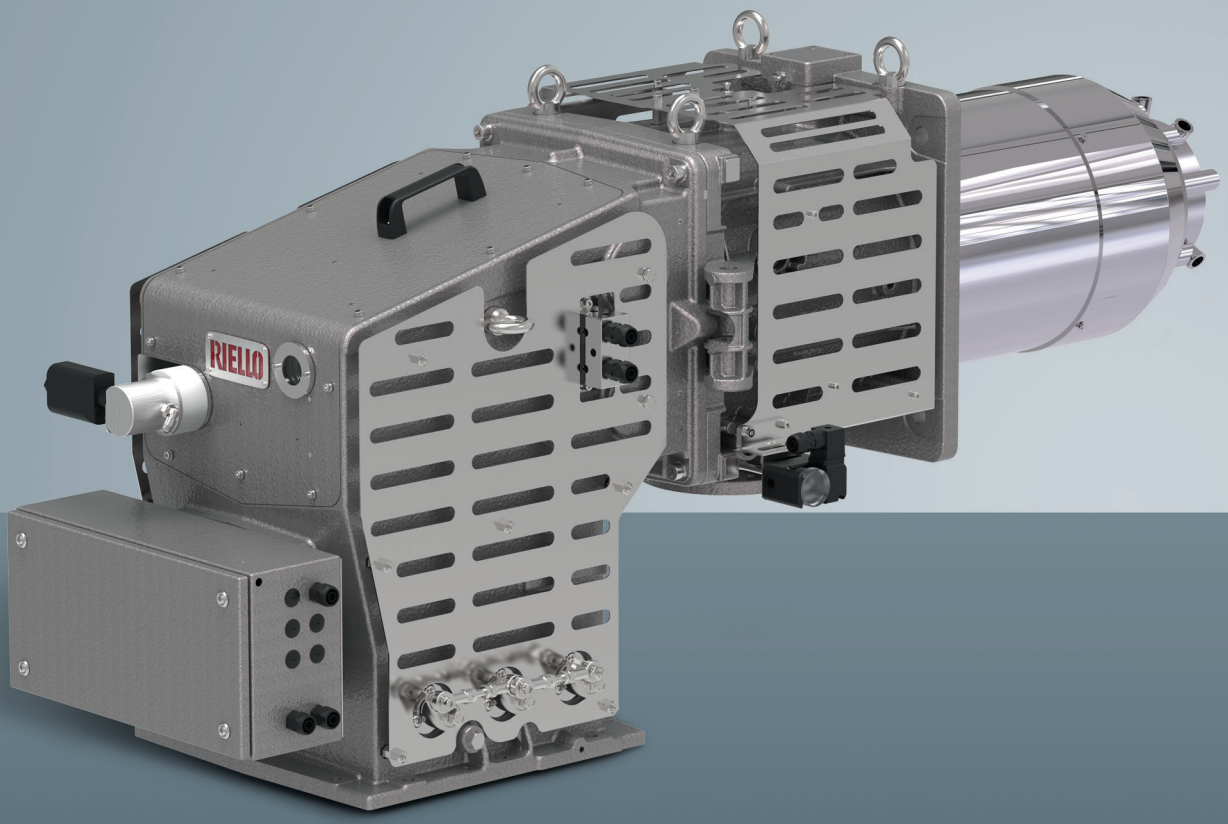
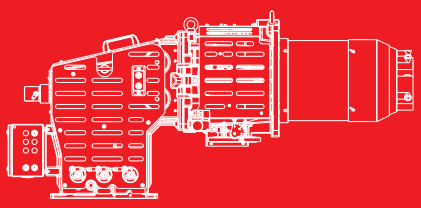
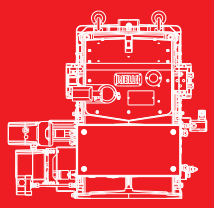


