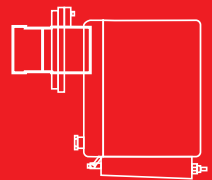
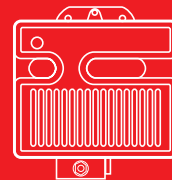




## RIELLO 40 N Series

One Stage Heavy Oil Burners

N 10	34 ÷	102 kW
N 20	102 ÷	217 kW



The Riello 40 N series of one stage heavy oil burners, is a complete range of products developed to respond to any request for residential heating. The Riello 40 N series is available in two different models, with an output ranging from 34 to 217 kW, divided in two different structures.

All the models use the same components designed by Riello for the Riello 40 N 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 N burners are fired before leaving the factory.

## Technical Data

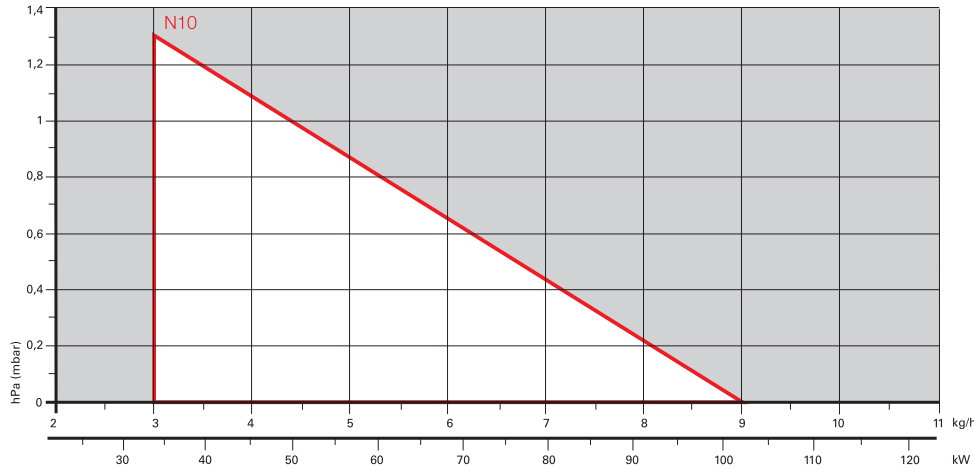
MODEL		R40 N10	R40 N20
Burner operation mode		One stage	
Modulation ratio at max. output		--	
Servomotor	type	--	
	run time s	--	
Heat output	kW	34 ÷ 102	102 ÷ 217
	Mcal/h	29.4 ÷ 88.2	88.2 ÷ 186.2
	Kg/h	3 ÷ 9	9 ÷ 19
Working temperature	°C min./max.	0/40	
<b>FUEL/AIR DATA</b>			
Heavy oil	net calorific value	kWh/kg	11.4
		kcal/kg	9800
	viscosity at 20°C	mm <sup>2</sup> /s (cSt)	25 - 50 (at 50°C)
Pump	type	Suntec	
	delivery	Kg/h	45 (at 20 bar)
Atomised pressure		bar	20
Fuel temperature		max. °C	50
Fuel pre-heater			NO
Fan		type	Centrifugal with forward tilted blades
Air temperature		max. °C	40
<b>ELECTRICAL DATA</b>			
Electrical supply		Ph/Hz/V	1/50/230 ± 10%
Auxiliary electrical supply		Ph/Hz/V	--
Control box		type	SIEMENS LMO
Total electrical power		kW	1,1
Auxiliary electrical power		kW	--
Protection level		IP	X0D (IP 40)
Fan motor	electrical power	kW	0,15
	protection level	IP	20
Pump motor	electrical power	kW	--
	rated current	A	--
	start up current	A	--
	protection level	IP	--
Ignition transformer	type	Incorporated in the control box	
	V1 - V2	5 Kv	
	I1 - I2	30 mA	
Operation		Intermittent (at least one stop every 24h)	
<b>APPROVAL</b>			
Directive		2006/42/EC - 2014/30/UE - 2014/35/UE	
Conforming to		--	
Certification		--	

### Reference conditions:

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter. Sound pressure measured in manufacturer's combustion laboratory, with burner operating on test boiler and at maximum rated output. The sound power is measured with the "Free Field" method, as per EN 15036, and according to an "Accuracy: Category 3" measuring accuracy, as set out in EN ISO 3746.

