

TS0051UK02

# ER Series

## Industrial Dual Block 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	÷	32000	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.


**Technical Data**

MODEL	ER 4		ER 6		ER 9		ER 12		
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	1750/9000÷12000			
	LPG	kW	650/2500÷4000	1000/4000÷6000	1500/6000÷9000	2100/9000÷12000			
	light oil	kW	820/2500÷4000	1250/4000÷6000	1870/6000÷9000	2600/9000÷12000			
	heavy oil	kW	1100/2500÷4000	1700/4000÷6000	2500/6000÷9000	3500/9000÷12000			
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	219/759÷1012			
Heavy oil	fuel temperature	max. °C	50						
	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	312/803÷1071				
	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	54/250÷400	84/400÷600	125/600÷900	175/900÷1200			
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	203/1047÷1395			
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	81/349÷465			
<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) - 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	89/336 (2004/108) - 73/23 (2006/95) - 98/37 - 90/396 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.

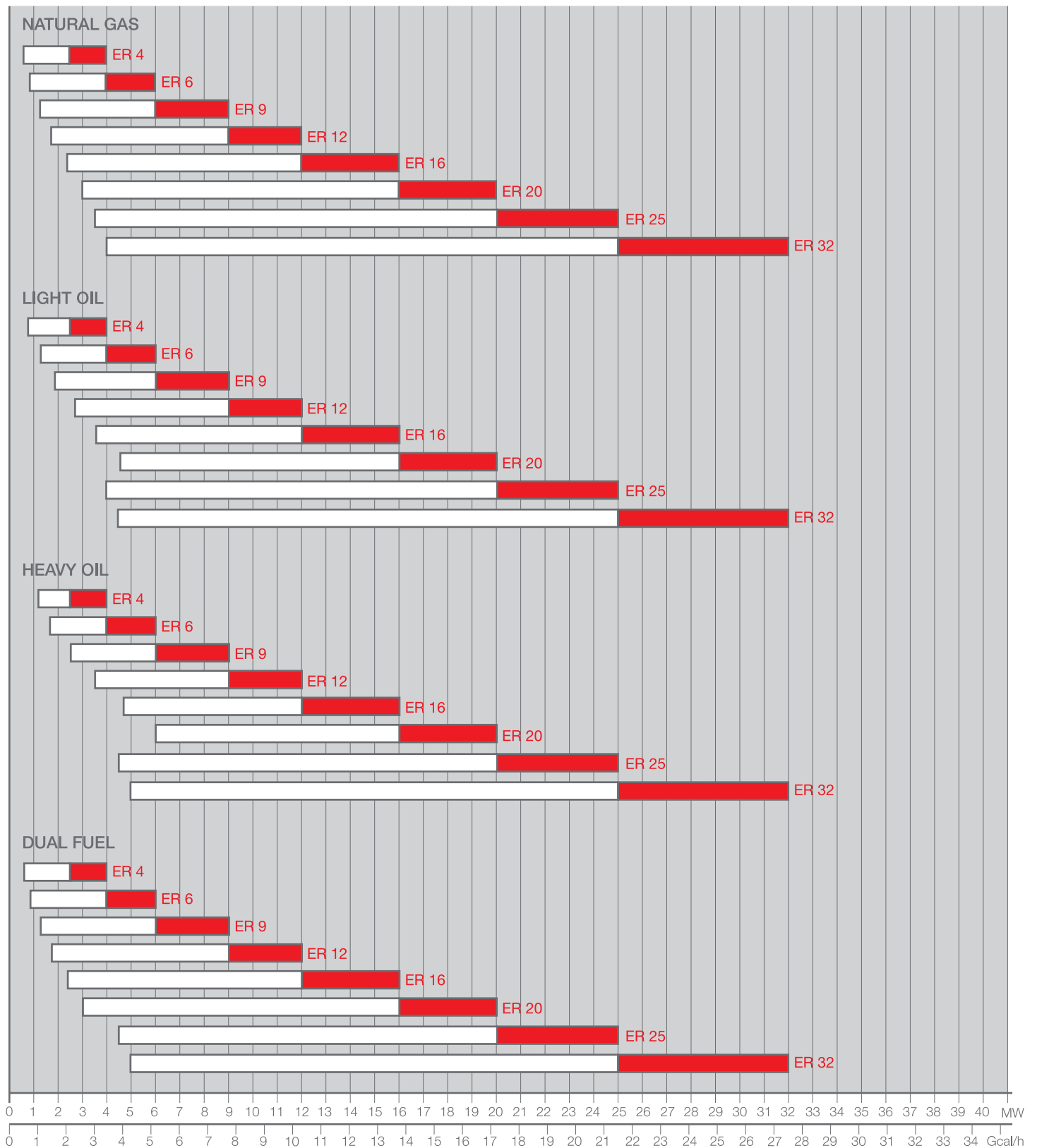
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MODEL	ER 16		ER 20		ER 25		ER 32	
Burner operation mode					modulating			
Modulation ratio at max output	natural gas					1:6		
	LPG					1:5		
	light oil					1:4		
	heavy oil					1:3		
Servomotor	type	MM 10004 - MM 10005						
	run time	s						30
Heat output	natural gas	kW	2350/12000÷16000	3000/16000÷20000	3500/20000-25000	4000/25000-32000		
	LPG	kW	2800/12000÷16000	3600/16000÷20000	3700/20000-25000	4200/25000-32000		
	light oil	kW	3500/12000÷16000	4500/16000÷20000	4000/20000-25000	4500/25000-32000		
	heavy oil	kW	4700/12000÷16000	6000/16000÷20000	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	295/1012÷1349	379/1349÷1686	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	420/1071÷1428	536/1428÷1786	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	235/1200÷1600	300/1600÷2000	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	273/1395÷1860	349/1860÷2326	407/2325-2907	465/2907-3721		
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	109/465÷620	140/620÷775	143/775-969	163/969-1240		
<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) - 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	89/336 (2004/108) - 73/23 (2006/95) - 98/37 - 90/396 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



