- ▶ Refit the burner casing to the slide bars.
- Install the nozzle, choosing it on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- ▶ Close the burner, fasten the screws, the nuts, the split pin and the pin.

HYDRAULIC AND ELECTRICAL CONNECTIONS AND START-UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- ▶ Prime the pump by turning the motor (after checking rotation direction if it is a three phase motor).
- On start up, check:
- Pressure pump and valve unit regulator (to max. and min.)
- Combustion quality, in terms of unburned substances and excess air.





ACCESSORIES



Return nozzles

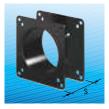
The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required output.



	Nozzle type B3 45°						
Burner	Rated output kg/h	Nozzle code					
P 140 P/G	70	3009713					
P 140 P/G	80	3009715					
P 140 P/G	90	3009717					
P 140 P/G - P 200 P/G	100	3009720					
P 140 P/G - P 200 P/G	125	3009723					
P 200 P/G - P 300 P/G	150	3009726					
P 200 P/G - P 300 P/G	175	3009729					
P 200 P/G - P 300 P/G	200	3009732					
P 300 P/G - P 400 P/G	225	3009735					
P 300 P/G - P 400 P/G	250	3009738					
P 300 P/G - P 400 P/G	275	3009742					
P 300 P/G - P 400 P/G	300	3009744					
P 450 P/G	325	3009747					
P 450 P/G	350	3009750					
P 450 P/G	375	3009753					
P 450 P/G	400	3009756					
P 450 P/G	425	3009759					
P 450 P/G	450	3009762					

Spacers kit

If burner head penetration in the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table.



Spacers to make the combustion head shorter						
Burner	Spacer thickness S (mm)	Kit code				
P 140 P/G	110	3000722				
P 200 P/G	110	3000722				
P 300 P/G	130	3000723				
P 450 P/G	130	3000751				

Sound proofing box

If noise emissions need reducing, sound proofing hoods are available, as given in the following table.



Sound proofing hood					
Burner	Box type	Box code			
P 140 P/G - P 200 P/G	C5	3000780			
P 300 P/G - P 450 P/G	C6	3000781			



Accessories for modulating operation

To obtain modulating operation, the PRESS P/G series of burners require a regulator, with three point outlet control. The relative temperature or pressure probes fitted with the regulator must be chosen on the basis of the application.

The following table lists the accessories for modulating setting with their application range.



REGULATOR		PROBES				
Туре	Code	Туре	Range	Code		
RWF 40	3010212	Temperature PT 100	-100 ÷ 500°C	3010110		
		Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213		
		Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214		

Depending on the servomotor fitted to the burner, a three-pole potentiometer (0÷1000 W) can be installed to check the servomotor position. The kits available for the various burners are listed below:



Potentiometer kit	
Burner	Kit code
P 140 P/G - P 200 P/G - P 300 P/G - P 450 P/G	3010021

Burner support

For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.



Support	
Burner	Code
P 300 P/G - P 450 P/G	3000731

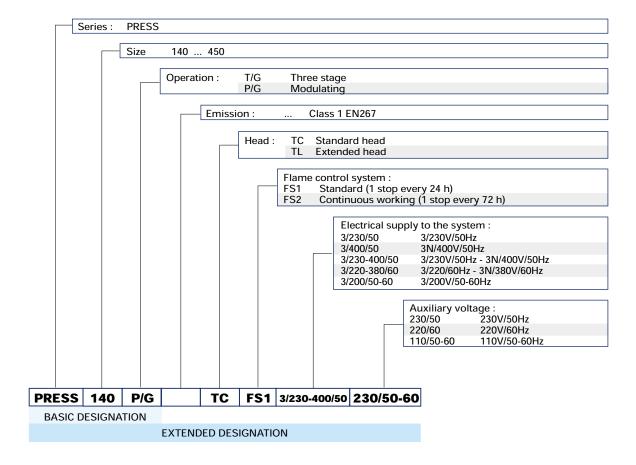




SPECIFICATION

A specific index guides your choice of burner from the various models available in the PRESS P/G series. Below there is a clear and detailed specification description of the product.

DESIGNATION OF SERIES PRESS LIGHT OIL BURNERS



LIST OF AVAILABLE MODELS

P 140 P/G P 140 P/G	TC TL	3/230-400/50 3/230-400/50	230/50 230/50	i	P 300 P/G P 300 P/G	TL TC	3/230/50 3/400/50	230/50 230/50
P 200 P/G P 200 P/G	TC TI	3/230-400/50 3/230-400/50	230/50	•	P 300 P/G	TL	3/400/50	230/50
			230/50	F	P 450 P/G P 450 P/G	TC TL	3/230/50 3/230/50	230/50 230/50
P 300 P/G P 300 P/G P 300 P/G	TC TL TC	3/230-400/50 3/230-400/50 3/230/50	230/50 230/50 230/50		P 450 P/G P 450 P/G	TC TL	3/400/50 3/400/50	230/50 230/50

Other models are available on request.





PRODUCT SPECIFICATION

Burner:

Monoblock forced draught oil burner with two-stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Air suction circuit
- Fan with forward curved blades high performance pressure levels
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Starting motor at 2850rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of the combustion output, fitted with:
 - Stainless steel end cone, resistant to corrosion and high temperatures
 - Ignition electrodes
 - Flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
 - Filter
 - Pressure regulator
 - Connections for installing a pressure gauge and vacuometer
 - Internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit and double safety valve on the return circuit
- Safey oil pressure switch for stop the burner in the case of problems on return circuit
- Photocell for flame detection
- Flame control panel, fitted with control function for the correct positioning of the servomotor and possibility of post-ventilaton
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 40 electric protection level.

According to:

- 89/336/EC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- wiring looms fittings for electrcial connections
- 4 screws for fixing the burner flange to the boiler
- instruction handbook for installation, use and maintenance
- spare parts catalogue
- 2 slide bar extensions (for the extended head models of P 300 P/G e P 450 P/G).

Available accessories to be ordered separately:

- return nozzles
- head lenght reduction kit (spacer)
- sound-proofing box
- RWF 40 output regulator
- pressure probe 0 2,4 bar
- pressure probe 0 16 bar
- temperature probe -100 500 °C
- potentiometer kit for the servomotor
- burner support.







RIELLO S.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

Internet: http://www.rielloburners.com - E-mail: rburners@rielloburners.com



CE

MODULATING LIGHT OIL BURNERS

► MODUBLOC MB LE SERIES ► MB 4 LE 1070 ÷ 4092 kW

▶ MB 6 LE 1186 ÷ 6000 kW **▶ MB 8 LE** 1500 ÷ 8000 kW

▶ **MB 10 LE** 2000 ÷ 10000 kW



The MODUBLOC MB LE series of burners are characterised by a monoblock structure that means all necessary components can be combined in a single unit, making installation easier and faster. The series covers a firing range from 1070 to 10000 kW, and they have been designed for use in hot water boilers or industrial steam generators.

Adjustment is modulating, through an innovative electronic module, which gives control of the air/fuel ratio and PID control of the generator temperature or pressure.

The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates

The burner can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.

An exclusive design, with fan unit fitted on line with the combustion head, quarantees low sound emissions, reduced dimensions, easy use and maintenance.

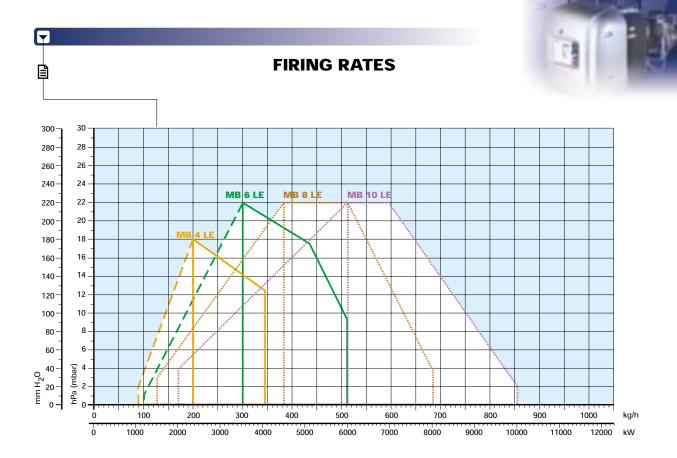


TECHNICAL DATA

Model			▼ MB 4 LE	▼ MB 6 LE	▼ MB 8 LE	▼ MB 10 LE				
Catting toma										
Setting type	atia at many Outmut		Modulating							
iviodulating ra	atio at max. Output			5 ÷						
Servomotor	Туре		MM 10004							
Run time		S	-		-	• 				
Heat		kW	1070/2375÷4092	1186/3558÷6000	1500/4500÷8000	2000/6000÷1000				
output		Mcal/h	920/2042÷3519	1020/3060÷5160	1290/3870÷6880	1720/5160÷8600				
		Kg/h	90/200÷345	100/300÷506	126/379÷675	169/506÷843				
Working tem	perature	°C min./max.		0/4	· -					
Net calorific v	value .	kWh/kg	11,8							
		Kcal/kg		102	00					
Viscosity at 2	0°C	mm ² /s (cSt)		4 ÷						
Pump	Туре		TA		VBH	IR G				
	Capacity	kg/h	1000 (2	25 bar)	1390 (3	30 bar)				
Atomised pre	ssure	bar		25	i					
Light oil temp	erature	Max. °C		50)					
Fan Type			Reverse curve blades							
Air temperatu	ire	Max. °C	60							
Electrical sup	ply	Ph/Hz/V	3N/50/230-400~(±10%)							
Auxiliary elec	trical supply	Ph/Hz/V	1/50/230							
Control box		Туре	LAL 2.25							
Total electrica	ıl power	kW	15	17	27,35	27,35				
Auxiliary elec	trical power	kW	0,55							
Protection lev	rel	IP	40							
Fan electric m	notor power	kW	11	13	22	22				
Rated fan mo	tor current	Α	38 - 22	46,7 - 27	67,5 - 39	67,5 - 39				
Fan motor sta	art current	Α	7,3 x I nom	7,6 x I nom	7,9 x 3	I nom				
Fan motor pro	otection level	IP		55	i					
Pump electric	motor power	kW	1,5							
Rated pump r	notor current	Α	6,4 -	3,7	11,4 - 6,6					
Pump motor	start current	Α	5 x I	nom	7 x I nom					
-	protection level	IP	55							
		V1 - V2	230V - 2x6 kV							
Ignition trans	former	l1 - l2		2,3A - 3						
Operation			Intermittent (at least one	stop every 24 hours) or Con		st one stop every 72 h				
•		dBA	82	85	8					
Sound output		w		-						
CO Emission		mg/kWh		<1	5					
Grade of smo	ke indicator	N° Bach.	<1							
C _x H _y Emission		mg/kWh		< 10 (after						
NOx Emission		mg/kWh		< 10 (alter	•					
Directive				73/23 - 89/336						
According to				73/23 - 69/330 EN 2						
ooo. amig to			DIN 5G 9		in progress					

Reference conditions:

Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 meters a.s.l. Noise measured at a distance of 1 meter.



Useful rate for the choice of the burner

Modulating rate

Firing rates in progress

Test conditions conforming to EN 267: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 meters a.s.l.



FUEL SUPPLY

HYDRAULIC CIRCUIT

The hydraulic circuit of the MB series of burners is characterised by a fuel pump with an independent motor.

The burners have two safety valves for the light oil, one on the delivery circuit and one on the return circuit; the use of a nozzle with shut-off needle gives even further safety.

A three way valve is associated to the actuator for opening and closing the nozzle needle, and a servo-driven pressure variator on the return circuit gives utmost precision to the amount of fuel burnt.

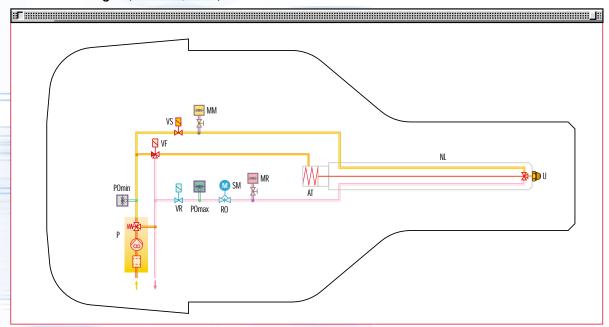
A minimum pressure switch on the oil delivery line means that the burners are suitable, from a hydraulic point of view, for use in steam generators that correspond to TRD 604 (Germany), NBN (Belgium) standards. For further information on MB burners series versions with "continuous operation" contact Riello Burners Technical Office.

Р	Pump with filter and pressure regulator						
PO min	Min. oil pressure switch on the delivery circuit						
VF	3 way operating valve						
VS	Safety valve on the delivery circuit						
MM	Pressure gauge on the delivery circuit						
NL	Nozzle pipe						
U	Nozzle						
AT	Actuator for opening and closing the nozzle needle						
MR	Pressure gauge on the return circuit						
SM	Servomotor						
RO	Pressure regulator on the return circuit						
PO max	Max. oil pressure switch on the return circuit						
VR	Safety valve on the return circuit						



Example of the MB 4 LE burner hydraulic circuit

EN 267 > 100 Kg/h (TRD 604, NBN)



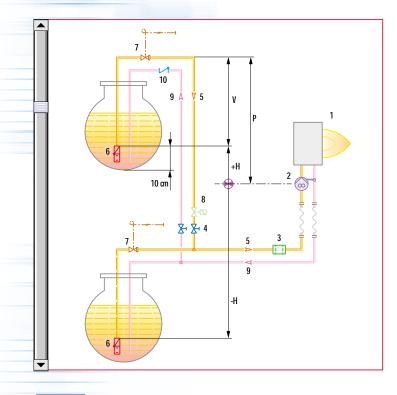


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]											
Model	▼ ME	3 4 LE	▼ MI	B 6 LE	▼ MB 8 LE	▼ MB 10 LE					
Piping diameter	G 3/4"	G1"	G 3/4" G1"								
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)							
+4,0	-	-	-	-	-	-					
+3,0	-	-	-		-	-					
+2,0	55	130	55	130	-	-					
+1,5	50	120	50	120	-	-					
+1,0	45	110	45	110	-	-					
+0,5	40	100	40	100	-	-					
0	35	90	35	90	-	-					
-0,5	30	80	30	80	-	-					
-1,0	25	70	25	70	-	-					
-1,5	20	60	20	60	-	-					
-2,0	15	45	15	45	-	-					
-3,0	10	25	10	25	-	-					
-4,0	-	-	-	-	-	-					



Н	Difference in height pump-foot valve
Ø	Internal pipe diameter
Р	Height ≤ 10 m
٧	Height ≤ 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shutoff valve (compulsory in Italy)
8	Type approved shut off solenoid (compulsory in Italy)
9	Return pipework
10	Check valve

note

with ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



VENTILATION

All the burners in the MB series are fitted with fans with reverse curve blades, which give

excellent performance and are fitted in line with the combustion head. The air flow and sound-deadening materials that are used in the construction are designed to reduce sound emissions to the minimum and guarantee high levels of performance in terms of output and air pressure.