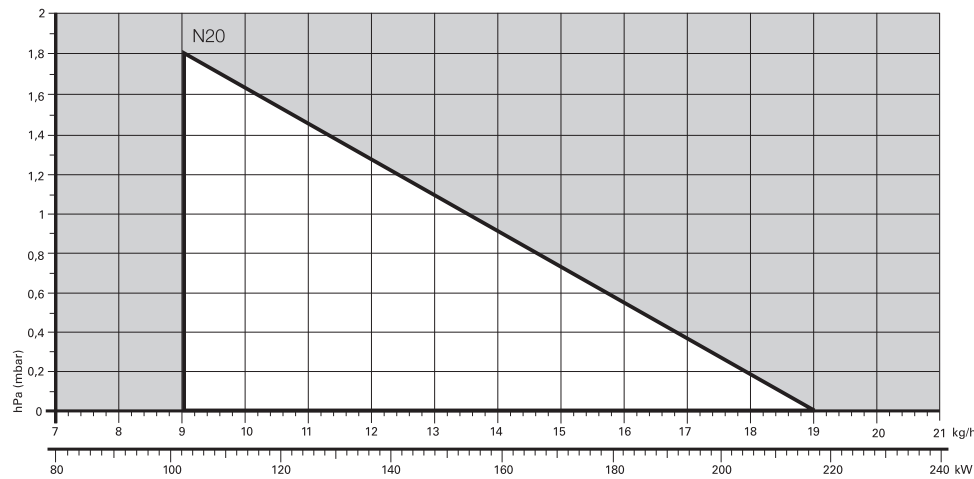
# Firing Rates

## RIELLO 40 N10 - N20



Useful working field for choosing the burner

Test conditions conforming to EN267  
 Temperature: 20°C  
 Pressure: 1013.5 mbar  
 Altitude: 0 m a.s.l.



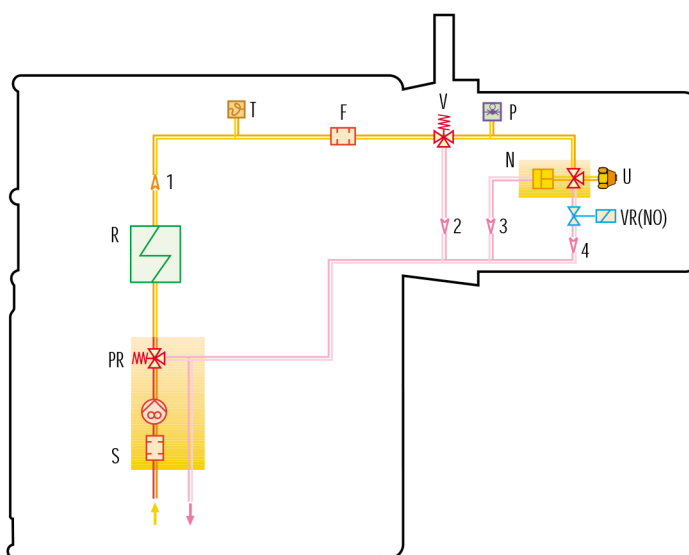
# Fuel Supply

## HYDRAULIC CIRCUIT

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



Fuel pump

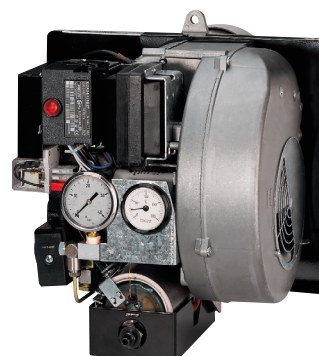


Fuel feed to the burner can be from the right or the left side on all models.