## HYDRAULIC CIRCUIT

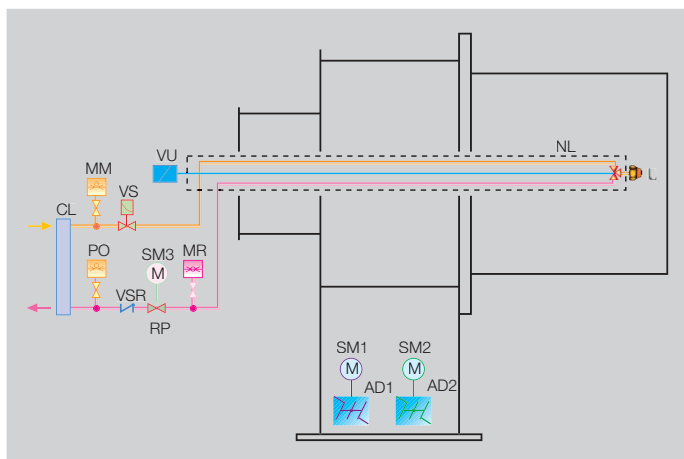
The hydraulic circuit of industrial burner ER series is composed by two main blocks; the first one, on board, includes the emergency and regulation units; the second, separate to the burner, constitutes the pumping group.

