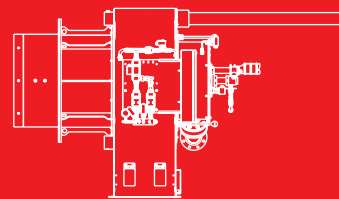
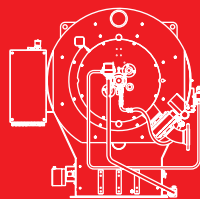




## ER Series

Industrial Oil, Gas and Dual Fuel Air Register Burners

ER 4	540/2500	÷	4000	kW
ER 6	840/4000	÷	6000	kW
ER 9	1250/6000	÷	9000	kW
ER 12	1750/9000	÷	12000	kW
ER 16	2350/12000	÷	16000	kW
ER 20	3000/16000	÷	20000	kW
ER 25	3500/20000	÷	25000	kW
ER 32	4000/25000	÷	20000	kW



The industrial burners ER series are designed especially for water tube boilers used in big civil installations and industrial processes with a remarkable thermal demand.

These burners allow to realise a modular and flexible combustion system adding a preparation fuel unit (regulation pressure group set, preheating/pumping oil station), a gas train, a control panel and a fan.

Preheated air can also be used as in the oil diathermic generators and other heat recovery systems.

The modulating regulation always allows to reach a wide modulation ratio and optimal fluid-dynamics conditions for a good combustion.

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

## Technical Data

MODEL			ER 4	ER 6	ER 9		
Burner operation mode			modulating				
Modulation ratio at max output	natural gas		1:6				
	LPG		1:5				
	light oil		1:4				
	heavy oil		1:3				
Servomotor	type		MM 10004 - MM 10005				
	run time	s	30				
Heat output	natural gas	kW	540/2500÷4000	840/4000÷6000	1250/6000÷9000		
	LPG	kW	650/2500÷4000	1000/4000÷6000	1500/6000÷9000		
	light oil	kW	820/2500÷4000	1250/4000÷6000	1870/6000÷9000		
	heavy oil	kW	1100/2500÷4000	1700/4000÷6000	2500/6000÷9000		
Working temperature	min./max.	°C	-15/60				
<b>FUEL/AIR DATA</b>							
Light oil	net calorific value	kWh/kg	11,86				
		Kcal/kg	10200				
	viscosity at 20°C	mm <sup>2</sup> /s (cSt)	6				
	delivery	kg/h	69/211÷337	105/337÷506	158/506÷759		
Heavy oil	net calorific value	kWh/kg	11,1÷11,3				
		Kcal/kg	9545÷9720				
	viscosity at 50°C	mm <sup>2</sup> /s (cSt)	500				
	delivery	kg/h	98/223÷357	152/357÷536	223/536÷803		
Atomizing pressure	fuel temperature	max. °C	140				
		bar	--				
		Natural gas (G20)	net calorific value	kWh/Nm <sup>3</sup>	10		
			density	kg/Nm <sup>3</sup>	0,71		
gas delivery	Nm <sup>3</sup> /h		54/250÷400	84/400÷600	125/600÷900		
Natural gas (G25)	net calorific value	kWh/Nm <sup>3</sup>	8,6				
	density	kg/Nm <sup>3</sup>	0,78				
	gas delivery	Nm <sup>3</sup> /h	63/291÷465	98/465÷698	145/698÷1047		
LPG	net calorific value	kWh/Nm <sup>3</sup>	25,8				
	density	kg/Nm <sup>3</sup>	2,02				
	gas delivery	Nm <sup>3</sup> /h	25/97÷155	39/155÷233	58/233÷349		
<b>ELECTRICAL DATA</b>							
Electrical supply		Ph/Hz/V	1/50-60/230 - (1/50-60/110 on request)				
Control box		type	--				
Auxiliary electrical power		Ph/Hz/V	1/50-60/230 - (1/50-60/110 on request)				
Total current		A	--				
Protection level		IP	54				
Ignition transformer	type		ignition pilot burner				
		V1 - V2	230 V - 1x8 KV				
		I1 - I2	1,4A - 30 mA				
Operation			Intermittent (at least one stop every 24 h) Continuos (at least one stop every 72 h)				
<b>EMISSIONS</b>							
Light oil	CO emission	mg/kWh	< 110				
	Grade of smoke indicator	N° Bacharach	< 1				
	NOx emission	mg/kWh	< 185				
Heavy oil	CO emission	mg/kWh	Depending on the fuel composition				
	Grade of smoke indicator	N° Bacharach	Depending on the fuel composition				
	NOx emission	mg/kWh	Depending on the fuel composition				

MODEL		ER 4	ER 6	ER 9
G20	CO emission	mg/kWh	< 100	
	NOx emission	mg/kWh	< 120	
<b>APPROVAL</b>				
Directive		2014/35 UE - 2014/30 UE - 2006/42 EC- 2009/142 EC		
Conforming to Certification		EN 267 - EN 676 --		

**Reference conditions:**

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.

MODEL		ER 12	ER 16	ER 20	
Burner operation mode		modulating			
Modulation ratio at max output	natural gas	1:6			
	LPG	1:5			
	light oil	1:4			
	heavy oil	1:3			
Servomotor	type	MM 10004 - MM 10005			
	run time	s 30			
Heat output	natural gas	kW	1750/9000÷12000	2350/12000÷16000	3000/16000÷20000
	LPG	kW	2100/9000÷12000	2800/12000÷16000	3600/16000÷20000
	light oil	kW	2600/9000÷12000	3500/12000÷16000	4500/16000÷20000
	heavy oil	kW	3500/9000÷12000	4700/12000÷16000	6000/16000÷20000
Working temperature	min./max.	°C	-15/60		

**FUEL/AIR DATA**

Light oil	net calorific value	kWh/kg	11,86		
		Kcal/kg	10200		
	viscosity at 20°C	mm <sup>2</sup> /s (cSt)	6		
		delivery	kg/h	219/759÷1012	295/1012÷1349
fuel temperature		max. °C	50		
Heavy oil	net calorific value	kWh/kg	11,1÷11,3		
		Kcal/kg	9545÷9720		
	viscosity at 50°C	mm <sup>2</sup> /s (cSt)	500		
		delivery	kg/h	312/803÷1071	420/1071÷1428
fuel temperature		max. °C	140		
Atomizing pressure		bar	--		
Natural gas (G20)	net calorific value	kWh/Nm <sup>3</sup>	10		
	density	kg/Nm <sup>3</sup>	0,71		
	gas delivery	Nm <sup>3</sup> /h	175/900÷1200	235/1200÷1600	300/1600÷2000
Natural gas (G25)	net calorific value	kWh/Nm <sup>3</sup>	8,6		
	density	kg/Nm <sup>3</sup>	0,78		
	gas delivery	Nm <sup>3</sup> /h	203/1047÷1395	273/1395÷1860	349/1860÷2326
LPG	net calorific value	kWh/Nm <sup>3</sup>	25,8		
	density	kg/Nm <sup>3</sup>	2,02		
	gas delivery	Nm <sup>3</sup> /h	81/349÷465	109/465÷620	140/620÷775

**ELECTRICAL DATA**

Electrical supply	Ph/Hz/V	1/50-60/230 - (1/50-60/110 on request)		
Control box	type	--		
Auxiliary electrical power	Ph/Hz/V	1/50-60/230 - (1/50-60/110 on request)		
Total current	A	--		
Protection level	IP	54		
Ignition transformer	type	ignition pilot burner		
	V1 - V2	230 V - 1x8 KV		
	I1 - I2	1,4A - 30 mA		

MODEL		ER 12	ER 16	ER 20
Operation		Intermittent (at least one stop every 24 h) Continuous (at least one stop every 72 h)		
<b>EMISSIONS</b>				
Light oil	CO emission	mg/kWh	< 110	
	Grade of smoke indicator	N° Bacharach	< 1	
	NOx emission	mg/kWh	< 185	
Heavy oil	CO emission	mg/kWh	Depending on the fuel composition	
	Grade of smoke indicator	N° Bacharach	Depending on the fuel composition	
	NOx emission	mg/kWh	Depending on the fuel composition	
G20	CO emission	mg/kWh	< 100	
	NOx emission	mg/kWh	< 120	
<b>APPROVAL</b>				
Directive		2014/35 UE - 2014/30 UE - 2006/42 EC- 2009/142 EC		
Conforming to		EN 267 - EN 676		
Certification		--		

Reference conditions:

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.