DB SE FGR T200 Series

Industrial Dual Block Gas Burners FGR Ready

DB 2 SE FGR T200	570	÷	2400	kW
DB 3 SE FGR T200	800	÷	3800	kW
DB 4 SE FGR T200	1000	÷	5000	kW
DB 6 SE FGR T200	1400	÷	7800	kW





RIELLO
Energy For Life

Overview

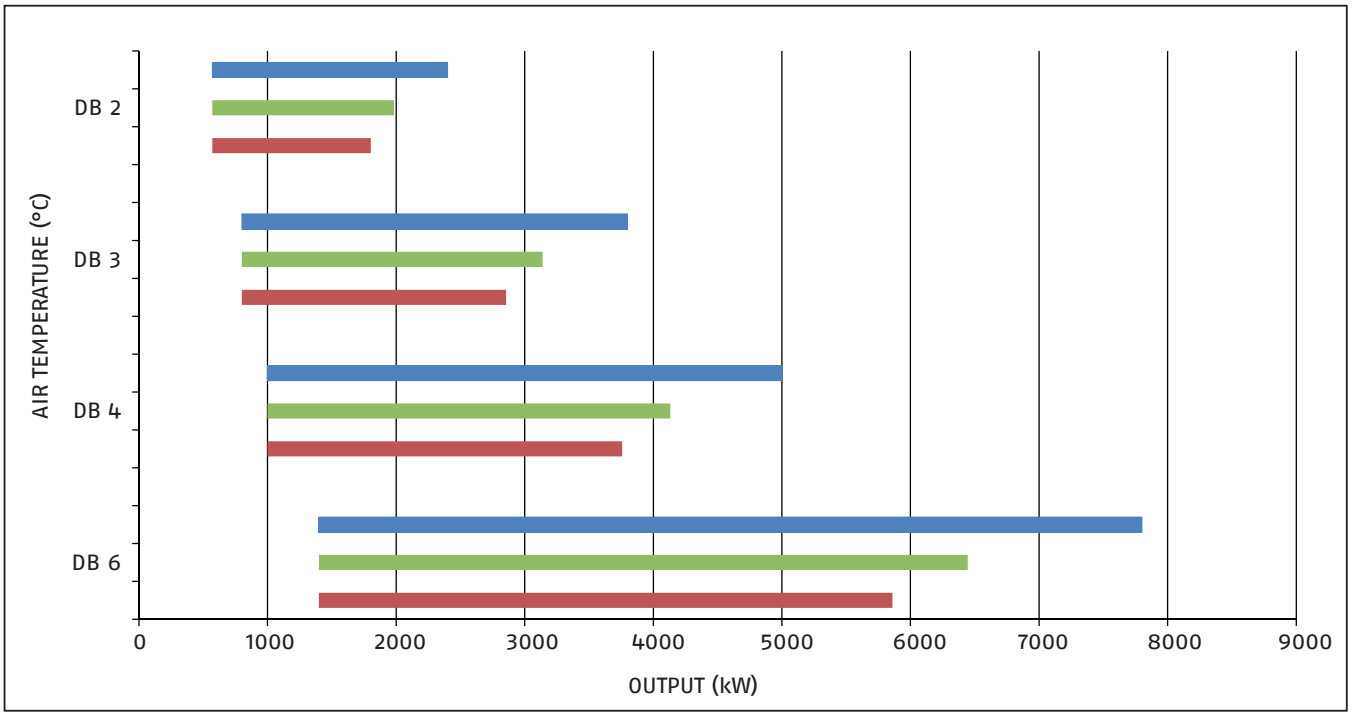
The new DB SE T200 FGR burners platform represents the evolution in Riello Burners industrial product range. They are dual block burners for applications in big heating plants (i.e. hospitals) as well as in food, chemicals, textile industry for matching with hot water boilers, steam and thermal oil generators.
These burners are supplied with electronic air-fuel ratio control in order to obtain a perfect output control and to assure a correct low polluting combustion and a safe operation on all modulation range.
The new DB SE T200 FGR series can work with pre-heated air up to 200°C. The low-NOx combustion head with direct ignition allows to reach, on natural gas operations, NOx emissions ≤ 80 mg/kWh without FGR use and ≤ 30 mg/kWh with FGR use (≤ 50 mg/kWh with 10% FGR).
As part of the offer, various accessories (air fan, control panel, FGR valve with servomotor, FGR temperature probe, high pressure gas train, etc.) are available.

