

TS0086UK00

# DB Series

## Industrial Dual Block Oil, Gas and Dual Fuel Burners



DB 4	1000/2500 ÷	5000 kW
DB 6	1400/4000 ÷	7800 kW
DB 9	1500/5000 ÷	9500 kW
DB 12	1700/7000 ÷	12500 kW
DB 16	2500/8000 ÷	16000 kW
DB 20	3000/10000 ÷	20000 kW

The new DB burners platform represents the evolution in Riello Burners industrial product range.

They are dual block burners for application in big plants (district heating, hospitals) as well as in food, chemicals, textile industry for matching with hot water boilers, steam and thermal oil generators.

DB series burners can be supplied with electronic or mechanical air-fuel ratio control according to customer specification.

DB 9-12-16-20 are equipped with pilot ignition, while for DB 4-6 models it can be supplied on demand. DB series can work with pre-heated air up to 150°C as standard, up to 250°C with special construction. New variable geometry combustion head allows to reach < 80 mg/kWh NO<sub>x</sub> emission on natural gas operations.

An hinge system for easier combustion head maintenance is available on all models.

As part of the offer, various accessories (air fan, control panels, high pressure gas train, etc) are available.


**Technical Data**

MODEL		DB 4	DB 6	DB 9	DB 12	DB 16	DB 20	
Burner operation mode		modulating						
Modulation ratio at max output	natural gas	1:5	1:5	1:6	1:6	1:6	1:6	
	LPG	1:4	1:5	1:5	1:5	1:5	1:6	
	light oil	1:4	1:4	1:4	1:4	1:4	1:4	
	heavy oil	1:3	1:3	1:3	1:3	1:3	1:3	
Servomotor	type - mechanical cam	SQM 10	SQM 10	SQM 20	SQM 20	SQM 50	SQM 50	
	type - electronic cam	MM 10004 / MM10005						
Heat output	natural gas	kW	1000/2500÷5000	1400/4000÷7800	1500/5000÷9500	1700/7000÷12500	2500/8000÷16000	3000/10000÷20000
	LPG	kW	1200/2500÷5000	1600/4000÷7800	1900/5000÷9500	2100/7000÷12500	3100/8000÷16000	3600/10000÷20000
	light oil	kW	1250/2500÷5000	1950/4000÷7800	2400/5000÷9500	3200/7000÷12500	4000/8000÷16000	5000/10000÷20000
	heavy oil	kW	1650/2500÷5000	2600/4000÷7800	3150/5000÷9500	4150/7000÷12500	5300/8000÷16000	6600/10000÷20000
Working temperature	min./max.	°C		-15/60				
<b>FUEL/AIR DATA</b>								
Light oil	net calorific value	kWh/kg		11,8				
		Kcal/kg		10200				
	viscosity at 20°C	mm <sup>2</sup> /s (cSt)		4 ÷ 6				
	delivery	kg/h	85/212 - 424	119/339 - 661	127/424 - 805	144/593 - 1059	212/678 - 1356	254/847 - 1695
	fuel temperature	max. °C		50				
Heavy oil	net calorific value	kWh/kg		11,1÷11,3				
		Kcal/kg		9545÷9720				
	viscosity at 20°C	mm <sup>2</sup> /s (cSt)		500				
	delivery	kg/h	90/224 - 448	125/358 - 699	134/448 - 851	152/627 - 1120	224/717 - 1434	269/896 - 1792
	fuel temperature	max. °C		140				
Atomizing pressure		bar		25÷30				
Natural gas (G20)	net calorific value	kWh/kg		10				
	density			0,71				
	gas delivery	Nm <sup>3</sup> /h	100/250 - 500	140/400 - 780	150/500 - 950	170/700 - 1250	250/800 - 1600	300/1000 - 2000
Natural gas (G25)	net calorific value			8,6				
	density			0,78				
	gas delivery	Nm <sup>3</sup> /h	116/291 - 581	163/465 - 907	174/581 - 1105	194/814 - 1453	291/930 - 1860	349/1163 - 2326
LPG	net calorific value			25,8				
	density			2,02				
	gas delivery	Nm <sup>3</sup> /h	39/97 - 194	54/155 - 302	58/194 - 368	66/271 - 484	97/310 - 620	116/388 - 775
<b>ELECTRICAL DATA</b>								
Electrical supply		Ph/Hz/V		1/50-60/230 - (1/50-60/110 on request)				
Control box	type	LFL 1.333 - LFL 1.335 (Intermittent working) - LGK 16 (Continuous working) - Mini MK5 EVO - Mini MK6 - MK 6 EVO						
Auxiliary electrical power	kW	0,63						
Total current	A	2,7 - 5,7						
Protection level	IP	54						
Ignition transformer		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 for C20 and C23 versions					
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	< 80 for C03 and C23 versions					
<b>APPROVAL</b>								
Directive	89/336 - 73/23 - 98/37 - 90/396 CEE							
Conforming to	EN 267 - EN 676							
Certification	--							