MODEL		ER 25	ER 32
Burner operation mode		modulating	
Modulation ratio at max output	natural gas	1:6	
	LPG	1:5	
	light oil	1:4	
	heavy oil	1:3	
Servomotor	type	MM 10004 - MM 10005	
	run time	30	
Heat output	natural gas	3500/20000-25000	4000/25000-32000
	LPG	3700/20000-25000	4200/25000-32000
	light oil	4000/20000-25000	4500/25000-32000
	heavy oil	4500/20000-25000	5000/25000-32000
Working temperature	min./max.	°C -15/60	

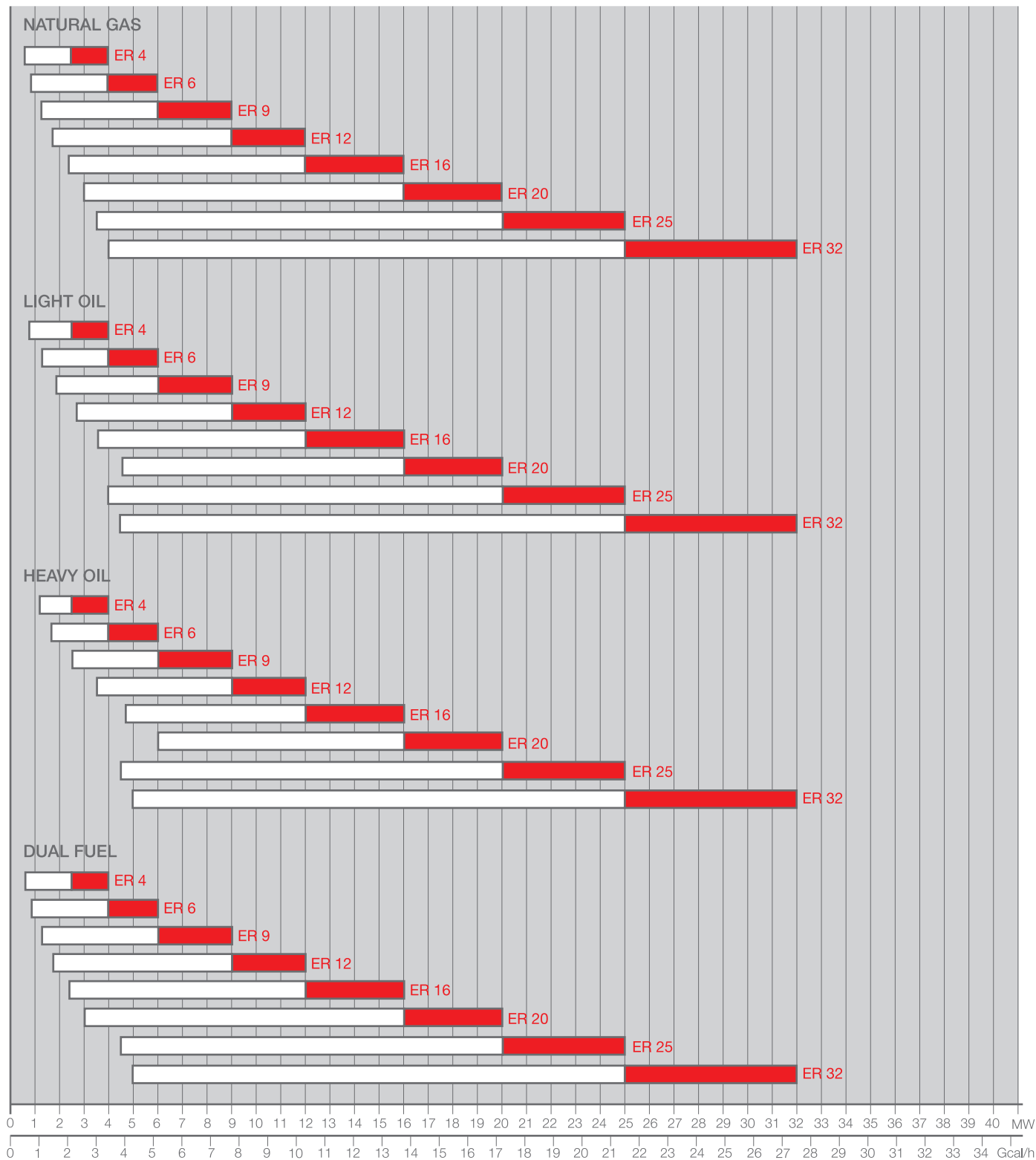
<b>FUEL/AIR DATA</b>				
Light oil	net calorific value	kWh/kg	11,86	
		Kcal/kg	10200	
	viscosity at 20°C	mm <sup>2</sup> /s (cSt)	6	
	delivery	kg/h	339/1695-2119	381/2119-2712
	fuel temperature	max. °C	50	
Heavy oil	net calorific value	kWh/kg	11,1÷11,3	
		Kcal/kg	9545÷9720	
	viscosity at 50°C	mm <sup>2</sup> /s (cSt)	500	
	delivery	kg/h	403/1792-2240	448/2240-2867
fuel temperature	max. °C	140		
Atomizing pressure		bar	--	
Natural gas (G20)	net calorific value	kWh/Nm <sup>3</sup>	10	
	density	kg/Nm <sup>3</sup>	0,71	
	gas delivery	Nm <sup>3</sup> /h	350/2000-2500	400/2500-3200
Natural gas (G25)	net calorific value	kWh/Nm <sup>3</sup>	8,6	
	density	kg/Nm <sup>3</sup>	0,78	
	gas delivery	Nm <sup>3</sup> /h	407/2325-2907	465/2907-3721

MODEL		ER 25	ER 32
LPG	net calorific value	kWh/Nm <sup>3</sup>	25,8
	density	kg/Nm <sup>3</sup>	2,02
	gas delivery	Nm <sup>3</sup> /h	143/775-969
<b>ELECTRICAL DATA</b>			
Electrical supply	Ph/Hz/V	1/50-60/230 - (1/50-60/110 on request)	
Control box	type	--	
Auxiliary electrical power	Ph/Hz/V	1/50-60/230 - (1/50-60/110 on request)	
Total current	A	--	
Protection level	IP	54	
Ignition transformer	type	ignition pilot burner	
	V1 - V2	230 V - 1x8 KV	
	I1 - I2	1,4A - 30 mA	
Operation		Intermittent (at least one stop every 24 h) Continuos (at least one stop every 72 h)	
<b>EMISSIONS</b>			
Light oil	CO emission	mg/kWh	< 110
	Grade of smoke indicator	N° Bacharach	< 1
	NOx emission	mg/kWh	< 185
Heavy oil	CO emission	mg/kWh	Depending on the fuel composition
	Grade of smoke indicator	N° Bacharach	Depending on the fuel composition
	NOx emission	mg/kWh	Depending on the fuel composition
G20	CO emission	mg/kWh	< 100
	NOx emission	mg/kWh	< 120
<b>APPROVAL</b>			
Directive	2014/35 UE - 2014/30 UE- 2006/42 EC- 2009/142 EC		
Conforming to	EN 267 - EN 676		
Certification	--		

Reference conditions:

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.

**FIRING RATES**



Test conditions conforming to EN 267 - EN 676:  
 Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l.

■ Working field  
 Modulation range

# Fuel Supply

## HYDRAULIC CIRCUIT

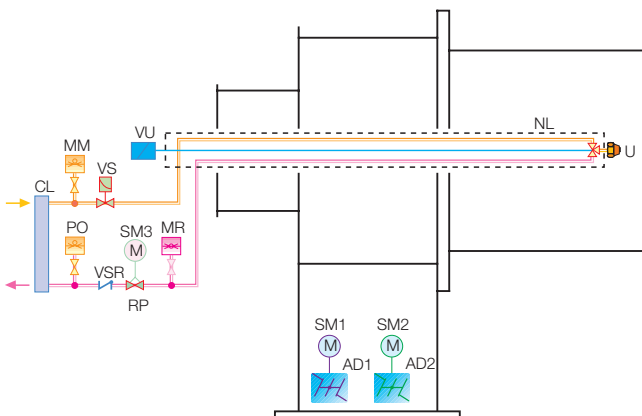
The hydraulic circuit of industrial burner ER series is composed by two main blocks; the first one, on board, includes the emergency and regulation units; the second, separate to the burner, constitutes the pumping group.