Technical Data

MODEL			DB 2	DB 3	DB 4	DB 6
Burner operation mode			Modulating			
Modulation ratio at maximum output	Natural gas		1:5	1:5	1:5	1:5
Servomotor	Type		SQM 45 / SQM 48			
Heat output	Natural gas	kW	570÷2400	800÷3800	1000÷5000	1400÷7800
Working temperature	Min./Max.	°C	-15÷50			
FUEL/AIR DATA						
Combustion air maximum temperature		°C	200			
Net calorific value		kWh/kg	10			
Density		kg/Nm³	0.71			
Gas delivery		Nm³/h	57 - 240	80 - 380	100 - 500	140 - 780
ELECTRICAL DATA						
Electrical supply		Ph/Hz/V	1/50/230			
Control box		Type	LMV 51 - LMV 52			
Auxiliary electrical power		kW	0.44	0.5	0.5	0.5
Protection level		IP	44			
Ignition transformer		V1 - V2	230V - 2x5 kV		230V - 1x8 kV	
		I1 - I2	1.9A - 35 mA		1.5A - 30 mA	
Operation			Intermittent (at least one stop every 24 h) Continuous (at least one stop every 72 h)			
EMISSIONS						
G20	CO emission	mg/kWh	< 100			
	NOx emission	mg/kWh	≤ 80 without FGR, ≤ 50 with 10% FGR and ≤ 30 with FGR > 10% (*)			
APPROVAL						
Conforming to			2006/42/EC - 2014/35/EU - EN 676 (**) - EN 746-2 (**)			

Reference conditions: Ambient temperature 20°C - Gas temperature 15°C - Barometric pressure 1013 mbar - Altitude 0 m a.s.l.
(*) Average value measured in test rig according to EN 676
(**) Limited to the applicable parts

Firing Rates



NO FGR – Combustion Air Temperature = 50°

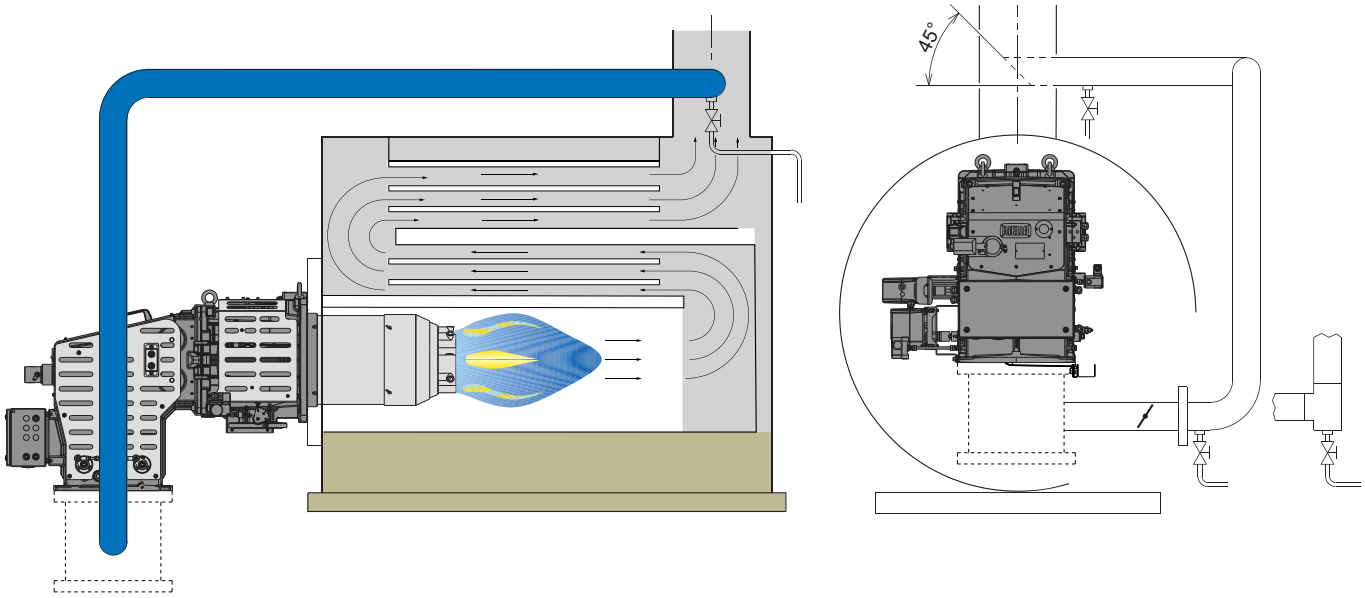
NO FGR – Combustion Air Temperature = 200°