A high precision servomotor, through the main management module installed on each burner of MB series, controls the air dampers position constantly, quaranteeing an optimal fuel-air mix.

On request, the Modubloc burners can be supplied



Example of the servomotor and dampers for air setting

with the "inverter" configuration, which means they are fitted with a device for varying the amount of combustion air through a variable speed action of the fan motor. The addition of the interface inverter module means the burner can work at reduced speed, with further benefits in terms of sound emissions, especially during the night when the perception threshold is lower.



COMBUSTION HEAD

Simple adjustment of the combustion head allows to adapt internal geometry of the head to

the output of the burner.

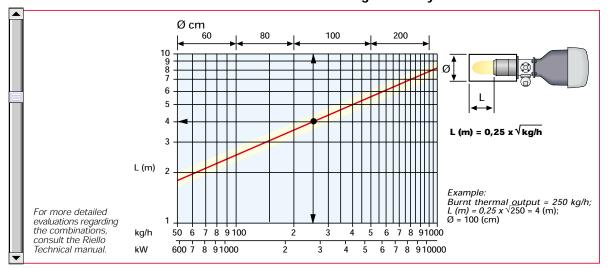
The same adjustment servomotor for the air damper also varies, depending on the required output, the setting of the combustion head, through a simple lever.

This system guarantees excellent mix on all firing rates range.



Example of a MODUBLOC MB LE burner combustion head

Dimensions of the combustion chambers used in the testing laboratory



SETTING



Each MB series burner has a main electronic microprocessor management panel, which controls both the fuel flow servomotor (with a pressure regulator) and air flow servomotor (with air dampers).

Hysteresis is prevented by the precise control of the two servomotors and the software link. The high precision regulation is due to the absence of mechanical



Main management module

clearance normally found in mechanical regulation cams on traditional modulating burners.

Inside each MB series burner main electronic microprocessor management panel, there is a PID regulator to control the boiler temperature or pressure . Variables can be controlled by specific accessory probes (see paragraph "Accessories).

The burner can run for a long time on intermediate output settings (see fig. A)

The main electronic management panel shows all operational parameters in real time, so as to keep a constant check on the burner:

- servomotor angle
- required set-point and actual set-point
- fuel consumption (measured indirectly)
- smoke and environmental temperature (with EGA module)
- CO₂, CO, O₂, NO e SO₂ value (with EGA module)
- burner stage

"Modulating" setting

Checked Variable of part of part

Figure A

The main electronic management panel operations can be increased by installing accessory modules as illustrated below. For available module codes see "Accessories".

Special software can be loaded into a portable PC to input and download data through an interface cable to an infrared device on the front panel of the MB series burner.

This is useful both during burner start-up and commissioning phases, and maintenance.





D.T.I. Module

D.T.I. module (Data Transfer interface)

This electronic module can transfer multiple signals from different local modules to a BMS supervisor software system (Building Management System).

Examples of local modules:

- main management module on each MB series burner which sends and receives signals to indicate or modify the burner working stage
- modules which send and receive signals from the various devices in the boiler room and system.
- e.g. analog modules I/O
 - digital modules /O
 - EGA modules

(For further information see relative paragraph)

Up to ten MB series burners, with or without the EGA module, ten analog modules I/O and ten digital modules I/O can be linked up.

The DTI module uses MODUBUS interface protocol as a standard protocol to external supervisory systems (a type of field bus widely used in industrial communication systems).

This type of protocol is used when sample signal rates which need checking are low e.g. for temperature, pressure or pump and fan systems.

With special electronic interface boards other communication protocols (e.g. PROFIBUS) can be used.

DTI module information is transferred directly or by modem to supervisory systems by RS 232 or RS 422 (in the case of long distance up to 1 km) connections.

The supervisory system can also manage a series of MB burners installed in the same system; each main electronic management panel comes with the software needed to manage such a series of burners.



Digital I/O Module

Digital I/O Module

Digital modules I/O transfer in-coming and out-going information such as working stages and alarms, from the boiler room or from the system in general where one or more MB series burners are installed to a remote supervisor system.

Digital modules I/O manage both input and output signals, e.g.:

- n. 16 input signals (free contacts max. current 1 A)
- n. 8 output signals (free contacts max. current 1 A)

The out-going signals can control any device in the boiler room, e.g. pumps, fans, etc...

The in-coming signals can check any device in the boiler room, e.g. pumps, fans, etc... and receive warning signals such as over heating, excess pressure.

Up to ten I/O digital modules can be linked together. Fig. C shows an example of sequencing I/O digital modules linked to a remote supervisor system by a DTI interface.





Analogic I/O Module

Analog I/O module

I/O Analog modules transfer in-coming and out-going information about burner working stages and other devices in the boiler room or in the system in general where one or more MB series burners are installed to a remote supervisor system.

I/O Analog modules manage both input and output signals, such as 4-20 mA or 0-10 Volt, e.g.:

- n. 6 input signals
- n. 6 output signals

These modules can be connected to the remote supervisor system in two different ways:

- "LOW LEVEL" connection

each I/O analog module transmits information from a single burner to a remote supervisor system using 4-20 mA or 0-10 Volt signals, e.g.

boiler temperature/pressure, output level, boiler set-point, servomotor angle position, etc. The system becomes operational when each single I/O analog module is programmed by a portable PC and appropriate software.

The set point can be modified by a single in-coming 4–20 mA or 0-10 Volt signal from the supervisor system.

Here is an example of a "LOW LEVEL" connection between I/O analogue modules and remote supervisor system. (figure B)

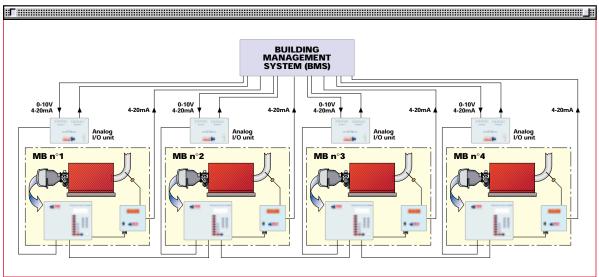


Figure B - " LOW LEVEL" connection

- " HIGH LEVEL" connection

each I/O analog module transmits in-coming and out-going information about boiler room temperature/pressure, pump rpm, set point, to a remote supervisor system using 4-20 mA or 0-10 Volt signals, through DTI interface.

Up to ten I/O digital modules can be linked together.



Here is an example of an "HIGH LEVEL" connection between I/O analogue modules and remote supervisor system. (figure C)

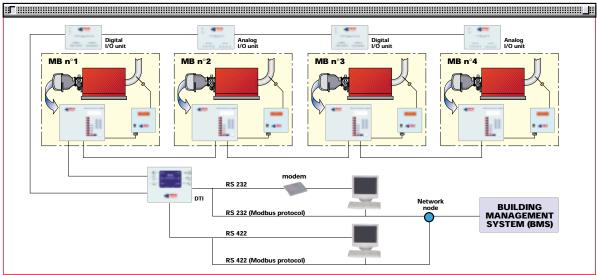


Figure C - " HIGH LEVEL" connection



E.G.A. Module

E.G.A. module (Exhaust Gas Analyser)

EGA modules measure some of the exhaust gas substances. These modules come with an exhaust gas sampler probe and exhaust gas temperature probe (0-400 °C).

Four different EGA modules are available depending on the type of substance to be checked. (For further information see "accessories" paragraph).

Thanks to EGA module connected to the main electronic microprocessor management panel on each MB series burner, the burner can adjust its working parameters on the basis of continuous combustion gas analysis.

The EGA module creates a closed control link which increases efficiency by up to max 5%.

The following functions are also available:

- smoke and environmental temperature measurement
- viewing of measured parameters on main management display panel
- burner lock-out when some parameters exceed permitted levels (settable)
- combustion optimisation with automatic air damper setting (adjustment O2 level)
- automatic re-adjustment at each firing

The information from EGA modules can be sent to a remote supervisor system in two ways:

- through six signals (4-20mA) on a terminal board (see layout fig. B)
 To activate this operation each single EGA module must be programmed using a PC with appropriate software.
- through the DTI interface module (see layout fig. C)

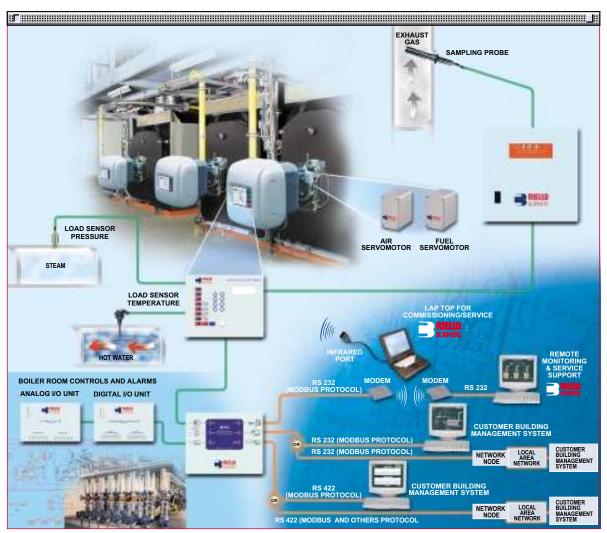
Connections between Modules

A data cable type BELDEN 9501 or similar, which can be ordered as an accessory (see accessories paragraph), must be used to connect the above modules.





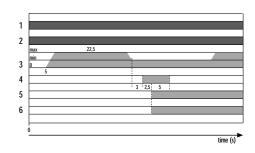
The following diagram summarises how MB series burners and modules can be used for the supervision of boiler rooms or systems in general.



Example of boiler room management system

IGNITION

MB 4-6-8-10 LE



- 1 Closing thermostat
- 2 Fan motor working
- 3 Air damper
- 4 Ignition transformer
- 5 Oil valves open
- 6 Flame presence





ELECTRICAL CONNECTIONS To be made by the installer

Electrical connections must be made by qualified and skilled personnel, according to the local norms.

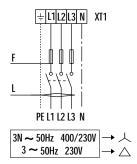


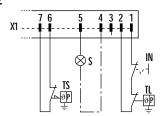
Example of the terminal board for electrical connections

THREE PHASE SUPPLY TO THE POWER CIRCUIT AND CONNECTING

THE AUXILIARY CONTROLS

MB 4-6-8-10 LE





XT1 - General supply terminal board
X1 - 10 pin plug
TS - Safety thermostat
TL - Threshold thermostat

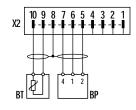
X1 TS TL IN

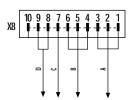
Manual switch
 External lock-out signal

- Fuse (refer to table A)
- Lead section (refer to table A)

CONNECTION OF THE PROBES FOR THE CONTROLLED PARAMETER AND DATA **CONNECTION FOR THE VARIOUS MODULES (Accessories)**

MB 4-6-8-10 LE





10 pin plug10 pin plug for connecting accessories

RT

- Temperature probe
- Pressure probe
- E.G.A. module connections
- Main, D.T.I., I/O modules

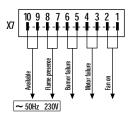
connections
- 230 V/50 Hz output for butterfly

valve of sequence boilers
- Free contacts for lead boiler

choice of sequence

SIGNALS FOR WORKING STATUS OF THE MAIN COMPONENTS

MB 4-6-8-10 LE



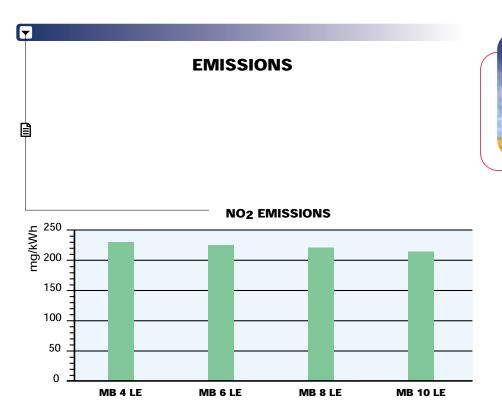
SL	00 00	Х8	00	Х7	00	Х6	00 00	Х5	0 0
	0	X1	00 00	X2	00 00	ХЗ	00 00	X4	0

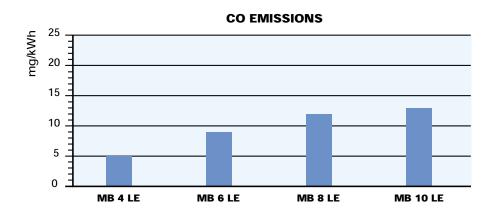
X7 - 10 pin output plug, free contacts

SL - Layout plug diagram X3, 4, 5, 6 - plugs for electrical factory-set connections

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

Model ▼ MB 4 LE		▼ MB 6 LE		▼ MB 8 LE		▼ MB 10 LE			
		230V	400V	230V	400V	230V	400V	230V	400V
F	Α	63 gG	50 gG	63 gG	50 gG	80 gG	63 gG	80 gG	63 gG
L	$\mathrm{mm^2}$	6	4	6	4	10	10	10	10

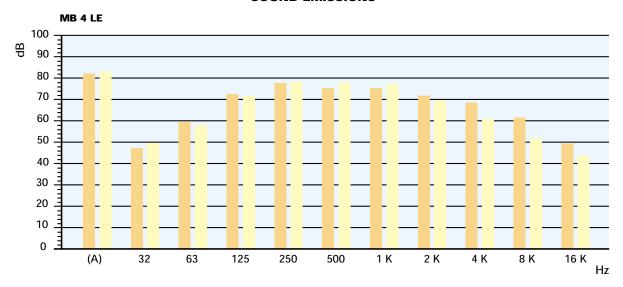


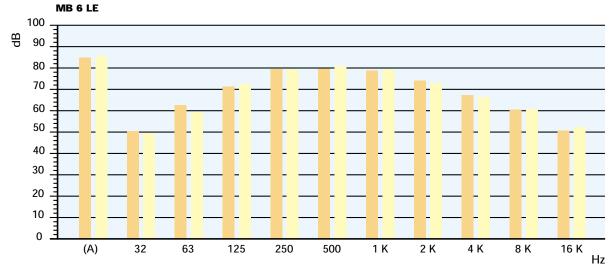


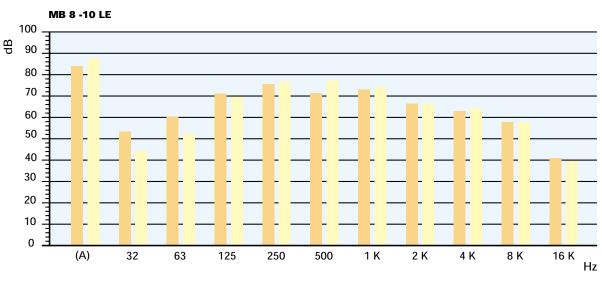
The emission data has been measured in the various models at maximum output, according to EN 267 standard.