A three servomotors system connects the regulation of the fuel and the air guaranteeing an elevate combustion efficiency on all firing rates.



Example of oil and gas unit ER 9

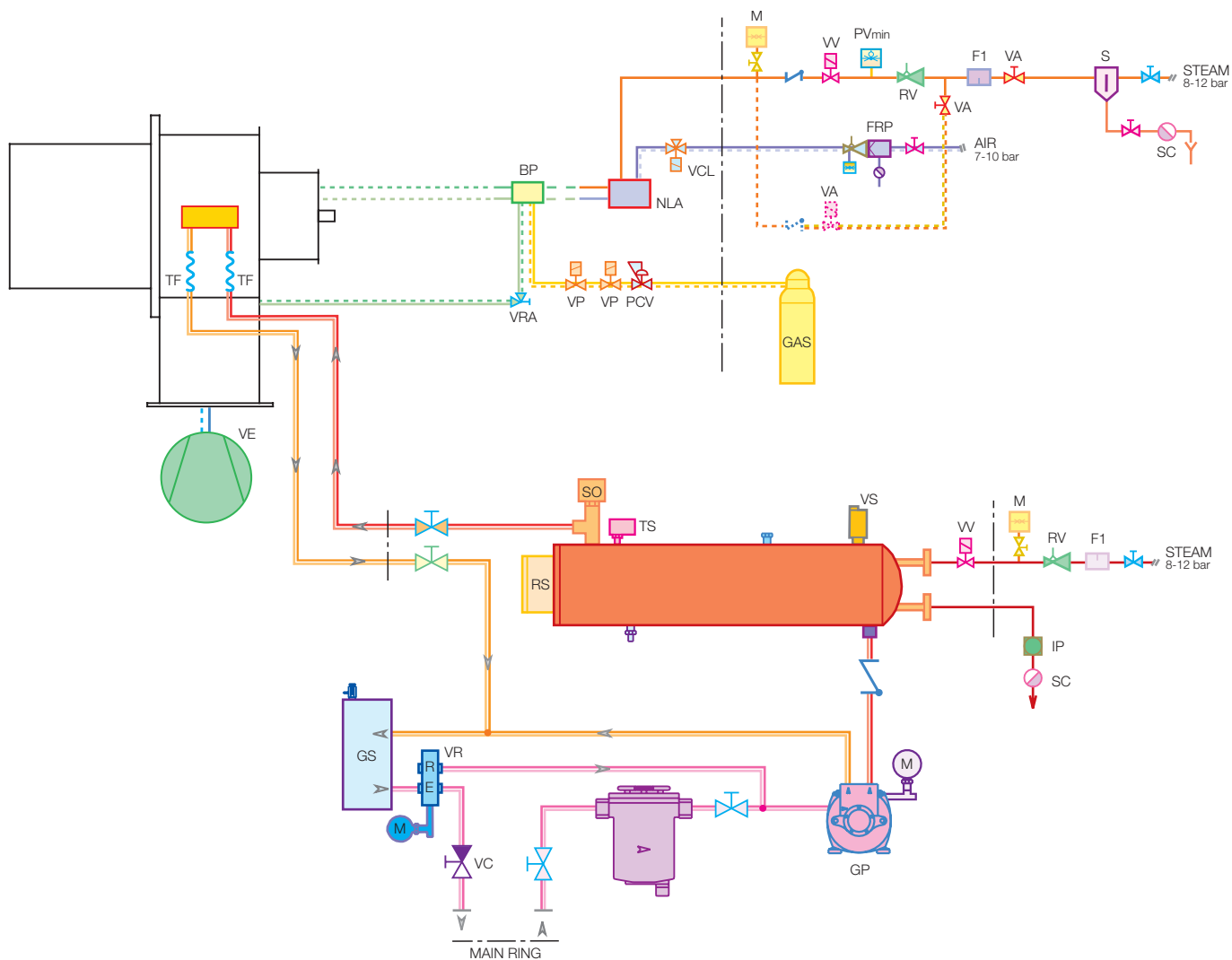
ER 4 - 6 - 9 - 12 - 16 - 20 - 25 - 32 Mechanical Atomizing



AD1	First air damper
AD2	Second air damper
CL	Oil collector
MM	Pressure gauge on the delivery circuit
MR	Pressure gauge on the return circuit
NL	Oil pipe
U	Nozzle
P0	Max. oil pressure switch on the return circuit
RP	Pressure regulator on the return circuit
SM1	Air damper servomotor
SM2	Air damper servomotor
SM3	Servomotor of oil regulator
VS	Safety oil valve
VSR	Safety oil valve on the return circuit
VU	Nozzle safety valve



**EXAMPLE OF COMPLETE SUPPLY OIL CIRCUIT**



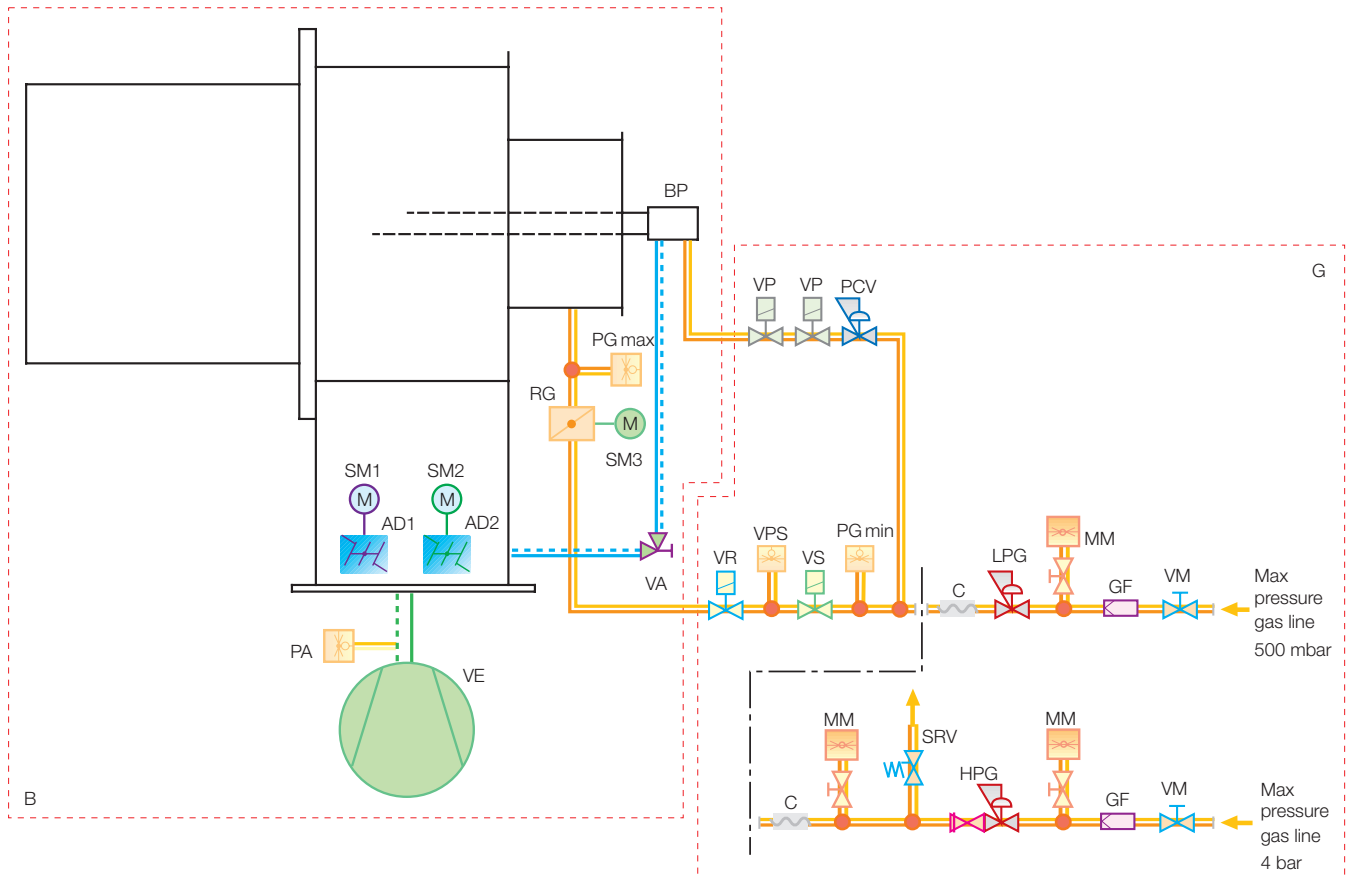
BP	Pilot burner
ELV	Electric/steam oil preheater
F	Self-cleaning filter
FRP	Air pressure regulation filter
F1	Filter
GP	Pump with pressure regulator
A	: suction
BP	: by-pass
S	: delivery
GS	Degassing unit
IP	Condensation passage indicator
PCV	Gas pressure regulator
PVmin	Minimum steam pressure switch
M	Pressure gauge
NLA	Oil lance
RS	Pre-heater heating element
RV	Steam/air pressure regulator