10% FGR – Combustion Air Temperature = 200°
Exhaust Gases Temperature = 200°

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

FGR Technology

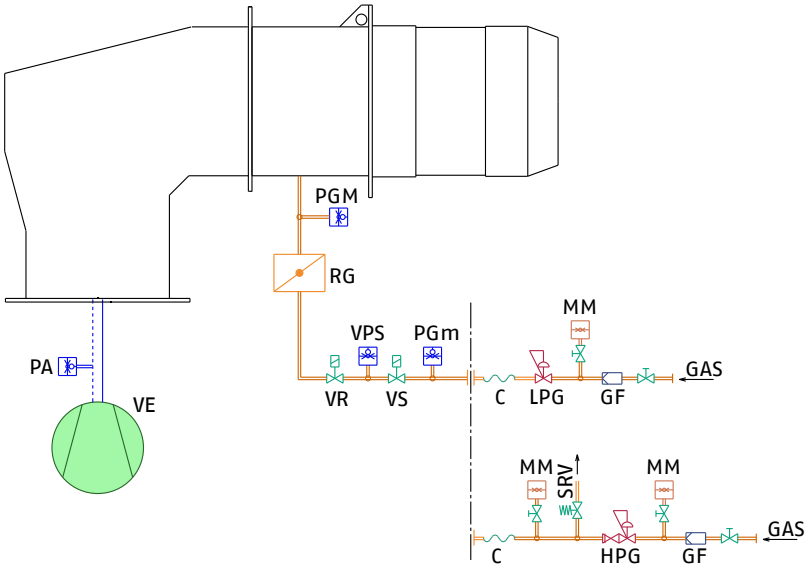
Due to the significant increase of pollutants in these last years, attention to performance, energy efficiency and emission reduction is becoming more important all around the world, in particular in all the highly industrialized countries.
In order to comply the increasing demand of very low NOx emissions, RIELLO has developed a new range of Dual Block burners equipped with advanced Low NOx combustion heads and compatible, if needed, with the FGR (Flue gas Recirculation) low emission technology, in order to comply with the most restrictive emission limits.
FGR technology is based on the recirculation of a part of the exhaust gas, which is introduced in the air inlet side of the burner; the Digital Burner Management System, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability and safety of operation.



Fuel Supply

EXAMPLE OF COMPLETE SUPPLY GAS LINE

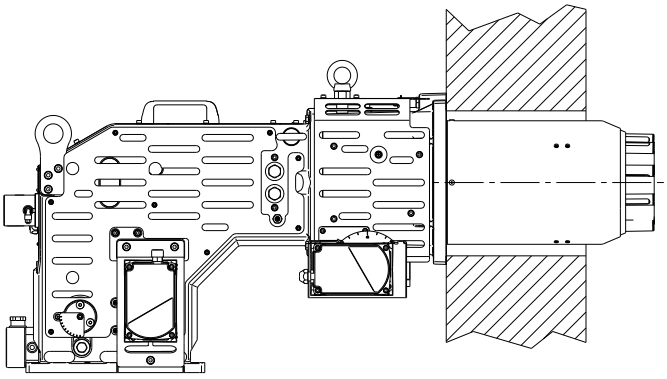
The DB burners series are fitted with a butterfly valve to regulate the fuel, controlled by a variable profile cam servomotor which guarantees, through the association of the air and fuel regulation, high thermal efficency all over the firing rates.