<b>F</b>	Filter
<b>N</b>	Nozzle holder
<b>PR</b>	Pressure oil regulator
<b>P</b>	Pressure gauge
<b>R</b>	Pre-heater
<b>S</b>	Pump with filter and pressure regulator on the delivery pipe
<b>T</b>	Thermostat
<b>U</b>	Nozzle
<b>V</b>	Degassing valve
<b>VR (NO)</b>	Oil return valve (usually open) on the delivery pipe
<b>1</b>	Oil input pipe to the nozzle
<b>2</b>	Oil return pipe from the degassing valve
<b>3</b>	Oil return pipe from the nozzle holder
<b>4</b>	Oil return pipe during pre-washing

## HEAVY OIL PRE-HEATER

This burner series is provided with a electrical oil pre-heater included in the burner housing constantly on.

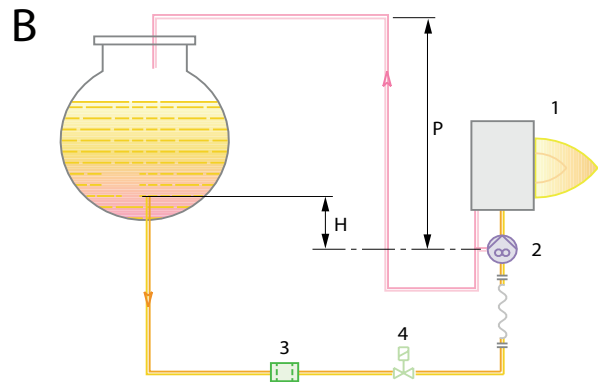
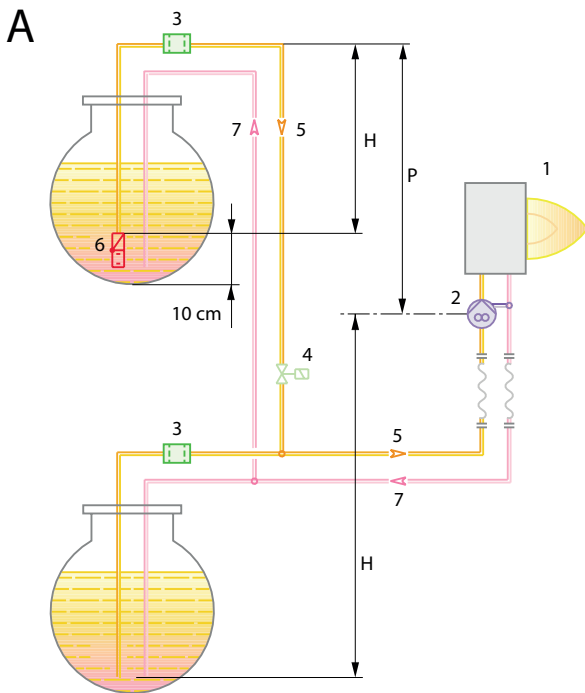


**SELECTING THE FUEL SUPPLY LINES**

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

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

Maximum equivalent length of the pipework L (m)				
	Type A system		Type B system	
Pipe size	Ø 1 1/4 mm	Ø 1 1/2 mm	Ø 3/4 mm	Ø 1 mm
H (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)	L <sub>max</sub> (m)
0	22	45	10	20
0.5	19	39	14	26
1.0	16	33	18	32
1.5	13	27	22	38
2.0	10	21	26	44
2.5	7	15	-	-
3	0	8	-	-



<b>H</b>	Pump/Foot valve height difference
<b>Ø</b>	Inside pipe diameter
<b>P</b>	Difference in height ≤ 10 m
<b>1</b>	Burner
<b>2</b>	Pump
<b>3</b>	Filter
<b>4</b>	Shut-off solenoid valve
<b>5</b>	Suction pipework
<b>6</b>	Bottom valve
<b>7</b>	Return pipework

## Ventilation

The ventilation circuits always ensure low noise levels with high performance of pressure and air delivery, inspite of their compact size.