SOUND EMISSIONS







Maximum modulation

Minimum modulation

(A) Value obtained in dB(A)

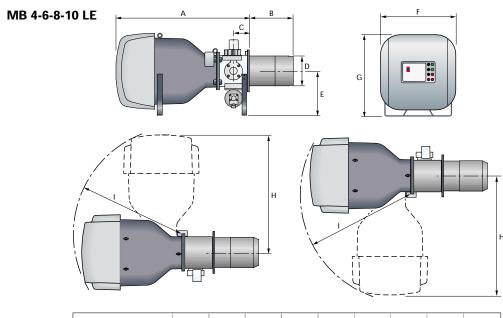
T

OVERALL DIMENSIONS (mm)



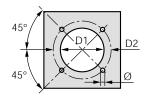


BURNERS



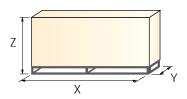
Model	A	В	С	D	E	F	G	Н	I
► MB 4 LE	1470	511	183	336	490	840	910	1330	1205
► MB 6 LE	1470	511	183	336	490	840	910	1330	1205
► MB 8 LE	1900	530	208	413	575	1007	1079	1740	1570
▶ MB 10 LE	1900	530	208	413	575	1007	1079	1740	1570

BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	Ø
►MB 4 LE	350	496	M20
►MB 6 LE	350	496	M20
►MB 8 LE	418	608	M20
▶ MB 10 LE	418	608	M20

PACKAGING



Model	X	Υ	Z	kg
►MB 4 LE	2120	1005	1175	300
►MB 6 LE	2120	1005	1175	300
►MB 8 LE	2590	1170	1350	450
▶ MB 10 LE	2590	1170	1350	450





INSTALLATION DESCRIPTION

Installation, start up and maintenance must be carried out by qualified and skilled personnel.

All operations must be performed in accordance with the technical handbook supplied with the burner.

Access to the internal components is very simple, as the back of the burner is hinged which means it can be completely opened.

The burners can be supplied with the opening on the right or left, depending on personal requirements.

FIXING THE BURNER TO THE BOILER AND INITIAL SETTINGS

- All the burners have lifting rings, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as template, prepare a suitable lifting system and, after hooking onto the rings, fix burner to the boiler.
- Install the nozzle, choosing it on the basis of the maximum boiler output and on the basis of the diagrams enclosed with the burner instructions.
- Adjust the combustion head run, using the mechanism lever





ELECTRICAL AND HYDRAULIC CONNECTIONS AND START UP

- ▶ The burner are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump, by turning the motor (check rotation direction corresponds with the arrow printed on the pump motor cover and that the led signalling correct rotation direction, at left of the plugs group, is on)
- ▶ On start up, check:
 - Pressure at the pump, the regulator and the valve unit (to max. and min.)
 - Combustion quality, in terms of unburned substances and excess air.









ACCESSORIES





This electronic module can transfer multiple signals from different local modules to a BMS supervisor software system (Building Management System).



DTI mo	dule
Burner	module code
MB 4 - 6 - 8 - 10 LE	3010234

I/O digital module

Digital modules I/O transfer in-coming and out-going information such as working stages and alarms, from the boiler room or from the system in general where one or more MB series burners are installed to a remote supervisor system.



I/O digital module				
Burner	module code			
MB 4 - 6 - 8 - 10 LE	3010233			

I/O analogic module

I/O Analog modules transfer in-coming and out-going information about burner working stages and other devices in the boiler room or in the system in general where one or more MB series burners are installed to a remote supervisor system.

I/O Analog modules manage both input and output signals, such as 4-20 mA or 0-10 Volt



I/O analogi	c module
Burner	module code
MB 4 - 6 - 8 - 10 LE	3010232



EGA module (Exhaust Gas analyser)

EGA modules measure some of the exhaust gas substances. These modules come with an exhaust gas sampler probe and exhaust gas temperature probe (0-400 °C).

Four different EGA modules are available depending on the type of substance to be checked, as given in the following table:



EGA module				
Burner	Analysed gas	module code		
MB 4 - 6 - 8 - 10 LE	CO, CO ₂ , O ₂	3010235		
MB 4 - 6 - 8 - 10 LE	CO, CO ₂ , O ₂ , NO	3010236		
MB 4 - 6 - 8 - 10 LE	CO, CO ₂ , O ₂ , SO ₂	3010237		
MB 4 - 6 - 8 - 10 LE	CO, CO ₂ , O ₂ , NO, SO ₂	3010238		

Belden 9501 type leads

All the connections for the above modules must be done using a BELDEN 9501 type lead, which is available as an accessory in coils of 50 m.



Belden 9501 lo	ead
Burner	lead code
MB 4 - 6 - 8 - 10 LE	3010239

Accessories for modulating setting

Main management module allows a modulating setting with use of probes chosen on the basis of the application.

The following table lists the accessories for modulating setting, with the application field.



PROBE				
Burner	Туре	Range (°C) (bar)	Code	
MB 4 - 6 - 8 - 10 LE	Temperature	0 ÷ 400°C	3010187	
MB 4 - 6 - 8 - 10 LE	Pressure	0 ÷ 3 bar	3010246	
MB 4 - 6 - 8 - 10 LE	Pressure	0 ÷ 18 bar	3010186	
MB 4 - 6 - 8 - 10 LE	Pressure	0 ÷ 30 bar	3010188	



Return nozzles with needle cut-off

The nozzles must be ordered separately. The following table shows the features and codes, on the basis of maximum fuel output that is required.



Nozzles B5 45°					
Burner	Rated output kg/h	nozzle code	Burner	Rated output kg/h	nozzle code
	200	3009800		525	3009813
	225	3009801		550	3009814
MB 4 I F	250	3009802	MB 8 LE	575	3009815
IVID 4 LL	275	3009803	IVID O LE	600	3009816
	300	3009804		650	3009817
	325	3009805		700	3009818
	350	3009806		400	3009808
	375	3009807		425	3009809
	400	3009808		450	3009810
MB 6 LE	425	3009809		475	3009811
	450	3009810		500	3009812
	475	3009811		525	3009813
	500	3009812	MB 10 LE	550	3009814
	300	3009804	IVID TO LE	575	3009815
	325	3009805		600	3009816
	350	3009806		650	3009817
	375	3009807		700	3009818
MB 8 LE	400	3009808		750	3009819
	425	3009809		800	3009820
	450	3009810		850	3009821
	475	3009811		900	3009822
	500	3009812			

Burner support

For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need for forklift trucks.



Support	
Burner	support code
MB 4 - 6 LE	In progress
MB 8 - 10 LE	In progress

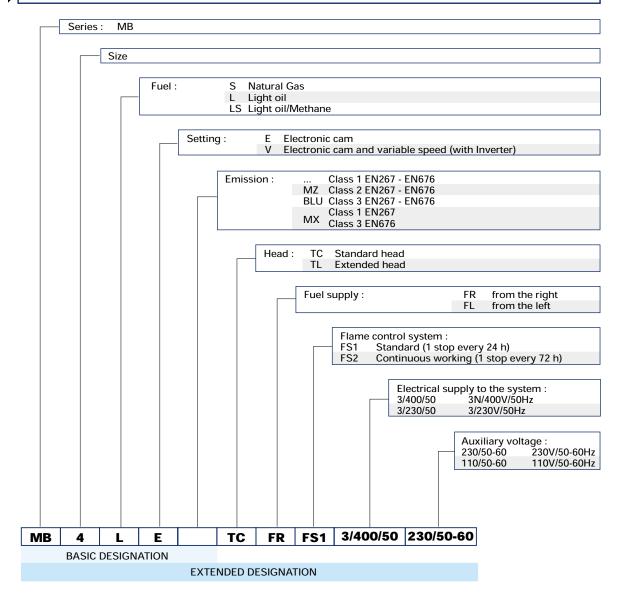




SPECIFICATION

A specific index guides your choice of burner from the various models available in the MODUBLOC MB series. Below is a clear and detailed specification description of the product.

DESIGNATION OF SERIES MODUBLOC MB BURNERS





LIST OF AVAILABLE MODELS

MB4LE	TC	FR	FS1	3/400/50	230/50-60
MB4LE	TC	FR	FS1	3/230/50	230/50-60
MB4LE	TC	FL	FS1	3/400/50	230/50-60
MB4LE	TC	FL	FS1	3/230/50	230/50-60
MB6LE	TC	FR	FS1	3/400/50	230/50-60
MB6LE	TC	FR	FS1	3/230/50	230/50-60
MB6LE	TC	FL	FS1	3/400/50	230/50-60
MB6LE	TC	FL	FS1	3/230/50	230/50-60
MB8LE	TC	FR	FS1	3/400/50	230/50-60
MB8LE	TC	FR	FS1	3/230/50	230/50-60
MB8LE	TC	FL	FS1	3/400/50	230/50-60
MB8LE	TC	FL	FS1	3/230/50	230/50-60
MB10LE	TC	FR	FS1	3/400/50	230/50-60
MB10LE	TC	FR	FS1	3/230/50	230/50-60
MB10LF	TC	FI	FS1	3/400/50	230/50-60
MB10LE	TC	FI.	FS1	3/230/50	230/50-60
IVIDIOLL	. 0			0,200,00	200/00-00

Other versions are available on request.

PRODUCT SPECIFICATION

Burner:

Monoblock forced draught oil burner with modulating setting, fully automatic, made up of:

- fan with reverse curve blades high performance with low sound emissions
- air suction circuit lined with sound-proofing material
- air damper for air setting controlled by a high precision servomotor
- air pressure switch
- fan starting motor at 2900 rpm, three-phase 230/400 400/690 V with neutral, 50Hz
- pump starting motor at 2900 rpm, three phase 230/400 V 50Hz
- mobile combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuum meter
 - internal by pass for single pipe installation
- valve unit containing:
 - oil safety valve on the delivery circuit
 - oil safety valve on the return circuit
 - three way valve for the actuator
- actuator for opening and closing the nozzle needle
- automatic setting for light oil delivery, controlled by a high precision servomotor
- safety oil pressure switch for stop the burner in the case of problems in the return circuit
- pressure gauge for delivery pressure
- pressure gauge for return pressure
- minimum oil pressure switch on the delivery circuit (TRD 604, NBN standards)
- module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator



- flame control panel for controlling the system safety
- photocell for flame detection
- star/triangle starter for the fan motor
- pump motor starter
- burner on/off switch
- auxiliary voltage led signal
- manual or automatic output increase/decrease switch
- burner working led signal
- contacts motor and thermal relay with release button
- motor failure led signal
- burner failure led signal and lighted release button
- led signal for correct rotation direction of fan and pump motor
- emergency button
- coded connection plugs-sockets
- burner opening hinge
- lifting rings
- IP 40 electric protection level.

According to:

- 89/336/CEE directive (electromagnetic compatibility)
- 73/23/CEE directive (low voltage)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners).

Standard equipment:

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- instruction handbook for installation, use and maintenance
- spare parts catalogue.

Available accessories to be ordered separately:

- DTI module (Data Transfer Interface)
- I/O digital module
- I/O analogic module
- EGA module (Exhaust Gas Analyser) in the following versions:
 - EGA C0, CO₂, O₂
 - EGA CO, CO₂, O₂, NO
 - EGA CO, CO₂, O₂, SO₂
 - EGA CO, CO₂, O₂, NO, SO₂
- BELDEN 9501 type lead
- Pressure probe 0 ÷ 3 bar
- Pressure probe 0 ÷ 18 bar
- Pressure probe 0 ÷ 30 bar
- Temperature probe 0 ÷ 400°C
- Return nozzles with needle cut-off
- Burner support.





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Internet: http://www.rielloburners.com - E-mail: rburners@rielloburners.com



CE

LOW NOx SINGLE-STAGE LIGHT OIL BURNERS

▶ GULLIVER BG SERIES

▶ BG1 - BG1E 15,5 ÷ 26,0 kW

▶ BG2 - BG2E 24,0 ÷ 33,0 kW **▶ BG3 - BG3E** 30,0 ÷ 36,0 kW

▶ BG4 - BG4E 35,5 ÷ 54,5 kW

▶ BG5 - BG5E 51,0 ÷ 72,3 kW



The Riello Gulliver BG series of single-stage light oil burners is a complete range of Low NOx products, developed to respond to any request for home heating, conforming to the strictest standards governing the reduction of polluting emissions. The Gulliver BG series is available in ten different models, with an output ranging from 15,5 to 72,3 kW, divided in two 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 ease 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, the German Standard RAL UZ-9, the Swiss standard BUWAL-LRV 92 and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.

