

## TWO STAGE LIGHT OIL BURNERS

### ► RIELLO 40 GI SERIES

► G10I	44/54 ÷ 120 kW
► G20I	71/95 ÷ 240 kW
► G20D	71/95 ÷ 240 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 residential heating. The Riello 40 GI series is available in three different models, with an output ranging from 54 to 240 kW, divided in two different structures.

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			▼ G10I	▼ G20I	▼ G20D
	Setting			Two stage		
Servo-motor	type			--		
	run time	s		--		
Heat output	kW			44/54 - 120	71/95 - 240	71/95 - 240
	Mcal/h			37,8/46,4 - 103,2	61/81,7 - 206,4	61/81,7 - 206,4
	kg/h			3,7/4,5 - 10	6/8 - 20	6/8 - 20
Working temperature		°C min./max.		0/40		
Fuel / air data	Net calorific value		kWh/kg	11,8		
			kcal/kg	10.200		
	Viscosity at 20°C		mm <sup>2</sup> /s (cSt)	4 ÷ 6		
	Pump	type		R.B.L.		
		output	kg/h at 12 bar	30		
	Atomised pressure		bar	8 ÷ 15		
	Fuel temperature		max. °C	50		
	Fuel pre-heater			NO		
	Fan		type	forward tilted blades		
	Air temperature		max. °C	40		
Electrical supply		Ph/Hz/V	1/50/230 ±10%			
Aux. electrical supply		Ph/Hz/V	--			
Control box		type	530 SE			
Electrical data	Total electrical power		kW	0,17	0,33	0,33
	Total rated current		A			
	Protection level		IP	40		
	Motor electrical power		kW	0,14	0,30	0,30
	Rated motor current		A	0,85	1,5	1,5
	Motor start current		A	3,5	6	6
	Motor protection level		IP	20		
Ignition transformer			incorporated in the control box			
Operation			intermittent (at least one halt every 24 h)			
Emissions	Sound pressure		dB(A)			
	CO Emissions		mg/kWh	<60		
	Grade of smoke indicator		N° Bach.	<1		
	C <sub>x</sub> H <sub>y</sub> Emissions		mg/kWh	<10 AFTER THE FIRST 20s		
Approval	NOx Emissions		mg/kWh	<250		
	Directives			89/339 (2004/108) EC, 73/23/EC, 98/37/EC, 92/42/EC		
	Conforming to			EN 267		
	Certifications			CE-0036 0258/99	CE-0036 0259/99	

## 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.

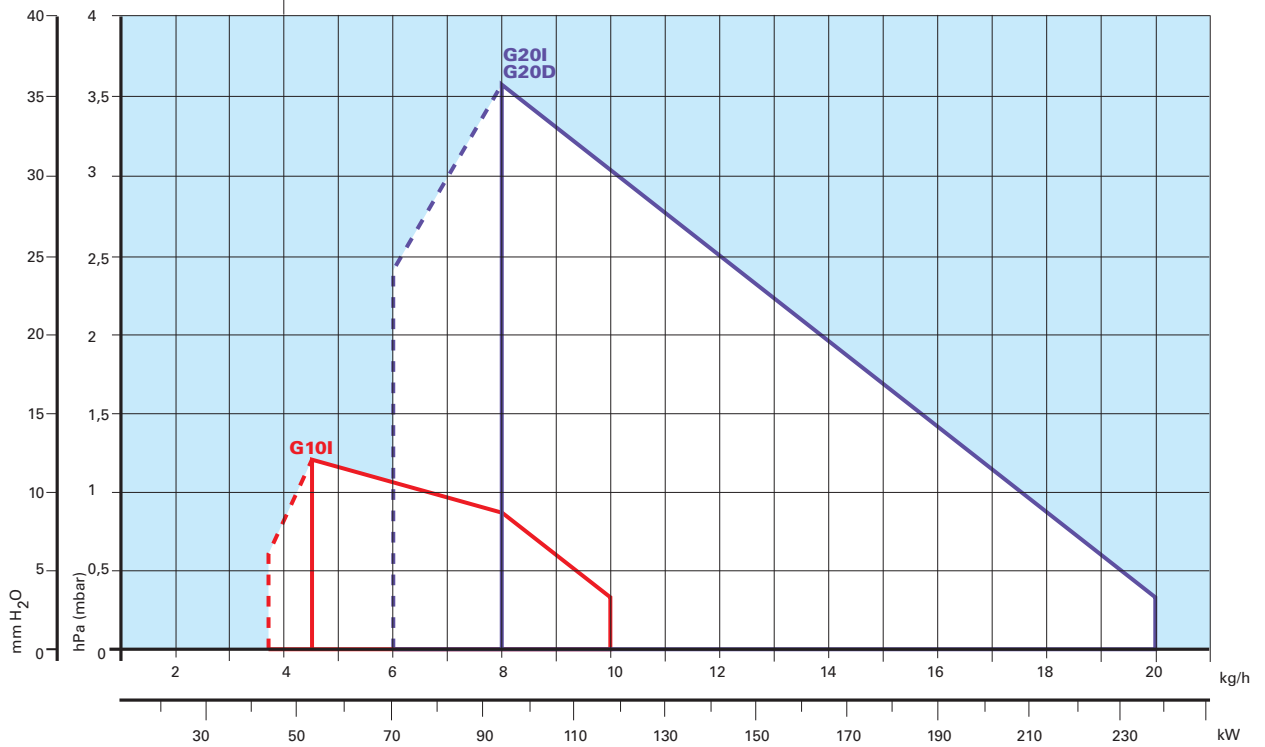
Hot air generation version: all these models, except G20D, can be used on hot air generator, using different control box.