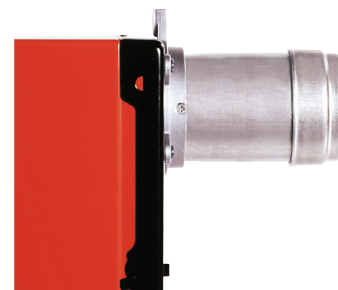


Air suction

## Combustion Head

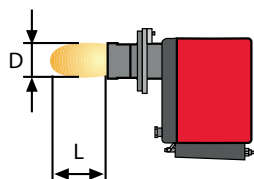
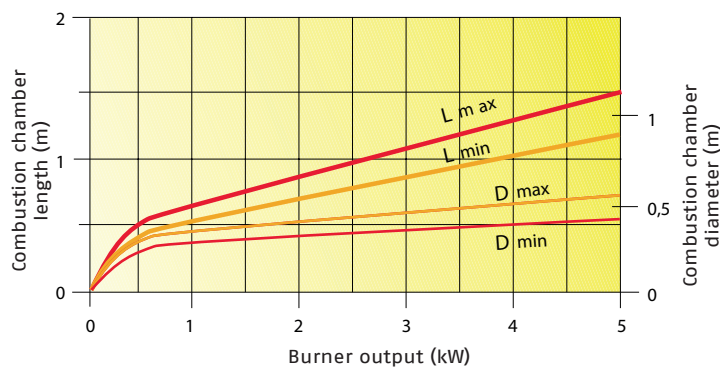
Simple adjustment to the combustion head allows adapting internal geometry of the head to the maximum rated output of the burner.

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

### SUGGESTED COMBUSTION CHAMBER DIMENSIONS

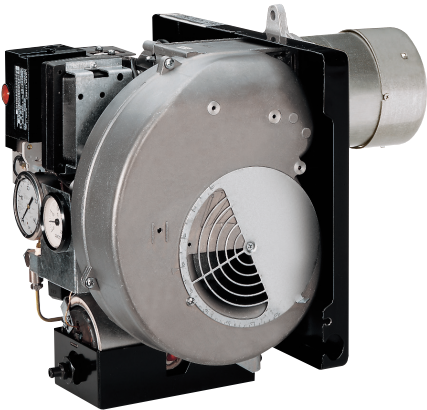


Example:  
 Burner thermal output = 350 kW;  
 L Combustion Chamber (m) = 1.2 m (medium value);  
 D Combustion Chamber (m) = 0.6 m (medium value)

# Operation

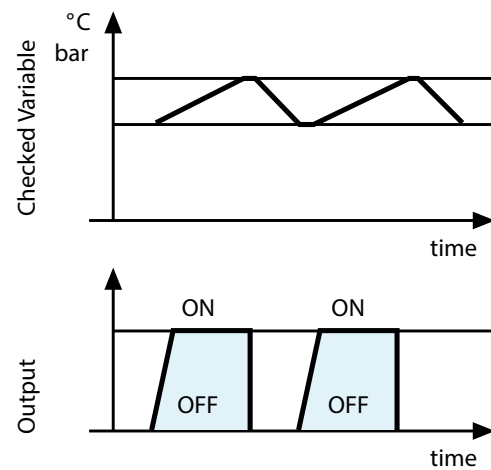
## BURNER OPERATION MODE

The burners of RIELLO 40 N series are one stage working. On "one stage" operation, the burner adjusts the output to the requested level, by varying between on-off phases (see picture A).