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

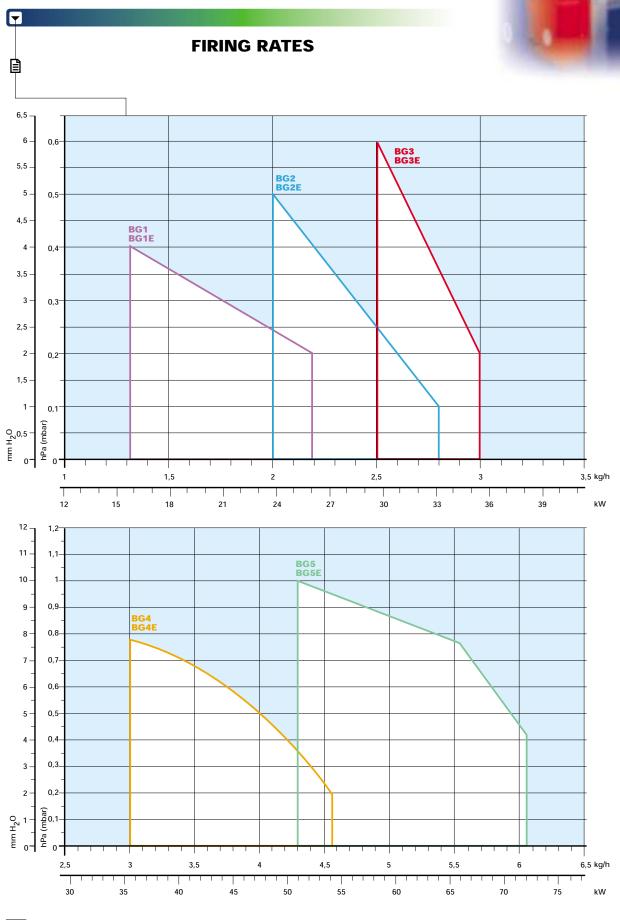




Model			▼ BG1 - 1E	▼ BG2 - 2E	▼ BG3 - 3E	▼ BG4 - 4E	▼ BG5 - 5E			
Setting					single-stage					
Servo-	Туре									
motor	Run time	s								
		kW	15,5 - 26	24 - 33	30 - 36	35,5 - 54,5	51 - 72,3			
Heat ou	tput	Mcal/h	13,3 - 22,5	20,7 - 28,4	25,8 - 31	30,6 - 47	43,9 - 62,2			
		kg/h	1,3 - 2,2	2 - 2,8	2,5 - 3	3 - 4,6	4,3 - 6,1			
Working	g temperature	°C min./max.			0/40					
		kWh/kg			11,8					
Net calc	orific value	kcal/kg			10.200					
Viscosit	y at 20°C	mm ² /s (cSt)			4 ÷ 6					
D	Туре				R.B.L.					
Pump	Delivery	kg/h at 12 bar		3	0		35			
Atomise	ed pressure	bar			8 ÷ 15					
Light oi	temperature	max. °C			50					
Fuel pre				YES						
Fan		Туре	forward tilted blades							
Air tem	perature	max. °C	40							
	al supply	Ph/Hz/V	1/50/230 ±10%							
	ctrical supply	Ph/Hz/V								
Control		Туре	R.B.L.550 SMD							
Total ele	ectrical output		0,29	0,29	0,29	0,46	0,47			
	ted current	Α	1.3	1.3	1.3	2.3	2.3			
Protecti	on level	IP	-,-	-,-	40	_,_	_,-			
	motor output	kW	0,17	0,17	0,17	0,39	0,39			
	notor current	A	0,9	0,9	0,9	1,8	1,8			
	ake-off current		3	3	3	8,5	8,5			
	rotection level		J	J	20	0,3	0,3			
•	transformer			inco	rporated in the control	hov				
Operation					ent (at least one halt e					
	oressure	dB(A)	57	59	61	64	66			
CO Emi		mg/kWh	37	33	<60	U4	00			
Grade of smoke indicator N° Bach.			<1							
		mg/kWh		,-	10 AFTER THE FIRST 20) e				
C _x H _y Emissions mg/kWh NOx Emissions mg/kWh				`	<120	, •				
Directiv				89/336/CFF	, 73/23/CEE, 98/37/CEE	92/42/CFF				
Conform					, 73/23/CEE, 98/37/CEE RV 92 - RAL UZ-9 - Blm					
Comon	9 to.		CE - 0036 0264/99	CE - 0036 0265/99	CE - 0036 0266/99	CE - 0036 0267/99	CE - 0036 0268/9			
Certifica	ntions		BUWAL - Nr. 192016 RAL - Nr. 11900	BUWAL - Nr. 192016 RAL - Nr. 11901	BUWAL - Nr. 192016 RAL - Nr. 11902	BUWAL - Nr. 193052 RAL - Nr. 11903	BUWAL - Nr. 1930 RAL - Nr. 11904			

Reference conditions:

Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.
Noise was measured in the boiler room behind the burner at a distance of 1 meter.



Useful working field for choosing the burner

Test conditions conforming to EN 267, RAL UZ-9 and LRV 92: Temperature: 20 $^{\circ}\text{C}$ Pressure: 1013.5 mbar Altitude: 100 m a.s.l.







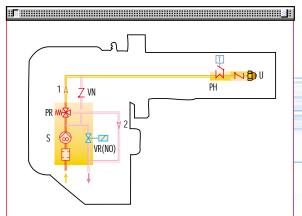
FUEL SUPPLY

HYDRAULIC CIRCUITS

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

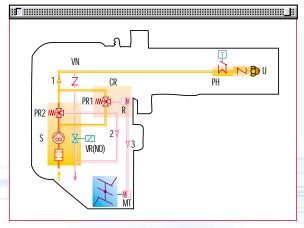


BG1-1E - BG2-2E - BG3-3E - BG4-4E



Fuel pump

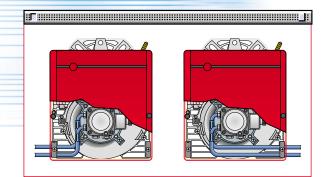
BG5-5E



S	Pump with filter and pressure regulator on the delivery pipe
VR(NC)) Oil return valve normally open
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)
VN	Oil no return valve for no drip device working
U	Nozzle with no drip device (where provided)

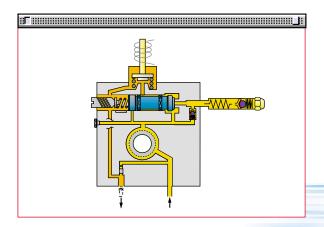




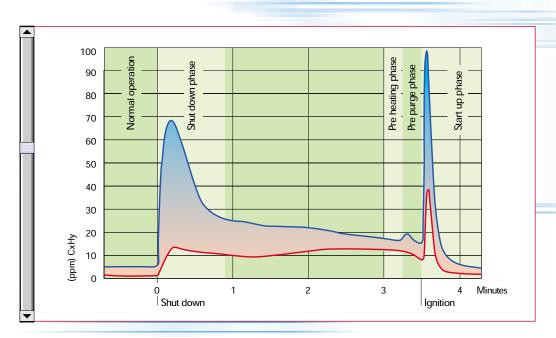


Fuel feed to the burner can be from the right or the left side on all models.

DROP STOP DEVICE



The more complete versions of the Gulliver BG models have the NO-DRIP hydraulic system installed, which avoids any light oil leakage on start up or light oil dripping when the burner halts, thus drastically reducing polluting emissions of CxHy.



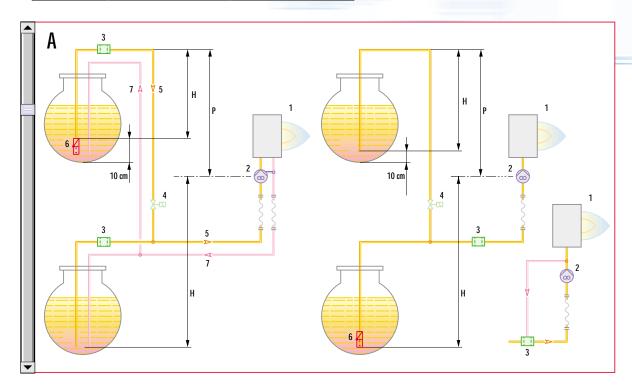


DIMENSIONING OF THE FUEL SUPPLY LINES

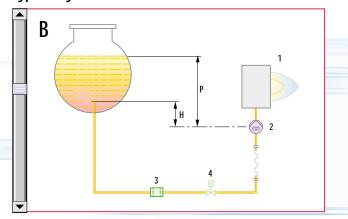
The fuel feed must be completed with the safety devices required by the local regulations in force.

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

MAXIMUM	MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]						
	▼ Type /	▼ Type A system		B system			
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm			
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	-	-			



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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

Y

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

In some versions, the Riello Gulliver BG series is equipped with an automatic outside temperature/air supply system: the compensator. This system allows the air damper to make small automatic adjustments at every change of external air temperature that is revealed by a capillary pipe, which increases air intake if the temperature is high and reduces it if the temperature is low. This keeps the percentage of CO2 in the flue gas always costant for overall combustion improvment.



Compensator

Y

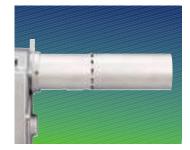
COMBUSTION HEAD



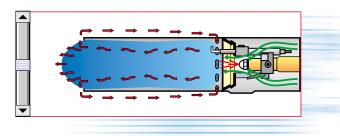
REDUCING FLAME TEMPERATURE

The configuration of the combustion head provokes internal re-circulation of the combustion substances. This re-circulation reduces the flame temperature and therefore the NOx emissions. Furthermore, re-circulation of the combustion substances speeds up evaporation of combustible droplets creating gassy type combustion, similar to gas burner blue flame.



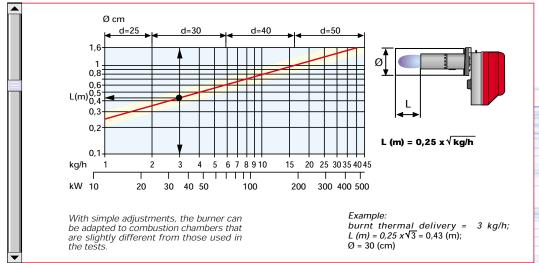


Combustion head

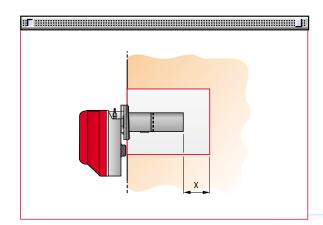




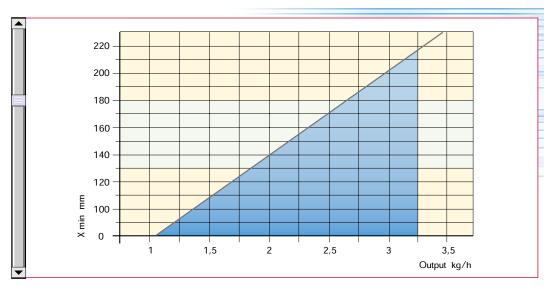
Combustion chamber dimensions used in the test laboratory



COMBUSTION CHAMBER LENGTH LIMIT



When choosing Riello Gulliver BG burners, a minimum distance must be respected between the end of the blast tube and the back of the combustion chamber. This distance varies proportionally to the output of the burner, as indicated in the diagram: this minimum dimension is necessary to guarantee the recirculation of flue gases.



ADJUSTMENT



BURNER OPERATION MODE

All these models are singlestage working; the BG5 and BG5E models are single-stage working with reduced output firing.

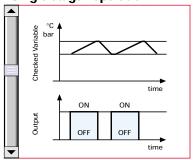


Air damper adjustment

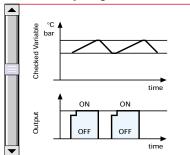


Reduced output ignition device

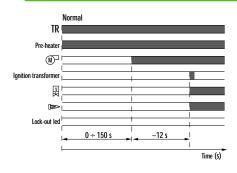
" Single-stage" operation

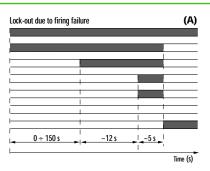


" Single-stage" operation with reduced output ignition



FIRING





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

Correct operations

0s The burner begins the firing cycle.

0s-150s Delay before pre-purge: this delay period can reach 150s,

Depending on the room and fuel temperatures.

150s-162s Pre-purge with air damper open.

162s Firing.

Lock-out due to firing failure

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



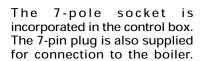


ELECTRICAL CONNECTIONS to be made by the installer

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



Appliance fitted with an ignition transformer





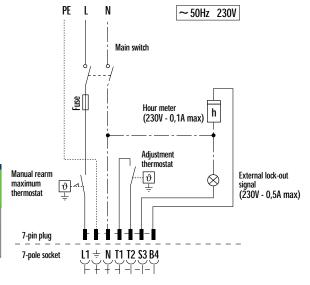
7-pole socket incorporated in the control box

" SINGLE-STAGE" OPERATIONS

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

Mc	odel			▼ BG3 ▼BG3E		▼ BG5 ▼BG5E
		230V	230V	230V	230V	230V
F	Α	6	6	6	T6	T6
L	mm²	1	1	1	1	1

F = Fuse L = Lead section



CONTROL BOX 550 SMD

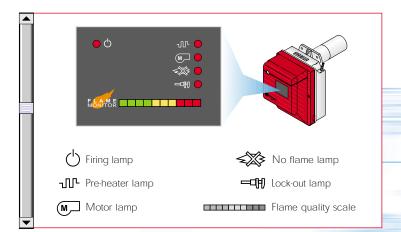
The Gulliver Low NOx series burners BG are fitted with a Riello Control Box, model 550 SMD.