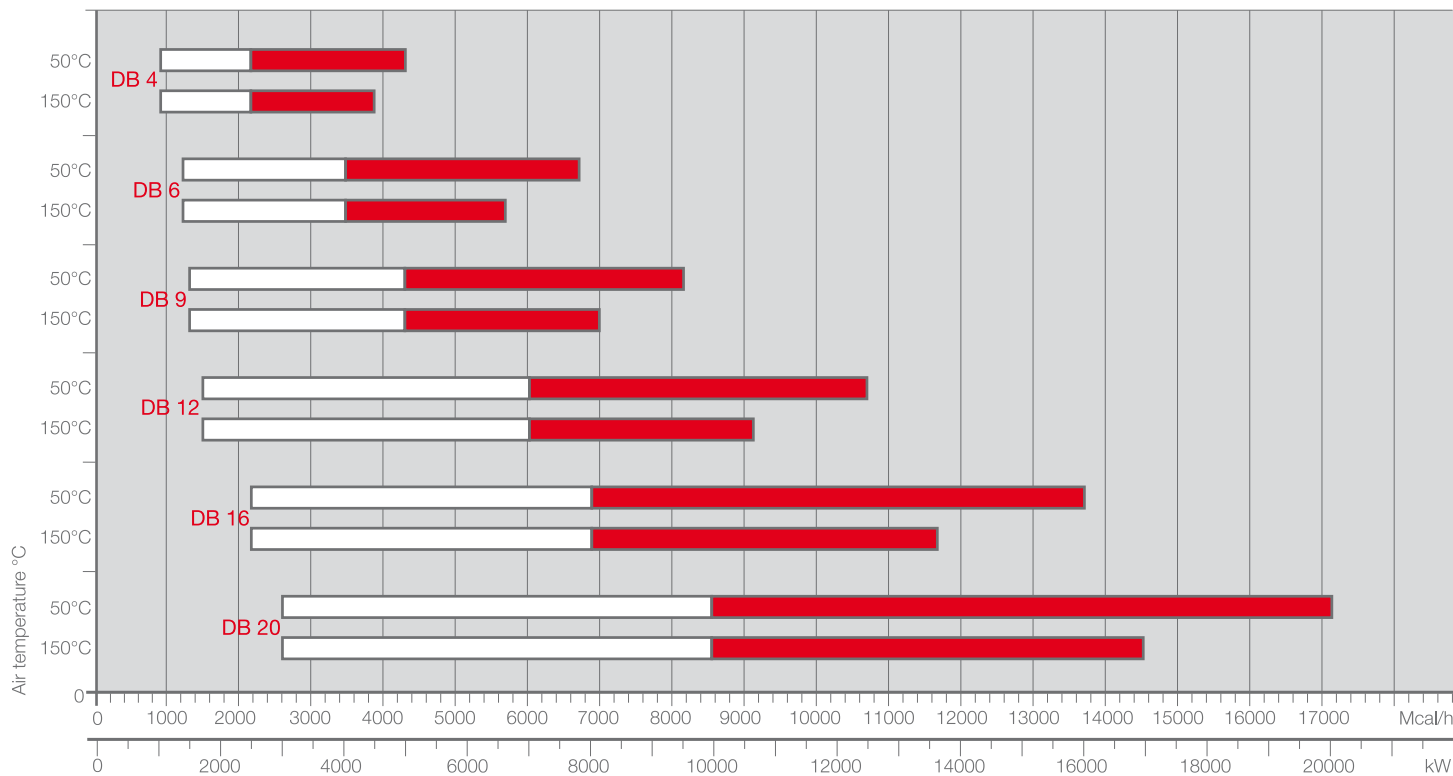
**Reference conditions:**

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

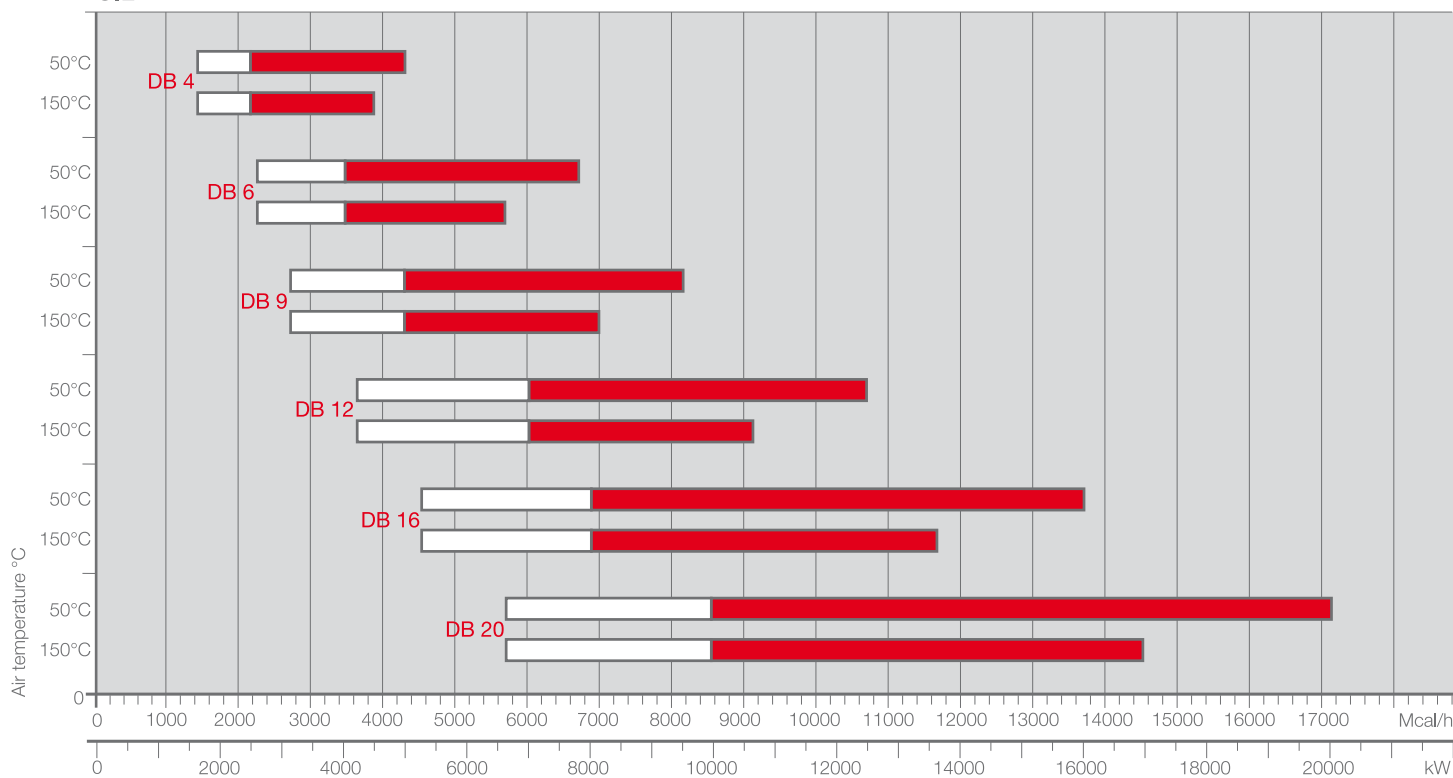
Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed. This document contains confidential and proprietary information of RIELLO S.p.A. Unless authorised, this information shall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

# FIRING RATES

## GAS



## OIL



Test conditions conforming EN 267; EN 676:  
 Temperature: 20°C  
 Pressure: 1013.5 mbar  
 Altitude: 0 m a.s.l.

Useful working field for choosing the burner  
 Modulating range

## EXAMPLE OF HYDRAULIC CIRCUIT (mechanical cam - mechanical atomisation)

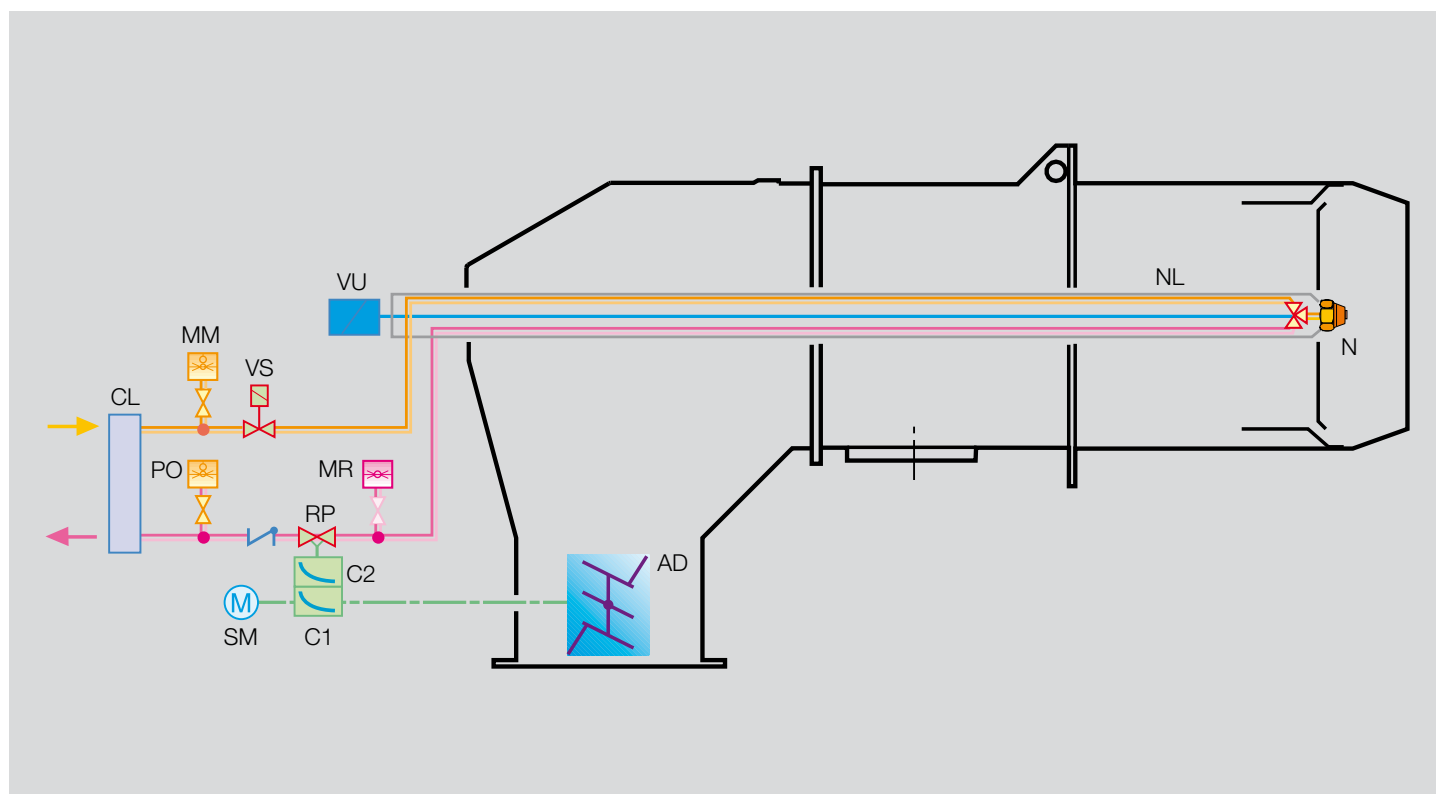
The hydraulic circuit of industrial burner DB series is composed by two main blocks; the first one, on board, includes the emergency and regulation units; the second, separate to the burner, constitutes the pumping group.