S	Condensation separator
SC	Condensation outlet
SO	Oil temperature probe (PT 100)
TF	Flexible hose
TS	Maximum and minimum oil thermostat
VA	Air/steam adjustment valve (manual selection)
VCL	Oil lance hydraulic control valve
VRA	Air pressure regulation valve
VC	Relief valve (normally closed)
VE	Fan
VP	Pilot valve
VR	Oil pressure regulator valve
VS	Safety valve (maximum pressure)
VV	Steam solenoid 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.

**EXAMPLE OF COMPLETE SUPPLY GAS LINE**

The ER burners series are fitted with a butterfly valve to regulate the fuel, controlled by the main management module, placed in the control panel, through a high precision servomotor. The association of the air and fuel regulation, guarantees high thermal efficiency all over the firing rates.

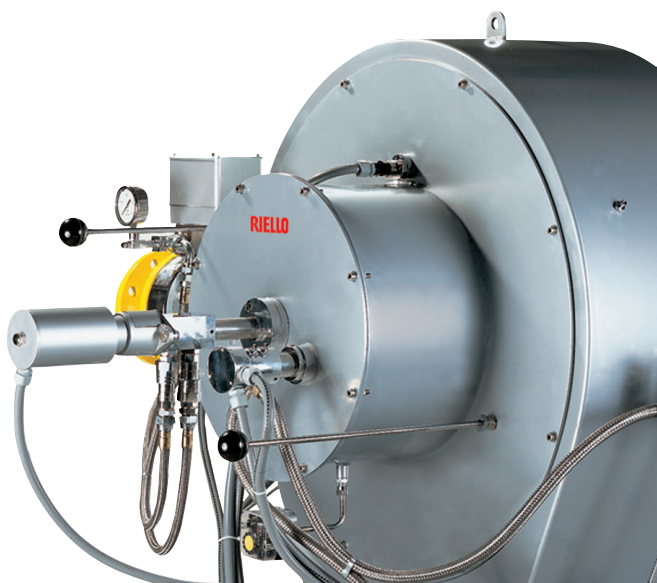


B	Burner
G	Supply gas line
VE	Fan
PA	Minimum air pressure switch
AD1	First air damper
AD2	Second air damper
SM1	First air damper servomotor
SM2	Second air damper servomotor
SM3	Servomotor of gas regulator
PG max	Maximum gas pressure switch
RG	Butterfly valve
BP	Pilot burner
VA	Air pressure regulator valve

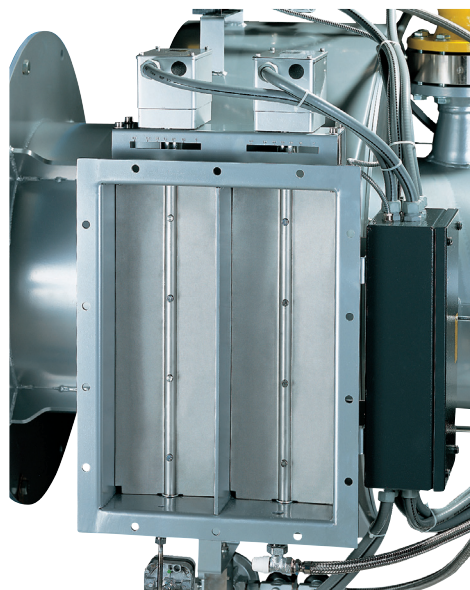
VP	Pilot valve
PCV	Pilot pressure regulator
VR	Gas train adjusting valve
VPS	Seal control
VS	Gas train safety valve
PG min	Minimum gas pressure switch
C	Anti-vibrant joint
LPG	Low pressure regulator
MM	Pressure gauge
GF	Filter
VM	Manual valve
SRV	Vent safety valve
HPG	High pressure regulator

## Air Suction Circuit

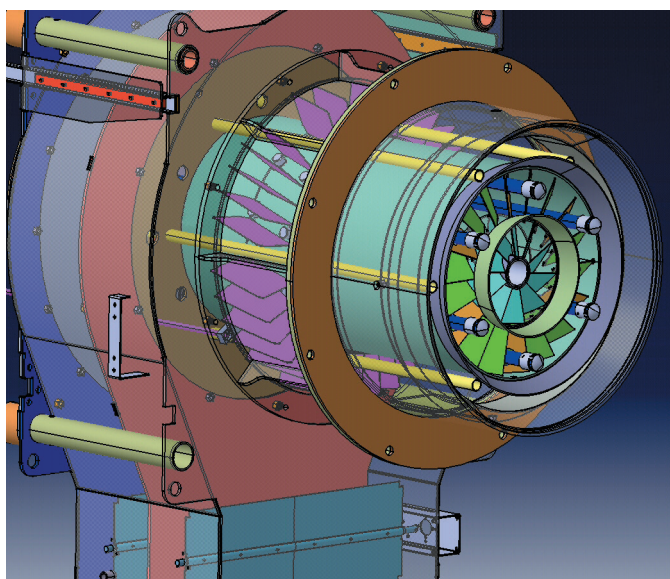
The air suction circuit of ER burners is designed with two independent air ducts, each of them equipped with an independent high precision servomotor to control the air flow. This particular design allows to obtain primary and secondary air flows to the combustion head in order to obtain staging combustion system (see "Combustion head" section). In the secondary air duct, moreover, is placed an axial swirl that permits, associated to the different distribution of air flows, to adjust the flame shape.



Example of axial swirl register device



Example of air dampers



Example of air suction circuit

## Combustion Head

The ER series burners reduce polluting emissions with their exclusive design based on a "three zones" combustion system.

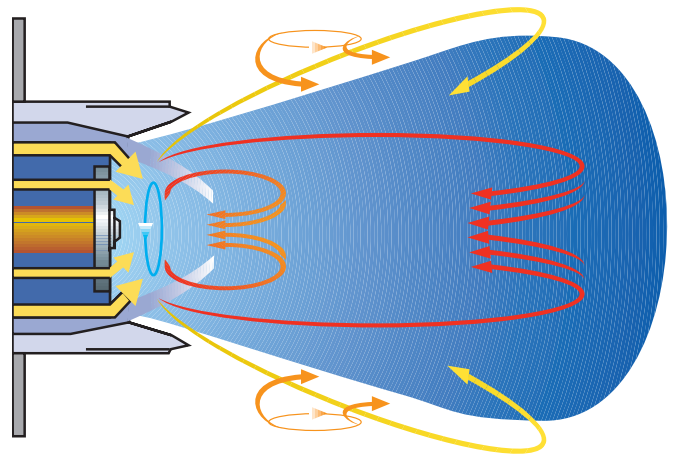
In the first zone combustion is developed in air defect and consequently the flame is maintained at low temperature, controlling thermal NOx formation.