This control box has the following features:

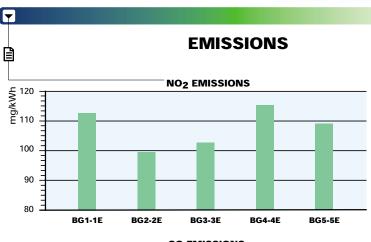
- Spark restoration
- Switch for burner post-ignition/recycling
- Led signalling the various working stages
- Post-combustion lock-out
- Socket for remote resetting.



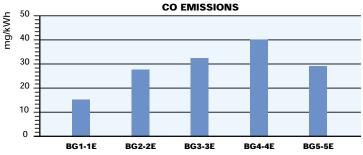
FLAME MONITOR

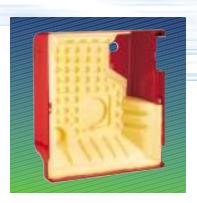


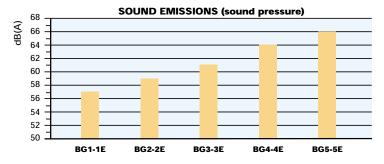
The "E" models are fitted with the FLAME MONITOR device, which supplies certain data regarding the status of burner operations and combusion quality.











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

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

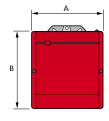


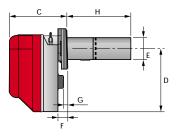


OVERALL DIMENSIONS (mm)

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.

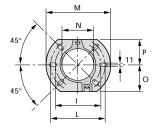
BURNER





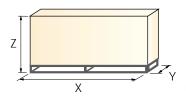
Model	Α	В	С	D	Е	F	G	Н
▶ BG1-1E	255	280	199	230	80	25	7	280
▶ BG2-2E	255	280	202	230	89	28	10	287,5
▶ BG3-3E	255	280	202	230	89	28	10	287,5
▶ BG4-4E	300	345	230	285	97	34	12	307
▶ BG5-5E	300	345	230	285	97	34	12	307

BURNER-BOILER MOUNTING FLANGE



Model	I	L	М	N	0	Р
▶ BG1-1E	130	150	180	91	72	72
▶ BG2-2E	140	168	189	106	83	83
▶ BG3-3E	140	168	189	106	83	83
▶ BG4-4E	140	165	189	106	83	83
▶ BG5-5E	140	165	189	106	83	83

PACKAGING



Model	Х	Υ	Z	kg
▶ BG1-1E	533	288	340	12
▶ BG2-2E	533	288	340	13
▶ BG3-3E	533	288	340	14
▶ BG4-4E	590	335	420	16
▶ BG5-5F	590	335	420	19



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. If necessary, change the nozzle on the basis of the maximum output of the boiler.

All operations must be carried out as describe in the technical handbook supplied with the burner.



BURNER SETTINGS

▶ The air damper can be opened without removing the burner cover.



▶ In models BG1, 2, 3 and BG1E, 2E, 3E, the amount of recircled combustion substances can be regulated using a shutter ring in the holes, which optimises combustion.



MAINTENANCE

▶ The maintenance position is easily carried out by hooking the burner to the flange after removing it from the fixing screw.



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









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



Tester	
Burner	Kit code
BG1-1E - BG2-2E - BG3-3E - BG4-4E - BG5-5E	3087211



Direct testing	Measurements
M MOTOR	V L1-N Main voltage
The switch feeds the motor.	(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	V M
The switch feeds the light oil pre-heater; a green led signals the thermostat cut-in.	Secondary voltage (low voltage)
TRANSFORMER TRANSFORMER	A
The switch feeds the firing transformer inside the control box and excites the oil valve.	Photo-resistance current consumption



SPECIFICATION

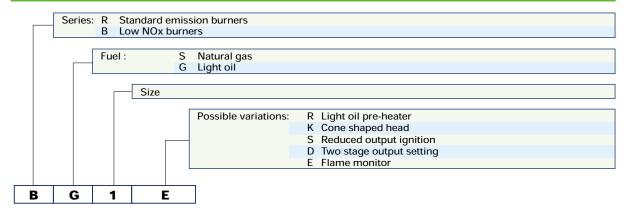


A special index will help you choose the right burner from the BG models available.

There is also a clear and detailed product specification and description.



DESIGNATION OF SERIES



LIST OF AVAILABLE MODELS

BG1 - BG1E	15,5 ÷	26	kW	BG4 - BG4E	$35,5 \div 54,5$	kW
BG2 - BG2E	24,0 ÷	33	kW	BG5 - BG5E	51,0 ÷ 72,3	kW
BC3 BC3E	30 0 ÷	36	Ŀ \ \ /			

SPECIFICATION DESCRIPTION

Completely automatic monobloc light oil burners, with single-stage operation fitted with: - Fan with forward inclined blades

- Cover lined with sound-deadening material
- Air damper, completely closed in stand by, with external adjustment, with no need to remove the cover
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
 - stainless steel head cone, resistant to high

 - temperaturesignition 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
- IRD for flame detection
- Electronic flame control equipment
- Protective filter against radio interference
- IP 40 protection levelPTC fuel pre-heater.

- **Approval:** EN 267 standard
 RAL UZ-9
- LRV 92.

- Conforming to European Directives:
 89/336/CEE (electromagnetic compatibility)
 73/23/CEE (low voltage)
 98/37/CEE (machinery)

- 92/42/CEE (efficiency).

Conforming to:

- BlmSchV 1996.

Supplied materials:

- 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:

Tester for checking the various components.







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LOW NOx SINGLE-STAGE LIGHT OIL BURNERS ➤ GULLIVER BGK SERIES ► BGK0.1 17,0 ÷ 35,0

kW ▶ BGK1 17,8 ÷ 35,6 kW ▶ BGK2 32,0 ÷ 59,3 kW



The Riello Gulliver BGK series of single stage light oil burners is a complete range of Low NOx products developed to respond to any request for home heating, conforming to the strictest standards regarding the reduction of polluting emissions.

The BGK series is available in three models with an output ranging from 17 to 59,3 kW,

divided in two 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 ease 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 German RAL UZ-9 standard, the European EN 267 standard, and conform to European Directives for EMC, Low Voltage, Machinery and Boiler

The BGK1 and BGK2 models are also approved by the Swiss LRV-92 standard. All the Gulliver BGK series of burners are fired before leaving the factory.

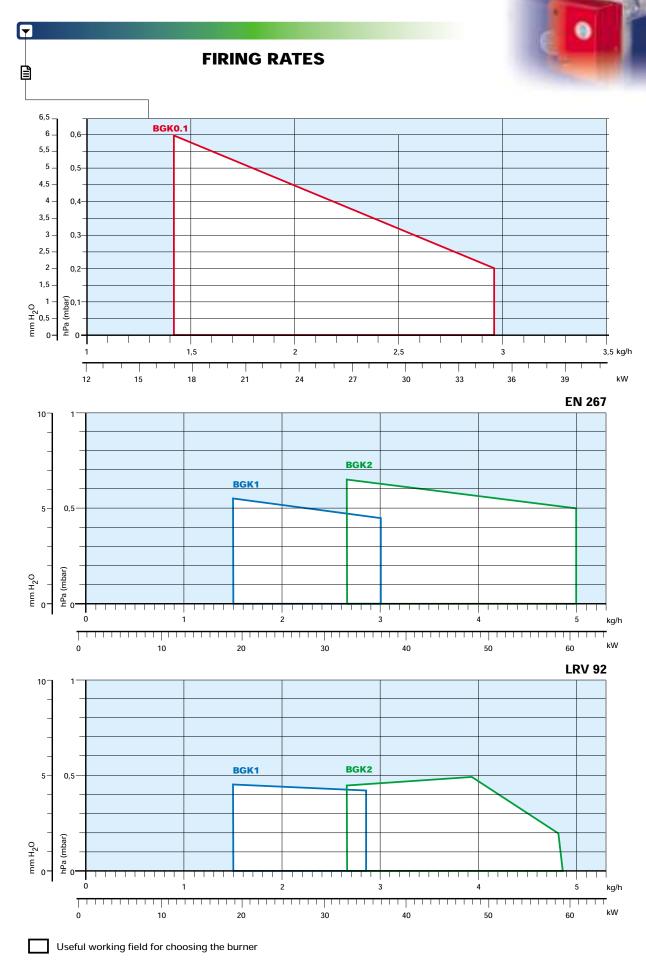


TECHNICAL DATA

Model			▼ BGK0.1	▼ BGK1	▼ BGK2			
Catting				o				
Setting				Single-stage				
Servo-	type							
motor	run time							
Heat		kW	17 - 35	17,8 - 35,6	32 - 59,3			
output		Mcal/h	14,6 - 30	15,3 - 30,6	27,5 - 51			
·		kg/h	1,43 - 2,95	1,5 - 3	2,7 - 5			
Working	g temperature			0/40				
Not cale	orific value	kWh/kg		11,8				
lact out	Jino value	kcal/kg		10.200				
Viscosit	y at 20°C	mm²/s (cSt)		4 ÷ 6				
Pump	type	kg/h at 12 bar		R.B.L.				
unp	delivery	bar		30				
	ed pressure	°C		8 ÷ 15				
Light oi	l temperature			50				
Fuel pre	-heater	type		YES				
Fan		°C max	forward tilted blades					
Air tem	perature	Ph/Hz/V	40					
Electrica	al supply	Ph/Hz/V	1/50/230 ±10%					
Aux. ele	ctrical supply	type						
Control	box	kW	553 SE	550 SMD	550 SMD			
Total ele	ectrical output	A	0,3	0,3	0,3			
Total rat	ed current	IP	1,3	1,4	1,4			
Protecti	on level	kW		40				
Electric	motor output	A	0,17	0,17	0,17			
	-	Α	0,8	0.9	0,9			
Motor ta	ake-off current	IP	3	3	3			
Motor p	rotection level			20				
	transformer			incorporated in the control box				
Operation		dB(A)		intermittent (at least one halt every 2	24 h)			
•	ressure	mg/kWh	61	62	64			
CO emis		N° Bach.		<60	0.7			
		mg/kWh		<1				
C _x H _y emissions		mg/kWh		<10 AFTER THE FIRST 20"				
NOx emissions <120								
Directiv			89	336/CEE, 73/23/CEE, 98/37/CEE, 92/42	/CFF			
Conforn				N 267 - LRV 92 - RAL UZ-9 - BlmSchV 19				
Certifica	-		in progress in progress	CE0036 0232/98 BUWAL - Nr.198014	CE0036 0233/98 BUWAL - Nr.198014			
Cortille			in progress	RAL - Nr.12002	RAL - Nr.12003			

Reference conditions: Temperature: 20 °C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.

Noise was measured in the boiler room behind the burner at a distance of 1 meter.





Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m a.s.l.





FUEL SUPPLY



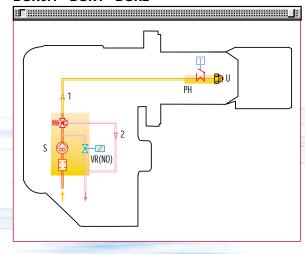
HYDRAULIC CIRCUITS

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

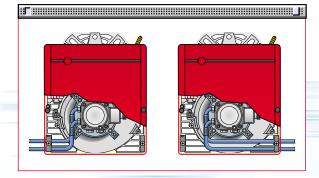


Fuel pump

BGK0.1 - BGK1 - BGK2



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



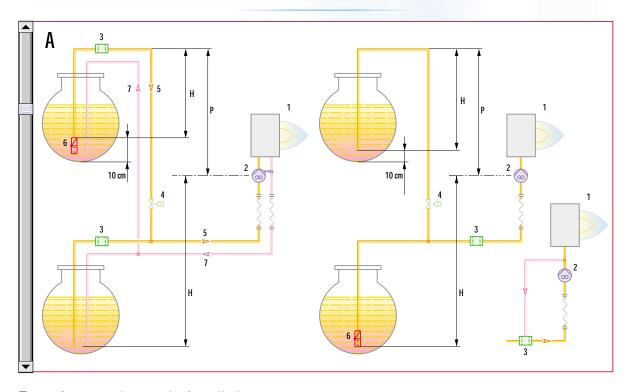
Fuel feed to the burner can be from the right or the left side on all models.

DIMENSIONING OF THE FUEL SUPPLY LINES

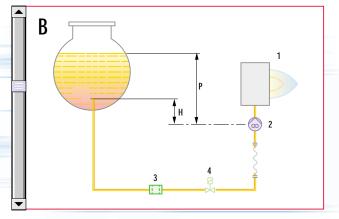
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	Ø8mm	Ø10mm	Ø8mm	Ø10mm				
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	-	-				



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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.



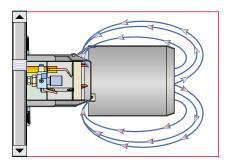
Air suction



COMBUSTION HEAD

REDUCING FLAME TEMPERATURE

The configuration of the combustion head provokes internal recirculation of the combustion substances. This re-circulation reduces the flame temperature and therefore the NOx emissions. Furthermore, re-circulation of the combustion substances speeds up evaporation of combustible droplets creating gassy type combustion, similar to gas burner blue flame.



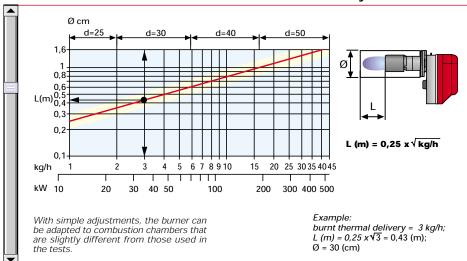


Combustion head BGK1



Combustion head BGK0.1

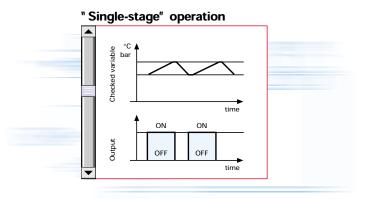
Combustion chamber dimensions used in the test laboratory







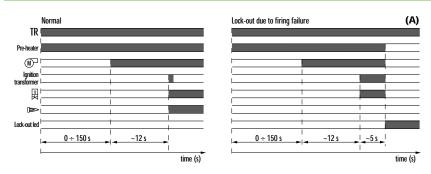
All these models are single-stage working.