A variable profile cam connects the regulation of the fuel and the air guaranteeing an elevate combustion efficiency on all firing rates.

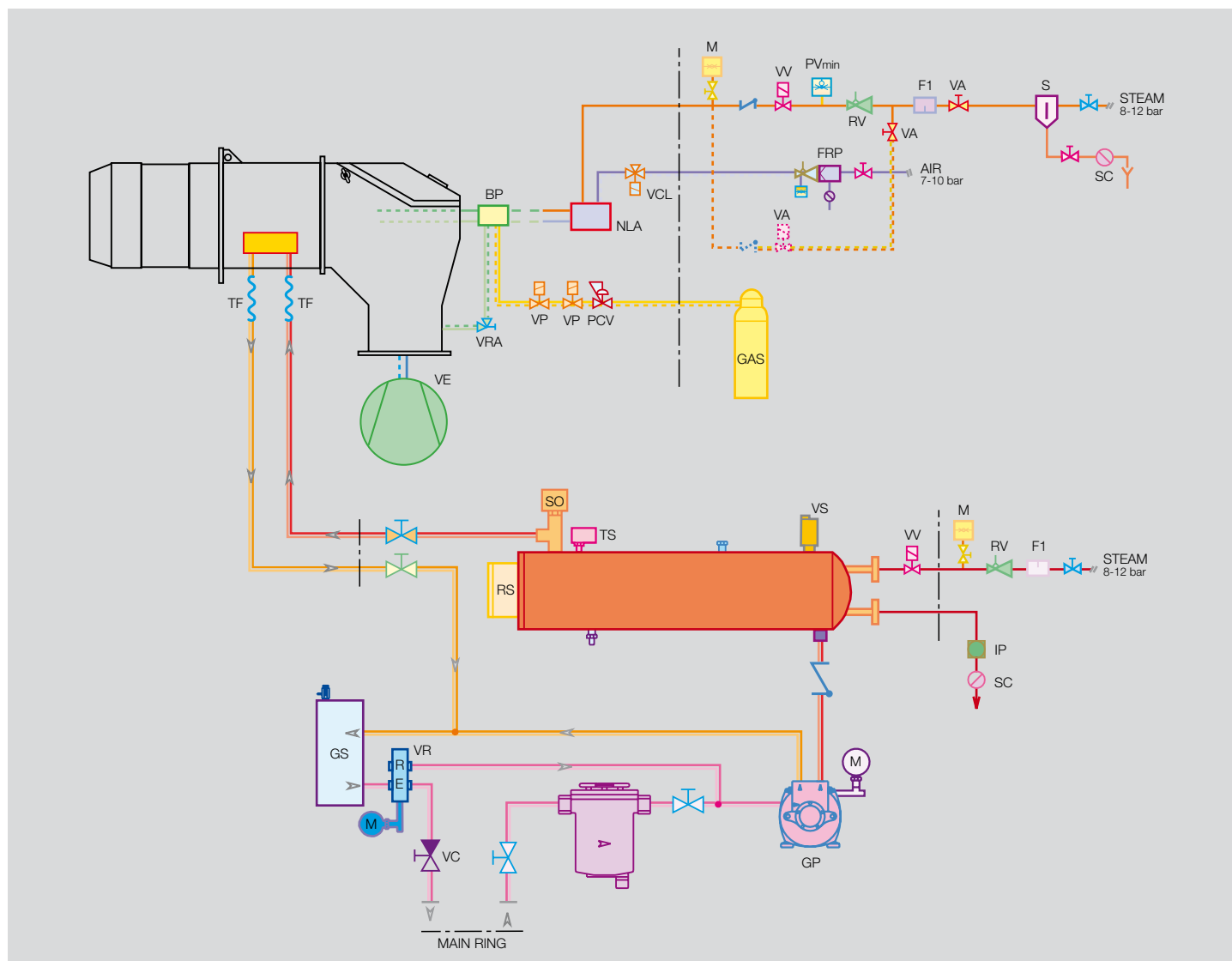
AD	Air damper
CL	Oil collector
C1	First adjusting cam
C2	Second adjusting cam
MM	Pressure gauge on the delivery circuit
MR	Pressure gauge on the return circuit
NL	Oil pipe
N	Nozzle
PO	Max. oil pressure switch on the return circuit
RP	Pressure regulator on the return circuit
SM	Servomotor
VS	Safety oil valve
VU	Nozzle safety valve



Example of oil unit DB



## EXAMPLE OF COMPLETE SUPPLY OIL CIRCUIT (steam atomizing)



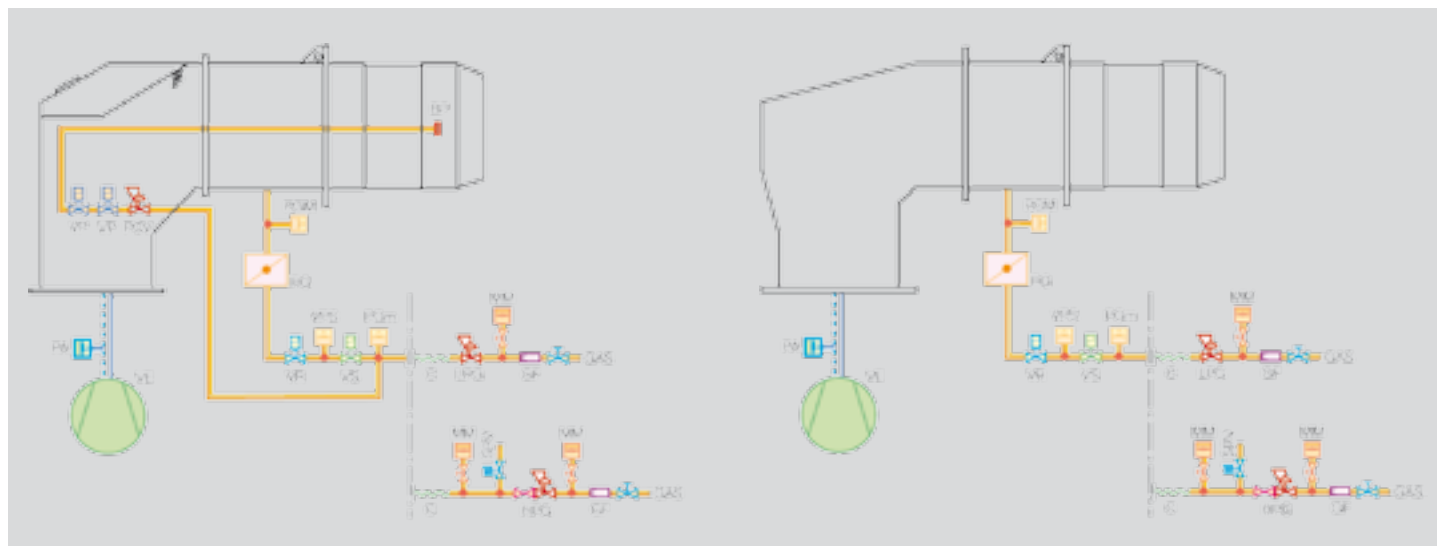
<b>BP</b>	Pilot burner
<b>ELV</b>	Electric/steam oil preheater
<b>F</b>	Self-cleaning filter
<b>FRP</b>	Air pressure regulation filter
<b>F1</b>	Filter
<b>GP</b>	Pump with pressure regulator
A	: suction
BP	: by-pass
S	: delivery
<b>GS</b>	Degassing unit
<b>IP</b>	Condensation passage indicator
<b>PCV</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 DB burners series are fitted with a butterfly valve to regulate the fuel, controlled by a variable profile cam servomotor which guarantees, through the association of the air and fuel regulation, high thermal efficiency all over the firing rates.