In the second zone, that it is developed thanks to the flow and the spin of the secondary air, the completion of the combustion happens.

The third zone of combustion is constituted from the recirculation of combustion gases and reduces the oxygen content in the external part of the flame, limiting the formation of thermal NOx.



Example of ER 9 combustion head



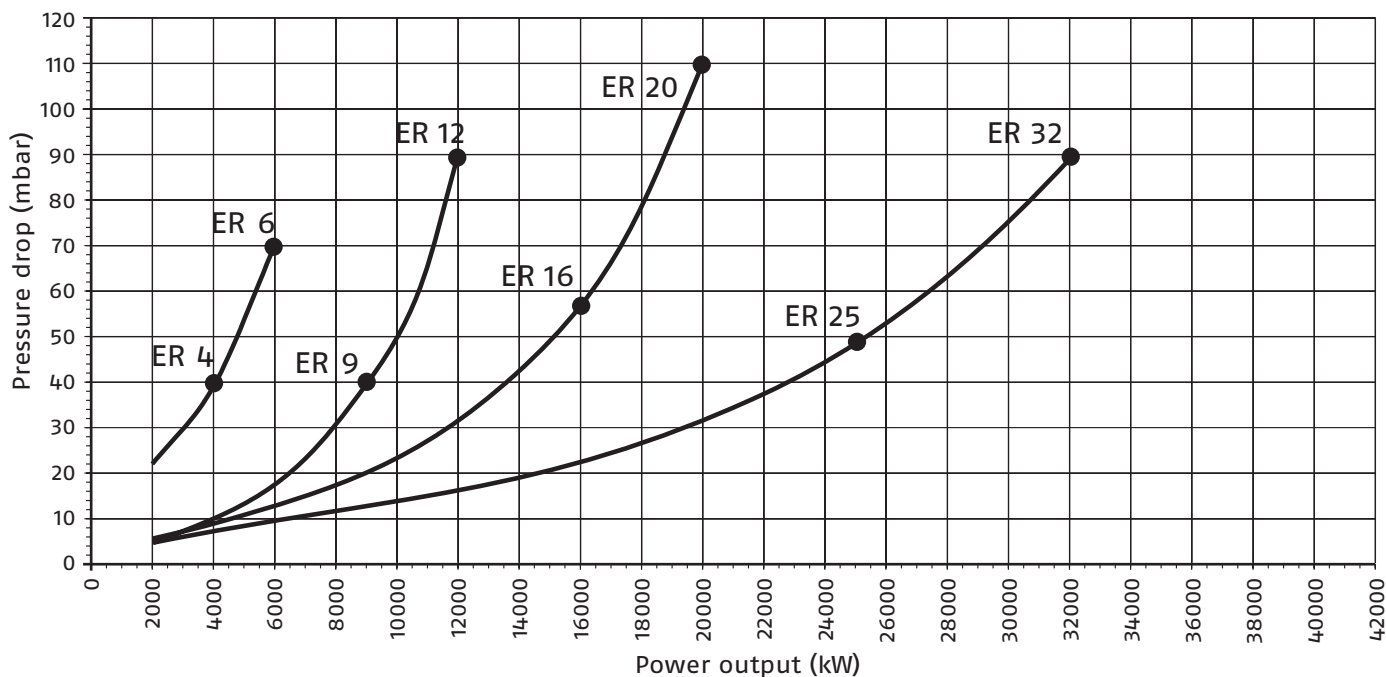
ER combustion head operating diagram

**CHARACTERISTICS COMBUSTION HEAD CURVES**

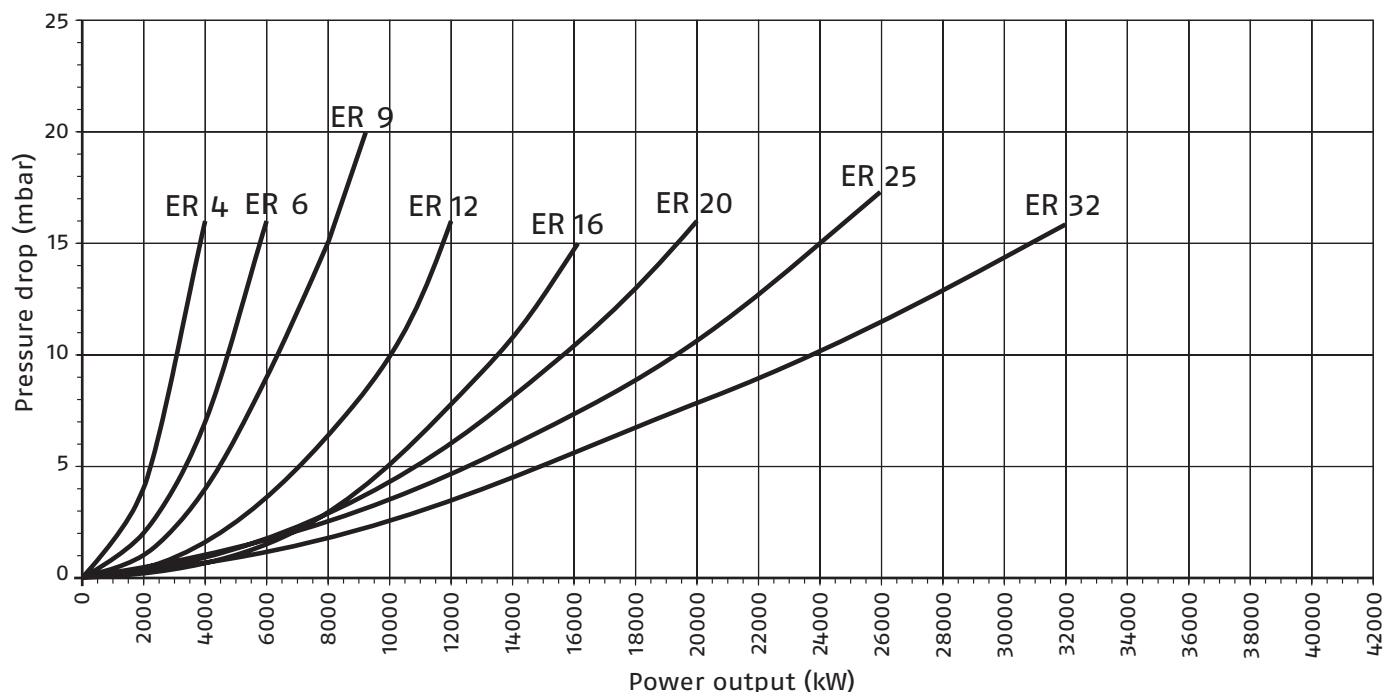
**GAS PRESSURE LOSSES**

The following diagrams indicate the gas side losses of the combustion head and the regulator butterfly valve. Adding to the value of these losses the combustion chamber pressure and total gas train loss, it is obtained the minimal input pressure necessary to the gas train.

Burner head GAS pressure drop (including butterfly valve and ref to G20)



Burner head AIR pressure drop (including air damper - AIR temp = 40°C)



# Operation

## BURNER OPERATION MODE

Each ER burner has a fuel flow servomotor (with a delivery regulator) and two air flow servomotors (with air dampers) that allows a high precision regulation, due to the absence of mechanical clearance normally found in mechanical regulation cams on traditional modulating burners.

On modulating operation the burner can run for a long time on intermediate output settings (see picture A).

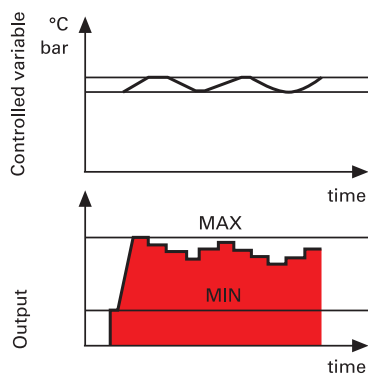
The control panels connected to the burners of ER series has a main electronic microprocessor management panel, that controls fuel and air flow servomotors to obtain the modulating operation of burner and to control boiler temperature or pressure by specific accessory probes.