Air damper adjustment

FIRING



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

Correct operations

0s The burner begins the firing cycle.

0s-150s Delay before pre-purge: this delay period can reach 150s,

depending on the room and fuel temperatures.

150s-162s Pre-purge with air damper open.

162s Firing.

Lock-out due to firing failure

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





ELECTRICAL CONNECTIONS *to be made by the installer*

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



Appliance fitted with an ignition transformer



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



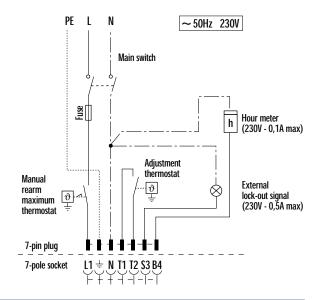
7-pole socket incorporated in the control box

" SINGLE-STAGE" OPERATIONS

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

Model		▼ BGK0.1	▼ BGK1	▼ BGK2
		230V	230V	230V
F	Α	6	6	6
L	mm ²	1	1	1

F = Fuse L = Lead section



CONTROL BOX 550 SMD

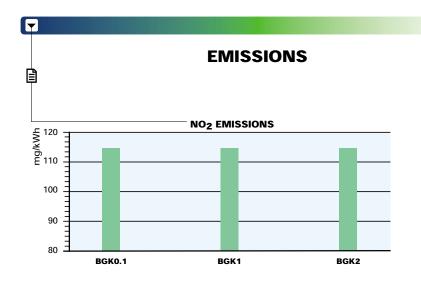
The BGK0.1 Gulliver model is fitted with the Riello model 553 SE control box, and a simple photocell is used for flame detection; on request the 550 SMD control box can be supplied.

The BGK1 and BGK2 Gulliver models are fitted with the Riello 550 SMD control box.

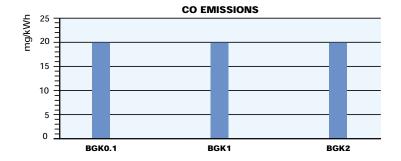
This control box has the following features:

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









SOUND EMISSIONS (sound pressure)

BGK1

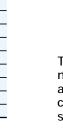
58

56

54 52

50 -

BGK0.1



BGK2

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-deadening material inside the cover.





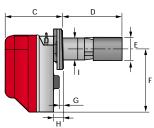
OVERALL DIMENSIONS (mm)

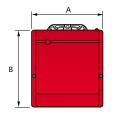
These models are distinguished by their reduced size, in relation to their output, which means they can be fitted to any boiler on the market.

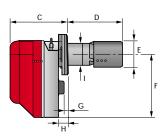
BURNERS

BGK0.1

A C





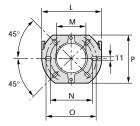


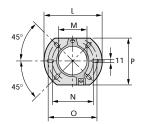
BGK1 - BGK2

Model	Α	В	С	D			Е	F	G	Н	I
				Pos. 1	Pos. 2	Pos. 3					
▶ BGK0.1	234	254	196	191	-	-	87	210	4	22	84
▶ BGK1	255	280	202	207	189,5	172	104	230	10	28	89
▶ BGK2	255	280	202	229	213	197	105	230	10	28	89

BURNER-BOILER MOUNTING FLANGES

BGK0.1

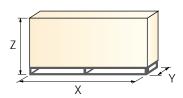




BGK1 - BGK2

Model	L	М	N	Ο	Р
▶ BGK0.1	180	91	130	150	144
▶ BGK1	189	106	140	166	168
▶ BGK2	189	106	140	166	168

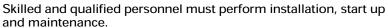
PACKAGING



Model	Χ	Υ	Z	kg
▶ BGK0.1	343	268	310	13
▶ BGK1	533	288	340	14
▶ BGK2	533	288	340	14



INSTALLATION DESCRIPTION



A nozzle is fitted to the burner 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 SETTINGS

The air damper can be opened without removing the burner cover.



▶ On the BGK1 and BGK2 models, the end cone can be adjusted to improve fuel output and emissions.



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



MAINTENANCE

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







ACCESSORIES



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.



Tester					
Burner	Kit code				
BGK0.1 - BGK1 - BGK2	3087211				



Direct testing	Measurements
M MOTOR	V L1-N
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	(V) (M)
The switch feeds the light oil pre-heater; a green led signals the thermostat cut-in.	Secondary voltage (low voltage)
TRANSFORMER	A
The switch feeds the firing transformer inside the control box and excites the oil valve.	Photo-resistance current consumption

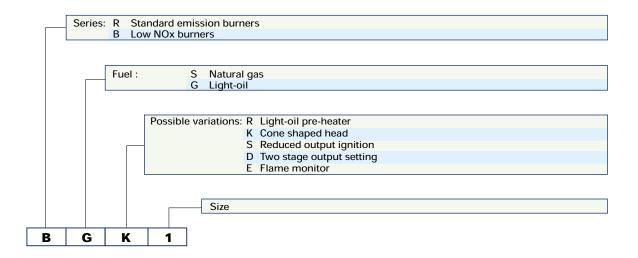




A special index will help you choose the right burner from the BGK models available.

There is also a clear and detailed product specification and description.

DESIGNATION OF SERIES



LIST OF AVAILABLE MODELS

BGK0.1 17,0 ÷ 35,0 kW BGK1 17,8 ÷ 35,6 kW BGK2 32,0 ÷ 59,3 kW



SPECIFICATION DESCRIPTION

Burner

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

- Fan with forward inclined blades
- Sound deadening cover
- Air damper with external adjustment, with no need to remove the cover
- Single phase electric motor 230 V, 50 Hz
- Combustion head, fitted with:
 - 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 vacuometer
 - internal by-pass for preparing for single pipe installation
- Fuel feed solenoid incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Protective filter against radio interference
- IP 40 protection level
- PTC fuel heater.

Approval to standards:

- EN 267
- RAL UZ-9
- LRV 92 (just models BGK1 and BGK2).

Conforming to European Directives:

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

Conforming to:

- BlmSchV 1996.

Supplied materials:

- Two flexible pipes and two connectors
- Flange, screen, screws and nuts for fixing
- Technical instructions
- Spare parts catalogue.

Available accessories:

- Tester for checking the various components.









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LOW NOx TWO-STAGE LIGHT OIL BURNERS

► GULLIVER BGD SERIES ► BG6D

57/65 ÷ kW ▶ BG7D 78/91 ÷ kW



The Riello Gulliver BGD series of two-stage light oil burners is a complete range of Low NOx products, developed to respond to any request for home heating, conforming to the strictest standards governing the reduction of polluting emissions. The Gulliver BGD series is available in two different models, with an output ranging from 57 to 160 kW, divided in two 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 ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.

The two-stage working guarantees high level of thermal unit efficiency.

All the models are approved by the EN 267 European Standard, the Swiss standard BUWAL-LRV 92 and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.

The model BG6D is approved by the German Standard RAL UZ-9. All the Gulliver BGD burners are fired before leaving the factory.

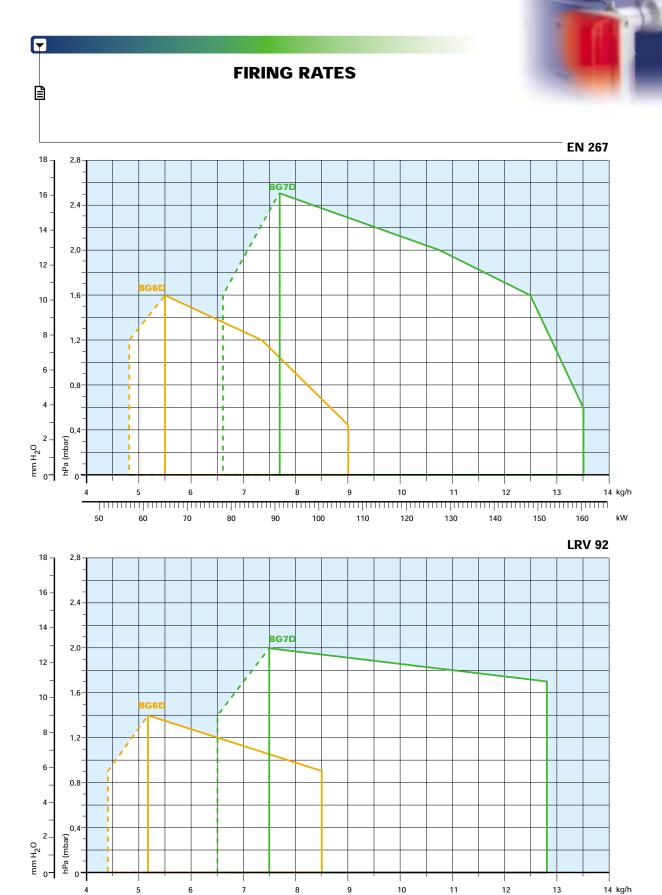


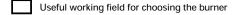
TECHNICAL DATA

Model			▼ BG6D	▼ BG7D				
Setting			Two-	stage				
Servo-	Туре			-				
motor	Run time	s		-				
Heat		kW	57/65 ÷ 106	78/91 ÷ 160				
output		Mcal/h	49/56 ÷ 87	67/78,3 ÷ 138				
output		kg/h	4,8/5,5 ÷ 8,5	6,6/7,7 ÷ 13,5				
Working	g temperature	°C min./max.	0/	'40				
Not colo	rific value	kWh/kg	1'	1,8				
ivet care	illic value	kcal/kg	10.	200				
Viscosit	y at 20°C	mm ² /s (cSt)	4	÷ 6				
D	Туре		R.E	3.L.				
Pump	Delivery	kg/h at 12 bar	3	60				
Atomise	ed pressure	bar	8 ÷ 15					
Light oil	temperature	max. °C	50					
Fuel pre	-heater		NO					
Fan		type	forward ti	Ited blades				
Air tem	perature	max. °C	4	10				
Electrica	al supply	Ph/Hz/V	1/50/23	30 ±10%				
Aux. elec	ctrical supply	Ph/Hz/V		-				
Control	box	type	R.B.L. 5	50 SMD				
Total ele	ectrical output	kW	0,39	0,47				
Total rat	ed current	A	1,9	2,1				
Protecti	on level	IP	4	0				
Electric	motor output	kW	0,39	0,47				
Rated m	otor current	Α	1,9	2,1				
Motor ta	ake-off current	A	8,5	9,8				
Motor p	rotection level	IP		20				
Ignition	transformer		incorporated in	the control box				
Operation	on		intermittent (at least	one halt every 24 h)				
	ressure	dB(A)	64	71				
CO Emis		mg/kWh	<	60				
Grade of	smoke indicator	•		1				
C _x H _y Em	nissions	mg/kWh	<1 <10 AFTER THE FIRST 20s					
NOx Em		mg/kWh		20				
Directive	es		89/336/CEE. 73/2	3/CEE, 98/37/CEE,				
Conforn	ning to:			. UZ-9 - BlmSchV 1996				
	J		CE - 0036 0270/99	CE - 0036 0269/99				
0	tions		BUWAL - Nr.197012	BUWAL - Nr. 197012				

Reference conditions:

Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.
Noise was measured in the boiler room behind the burner at a distance of 1 meter.





Modulation range

Test conditions conforming to EN 267, RAL-UZ9 and LRV 92: Temperature: 20 $^{\circ}\text{C}$ Pressure: 1013.5 mbar

Altitude: 100 m a.s.l.



kW



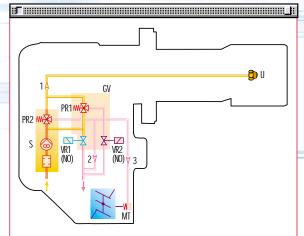
FUEL SUPPLY

HYDRAULIC CIRCUITS

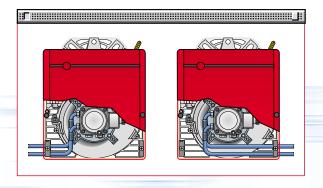
All the burners have a geared pump Riello with double safety valve on the return circuit.



Fuel pump



S	Pump with filter and pressure regulator on the delivery pipework
VR1(NO)	1 st stage oil return valve normally open
VR2(NO)	2 nd stage oil return valve normally open
1	Oil delivery pipe to the nozzle/s
2	Oil return pipe from the 2 nd stage regulator
3	Oil delivery pipe to the air damper hydraulic jack
MT	Air damper hydraulic jack for the 2 nd stage
PR1	1 st stage oil regulator
PR2	2 nd stage oil regulator
GV	Valve unit
U	Nozzle



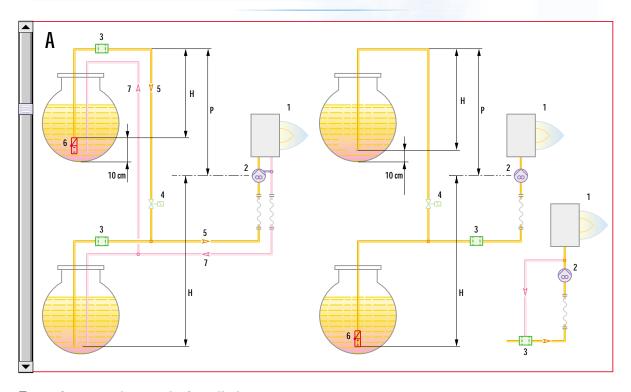
Fuel feed to the burner can be from the right or the left side on all models.

DIMENSIONING OF THE FUEL SUPPLY LINES

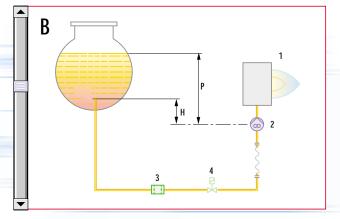
The fuel feed must be completed with the safety devices required by the local regulations in force.