G10I and G20I use 479 SE and 539 SE control box type.

Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed.

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

## FIRING RATES



Useful working field for choosing the burner

1st stage operation rate

**Test conditions conforming to EN 267 standards:**

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



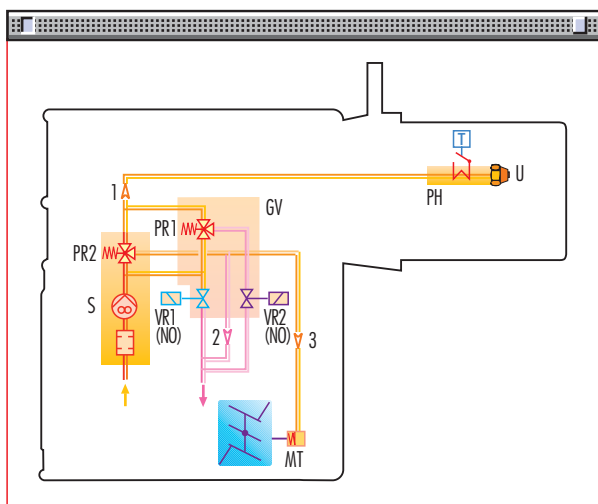
## FUEL SUPPLY

### 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 <sup>st</sup> stage oil return valve normally open
VR2(NO)	2 <sup>nd</sup> stage oil return valve normally open
1	Oil delivery pipe to the nozzle/s
2	Oil return pipe from the 2 <sup>nd</sup> stage regulator
3	Oil delivery pipe to the air damper hydraulic jack
MT	Air damper hydraulic jack for the 2 <sup>nd</sup> stage
PR1	1 <sup>st</sup> stage oil regulator
PR2	2 <sup>nd</sup> 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.