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



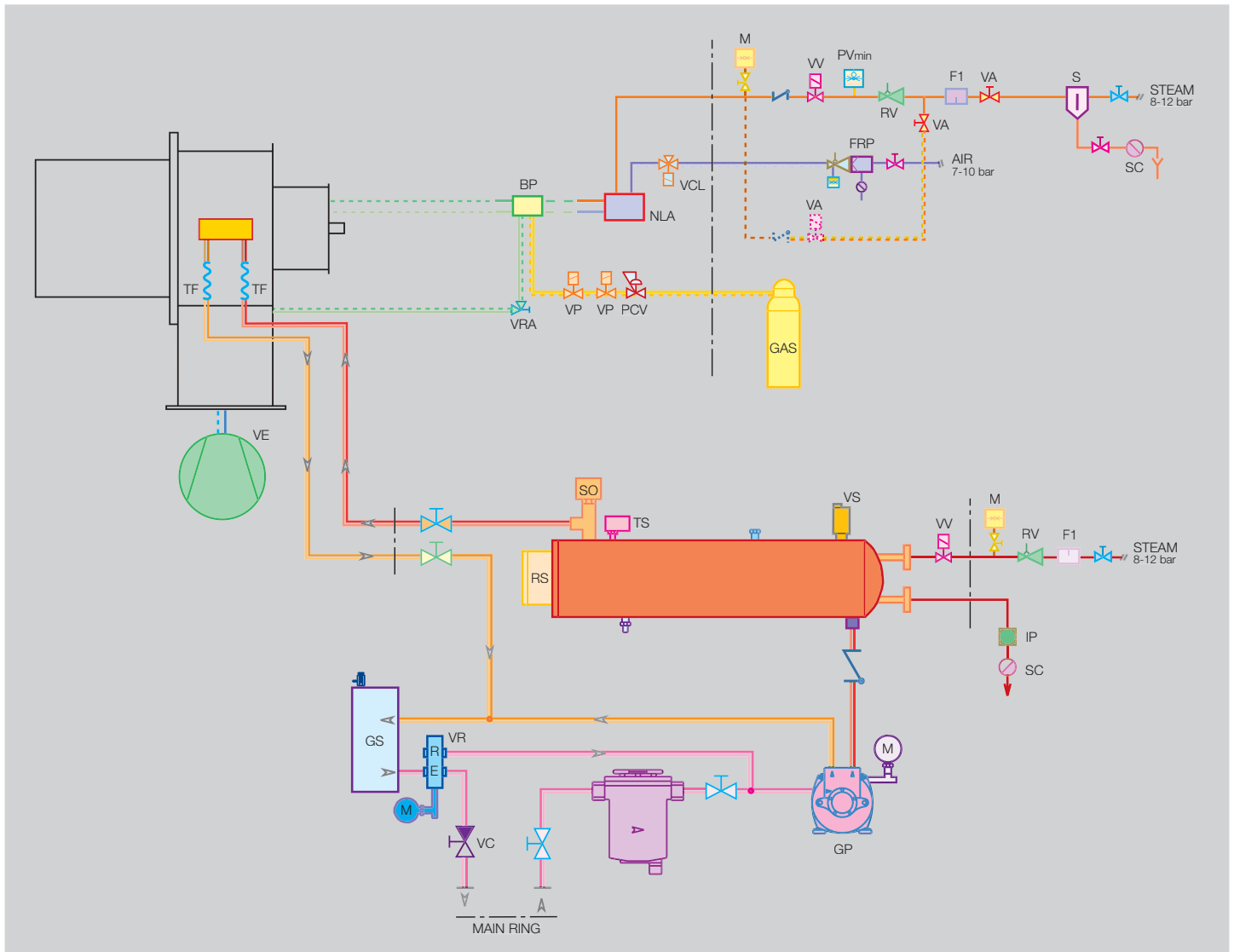
Example of oil and gas unit ER 9

### 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
PO	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



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

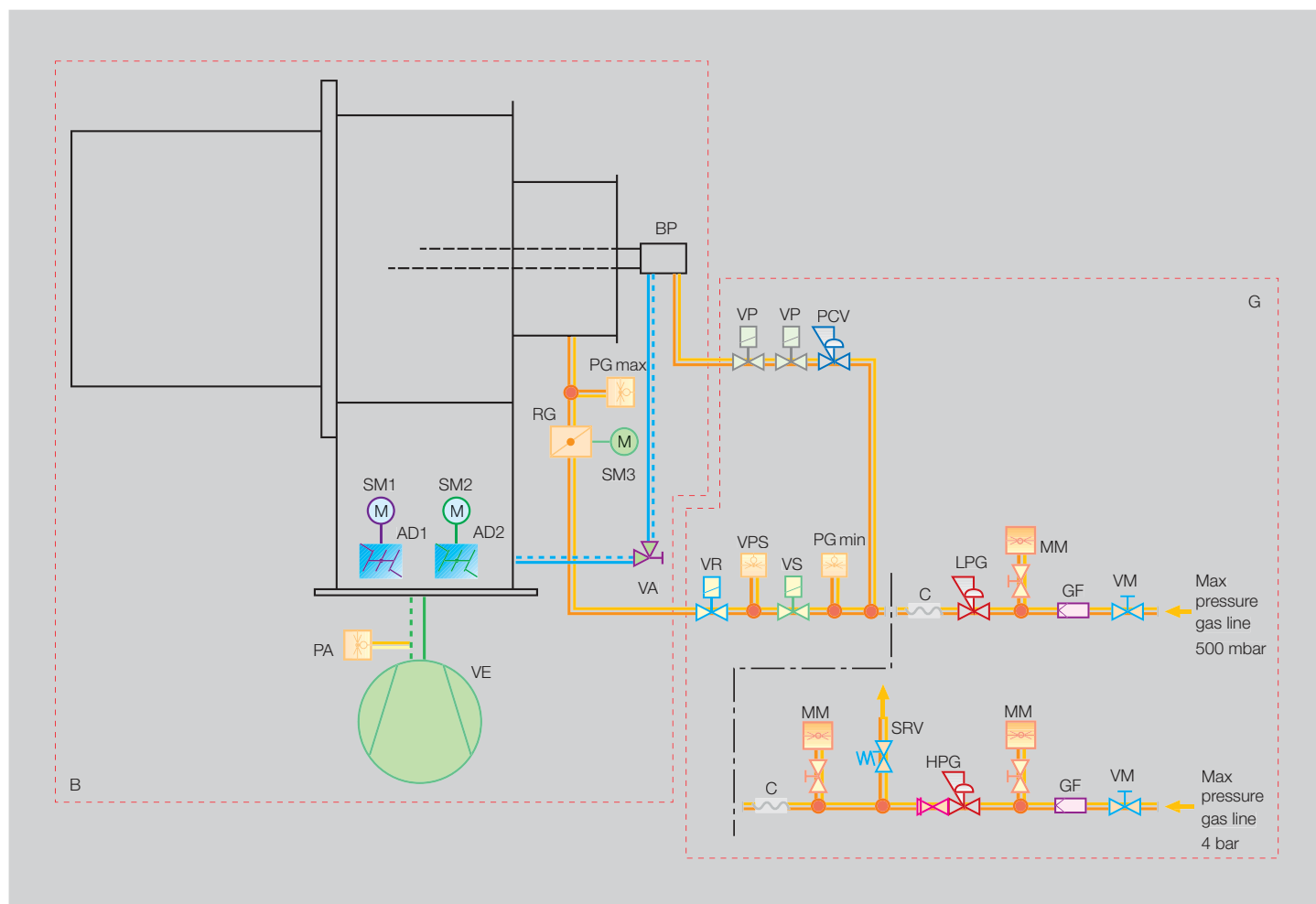
<b>RV</b>	Steam/air pressure regulator
<b>S</b>	Condensation separator
<b>SC</b>	Condensation outlet
<b>SO</b>	Oil temperature probe (PT 100)
<b>TF</b>	Flexible hose
<b>TS</b>	Maximum and minimum oil thermostat
<b>VA</b>	Air/steam adjustment valve (manual selection)
<b>VCL</b>	Oil lance hydraulic control valve
<b>VRA</b>	Air pressure regulation valve
<b>VC</b>	Relief valve (normally closed)
<b>VE</b>	Fan
<b>VP</b>	Pilot valve
<b>VR</b>	Oil pressure regulator valve
<b>VS</b>	Safety valve (maximum pressure)
<b>VV</b>	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>B</b>	Burner
<b>G</b>	Supply gas line
<b>VE</b>	Fan
<b>PA</b>	Minimum air pressure switch
<b>AD1</b>	First air damper
<b>AD2</b>	Second air damper
<b>SM1</b>	First air damper servomotor
<b>SM2</b>	Second air damper servomotor
<b>SM3</b>	Servomotor of gas regulator
<b>PG max</b>	Maximum gas pressure switch
<b>RG</b>	Butterfly valve
<b>BP</b>	Pilot burner
<b>VA</b>	Air pressure regulator valve