Air damper

## "ONE STAGE" OPERATION



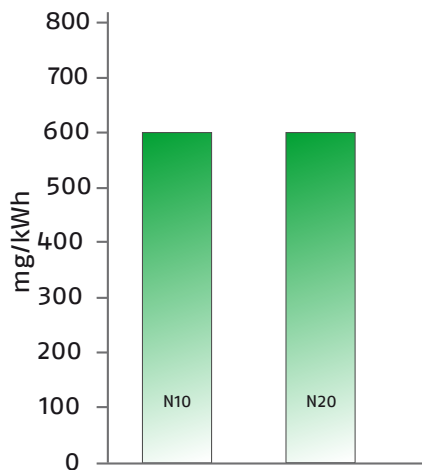
Picture A



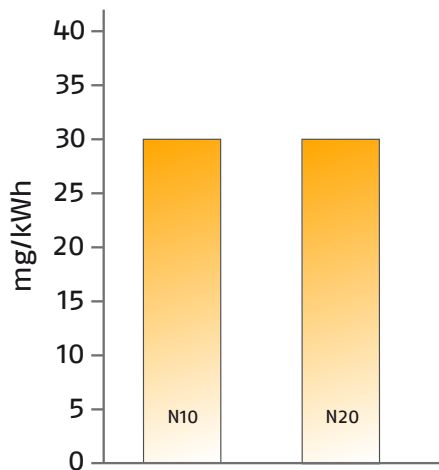
## Emissions

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

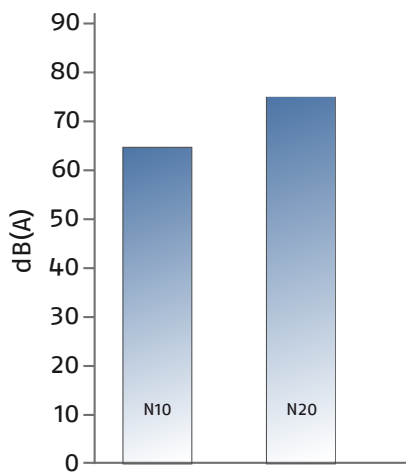
### NO<sub>2</sub> EMISSIONS



### CO EMISSIONS



### NOISE EMISSIONS



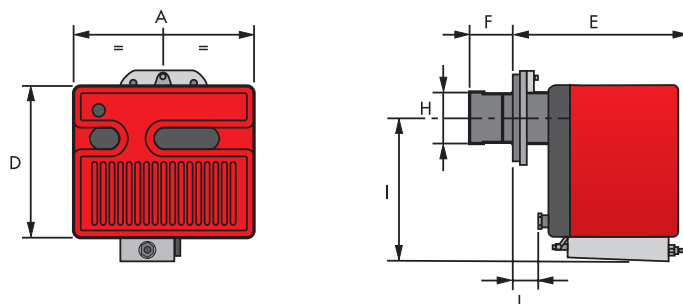
Special attention has been paid to noise reduction. All models are fitted with sound-proofing material inside the cover.



## 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



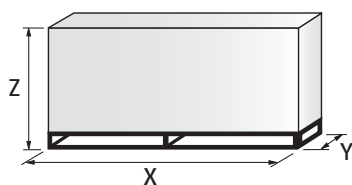
MODEL	A	D	E	F	H	I	L
N10	305	262	275	108	105	258	25
N20	350	298	295	118	125	280	35

### BURNER - BOILER MOUNTING FLANGE



MODEL	C1	C2	F	Q	R	S	T
N10	140	170	189	45°	11	83	83
N20	160	190	213	90°	11	99	99

### PACKAGING



MODEL	X	Y	Z	kg
N10	395	307	375	26
N20	425	352	410	29

## Installation Description

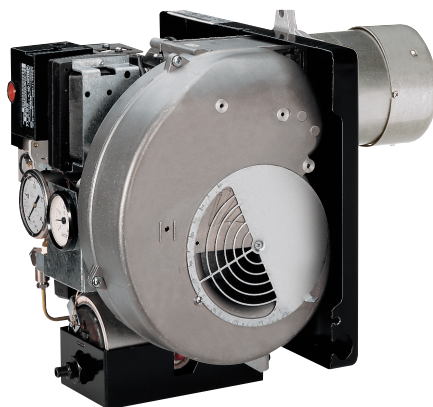
Skilled and qualified personnel must perform installation, start up and maintenance.

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.

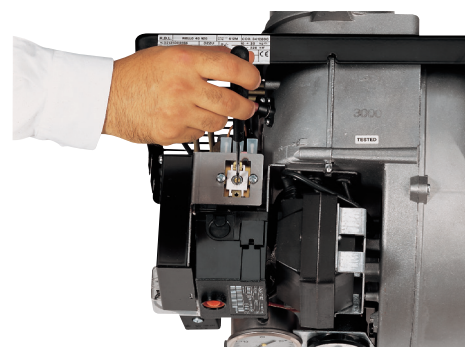
All operations must be carried in accordance with the technical handbook supplied with the burner.