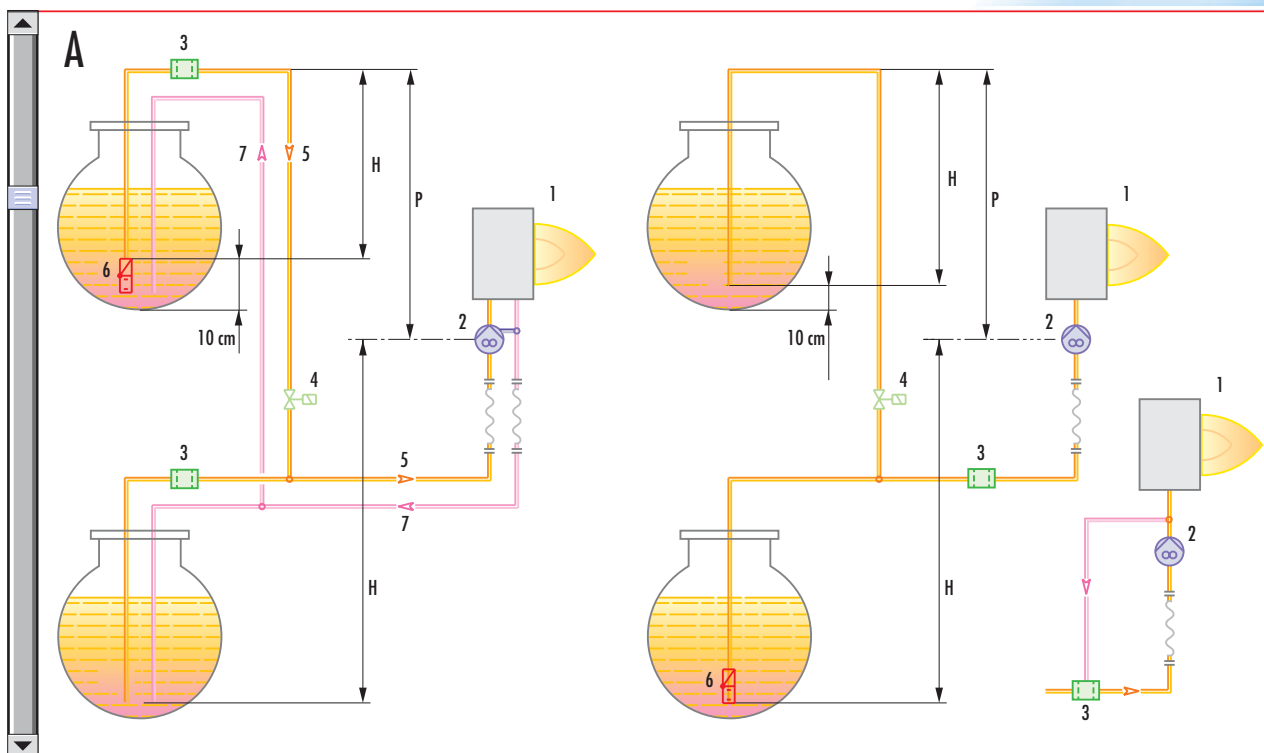


## DIMENSIONING OF THE FUEL SUPPLY LINES

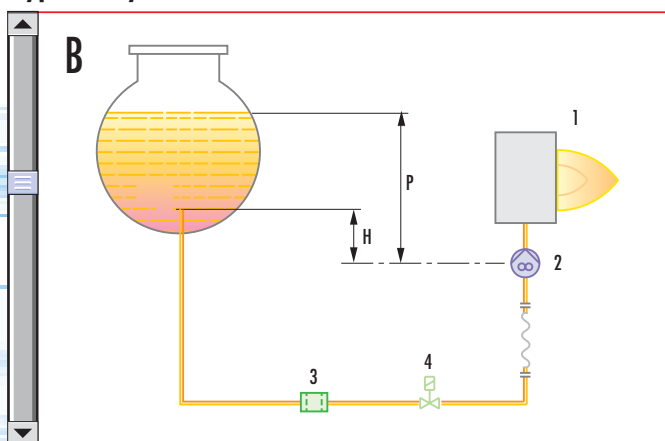
The fuel feed must be completed with the safety devices required by the local regulations in force.

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]				
Pipe size	▼ Type A system		▼ Type B system	
	Ø8mm	Ø10mm	Ø8mm	Ø10mm
H (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)
0	35	100	-	-
0,5	30	100	10	20
1,0	25	100	20	40
1,5	20	90	40	80
2,0	15	70	60	100
3,0	8	30	-	-
3,5	6	20	-	-



### Type of system that can be installed



H	Difference in height
Ø	Internal pipe diameter
P	Difference in height ≤ 4 m
1	Burner
2	Pump
3	Filter
4	Shut-off solenoid valve
5	Suction pipework
6	Bottom valve
7	Return pipework



## VENTILATION

The 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.