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

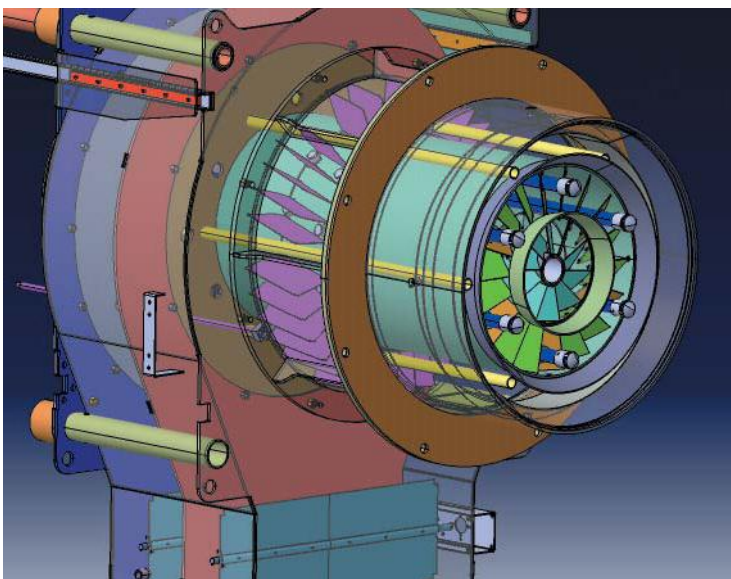
In the secondary air duct, moreover, is placed an axial swirl that permits, associated to the different distribution of air flows, to adjust the flame shape.