<b>BP</b>	Pilot burner
<b>GAS</b>	Supply gas line
<b>VE</b>	Fan
<b>PA</b>	Minimum air pressure switch
<b>PGM</b>	Maximum gas pressure switch
<b>RG</b>	Butterfly valve
<b>VP</b>	Pilot gas train valve
<b>PCV</b>	Pilot gas train regulator
<b>VR</b>	Gas train adjusting valve

<b>VPS</b>	Seal control
<b>VS</b>	Gas train safety valve
<b>PGm</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>SRV</b>	Vent safety valve
<b>HPG</b>	High pressure regulator

# Combustion Head

Different lengths of the combustion head can be chosen for the DB series of burners. The choice depends on the thickness of the front panel and the type of boiler.

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



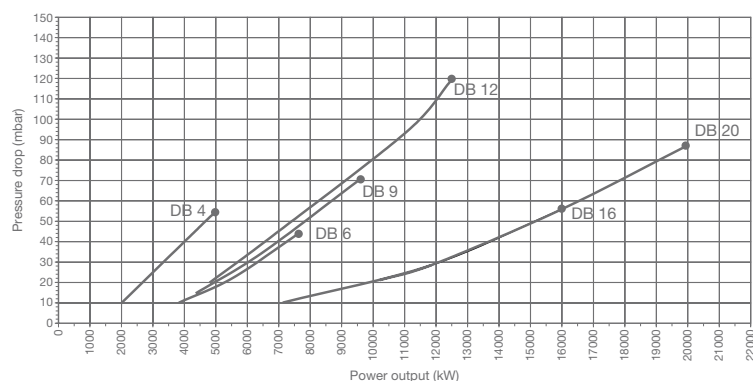
Example of DB low NOx combustion head (gas operation).

## COMBUSTION HEAD PRESSURE DROP DIAGRAMS

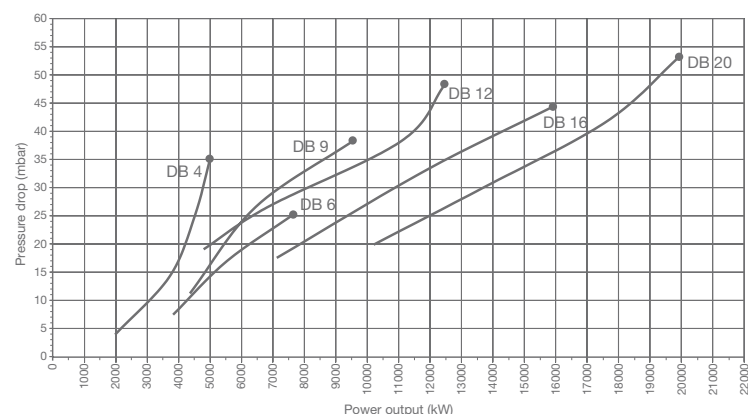
### GAS PRESSURE LOSSES

The following diagrams indicate the gas side losses of the combustion head. 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.

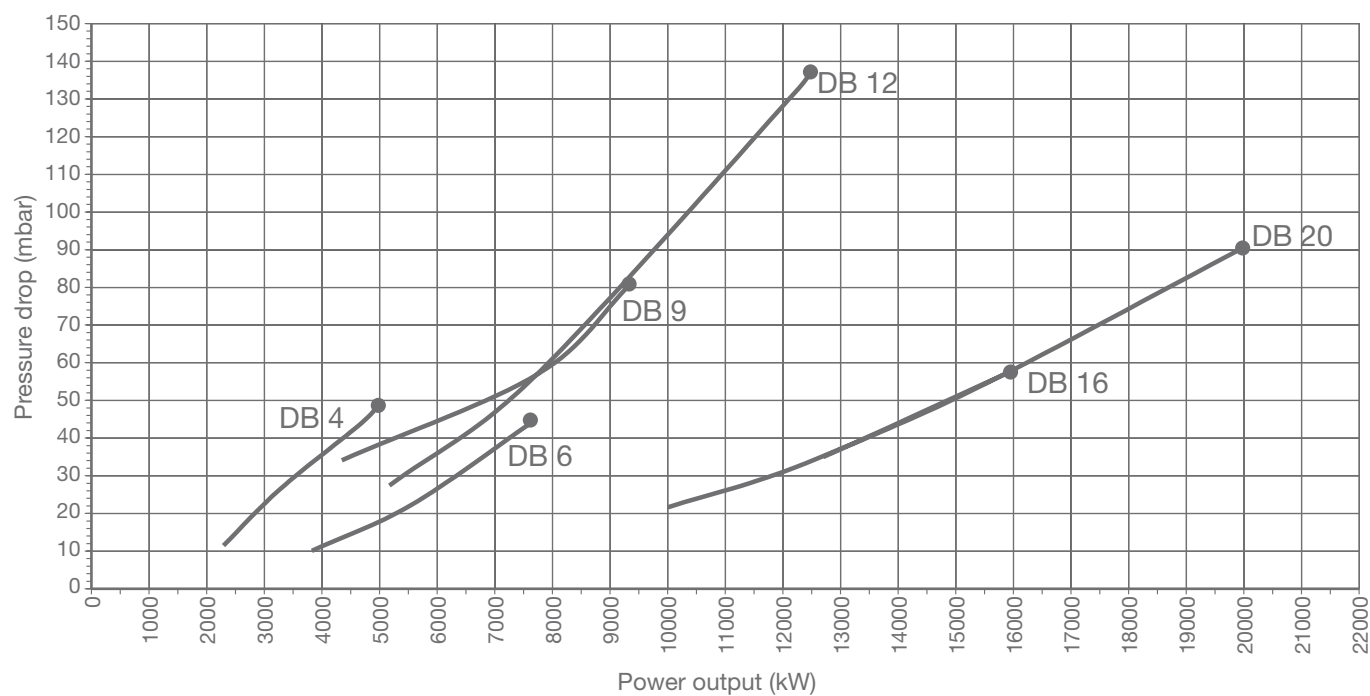
#### Burner head GAS pressure drop (including butterfly valve and ref to G20) DB - Natural Gas - Low NOx Emissions