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 accessory)
- CO<sub>2</sub>, CO, O<sub>2</sub>, NO e SO<sub>2</sub> value (with EGA module accessory)
- burner stage.

The main electronic management panel operations can be increased by installing accessory modules.

## "MODULATING" OPERATION



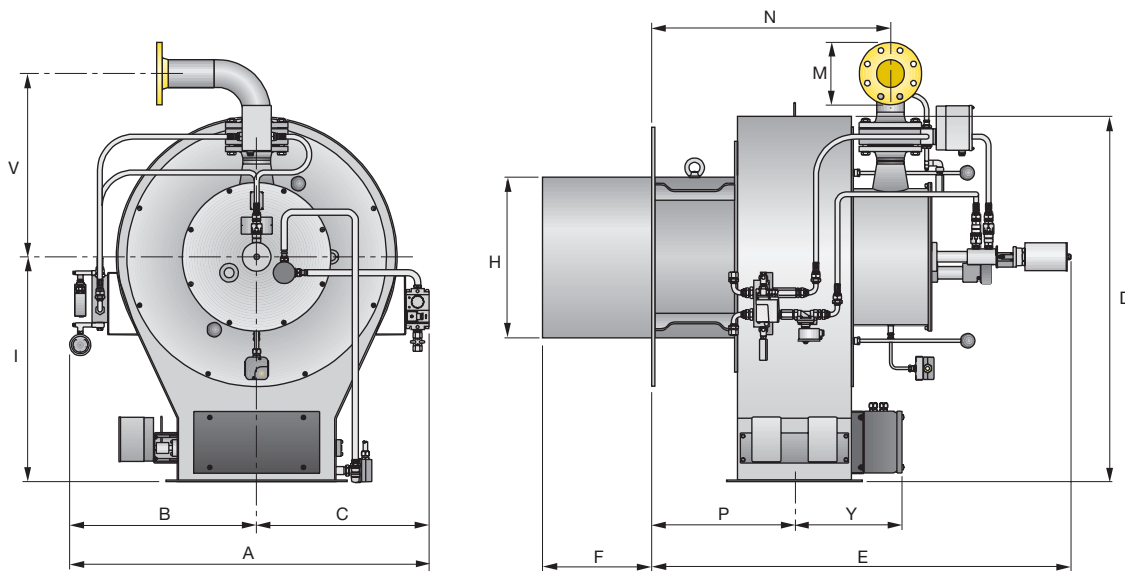
Picture A

Example of wall mounted electronic management control panel

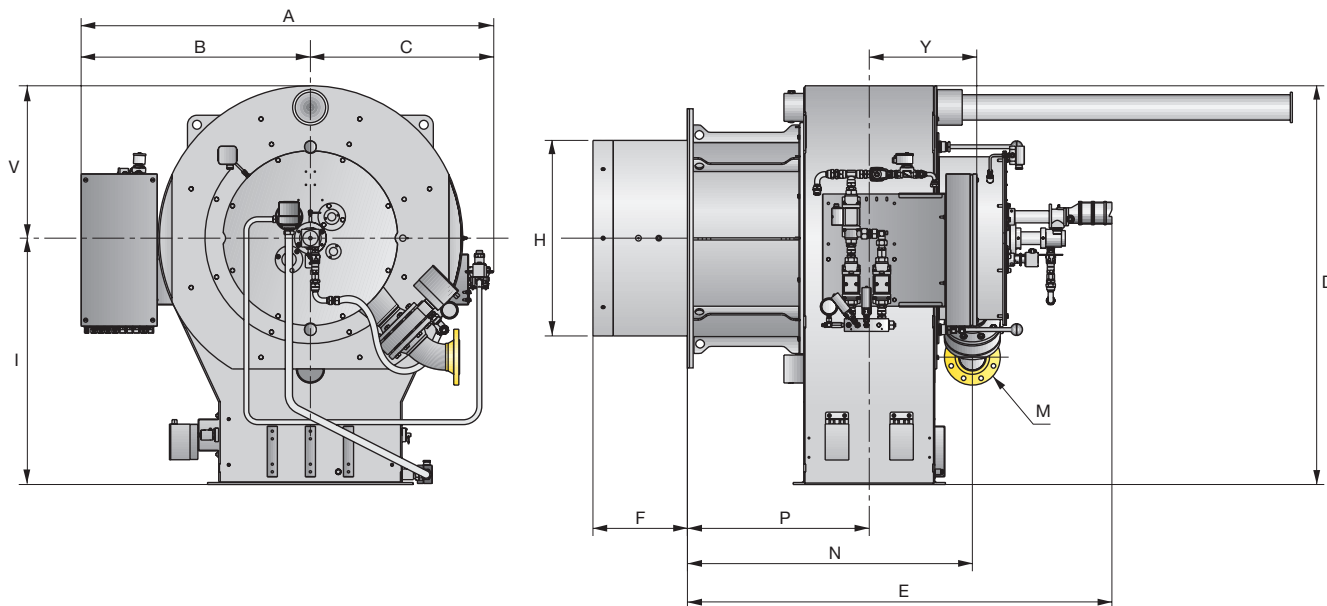
# Overall Dimensions (mm)

## BURNER

ER 4 - 6 - 9 - 12



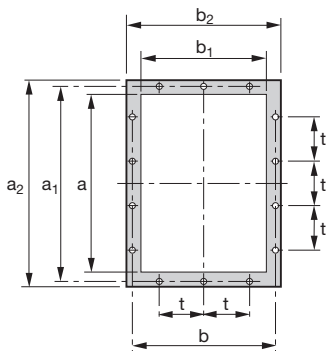
ER 16 - 20 - 25 - 32



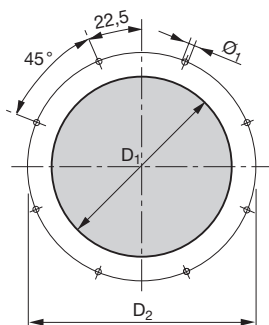
MODEL	A	B	C	D	E	F	H	I	M	N	P	Y	V
ER 4	855	455	400	835	1160	330	370	530	DN65	605	380	307	542
ER 6	855	455	400	835	1160	330	430	530	DN65	605	380	307	542
ER 9	1150	600	550	1170	1345	350	520	720	DN80	765	457	345	588
ER 12	1150	600	550	1170	1345	350	600	720	DN80	765	457	345	588
ER 16	1623	903	720	1570	1670	372	690	970	DN100	1122	716	423	600
ER 20	1623	903	720	1570	1670	372	770	970	DN100	1122	716	423	600
ER 25	1835	1007	828	1758	1952	472	870	1050	DN125	1294	794	487	708
ER 32	1835	1007	828	1758	1952	472	980	1050	DN125	1294	794	487	708

**BURNER - BOILER MOUNTING FLANGE**

AIR DUCT CONNECTION

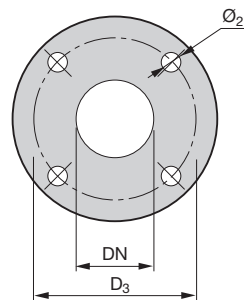


FIXING TO THE BOILER

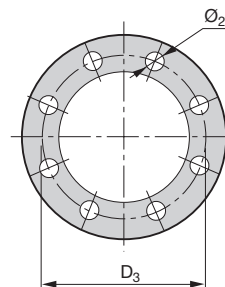


GAS SUPPLY

ER 4-6

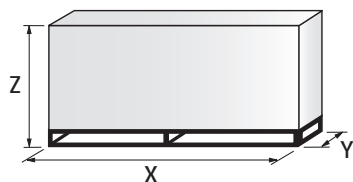


ER 9÷32



MODEL	a	a <sub>1</sub>	a <sub>2</sub>	b	b <sub>1</sub>	b <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	t	Ø <sub>1</sub>	Ø <sub>2</sub>
ER 4	400	444	480	324	280	360	380	552	145	148	M18	18
ER 6	400	444	480	324	280	360	440	552	145	148	M18	18
ER 9	500	551	580	405	355	435	530	800	160	125	M18	18
ER 12	500	551	580	405	355	435	620	800	160	125	M18	18
ER 16	710	775	810	567	500	600	710	970	180	160	M20	18
ER 20	710	775	810	567	500	600	790	970	180	160	M20	18
ER 25	900	968	1018	708	640	758	930	1200	210	200	M20	18
ER 32	900	968	1018	708	640	758	1050	1200	210	200	M20	18