Example of axial swirl register device



Example of air dampers



Example of air suction circuit

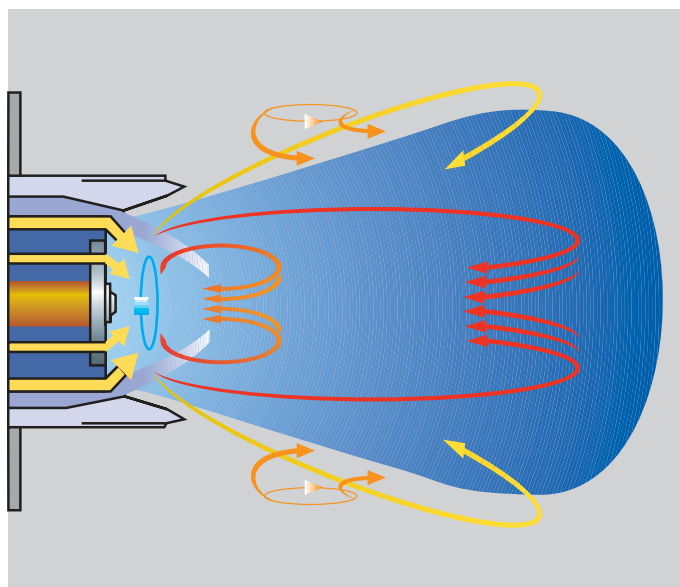


# Combustion Head

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



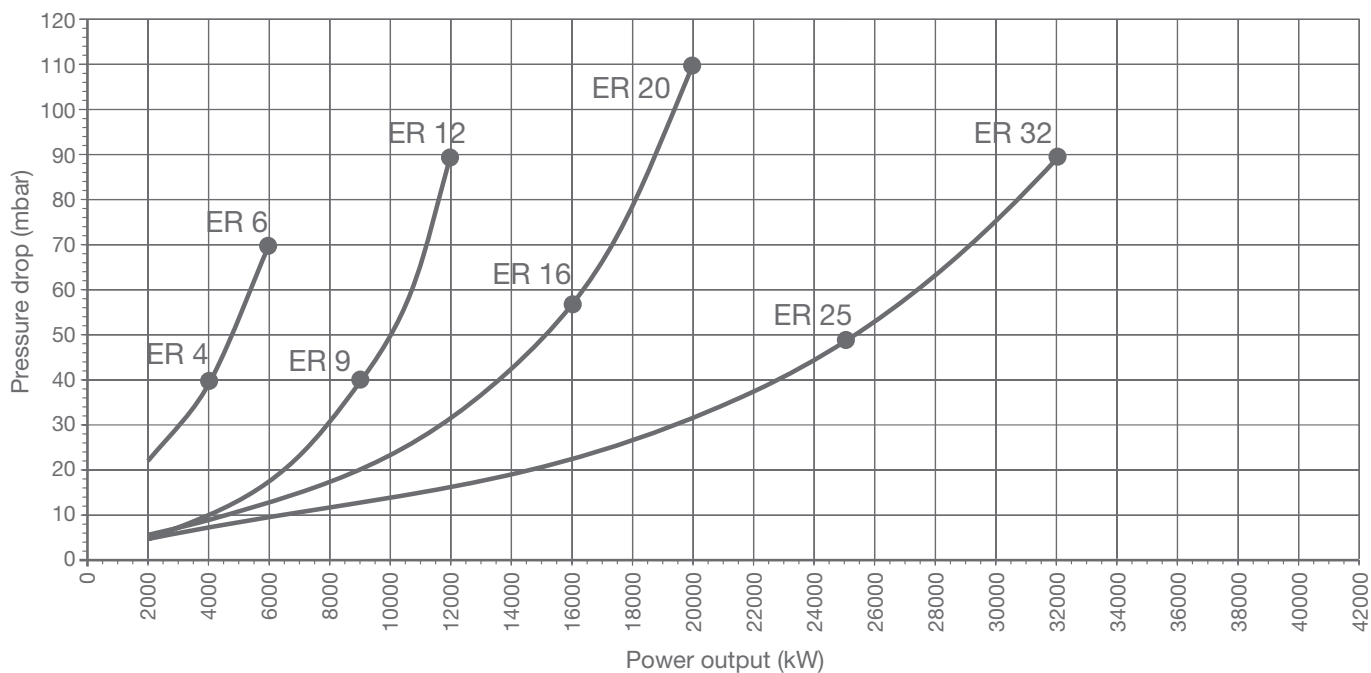
ER combustion head operating diagram

## CHARACTERISTICS COMBUSTION HEAD CURVES

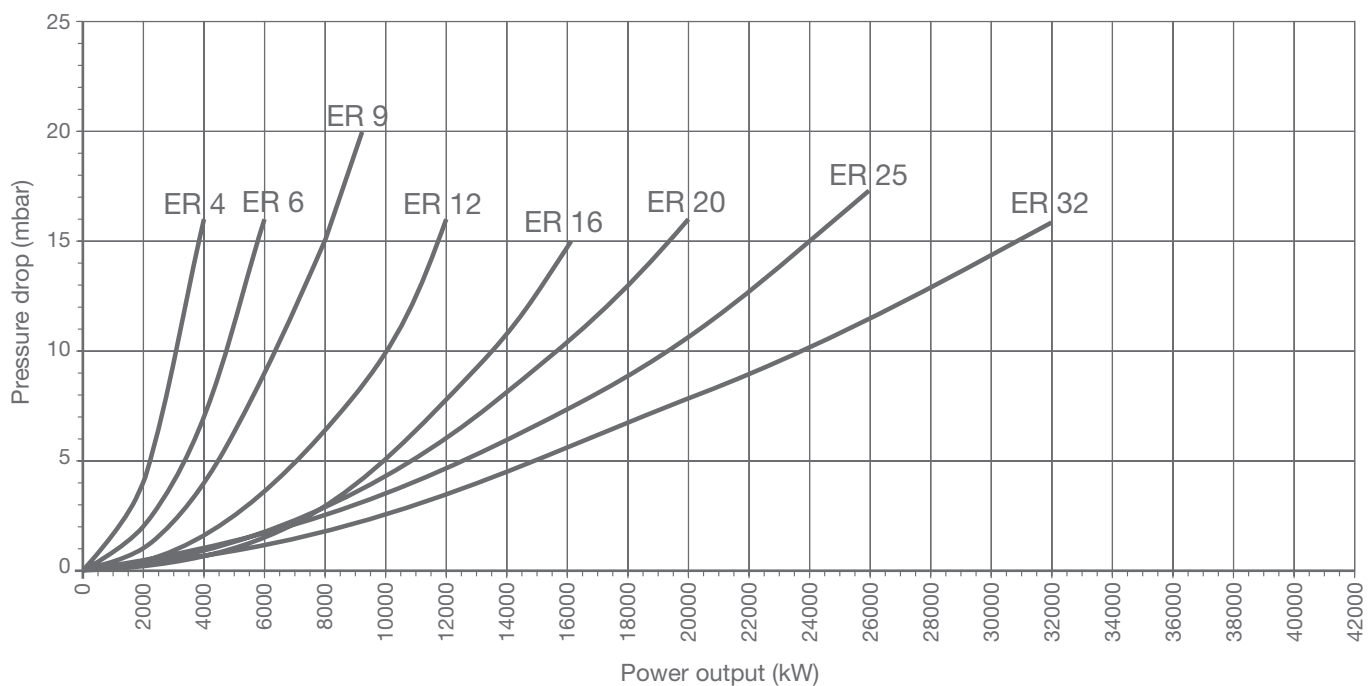
### GAS PRESSURE LOSSES

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)





## 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).

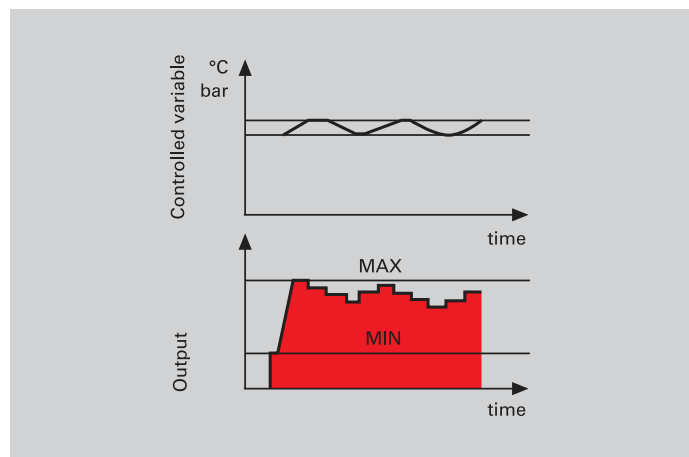
The control panels connected to the burners of ER series has a main electronic microprocessor management panel, that controls fuel and air flow servomotors to obtain the modulating operation of burner and to control boiler temperature or pressure by specific accessory probes.