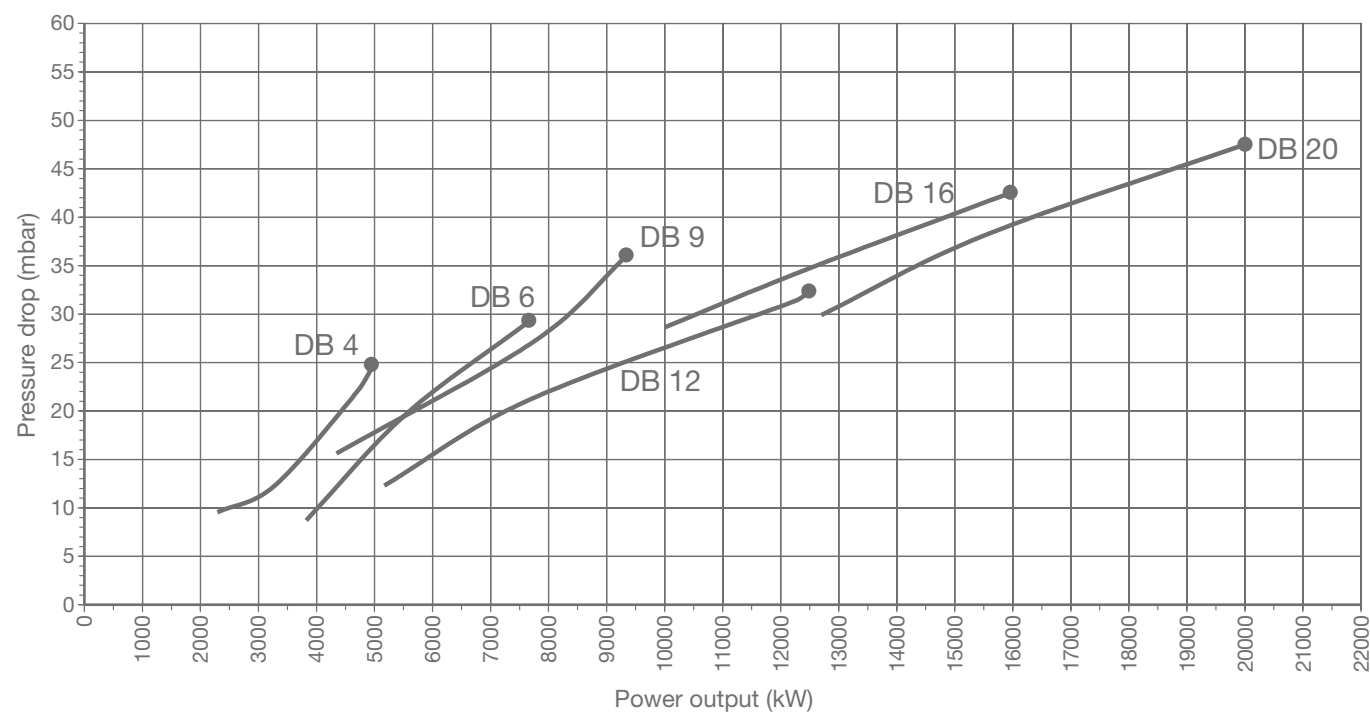
#### Burner head AIR pressure drop (including air damper - AIR temp = 40°C) DB - Natural Gas - Low NOx Emissions



Burner head GAS pressure drop (including butterfly valve and ref to G20)  
 DB - All versions except DB gas-low NOx



Burner head AIR pressure drop (including air damper - AIR temp = 40°C)  
 DB - All versions except DB gas-Low NOx



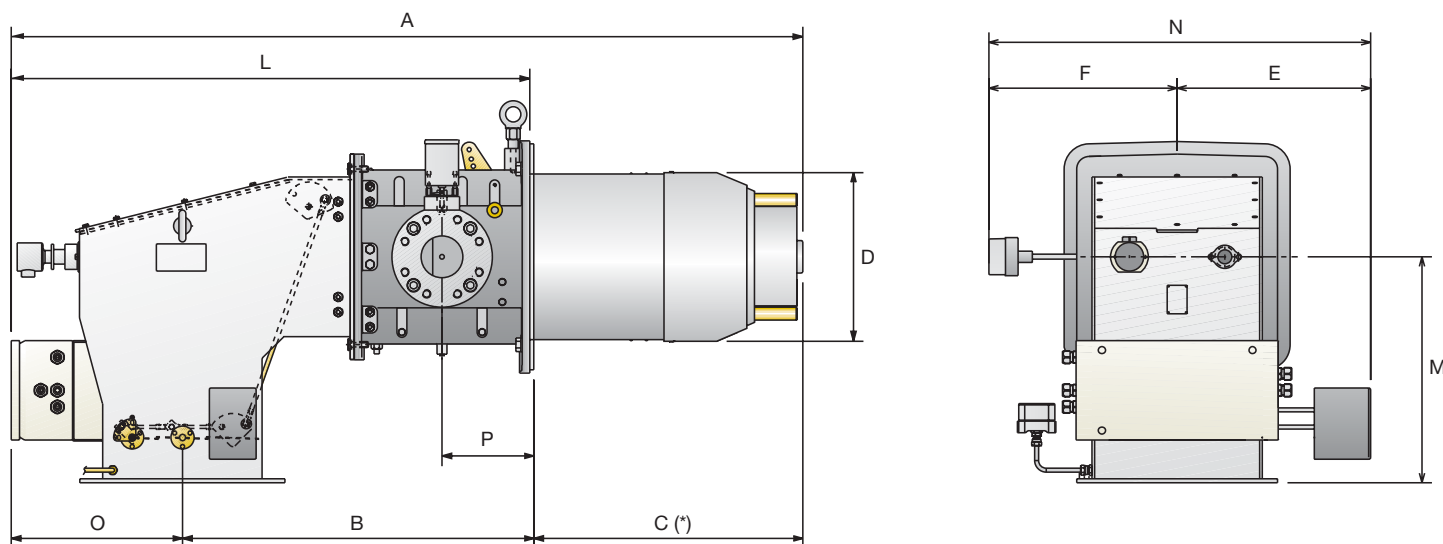


# Overall Dimensions (mm)



All dimensions are approximate and mentioned just as an indication. Please refer to Riello Burners Technical Department for further detailed information.

## BURNER



MODEL	A	B	C	D	E	F	L (L*)	M	N	O	P
▶ DB 4	1577	700	536	336	385	375	1033 (1217)	450	760	341	183
▶ DB 6	1577	700	536	336	385	375	1033 (1217)	450	760	341	183
▶ DB 9	1857	851	662	413	420	333	1195 (1539)	550	753	344	208
▶ DB 12	1857	851	662	456	420	333	1195 (1539)	550	753	344	208
▶ DB 16	2080	852	797	544	486	448	1283 (1600)	761	934	431	258
▶ DB 20	2080	852	797	590	486	448	1283 (1600)	761	934	431	258

L = gas version

L\* = oil and dual fuel versions

(\*) Instructions about how to realize the fettling are reported in the manual of the burner in the chapter "Fixing to the boiler".

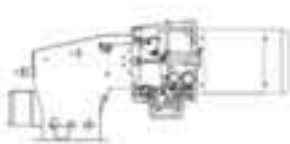
## GAS CONNECTIONS

DB 4



DN 65 gas connection from below  
L-shape DN 65 gas adapter required

DB 6



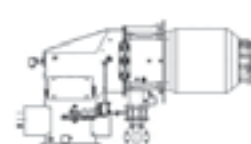
DN 80 gas connection from below  
L-shape DN 80 gas adapter required