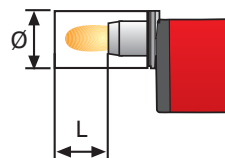
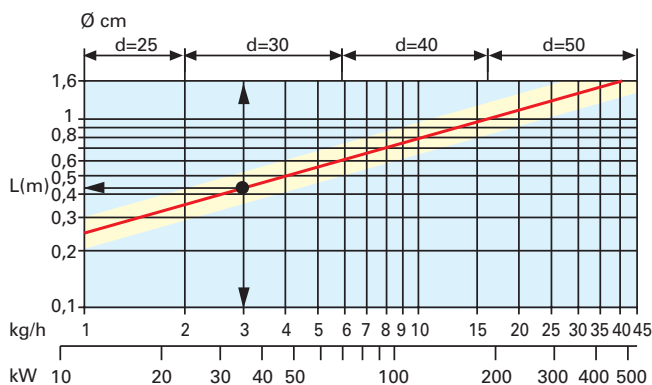
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.

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



$$L(m) = 0,25 \times \sqrt{\text{kg/h}}$$

With simple adjustments, the burner can be adapted to combustion chambers that are slightly different from those used in the tests.

Example:  
burnt thermal delivery = 3  $\text{kg/h}$ ;  
 $L(m) = 0,25 \times \sqrt{3} = 0,43(m)$ ;  
 $\varnothing = 30(\text{cm})$

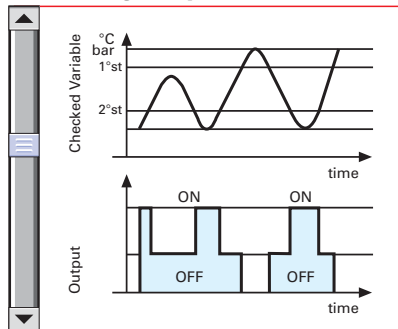
## OPERATION



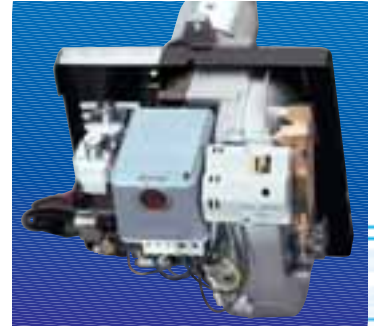
### BURNER OPERATION MODE

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

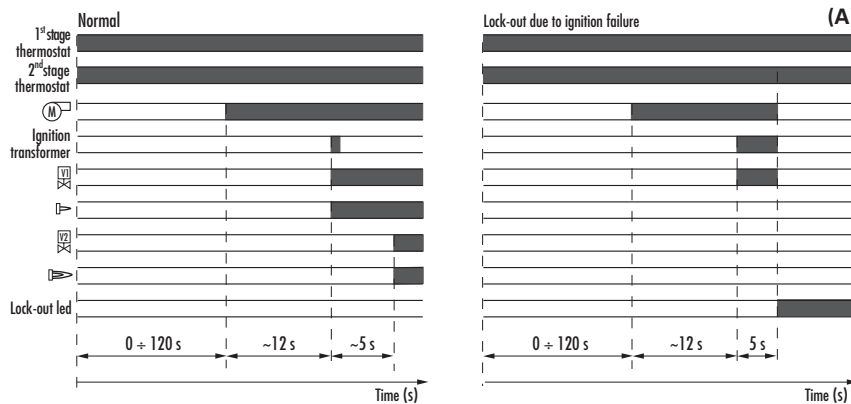


Air damper



Economizer

### START UP CYCLE



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

#### Correct operation

- 0s The burner begins the ignition cycle.
- 0s-12s Pre-purge with the air damper open.
- 12s 1<sup>st</sup> stage ignition.
- 17s-40s 2<sup>nd</sup> stage 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.