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	MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]								
	▼ Type	A system	▼ Type	B system					
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm					
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	-	-					



Type of system that can be installed



Н	Difference in height
Ø	Internal pipe diameter
Р	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.



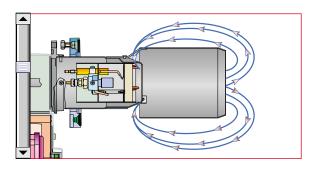
Air suction



COMBUSTION HEAD

REDUCING FLAME TEMPERATURE

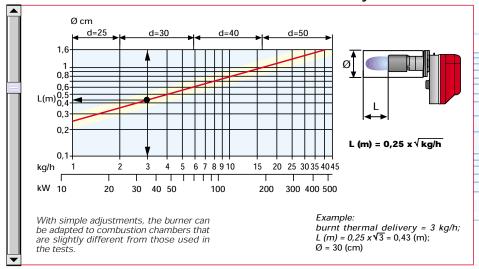
The configuration of the combustion head provokes internal recirculation of the combustion substances. This re-circulation reduces the flame temperature and therefore the NOx emissions. Furthermore, re-circulation of the combustion substances speeds up evaporation of combustible droplets creating gassy type combustion, similar to gas burner blue flame.





Combustion head

Combustion chamber dimensions used in the test laboratory

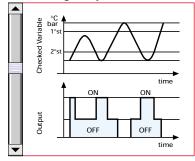




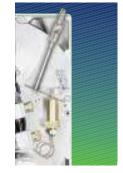


All these models have two-stage output adjustment.

"Two-stage" operation



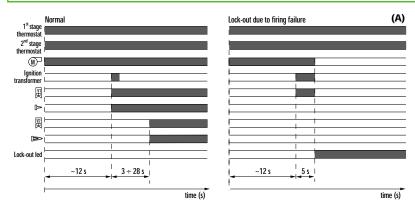




Air damper adjustment

Reduced output ignition device

FIRING



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

Correct operations

Os The burner begins the firing cycle.
Os-12s Pre-purge with the air damper open.

12s 1st stage ignition. 15s-40s 2nd stage ignition.

Lock-out due to firing failure

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





ELECTRICAL CONNECTIONS to be made by the installer

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

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.



Appliance fitted with an ignition transformer









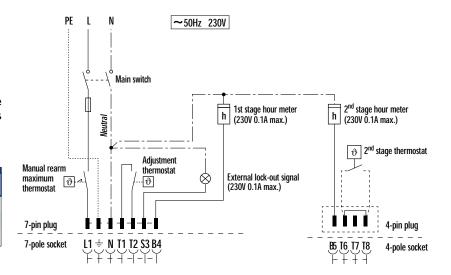
7-pole socket incorporated in the control box

"TWO-STAGE" OPERATIONS

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

Model	▼BG6D	▼BG7D		
	230V	230V		
F A	T6	T6		
L mm ²	1	1		

F = Fuse L = Lead section



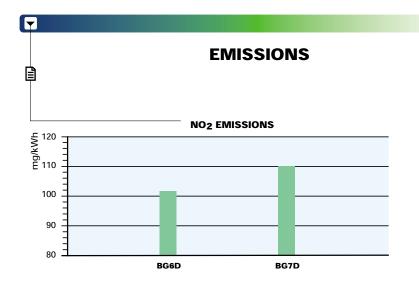
CONTROL BOX 550 SMD

The Gulliver Low NOx series burners BGD are fitted with a Riello Control Box, model 550 SMD.

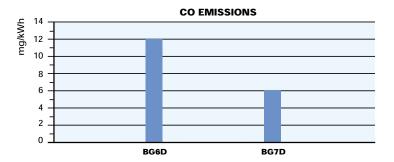
This control box has the following features:

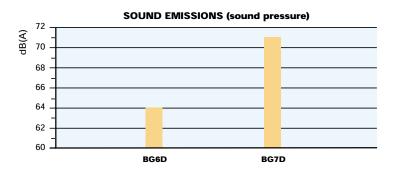
- Spark restoration
- Switch for burner post-ignition/recycling
- Led signalling the various working stages
- Post-combustion lock-out
- Socket for remote resetting.



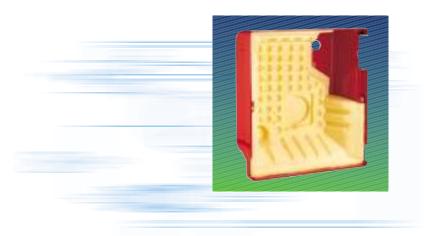








The emission data have been measured in the various models at maximum output, in conformity with EN 267 standard.



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

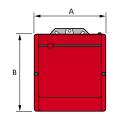


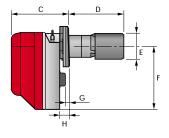


OVERALL DIMENSIONS (mm)

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.

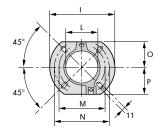
BURNER





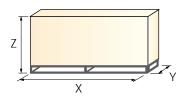
Model	Α	В	С	D	E	F	G	Н
▶ BG6D	300	345	228	284	131	285	12	36
▶ BG7D	300	345	247	394	165	285	12	36

BURNER-BOILER MOUNTING FLANGE



Model	I	L	М	N	Ο	Р
▶ BG6D	189	106	140	170	83	83
▶ BG7D	213	127	160	190	99	99

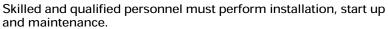
PACKAGING



Model	Х	Υ	Z	kg
▶ BG6D	590	335	420	20
▶ BG7D	590	335	420	20



INSTALLATION DESCRIPTION



A nozzle is fitted to the burner 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 SETTINGS

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



▶ 1st stage air damper position adjustment.



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



MAINTENANCE

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







ACCESSORIES



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.



Tes	ter
Burner	Kit code
BG6D - BG7D	3087211



Direct testing	Measurements
M MOTOR	V L1-N Main voltage
The switch feeds the motor.	(230 V)
The switch feeds electromagnetic winding of the coil. A red led signals excitation stage, and a green	A TITE Pre-heater
led signals retainer stage.	current consumption
□□□□ PRE-HEATER	VM
The switch feeds the light oil pre-heater; a green led signals the thermostat cut-in.	Secondary voltage (low voltage)
TRANSFORMER	(A) [
The switch feeds the firing transformer inside the control box and excites the oil valve.	Photo-resistance current consumption

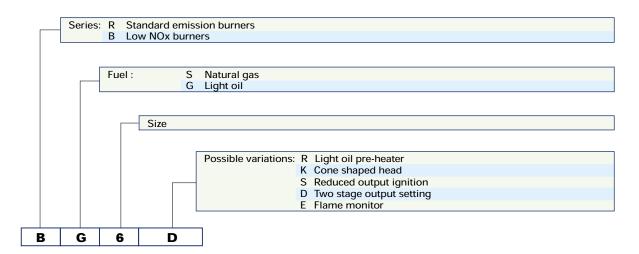




A special index will help you choose the right burner from the BGD models available.

There is also a clear and detailed product specification and description.

DESIGNATION OF GULLIVER BURNERS



LIST OF AVAILABLE MODELS

BG6D 57/65 ÷ 106 kW BG7D 78/91 ÷ 160 kW



SPECIFICATION DESCRIPTION

Burner:

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

- Fan with forward inclined blades
- Cover lined with sound-deadening material
- Air damper completely closed in stand by
- Air damper, with 1st and 2nd stage adjustment (2nd stage adjustment without removing the casing)
- 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
- IRD for flame detection
- Electronic flame control equipment
- Protective filter against radio interference
- IP 40 protection level.

Approval:

- EN 267 standard
- RAL UZ-9 (only for BG6D)
- LRV 92.

Conforming to European directives:

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

Conforming to:

- BlmSchV 1996.

Supplied materials:

- 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
- 4-pin plug
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Tester for checking the various components.









RIELLO s.p.A. - Via degli Alpini, 1 - 37045 LEGNAGO (VR) Italy Tel. ++39.0442630111 - Fax ++39.044221980

 $Internet: http://www.rielloburners.com \ - \ E-mail: rburners@rielloburners.com \\$



CE BUWAL

TWO STAGE LOW NOx OIL BURNERS

▶ RL BLU SERIES

▶ **RL 22 BLU** 130 ÷ 249 kW

▶ **RL 32 BLU** 237 ÷ 356 kW



The RL BLU series of burners have been designed for use in hot or superheated water boilers, hot air or steam generators, diathermic oil boilers. The series includes two models with output ranging from 95 to 356 kW. A servomotor with three adjustable positions guarantees correct air output and air damper closing when the burner is turned off.

The burners are fitted with an electronic device STĂTUS PANEL, which supplies complete diagnostic: hour meter, ignition meter, identification of trouble shooting. Special care has been paid to keeping overall dimensions compact, to easy servicing, to design and to noise emissions.

The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates and low NOx emissions.



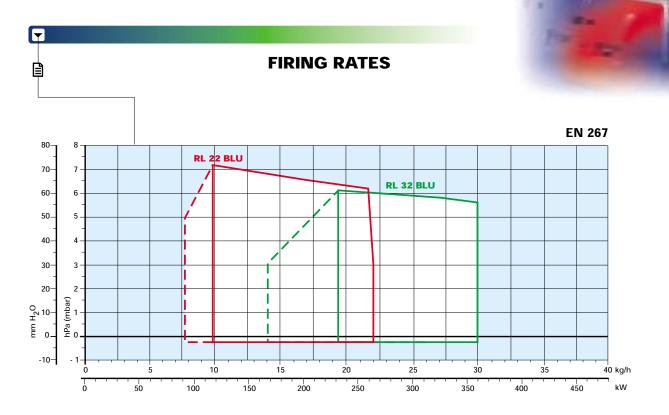


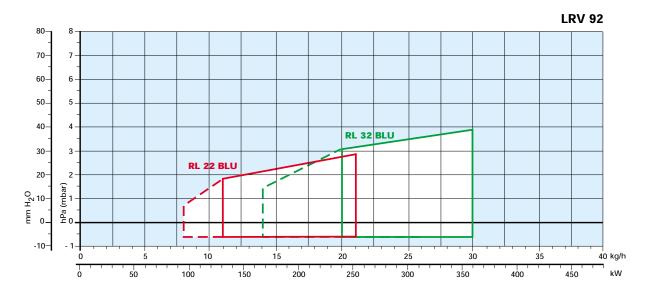
TECHNICAL DATA

Model			▼ RL22 BLU	▼ RL32 BLU			
Setting			Two-stage				
Modula	tion ratio at max	c. output	1,3 ÷ 1				
Servo-	Туре		STA4,5 B0.37/6				
motor	Run time	s		4,5			
Heat		kW	95/130÷249	166/237÷356			
output		Mcal/h	82/112÷214	143/204÷306			
оперис		Kg/h	8/11÷21	14/20÷30			
Working	g temperature	°C min./max.		0/40			
Not cale	orific value	kWh/kg		11,8			
		Kcal/kg		10200			
Viscosit	y at 20°C	mm²/s (cSt)		4 ÷ 6			
Pump	Туре		A	T 2 55 C			
· unip	Output	kg/h a 20 bar		60			
Atomise	ed pressure	bar		20			
Fuel ten	nperature	Max. °C		50			
Fan		Туре	Centrifugal with reverse curve blades				
Air tem	perature	Max. °C	60				
Electrica	al supply	Ph/Hz/V	1/50/230~(±10%)				
Auxiliary	electrical supply	Ph/Hz/V	1/50/	230~(±10%)			
Control	box	Туре	İ	LOA 24			
Total ele	ectrical power	kW	0,6	0,6			
Auxiliary	electrical power	kW	0,18	0,18			
Protecti	on level	IP		44			
Motor e	lectrical power	kW	0,42	0,42			
Rated n	notor current	Α	2,9	2,9			
Motor s	tart current	Α	11	11			
Motor p	rotection level	IP		54			
Ignition		V1 - V2	230	V - 2x5 kV			
transfor	mer	l1 - l2	1,9.	A - 30 mA			
Operation	on		Intermittent (at le	ast one stop every 24 h)			
Sound p	oressure	dBA	71	72			
Sound o	output	w		-			
CO emis	ssion	mg/kWh		< 10			
Grade of	smoke indicator	N° Bach.		<1			
C _x H _y Em	nission	mg/kWh	10 (After the first 20 s)				
NOx Em	nission	mg/kWh		< 120			
Directiv	e		73/23 - 89/336	6 - 98/37 - 92/42 EEC			
Accordi	ng to		EN 26	67 - LRV 92			
Certifica	ation		BUWAL Nr 100009				

Reference conditions:

Temperature: 20°c Pressure: 1013.5 mbar Altitude: 100 meters a.S.L. Noise measured at a distance of 1 meter.





Useful rate for the choice of the burner

 1^{-1} 1^{st} stage operating rate

Test conditions conforming to EN 267: Temperature: 20°C Pressure: 1013.5 mbar Altitude: 100 m.s.l.





FUEL SUPPLY

HYDRAULIC CIRCUIT

The burners are fitted with a pump that controls passage from first to second stage by a pressure jump.

The pump is fitted with a safety valve, supplied on ignition and constantly during working, and a control valve for the passage from low to high pressure.

In first stage the control valve remains open and the fuel reaches the nozzle at low pressure; when the thermostat of the second stage triggers because greater heat is required, the control valve closes allowing the fuel to reach the nozzle at high pressure.

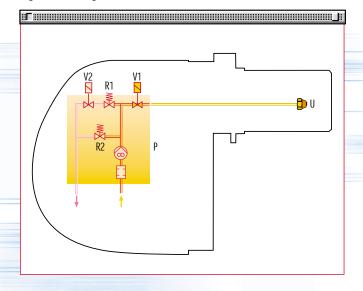
The pump does not need calibrating, as it is set in the factory at 22 bar in high pressure and 9 bar in low pressure; however, both pressure levels can be changed if necessary, by adjusting the regulators fitted on the pump.