GAS	Supply gas line
VE	Fan
PA	Minimum air pressure switch
PGM	Maximum gas pressure switch
RG	Butterfly valve
VR	Gas train adjusting valve
VPS	Seal control
VS	Gas train safety valve
PGm	Minimum gas pressure switch
C	Anti-vibrant joint
LPG	Low pressure regulator
MM	Pressure gauge
GF	Filter
SRV	Vent safety valve
HPG	High pressure regulator

Combustion Head

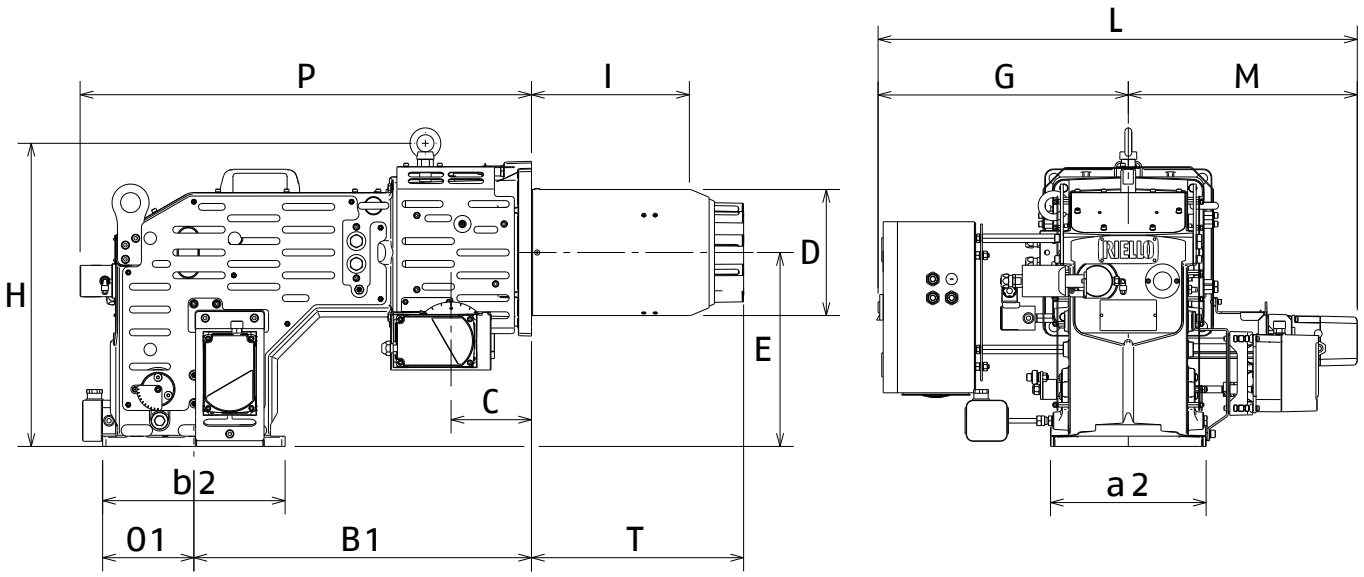
Different lengths of the combustion head can be chosen for the DB series of burners. The choice depends on the thickness of the front panel and the type of boiler.
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.