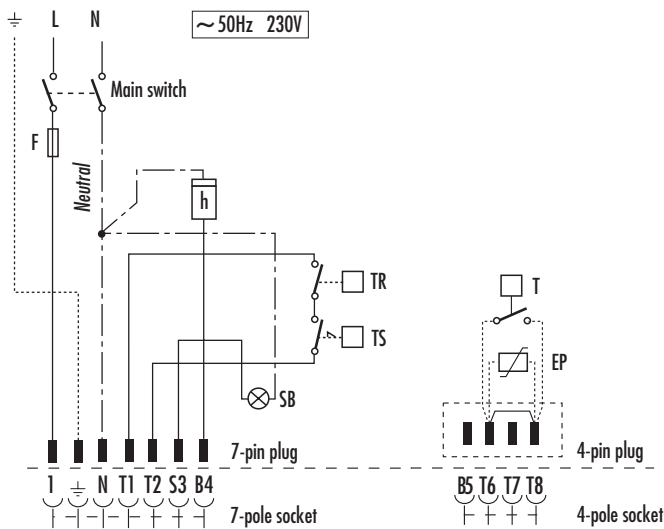
7-pole socket wiring with 7-pin plug



Control box fitted with an ignition transformer

### "TWO STAGE" OPERATION

#### 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)

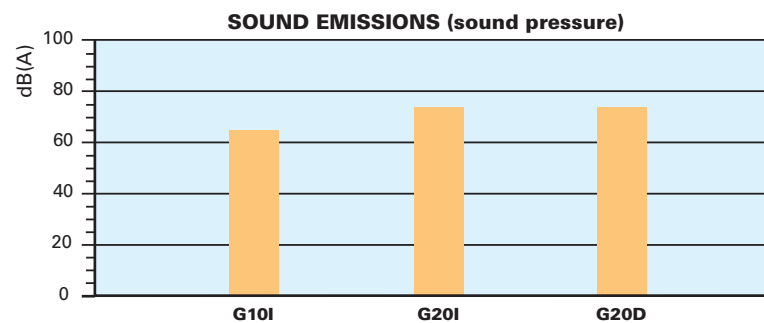
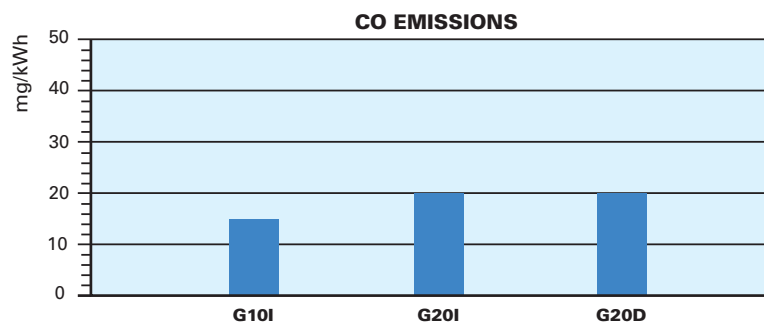
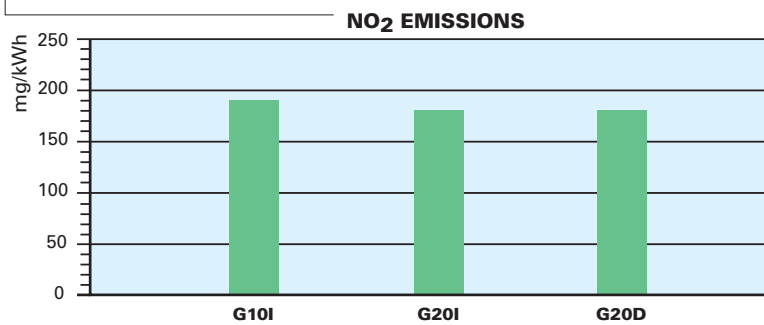
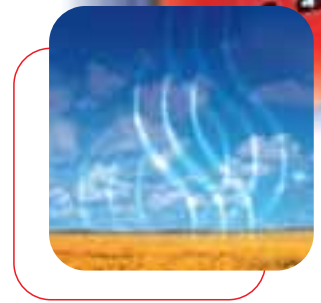
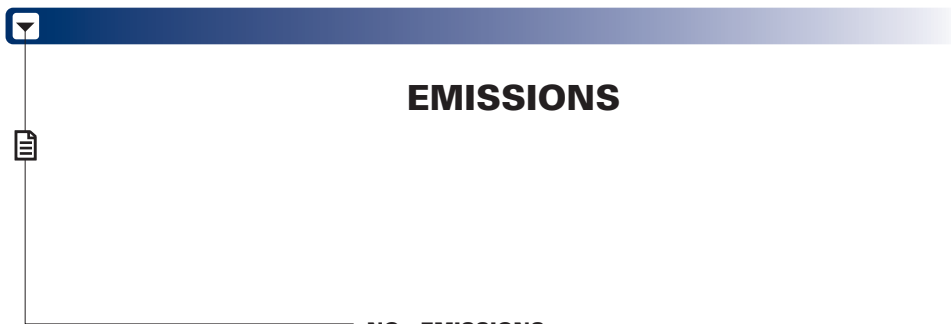
The following table shows the supply lead sections and types of fuse to be used.