DB 9 - 12



DN 80 gas connection from the side  
L-shape DN 80 gas adapter required

DB 16 - 20



DN 100 gas connection from the side  
L 100/100 adapter already included

## BURNER - BOILER MOUNTING FLANGE

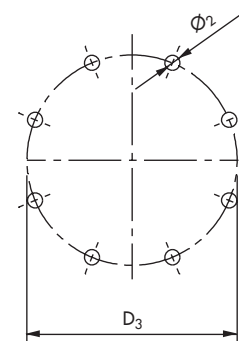
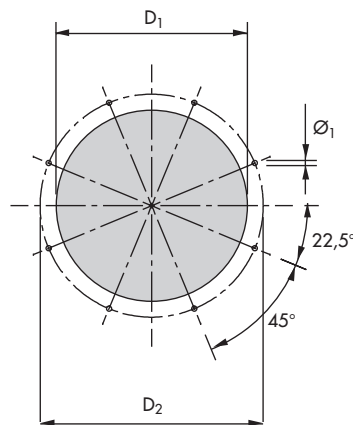
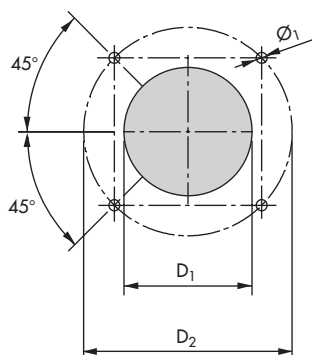
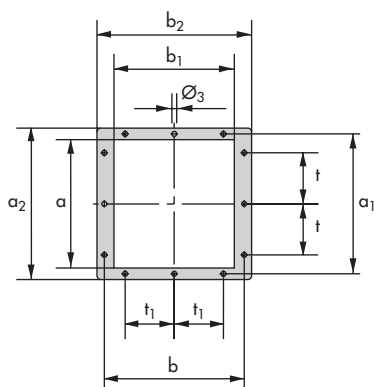
AIR DUCT CONNECTION

FIXING TO THE BOILER

GAS SUPPLY

DB 4 - 6 - 9 - 12

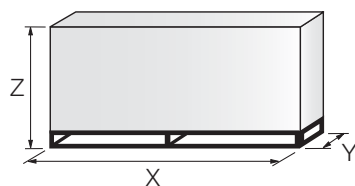
DB 16 - 20



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	t <sub>1</sub>	Ø <sub>1</sub>	Ø <sub>2</sub>	Ø <sub>3</sub>
▶ DB 4	329	370	400	370	308	409	350	498	160 - DN 65	135	130	M20	18	13
▶ DB 6	329	370	400	370	308	409	350	498	160 - DN 80	135	130	M20	18	13
▶ DB 9	436	476	506	440	400	470	420	608	160 - DN 80	200	180	M18	18	11
▶ DB 12	436	476	506	440	400	470	465	608	160 - DN 80	200	180	M18	18	11
▶ DB 16	562	tbd	400	520	452	542	560	700	160 - DN 100	410	205	M14	18	11
▶ DB 20	562	tbd	400	520	452	542	560	700	160 - DN 100	410	205	M14	18	11

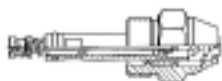
## PACKAGING

Overall dimensions and weights to estimate the delivery.



MODEL	X	Y	Z	kg
▶ DB 4	2100	1000	1200	200
▶ DB 6	2100	1000	1200	200
▶ DB 9	2100	1000	1200	250
▶ DB 12	2100	1000	1200	250
▶ DB 16	2200	1000	1300	300
▶ DB 20	2200	1000	1300	300

## Nozzles for DB 4 - 6 - 9 - 12 - 16 - 20



The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output. One nozzle required for each burner, able to guarantee the calculated oil delivery.

BURNER	FLDCS - W2 45° ton/h*	CODE	BRGZ - B5 45° AA kg/h	CODE	BRGZ - C5 45° kg/h	CODE
▶ DB 4 - 6 - 9	3	3045438	200	3009800		
			225	3009801		
			250	3009802		
	4	3045444	275	3009803		
			300	3009804		
			325	3009805		
	5	3045450	350	3009806		
			375	3009807		
	6	3045454	400	3009808		
			425	3009809		
▶ DB 6 - 9 - 12			450	3009810		
			475	3009811		
			500	3009812		
			525	3009813		
	8	3045460	550	3009814		
			575	3009815		
			600	3009816		
			650	3009817		
			700	3009818	700	in progress
			750	3009819	750	in progress
▶ DB 9 - 12 - 16			800	3009820	800	in progress
	12		850	3009821	850	in progress
					900	in progress
▶ DB 12 - 16 - 20					950	in progress
					1000	in progress
	15				1050	in progress
	16				1100	in progress
					1150	in progress
▶ DB 16 - 20					1200	in progress
	18				1250	in progress
					1300	in progress
	20				1400	in progress
					1500	in progress
▶ DB 20	22				1600	in progress
					1700	in progress
	25				1800	in progress

\*steam boiler size according to:  
N.C.V. heavy oil = 11,16 kWh/kg  
combustion air = 50°C  
1 ton/h = 775 kW (eff = 90%)

For steam/air assisted atomizing, special nozzles available on demand.

## High pressure flexible tubes



In order to facilitate the connection of the burner to the fuel line adduction there are flexible tubes available according to the following table.

BURNER	TUBE DIAMETER	TUBE LENGTH (mm)	MAXIMUM WORKING PRESSURE (bar)	TUBE CODE
▶ DB 4 - 6	1/2"	1500	40	3094227
▶ DB 9 - 12 - 16 - 20	3/4"	2000	40	3094226

## High pressure oil filter



In order to protect the hydraulic circuit of the burner from the possible presence of particles in the combustion line, these following filters are available.

BURNER	FILTER DIAMETER	FILTERING DEGREE (µm)	FILTER CODE
▶ DB 4 - 6	1/2"	500	in progress
▶ DB 9 - 12 - 16 - 20	3/4"	500	in progress

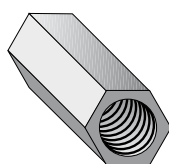
## Circulation group (by-pass valve)



If the burner is far away from the pumping group it is possible to install a circulation group that allows the circulates of the heated fuel during the stand-by phase.

BURNER	GROUP DIAMETER	GROUP CODE
▶ DB 4 - 6	1/2"	in progress
▶ DB 9 - 12 - 16 - 20	3/4"	in progress

## Check valve



In order to avoid fuel return, that could damage the hydraulic circuit, "check valve" are available.

BURNER	VALVE DIAMETER	VALVE CODE
▶ DB 4 - 6	1/2"	in progress
▶ DB 9 - 12 - 16 - 20	3/4"	in progress