### BURNER SETTING

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

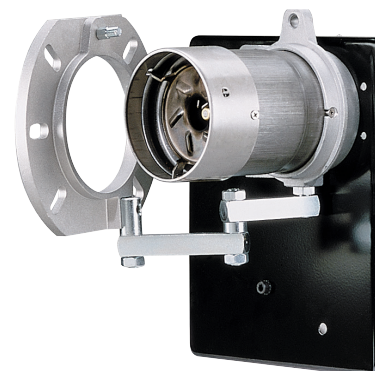


The heavy oil vaporisation can be improved adjusting the fuel temperature by a screw fitted on the adjustment thermostat.



### MAINTENANCE

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



## Burner accessories

### CARTRIDGE FILTER



BURNER	CODE
N10 - N20	3004588

### SELF-CLEANING FILTER

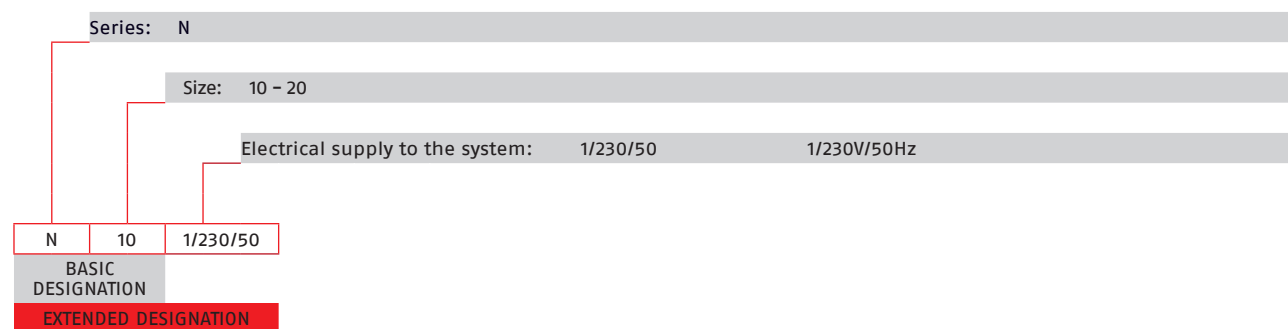


BURNER	CODE
N10 - N20	3000861

# Specification

## DESIGNATION OF SERIES

A specific index guides your choice of burner from the various models available in the RIELLO 40 N series. Below is a clear and detailed specification description of the product.



## AVAILABLE BURNER MODELS

BURNER MODELS		HEAT OUTPUT		TOTAL ELECTRICAL POWER	CERTIFICATION	NOTE
		(KW)	(Kg/h)	(KW)		
N10	1/230/50	34 - 102	3 - 9	1.1	-	(1)
N20	1/230/50	102 - 217	9 - 19	1.8	-	(1)

Net calorific value: 11,3 kWh/kg; 9720 kcal/kg - Max Viscosity at 50°C: 5°E (38 mm²/s, cSt), Type MEDIUM HEAVY OIL / USA n° 4.  
 (1) Austrian version.

**STATE OF SUPPLY**

Completely automatic monobloc heavy oil burners, one stage operation, made up to:

- Fan with forward curve blades
- Metallic cover lined with sound-proofing material
- Metallic air damper
- 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
- Heavy oil preheater
- Heavy oil filter into the preheater
- Heavy oil manometer
- Heavy oil thermometer
- Heavy oil protection valve
- Heavy oil outlet valve
- Adjustment thermostat with probe
- Thermostat for fuel low temperature
- Fuel feed solenoid valve incorporated in the pump
- Terminal block for electrical links
- Photocell for flame detection
- Electronic flame control equipment
- Electronic transformer
- Protective filter against radio interference
- IP X0D(IP 40) protection level.

**Conforming to:**

- 2014/30 UE Directive (electromagnetic compatibility)
- 2014/35 UE Directive (low voltage)
- 2006/42 EC Directive (machine)

**Standard equipment:**

- Heavy oil nozzle
- Two flexible pipes with seal for connection to the heavy oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal gasket
- Hinge kit
- Grommet
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

**Available accessories to be ordered separately:**

- Cartridge filter
- Self cleaning filter



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

11/2016

TS0033UK01



[ 1 ]

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

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

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



[ 2 ]

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

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

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

[ 2 ] HEADQUARTER BURNERS DIVISION  
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