Model	▼ G10I	▼ G20I	▼ G20D
	230V	230V	230V
F A	6	T6	T6
L mm <sup>2</sup>	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.

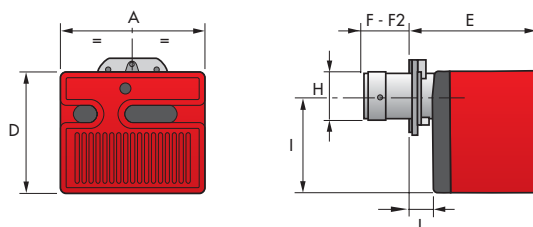




## OVERALL DIMENSIONS (mm)

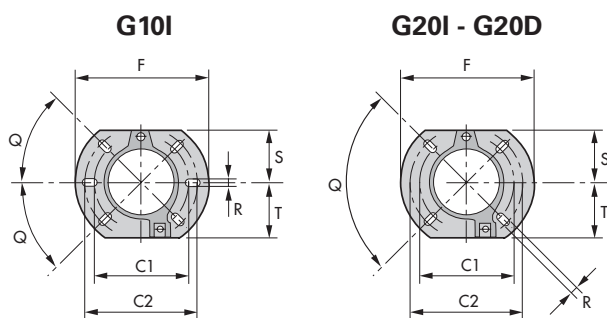
These models are distinguished by their reduced size, in relation to their outputs, which means they can be fitted to any boiler on the market.

### BURNERS



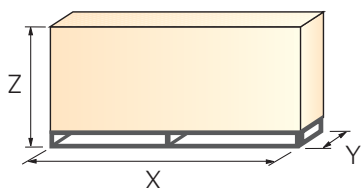
Model	A	D	E	F	F2	H	I	L
► G10I	305	262	261	108	-	105	204	40
► G20I - G20D	350	298	295	118	-	125	230	41

### BURNER-BOILER MOUNTING FLANGE



Model	C1	C2	F	Q	R	S	T
► G10I	140	170	189	45	11	83	83
► G20I	160	190	213	90	11	99	99
► G20D	160	190	213	90	11	99	99

### PACKAGING



Model	X	Y	Z	kg
► G10I	423	348	340	13
► G20I	483	393	377	15
► G20D	483	393	377	16,3



## 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.



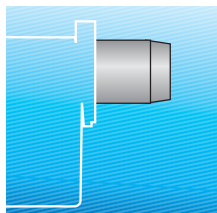


## BURNER ACCESSORIES



### Extended head kit

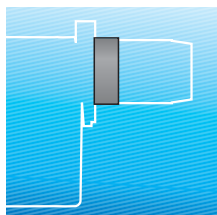
Kits of extended heads are available.



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 length reduction kit			
Burner	Accessory	Pulling back (mm)	Kit code
G10I	Spacer	25	3000672
G20I	Spacer	25	3000673
G20D	Spacer	25	3000673

### Light oil filter

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



Light oil filter		
Burner	Filtering degree (μm)	Code
G10I - G20I - G20D	60	3006561

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

Light oil filter		
Burner	Filtering degree (μm)	Code
G10I - G20I - G20D	60	3075011

Filter made up of aluminium cover, plastic tank and nylon filtering cartridge; available in packaging of 50 pieces.