**PACKAGING**



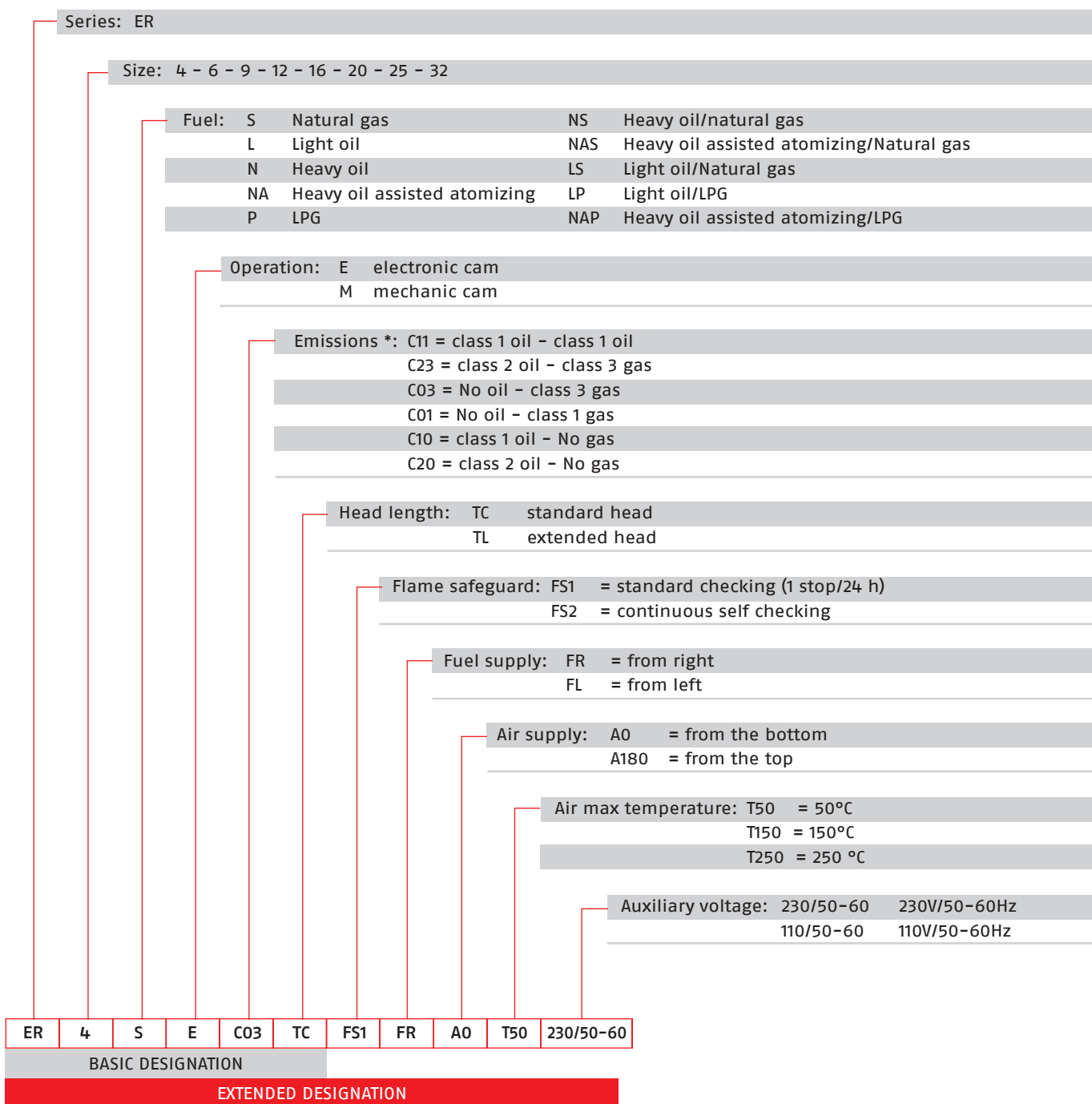
MODEL	X	Y	Z	kg
ER 4	2090	1460	1680	200
ER 6	2090	1460	1680	200
ER 9	2300	1750	1900	300
ER 12	2300	1750	1900	300
ER 16	2750	1850	2000	500
ER 20	2750	1850	2000	500
ER 25	3000	2500	2300	800
ER 32	3000	2500	2300	1550



# Specification

## DESIGNATION OF SERIES

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



\* Estimated, not guaranteed emissions values, considering a hot water boiler with thermal load of 1,1 MW/m<sup>3</sup>

## AVAILABLE BURNER MODELS

MODEL	FUEL	HEAT OUTPUT *		
		(kW)	OIL (kg/h) max	GAS (Nm <sup>3</sup> /h) max
ER 4 S E ...	Natural gas	540/2500-4000	---	400
ER 4 L E ...	Light oil	820/2500-4000	337	---
ER 4 N E ...	Heavy oil	1100/2500-4000	357	---
ER 4 P E ...	LPG	540/2500-4000	---	155
ER 4 NP E ...	Heavy oil/LPG	1100/2500-4000	357	155
ER 4 NS E ...	Heavy oil/Natural gas	1100/2500-4000	357	400
ER 4 LS E ...	Light oil/Natural gas	820/2500-4000	337	400
ER 4 LP E ...	Light oil/LPG	820/2500-4000	337	155
ER 4 NA E ...	Heavy oil steam atomising	1100/2500-4000	357	---
ER 4 NAS E ...	Natural gas / heavy oil steam atomising	1100/2500-4000	357	400
ER 6 S E ...	Natural gas	840/4000-6000	---	600
ER 6 L E ...	Light oil	1250/4000-6000	506	---
ER 6 N E ...	Heavy oil	1700/4000-6000	536	---
ER 6 P E ...	LPG	840/4000-6000	---	233
ER 6 NP E ...	Heavy oil/LPG	1700/4000-6000	536	233
ER 6 NS E ...	Heavy oil/Natural gas	1700/4000-6000	536	600
ER 6 LS E ...	Light oil/Natural gas	1250/4000-6000	506	600
ER 6 LP E ...	Light oil/LPG	1250/4000-6000	506	233
ER 6 NA E ...	Heavy oil steam atomising	1700/4000-6000	536	---
ER 6 NAS E ...	Natural gas / heavy oil steam atomising	1700/4000-6000	536	600
ER 9 S E ...	Natural gas	1250/6000-9000	---	900
ER 9 L E ...	Light oil	1870/6000-9000	759	---
ER 9 N E ...	Heavy oil	2500/6000-9000	804	---
ER 9 P E ...	LPG	1250/6000-9000	---	349
ER 9 NP E ...	Heavy oil/LPG	2500/6000-9000	804	349
ER 9 NS E ...	Heavy oil/Natural gas	2500/6000-9000	804	900
ER 9 LS E ...	Light oil/Natural gas	1870/6000-9000	759	900
ER 9 LP E ...	Light oil/LPG	1870/6000-9000	759	349
ER 9 NA E ...	Heavy oil steam atomising	2500/6000-9000	804	---
ER 9 NAS E ...	Natural gas / heavy oil steam atomising	2500/6000-9000	804	900
ER 12 S E ...	Natural gas	1750/9000-12000	---	1200
ER 12 L E ...	Light oil	2600/9000-12000	1012	---
ER 12 N E ...	Heavy oil	3500/9000-12000	1071	---
ER 12 P E ...	LPG	2100/9000-12000	---	465
ER 12 NP E ...	Heavy oil/LPG	3500/9000-12000	1071	465
ER 12 NS E ...	Heavy oil/Natural gas	3500/9000-12000	1071	1200
ER 12 LS E ...	Light oil/Natural gas	2600/9000-12000	1012	1200
ER 12 LP E ...	Light oil/LPG	2600/9000-12000	1012	465
ER 12 NA E ...	Heavy oil steam atomising	3500/9000-12000	1071	---
ER 12 NAS E ...	Natural gas / heavy oil steam atomising	3500/9000-12000	1071	1200