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

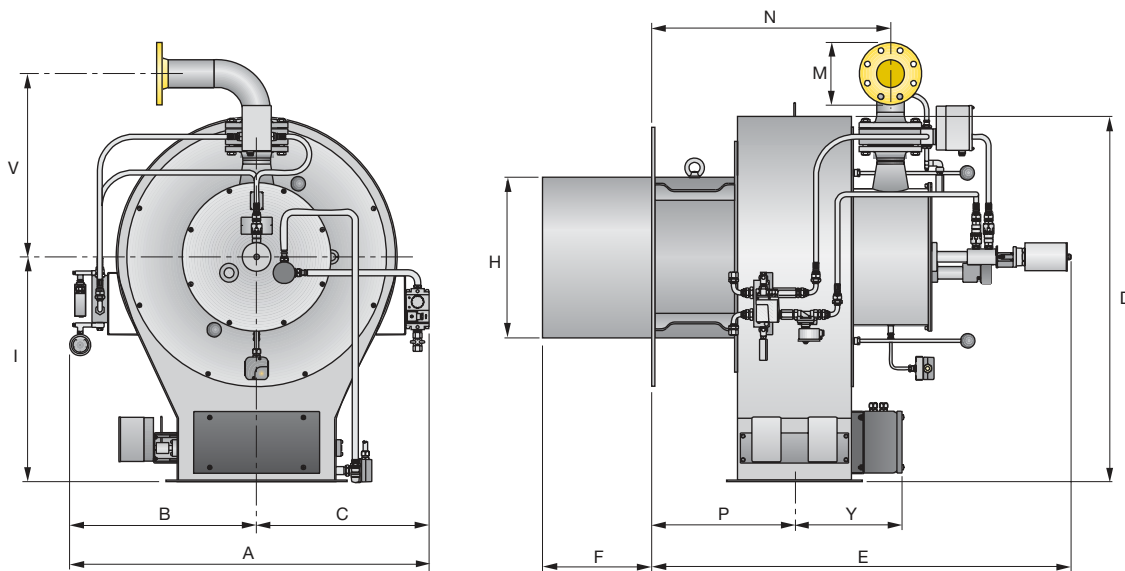


Example of wall mounted electronic management control panel

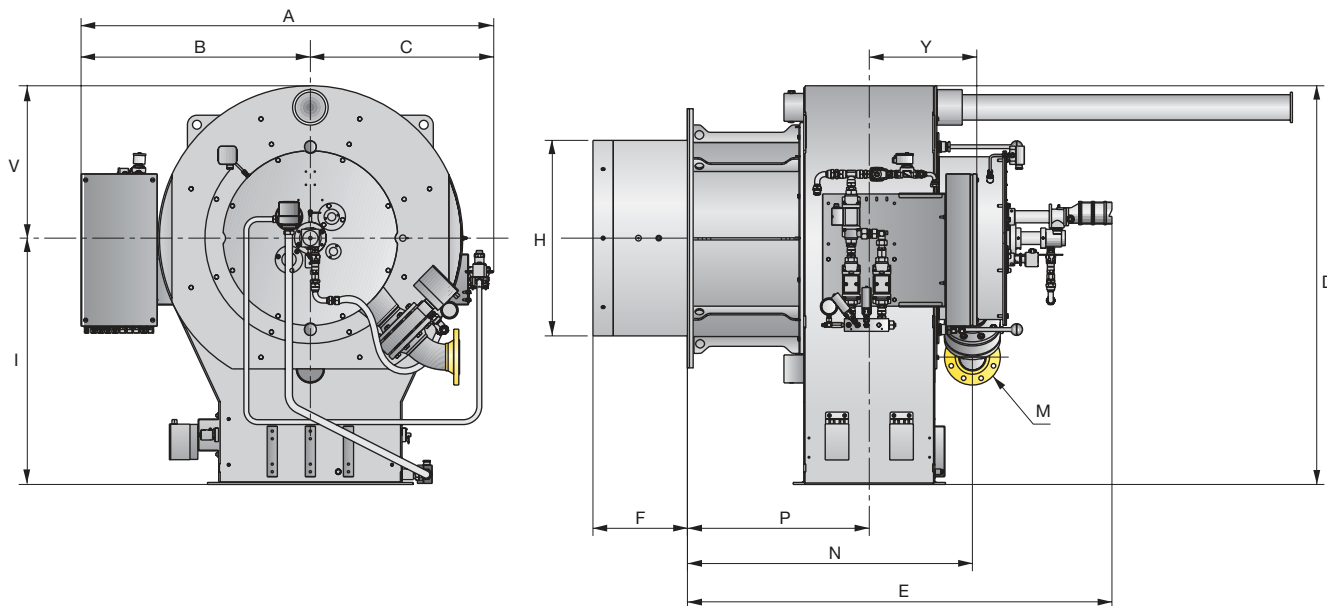
**Overall Dimensions (mm)**

**BURNER**

ER 4 - 6 - 9 - 12



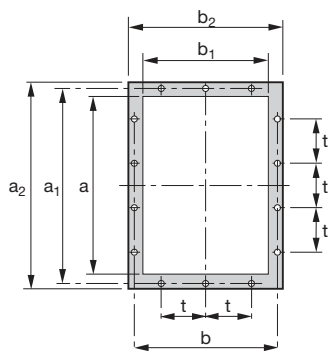
ER 16 - 20 - 25 - 32



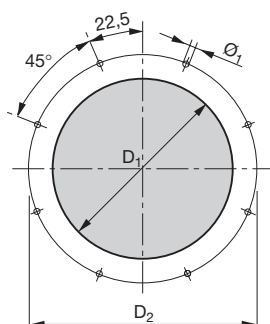
MODEL	A	B	C	D	E	F	H	I	M	N	P	Y	V
▶ ER 4	855	455	400	835	1160	330	370	530	DN65	605	380	307	542
▶ ER 6	855	455	400	835	1160	330	430	530	DN65	605	380	307	542
▶ ER 9	1150	600	550	1170	1345	350	520	720	DN80	765	457	345	588
▶ ER 12	1150	600	550	1170	1345	350	600	720	DN80	765	457	345	588
▶ ER 16	1623	903	720	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

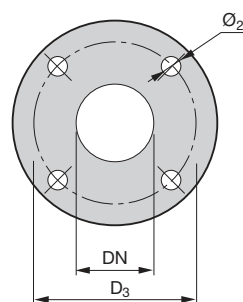


FIXING TO THE BOILER

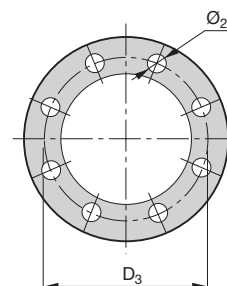


GAS SUPPLY

ER 4-6

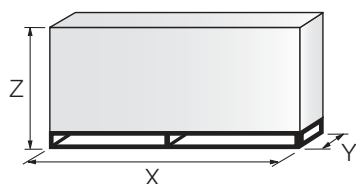


ER 9-32



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	790	970	180	160	M20	18
▶ ER 20	710	775	810	567	500	600	790	970	180	160	M20	18
▶ ER 25	640	708	1018	968	900	758	930	1200	210	200	M20	18
▶ ER 32	640	708	1018	968	900	758	1050	1200	210	200	M20	18