## Potentiometer kit

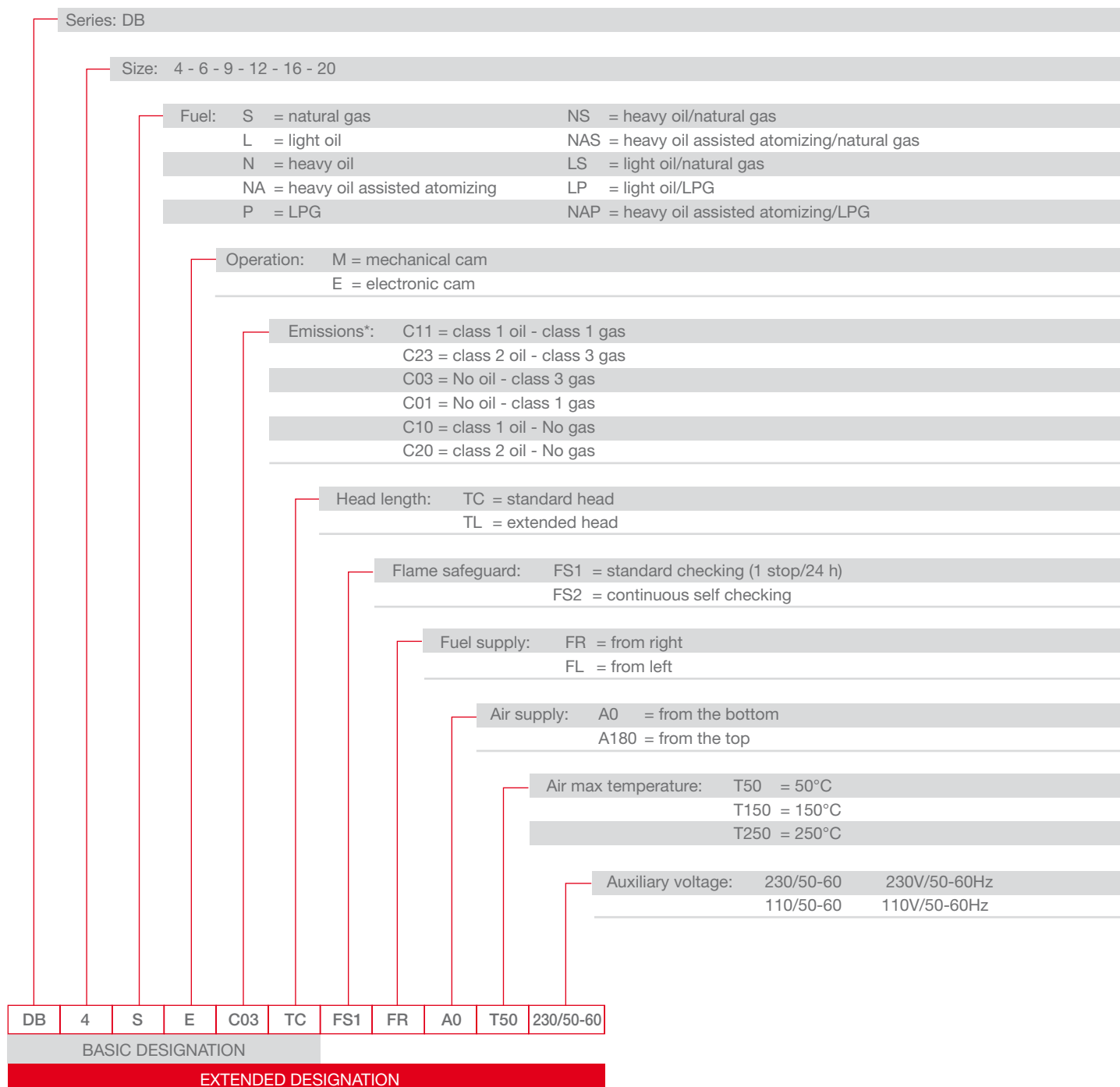


Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor. The KITS available for the various burners are listed below.

BURNER	POTENTIOMETER KIT CODE
▶ DB 4 - 6 - 9 - 12 - 16 - 20	3010021

## DESIGNATION OF VERSIONS

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, emissions values, considering a hot water boiler with thermal load of 1,1 MW/m<sup>3</sup>  
 Guaranteed values to be confirmed after the verification of the combustion chamber characteristics

## AVAILABLE BURNER MODELS

In the following table you can find the DB models available. Further versions are available on demand (heavy oil air/steam atomising models, preheated air up to 250°C construction, specific equipment and many others). For other low NOx versions, please contact Riello Burners Headquarter.

	MODEL **						FUEL	HEAT OUTPUT *		
								(kW)	OIL (kg/h)	GAS (Nm <sup>3</sup> /h)
LOW NOX MODELS	DB 4	SE	TC	A 0	FS1	230/50-60 T50	Natural gas	1000/2500-5000	-	500
	DB 4	SE	TC	A 180	FS1	230/50-60 T50	Natural gas		-	500
	DB 6	SE	TC	A 0	FS1	230/50-60 T50	Natural gas	1400/4000-7800	-	780
	DB 6	SE	TC	A 180	FS1	230/50-60 T50	Natural gas		-	780
	DB 9	SE	TC	A 0	FS1	230/50-60 T50	Natural gas	1500/5000-9500	-	950
	DB 9	SE	TC	A 180	FS1	230/50-60 T50	Natural gas		-	950
	DB 12	SE	TC	A 0	FS1	230/50-60 T50	Natural gas	1700/7000-12500	-	1250
	DB 12	SE	TC	A 180	FS1	230/50-60 T50	Natural gas		-	1250
	DB 16	SE	TC	A 0	FS1	230/50-60 T50	Natural gas	2500/8000-16000	-	1600
	DB 16	SE	TC	A 180	FS1	230/50-60 T50	Natural gas		-	1600
DB 20	SE	TC	A 0	FS1	230/50-60 T50	Natural gas	3000/10000-20000	-	2000	
DB 20	SE	TC	A 180	FS1	230/50-60 T50	Natural gas		-	2000	
OTHER MODELS AVAILABLE	DB 4	SM	TC	A 0	FS1	230/50-60 T50	Natural gas	1000/2500-5000	-	500
	DB 4	SM	TC	A 180	FS1	230/50-60 T50	Natural gas		-	500
	DB 4	LE	TC	A 0	FS1	230/50-60 T50	Light oil		422	-
	DB 4	LE	TC	A 180	FS1	230/50-60 T50	Light oil		422	-
	DB 4	LSE	TC	A 0	FS1	230/50-60 T50	Light oil / Natural gas		422	500
	DB 4	LSE	TC	A 180	FS1	230/50-60 T50	Light oil / Natural gas		422	500
	DB 4	LSM	TC	A 0	FS1	230/50-60 T50	Light oil / Natural gas		422	500
	DB 4	LSM	TC	A 180	FS1	230/50-60 T50	Light oil / Natural gas		422	500
	DB 4	NM	TC	A 0	FS1	230/50-60 T50	Heavy oil		450	-
	DB 4	NM	TC	A 180	FS1	230/50-60 T50	Heavy oil		450	-
	DB 4	NSM	TC	A 0	FS1	230/50-60 T50	Heavy oil / Natural gas	450	500	
	DB 4	NSM	TC	A 180	FS1	230/50-60 T50	Heavy oil / Natural gas	450	500	
	DB 6	SM	TC	A 0	FS1	230/50-60 T50	Natural gas	1400/4000-7800	-	780
	DB 6	SM	TC	A 180	FS1	230/50-60 T50	Natural gas		-	780
	DB 6	LE	TC	A 0	FS1	230/50-60 T50	Light oil		658	-
	DB 6	LE	TC	A 180	FS1	230/50-60 T50	Light oil		658	-
	DB 6	LSE	TC	A 0	FS1	230/50-60 T50	Light oil / Natural gas		658	780
	DB 6	LSE	TC	A 180	FS1	230/50-60 T50	Light oil / Natural gas		658	780
	DB 6	LSM	TC	A 0	FS1	230/50-60 T50	Light oil / Natural gas		658	780
	DB 6	LSM	TC	A 180	FS1	230/50-60 T50	Light oil / Natural gas		658	780
DB 6	NM	TC	A 0	FS1	230/50-60 T50	Heavy oil	703		-	
DB 6	NM	TC	A 180	FS1	230/50-60 T50	Heavy oil	703		-	
DB 6	NSM	TC	A 0	FS1	230/50-60 T50	Heavy oil / Natural gas	703	780		
DB 6	NSM	TC	A 180	FS1	230/50-60 T50	Heavy oil / Natural gas	703	780		
DB 9	SM	TC	A 0	FS1	230/50-60 T50	Natural gas	1500/5000-9500	-	950	
DB 9	SM	TC	A 180	FS1	230/50-60 T50	Natural gas		-	950	
DB 9	LE	TC	A 0	FS1	230/50-60 T50	Light oil		801	-	
DB 9	LE	TC	A 180	FS1	230/50-60 T50	Light oil		801	-	
DB 9	LSE	TC	A 0	FS1	230/50-60 T50	Light oil / Natural gas		801	950	
DB 9	LSE	TC	A 180	FS1	230/50-60 T50	Light oil / Natural gas		801	950	
DB 9	LSM	TC	A 0	FS1	230/50-60 T50	Light oil / Natural gas		801	950	

\* Max capacity is referred to:

Light oil net calorific value 11,8 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>

\*\* FS1 operation as standard. FS2 on demand.