Further version available on request

\* Max capacity is referred to:

Light oil net calorific value 11,86 kWh/kg - 10200 kcal/kg - Viscosity at 20°C 4-6 mm<sup>2</sup>/s (cSt)

Heavy oil net calorific value 11,1-11,3 kWh/kg - 9545-9720 kcal/kg - Viscosity at 20°C 500 mm<sup>2</sup>/s (cSt)

G20 net calorific value 10 kWh/Nm<sup>3</sup> - Density 0,71 kg/Nm<sup>3</sup>

G25 net calorific value 8,6 kWh/Nm<sup>3</sup> - Density 0,78 kg/Nm<sup>3</sup>

LPG net calorific value 25,8 kWh/Nm<sup>3</sup> - Density 2,02 kg/Nm<sup>3</sup>

MODEL	FUEL	HEAT OUTPUT *		
		(kW)	OIL (kg/h) max	GAS (Nm <sup>3</sup> /h) max
ER 16 S E ...	Natural gas	2350/12000-16000	---	1600
ER 16 L E ...	Light oil	3500/12000-16000	1349	---
ER 16 N E ...	Heavy oil	4700/12000-16000	1428	---
ER 16 P E ...	LPG	2800/12000-16000	---	620
ER 16 NP E ...	Heavy oil/LPG	4700/12000-16000	1428	620
ER 16 NS E ...	Heavy oil/Natural gas	4700/12000-16000	1428	1600
ER 16 LS E ...	Light oil/Natural gas	3500/12000-16000	1349	1600
ER 16 LP E ...	Light oil/LPG	3500/12000-16000	1349	620
ER 16 NA E ...	Heavy oil steam atomising	4700/12000-16000	1428	---
ER 16 NAS E ...	Natural gas / heavy oil steam atomising	4700/12000-16000	1428	1600
ER 20 S E ...	Natural gas	3000/16000-20000	---	2000
ER 20 L E ...	Light oil	4500/16000-20000	1686	---
ER 20 N E ...	Heavy oil	6000/16000-20000	1786	---
ER 20 P E ...	LPG	3600/16000-20000	---	775
ER 20 NP E ...	Heavy oil/LPG	6000/16000-20000	1786	775
ER 20 NS E ...	Heavy oil/Natural gas	6000/16000-20000	1786	2000
ER 20 LS E ...	Light oil/Natural gas	4500/16000-20000	1686	2000
ER 20 LP E ...	Light oil/LPG	4500/16000-20000	1686	775
ER 20 NA E ...	Heavy oil steam atomising	6000/16000-20000	1786	---
ER 20 NAS E ...	Natural gas / heavy oil steam atomising	6000/16000-20000	1786	2000
ER 25 S E ...	Natural gas	3500/20000-25000	---	2500
ER 25 L E ...	Light oil	3500/20000-25000	2107	---
ER 25 N E ...	Heavy oil	3500/20000-25000	2232	---
ER 25 P E ...	LPG	3500/20000-25000	---	968
ER 25 NP E ...	Heavy oil/LPG	3500/20000-25000	2232	968
ER 25 NS E ...	Heavy oil/natural gas	3500/20000-25000	2232	2500
ER 25 LS E ...	Light oil/natural gas	3500/20000-25000	2107	2500
ER 25 LP E ...	Light oil/LPG	3500/20000-25000	2107	968
ER 25 NA E ...	Heavy oil steam atomising	3500/20000-25000	2232	---
ER 25 NAS E ...	Natural gas / heavy oil steam atomising	3500/20000-25000	2232	2500
ER 32 S E ...	Natural gas	4000/25000-32000	---	3200
ER 32 L E ...	Light oil	4000/25000-32000	2711	---
ER 32 N E ...	Heavy oil	4000/25000-32000	2857	---
ER 32 P E ...	LPG	4000/25000-32000	---	1240
ER 32 NP E ...	Heavy oil/LPG	4000/25000-32000	2857	1240
ER 32 NS E ...	Heavy oil/natural gas	4000/25000-32000	2857	3200
ER 32 LS E ...	Light oil/natural gas	4000/25000-32000	2711	3200
ER 32 LP E ...	Light oil/LPG	4000/25000-32000	2711	1240
ER 32 NA E ...	Heavy oil steam atomising	4000/25000-32000	2857	---
ER 32 NAS E ...	Natural gas / heavy oil steam atomising	4000/25000-32000	2857	3200

Further version available on request

\* Max capacity is referred to:

Light oil net calorific value 11,86 kWh/kg - 10200 kcal/kg - Viscosity at 20°C 4-6 mm<sup>2</sup>/s (cSt)

Heavy oil net calorific value 11,1-11,3 kWh/kg - 9545-9720 kcal/kg - Viscosity at 20°C 500 mm<sup>2</sup>/s (cSt)

G20 net calorific value 10 kWh/Nm<sup>3</sup> - Density 0,71 kg/Nm<sup>3</sup>

G25 net calorific value 8,6 kWh/Nm<sup>3</sup> - Density 0,78 kg/Nm<sup>3</sup>

LPG net calorific value 25,8 kWh/Nm<sup>3</sup> - Density 2,02 kg/Nm<sup>3</sup>

Other versions are available on request.

**STATE OF SUPPLY****OIL BURNER**

Forced draught oil burner with modulating operation and separate supplies, fully automatic, made up of:

- Sheet-steel airlock painted with a front cover for access to the internal elements
- Air dampers for air setting controlled by two independent high precision servomotors
- Combustion head fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - pilot burner with gas train and ignition electrodes
  - flame stability disk made up of axial swirlers
- Flame shape regulation device
- Photocell for flame detection
- Minimum air pressure switch
- Nozzle pipe
- Safety nozzle valve
- Valves group with safety oil valves
- Automatic regulator of oil delivery controlled by a high precision servomotor
- Maximum oil pressure switch on the return circuit
- Pressure gauge on the delivery circuit
- Pressure gauge on the return circuit
- Electrical box with ignition transformer
- IP 54 electric protection level.

Standard equipment:

- Screws for fixing the burner flange to the boiler
- Thermal screen
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

**GAS BURNER**

Forced draught gas burner with modulating operation and separate supplies, fully automatic, made up of:

- Sheet-steel airlock painted with a front cover for access to the internal elements
- Air dampers for air setting controlled by two independent high precision servomotors
- Combustion head fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - gas distributor with multiple pipes
  - pilot burner with gas train and ignition electrodes
  - uv photocell
  - flame stability disk made up of axial swirler
- Flame shape regulation device
- Minimum air pressure switch
- Maximum gas pressure switch
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Gas pressure test point to the combustion head
- Electrical box with ignition transformer
- IP 54 electric protection level.

Standard equipment:

- Screws for fixing the burner flange to the boiler
- Thermal screen
- Screws for fixing the gas train flange to the burner
- Gas train gasket
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

**DUAL FUEL BURNER (OIL/GAS)**

Forced draught dual fuel burner with modulating operation and separate supplies, fully automatic, made up of:

- Sheet-steel airlock painted with a front cover for access to the internal elements
- Air dampers for air setting controlled by two independent high precision servomotors
- Combustion head fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - gas distributor with multiple pipes
  - pilot burner with gas train and ignition electrodes
  - flame stability disk made up of axial swirler
- Flame shape regulation device
- UV photocell for flame detection
- Nozzle pipe
- Safety nozzle valve
- Valves group with safety oil valves
- Automatic regulator of oil and gas delivery controlled by a high precision servomotor
- Maximum oil pressure switch on the return circuit
- Pressure gauge on the delivery circuit
- Pressure gauge on the return circuit
- Minimum air pressure switch
- Maximum gas pressure switch
- Gas pressure test point to the combustion head
- Electrical box with ignition transformer
- IP 54 electric protection level.

**Standard equipment:**

- Screws for fixing the burner flange to the boiler
- Thermal screen
- Screws for fixing the gas train flange to the burner
- Gas train gasket
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

**NOTES**

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

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[ 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

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