## PACKAGING

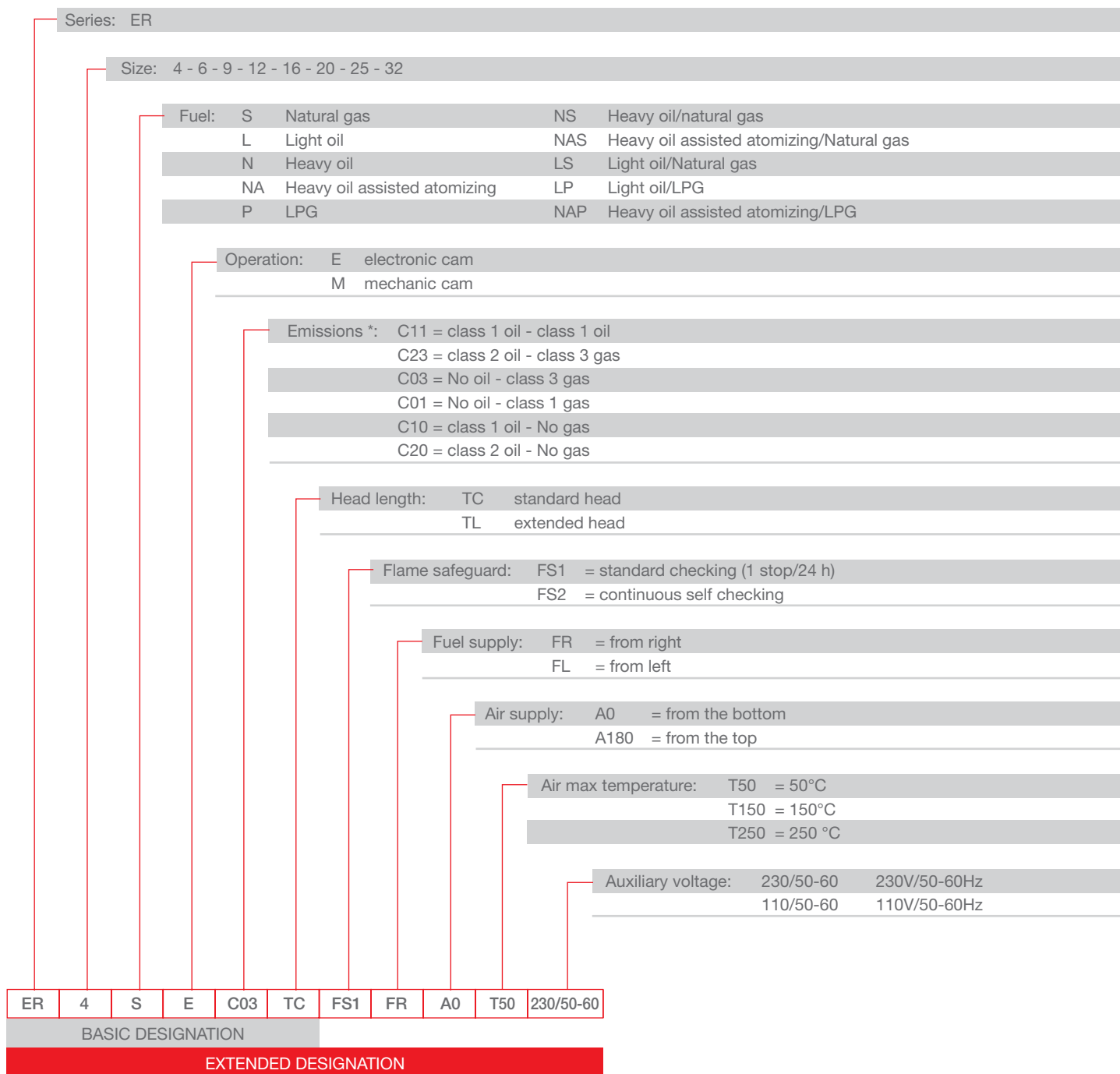


MODEL	X	Y	Z	kg
▶ ER 4	2090	1460	1680	200
▶ ER 6	2090	1460	1680	200
▶ ER 9	2300	1750	1900	300
▶ ER 12	2300	1750	1900	300
▶ ER 16	2750	2100	2150	500
▶ ER 20	2750	2100	2150	500
▶ ER 25	3000	2500	2300	800
▶ ER 32	3000	2500	2300	800

# 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.



## PRODUCT SPECIFICATION

### OIL BURNER

#### Combustion head:

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.

#### Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23 (2006/95) EC directive (low voltage)
- 98/37/EC directive (machinery)
- EN 267 (liquid fuel burners).

#### 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

#### Combustion Head:

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.

#### Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)

- 73/23 (2006/95) EC directive (low voltage)
- 90/396/EC directive (gas)
- EN 676 (gas burners).

#### 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)

#### Combustion Head:

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.

#### Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23 (2006/95) EC directive (low voltage)
- 98/37/EC directive (machinery)
- 90/396/EC directive (gas)
- EN 267 (liquid fuel burners)
- EN 676 (gas burners)

#### 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.



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