Example of the hydraulic circuit on RL 32 BLU burners

The pump has a by-pass that links the return circuit with suction, in the case of single pipe working. The pump is fitted with the by-pass closed, which means it is set for working with two pipes.

Hydraulic layout of RL 22 - 32 BLU burners



Р	Pump with filter and control of two stage output
V2	2 nd stage valve (normally open)
R1	1 st stage regulator
V1	1 st stage valve
U	Nozzle
R2	2 nd stage regulator

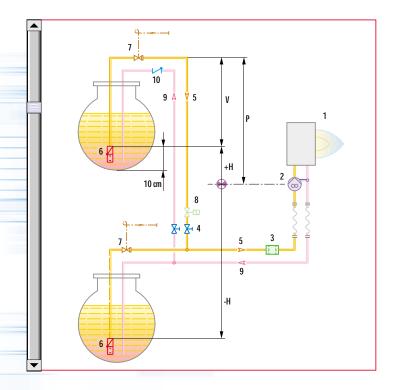


DIMENSIONING OF THE FUEL SUPPLY LINES

The fuel feed must be completed with the safety devices required by the local norms.

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

MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L (m)								
Model	•	▼ RL22 BLU - RL32 BLU						
Piping diameter	Ø8mm	Ø10mm	Ø12mm					
+H, -H (m)	L _{max} (m)	L _{max} (m)	L _{max} (m)					
+4,0	52	134	160					
+3,0	46	119	160					
+2,0	39	104	160					
+1,0	33	89	160					
+0,5	30	80	160					
0	27	73	160					
-0,5	24	66	144					
-1,0	21	58	128					
-2,0	15	43	96					
-3,0	8	28	65					
-4,0	3	12	33					



	Bigg I I I I I I I I I I I I I I I I I I
Н	Difference in height pump-foot valve
Ø	Internal pipe diameter
Р	Height ≤ 10 m
V	Height ≤ 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

note

with ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.



T

VENTILATION

The ventilation circuit produces low noise levels with high performance pressure and air output, in

spite of the compact dimensions.

The use of reverse curve blades and sound-proofing material keeps noise level very low.

Air setting through the servomotor guarantees correct fuel output at each working stage.



Example of air setting servomotor



COMBUSTION HEAD

The combustion head has been designed to create partial smoke recirculation; this way, thanks to lower temperatures reached,

NOx emissions are reduced, taking the value below the level allowed by the strictest norms.

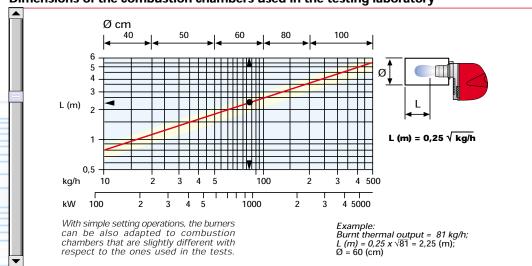
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal positioning of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.



Example of a RL/BLU burner combustion head

Dimensions of the combustion chambers used in the testing laboratory







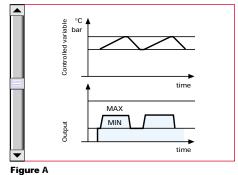
OUTPUT SETTING

With two-stage setting, the RL 22 and 32 BLU burners can follow the temperature load requested by the system.

A modulation ration of 1.3:1 is reached, thanks to the "pressure jump" technique; the air is adapted to the servomotor rotations.

On "two stage" setting, the burner gradually adjusts output to the requested level, by varying between the two pre-set levels (see figure A).

Two-stage setting

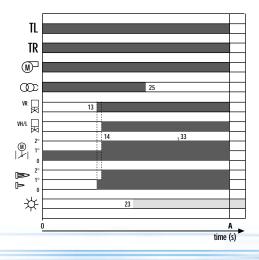


= Electrical supply on ■ Burner lock-out "0" $=2^{nd}$ stage operation "T" • $\Lambda = 1^{st}$ stage operation "T" ℧ = Heating load reached "T" (Stand-by) "1111' **★** = LED flashing "1111 = LED steady

The RL 22-32 BLU burners are equipped of an exclusive electronic device "Status Panel" that, in every moments, shows all burners operational modes and finds eventual anomalies during the operational cycle.

FIRING

RL 22 BLU - RL 32 BLU



- 0" The burner begins the firing cycle: the motor and transformer are supplied; the servomotor opens in the pre-purge position.
- 13" Ignition: the VR valve is supplied.
- 14" Output can be increased: the servomotor opens in the 2nd stage position and the VH/L valve is supplied.



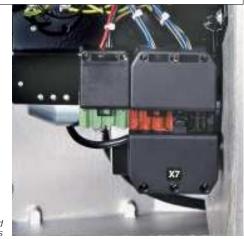




ELECTRICAL CONNECTIONS To be made by the installer

Electrical connections must be made by qualified and skilled personnel, according to the local norms.

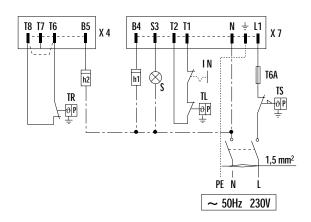
RL22 and 32 BLU burners are supplied with sockets and plugs for easier electrical connections.



Example of the terminal board for electrical connections

"TWO-STAGE" SETTING

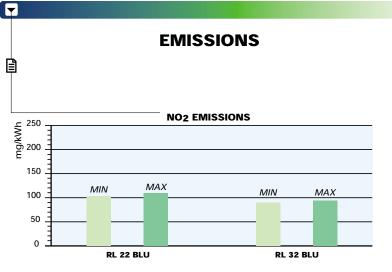
RL 22 BLU - RL 32 BLU



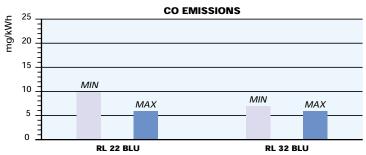
- h1 h2 IN X4 X7 S TL TR TS
- First stage hour meter
 Second stage hour meter
 Manual switch
 4 pin plug
 7 pin plug
 External lock-out signal
 Threshold thermostat
 High/low flame setting thermostat
 Safety thermostat
 6a fuse

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

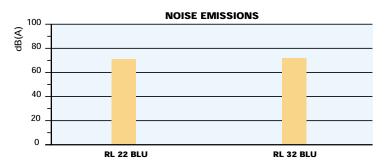
Model	▼ RL 22 BLU	▼ RL 32 BLU		
	230V	230V		
F A	T6	T6		
L mm ²	1,5	1,5		





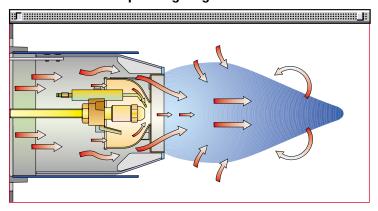


The emissions of NO₂ and CO have been measured, for the various models, at minimum and maximum output according to EN 267 standard.



Sound emissions have been measured at maximum output.

Combustion head operating diagram



The combustion head on the RL22 - 32 BLU burners is a conical type, and its operating principle is based on recirculating the combustion exaust gas; even distribution of air to the head garantees optimum mix to the elements.

The special design of the central diffuser also allows optimum ignition and air control.

The first quantity of air is aimed towards the centre of the head, where combustion develops to avoid strong flame oxidation. A second part is directed towards the flame stability disc where, due

to the conic shape of the mobile shutter, it gains speed and activates smoke recirculation. All this aids reduction of polluting emissions, obtaining values lower than the levels allowed by the strictest regulations norms.



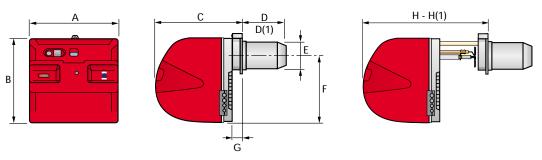


OVERALL DIMENSIONS (mm)



BURNER

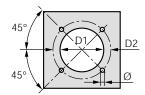
RL 22 BLU - RL 32 BLU



Model	А	В	С	D - D(1)	Е	F	G	H - H(1)
▶ RL 22 BLU	476	474	468	197 - 276	140	352	52	604 - 739
▶ RL 32 BLU	476	474	468	217 - 293	140	352	52	604 - 739

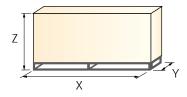
(1) dimension with extended head

BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	Ø	
▶ RL 22 BLU	160	224	M8	
▶ RL 32 BLU	160	224	M8	

PACKAGING



Model	Χ	Υ	Z	kg
▶ RL 22 BLU	850	540	550	40
▶ RL 32 BLU	850	540	550	41



INSTALLATION DESCRIPTION

Installation, start up and maintenance must be carried out by qualified and skilled personnel. All operations must be performed in accordance with the technical handbook supplied with the burner.



FIXING THE BURNER TO THE BOILER AND INITIAL SETTINGS

- ▶ All the burners have slide bars, for easier installation and maintenance.
- After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.
- ▶ Adjust the combustion head.
- ▶ Refit the burner casing to the slide bars.
- Install the nozzle, choosing this on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- ▶ Check the position of the electrodes.
- ▶ Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.





HYDRAULIC AND ELECTRICAL CONNECTIONS AND START UP

- ▶ The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- ▶ Prime the pump by turning the motor.
- On start up, check:
 - Pressure pump (to max. and min.)
 - Combustion quality, in terms of unburned substances and excess air.









ACCESSORIES

Nozzles

Normally, RL 22 and 32 BLU burners require standard or full nozzles; the nozzles are chosen on the basis of the maximum output required from the application. The features of the recommended nozzles are listed below.



		Nozzles		
GPH	Rated output [kg/h] at 8 [bar]	Rated output [kg/h] at 20 [bar]	Delavan 60° A Code	Monarch 60° PLP Code
2.25	7.4	11.9	3042134	3041132
2.50	8.2	13.4	3042144	3041142
3.00	9.9	16.1	3042148	3041152
3.50	11.5	18.8	3042164	3041162
4.00	13.2	21.5	3042174	3041172
4.50	14.8	24.0	3042184	3041182
5.00	16.5	26.8	3042194	3041192
5.50	18.1	29.5	3042204	3041202
6.00	19.8	32.2	3042214	3041212

Extended heads

"Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kits available for the various burners, giving the original and the extended lengths, are listed below.



Combustion head extension kits				
Burner	Standard head length (mm)	Extended head length (mm)	Kit code	
RL 22 BLU	197	276	3010204	
RL 32 BLU	217	293	3010205	

Sound proofing box

If noise emission needs reducing even further, sound-proofing boxes are available, as given in the following table:



Sound proofing box				
Burner	Box type	Box code		
RL 22 BLU - RL 32 BLU	C2	3000777		





With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal.

To solve this problem, we recommend fitting a degassing unit near the burner. Two versions are available with or without filter:



Degassing unit				
Burner	Degassing unit with filter Code	Degassing unit without filter Code		
RL 22 BLU - RL 32 BLU	3010055	3010054		

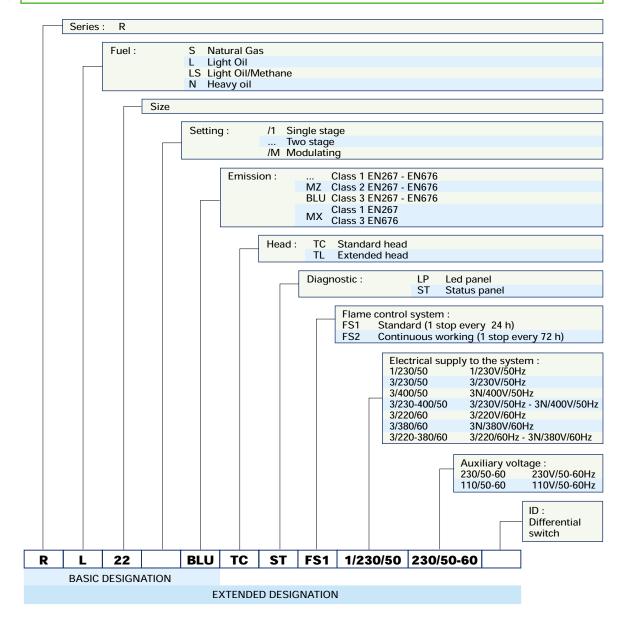




SPECIFICATION

A specific index guides your choice of burner from the various models available in the RL BLU series. Below is a clear and detailed specification description of the product.

DESIGNATION OF SERIES R BURNERS



LIST OF AVAILABLE MODELS

RL 22 BLU TC ST FS1 1/230/50 230/50-60 RL 32 BLU TC ST FS1 1/230/50 230/50-60





PRODUCT SPECIFICATIONS

Burner:

Monoblock forced LOW NOx oil burner with completely automatic two stage setting, made up of:

- air suction circuit lined with sound-deadening material
- fan with reverse curve blades high performance with low sound emissions
- air damper for air setting, driven by the adjustable servomotor
- starting motor at 2800 rpm, single-phase, 230V and 50Hz
- low emission combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - flame stability disk
- gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and vacuometer
 - internal by pass for single pipe installation
- two oil valves fitted directly on to the pump
- photocell for flame detection
- flame control panel
- electronic device to check all burners operational modes (status panel)
- burner on/off switch
- manual high/low flame switch
- flame inspection window
- slide bars for easier installation and maintenance
- protection filter against radio interference
- İP 44 electric protection level.

According to:

- 89/336/EEC directive (electromagnetic compatibility)
- 73/23/EEC directive (low voltage)
- 92/42/EEC directive (performance)
- 98/37/EEC directive (machinery)
- EN 267 (liquid fuel burners)
- LRV '92.

Standard equipment:

- 1 nozzle
- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- wiring loom fittings for electrical connections
- instruction handbook for installation, use and maintenance
- spare parts catalogue.

Available accessories to be ordered separately:

- nozzles
- head extension kit
- sound-proofing box
- degassing unit.







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