### Light oil filter/degassing unit

To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly.



Light oil filter/degassing unit		
Burner	Filtering degree (μm)	Code
G10I - G20I - G20D	100	3000926



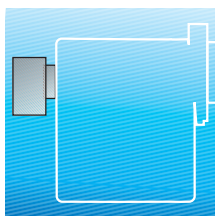
### Biodiesel kit

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

FAME according to EN 14213

### 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
G10I - G20I - G20D	3001030

### Hour counter kit for 530 SE and 531 SE control boxes

To measure the burner working time a hour counter kit is available.



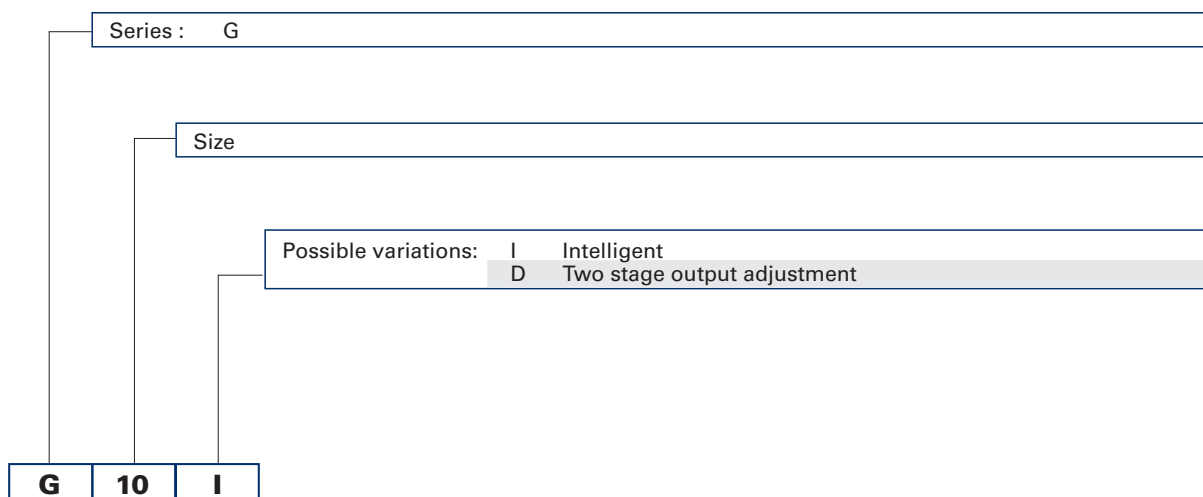
Hour counter kit for 530 SE and 531 SE control boxes	
Burner	Kit code
G10I - G20I - G20D	3000904



## 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

G10I	44/54	÷	120 kW
G20I	71/95	÷	240 kW
G20D	71/95	÷	240 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 X0D (IP40) protection level
- Reduced output ignition mechanism (optional)
- Electronic economizer.

### **Approval:**

- EN 267 standard

### **Conforming to:**

- Directive 89/336 (2004/108) EC (electromagnetic compatibility)
- Directive 73/23/EC (low voltage)
- Directive 98/37/EC (machinery)
- Directive 92/42/EC (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
- External probe (for "I" versions only)
- Maintenance assembly
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

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

- Extended head kit
- Spacer kit
- Light oil filter
- Light oil filter/degassing unit
- Biodiesel kit
- Remote control release kit for 530-531 SE control boxes
- Hour counter kit for 530 and 531 control boxes.





RIELLO S.p.A. - Via Ing. Pilade Riello, 5 - 37045 Legnago (VR) Italy  
Tel. ++39.0442630111 - Fax ++39.044221980

Internet: <http://www.rielloburners.com> - E-mail: [info@rielloburners.com](mailto:info@rielloburners.com)

Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed.  
This document contains confidential and proprietary information of RIELLO S.p.A.  
Unless authorised, this information shall not be divulged, nor duplicated in whole or in part.