OTHER MODELS AVAILABLE

MODEL **							FUEL	HEAT OUTPUT *		
								(kW)	OIL (kg/h)	GAS (Nm <sup>3</sup> /h)
DB 9	LSM	TC	A 180	FS1	230/50-60	T50	Light oil / Natural gas	1500/5000-9500	801	950
DB 9	NM	TC	A 0	FS1	230/50-60	T50	Heavy oil		856	-
DB 9	NM	TC	A 180	FS1	230/50-60	T50	Heavy oil		856	-
DB 9	NSM	TC	A 0	FS1	230/50-60	T50	Heavy oil / Natural gas		856	950
DB 9	NSM	TC	A 180	FS1	230/50-60	T50	Heavy oil / Natural gas		856	950
DB 12	SM	TC	A 0	FS1	230/50-60	T50	Natural gas	1700/7000-12500	-	1250
DB 12	SM	TC	A 180	FS1	230/50-60	T50	Natural gas		-	1250
DB 12	LE	TC	A 0	FS1	230/50-60	T50	Light oil		1054	-
DB 12	LE	TC	A 180	FS1	230/50-60	T50	Light oil		1054	-
DB 12	LSE	TC	A 0	FS1	230/50-60	T50	Light oil / Natural gas		1054	1250
DB 12	LSE	TC	A 180	FS1	230/50-60	T50	Light oil / Natural gas		1054	1250
DB 12	LSM	TC	A 0	FS1	230/50-60	T50	Light oil / Natural gas		1054	1250
DB 12	LSM	TC	A 180	FS1	230/50-60	T50	Light oil / Natural gas		1054	1250
DB 12	NM	TC	A 0	FS1	230/50-60	T50	Heavy oil		1126	-
DB 12	NM	TC	A 180	FS1	230/50-60	T50	Heavy oil		1126	-
DB 12	NSM	TC	A 0	FS1	230/50-60	T50	Heavy oil / Natural gas		1126	1250
DB 12	NSM	TC	A 180	FS1	230/50-60	T50	Heavy oil / Natural gas		1126	1250
DB 16	SM	TC	A 0	FS1	230/50-60	T50	Natural gas		2500/8000-16000	-
DB 16	SM	TC	A 180	FS1	230/50-60	T50	Natural gas	-		1600
DB 16	LE	TC	A 0	FS1	230/50-60	T50	Light oil	1349		-
DB 16	LE	TC	A 180	FS1	230/50-60	T50	Light oil	1349		-
DB 16	LSE	TC	A 0	FS1	230/50-60	T50	Light oil / Natural gas	1349		1600
DB 16	LSE	TC	A 180	FS1	230/50-60	T50	Light oil / Natural gas	1349		1600
DB 16	LSM	TC	A 0	FS1	230/50-60	T50	Light oil / Natural gas	1349		1600
DB 16	LSM	TC	A 180	FS1	230/50-60	T50	Light oil / Natural gas	1349		1600
DB 16	NM	TC	A 0	FS1	230/50-60	T50	Heavy oil	1441		-
DB 16	NM	TC	A 180	FS1	230/50-60	T50	Heavy oil	1441		-
DB 16	NSM	TC	A 0	FS1	230/50-60	T50	Heavy oil / Natural gas	1441		1600
DB 16	NSM	TC	A 180	FS1	230/50-60	T50	Heavy oil / Natural gas	1441		1600
DB 20	SM	TC	A 0	FS1	230/50-60	T50	Natural gas	3000/10000-20000		-
DB 20	SM	TC	A 180	FS1	230/50-60	T50	Natural gas		-	2000
DB 20	LE	TC	A 0	FS1	230/50-60	T50	Light oil		1686	-
DB 20	LE	TC	A 180	FS1	230/50-60	T50	Light oil		1686	-
DB 20	LSE	TC	A 0	FS1	230/50-60	T50	Light oil / Natural gas		1686	2000
DB 20	LSE	TC	A 180	FS1	230/50-60	T50	Light oil / Natural gas		1686	2000
DB 20	LSM	TC	A 0	FS1	230/50-60	T50	Light oil / Natural gas		1686	2000
DB 20	LSM	TC	A 180	FS1	230/50-60	T50	Light oil / Natural gas		1686	2000
DB 20	NM	TC	A 0	FS1	230/50-60	T50	Heavy oil		1802	-
DB 20	NM	TC	A 180	FS1	230/50-60	T50	Heavy oil		1802	-
DB 20	NSM	TC	A 0	FS1	230/50-60	T50	Heavy oil / Natural gas		1802	2000
DB 20	NSM	TC	A 180	FS1	230/50-60	T50	Heavy oil / Natural gas		1802	2000

\* Max capacity is referred to:

Light oil net calorific value 11,8 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>

\*\* FS1 operation as standard. FS2 on demand.

Other versions are available on request.

## PRODUCT SPECIFICATION

### ALL BURNERS

Dual block forced draught burner, two stages progressive or modulating operation (with a kit), separate supply, fully automatic, made up of:

- Air damper for air setting with variable profile cam controlled by a servomotor (version /M – mechanical cam)
- Air damper for air setting with air servomotor managed by microprocessor (version /E – electronic cam)
- Variable geometry combustion head that can be set according the required output
- Combustion head servomotor managed by microprocessor (version /E – electronic cam DB16-20 only)
- Pilot burner with two gas valves and pressure regulator (as standard on DB9-12-16-20 only)
- Minimum air pressure switch
- Flame inspection window
- Electrical interface box with ignition transformer inside
- Opening hinge to have easier combustion head inspection and maintenance
- IP54 protection level.

### OIL BURNER

- Photocell for flame detection
- Nozzle pipe
- Safety nozzle valve
- Oil lance without nozzle (nozzle must be ordered separately)
- Valves group with safety oil valves
- Oil capacity regulator controlled by air servomotor linkage (version /M – mechanical cam)
- Oil capacity regulator with servomotor managed by microprocessor (version /E – electronic cam)
- Maximum oil pressure switch on the return circuit
- Pressure gauge on delivery and return circuit.

### Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23/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.

### Available accessories to be ordered separately:

- flexible tubes
- return nozzles
- high pressure oil filter
- circulation group (by-pass valve)
- check valve
- potentiometer kit for the servomotor.

### GAS BURNER

- Photocell for flame detection
- Maximum gas pressure switch
- Butterfly gas valve controlled by air servomotor linkage (version /M – mechanical cam)
- Butterfly gas valve with servomotor managed by microprocessor (version /E – electronic cam)
- Gas pressure test point to the combustion head.



**Conforming to:**

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23/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.

**Available accessories to be ordered separately:**

- potentiometer kit for the servomotor.

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

- Photocell for flame detection
- Nozzle pipe
- Safety nozzle valve
- Oil lance without nozzle (nozzle must be ordered separately)
- Valves group with safety oil valves
- Oil capacity regulator controlled by air servomotor linkage (version /M – mechanical cam)
- Maximum oil pressure switch on the return circuit
- Pressure gauge on delivery and return circuit
- Maximum gas pressure switch
- Butterfly gas valve controlled by air servomotor linkage (version /M – mechanical cam)
- Gas/oil servomotor managed by microprocessor (version /E – electronic cam) for butterfly gas valve / oil capacity regulator control
- Gas pressure test point to the combustion head.

**Conforming to:**

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23/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.

**Available accessories to be ordered separately:**

- flexible tubes
- return nozzles
- high pressure oil filter
- circulation group (by-pass valve)
- check valve
- potentiometer kit for the servomotor.





**RIELLO** s.p.A.

Via Ing. Pilade Riello, 5  
37045 Legnago (VR) Italy

Tel. +39.0442.630111 - Fax +39.0442.21980

[www.rielloburners.com](http://www.rielloburners.com) - [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.



Riello Burners is a brand of Riello Group.