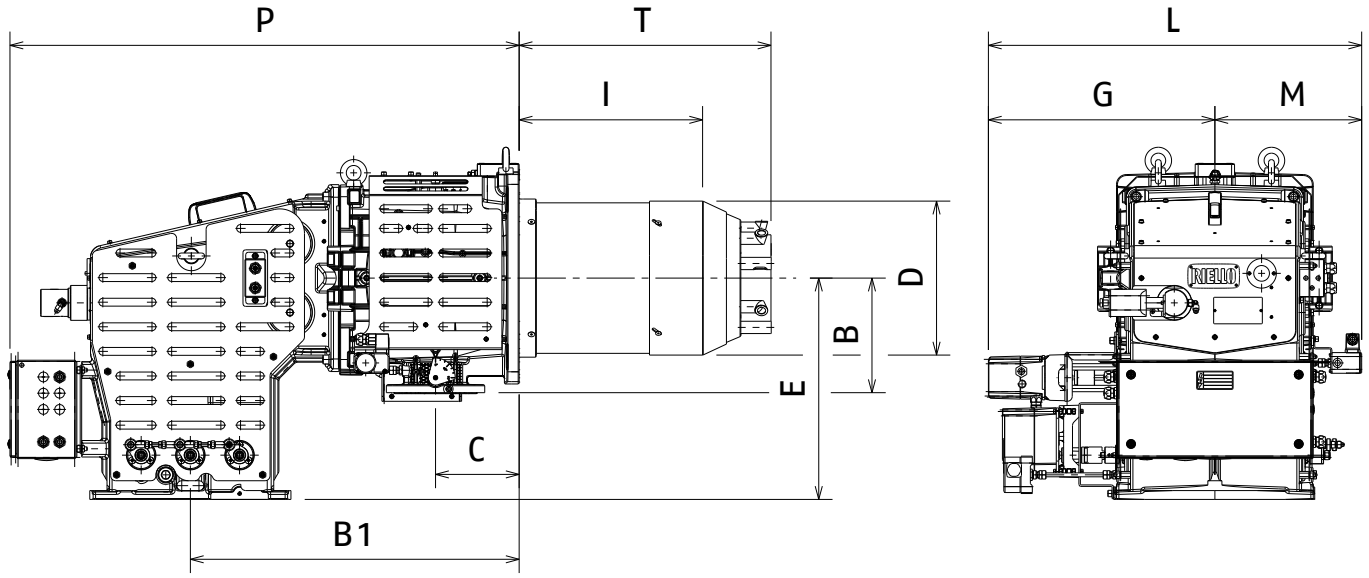
Overall Dimensions (mm)

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

BURNER – DB 2 SE FGR T200



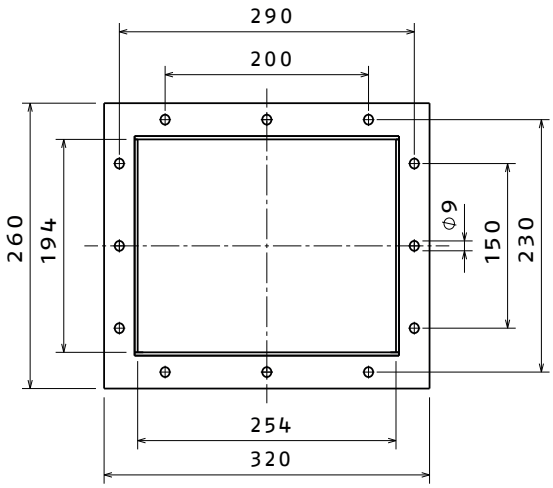
BURNER – DB 3-4-6 SE FGR T200



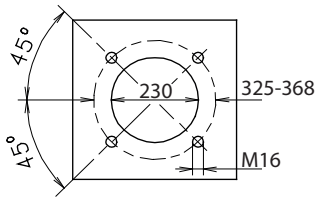
MODEL	B	B1	C	D	E	G	H	I	L	M	01	P	T	a2	b2
DB 2 SE FGR	–	592	141	221	340	439	532	277	840	401	200	792	372	260	320
DB 3 SE FGR	235	688	170	313	450	460	–	373	759	299	–	1035	512	–	–
DB 4 SE FGR	235	688	170	313	450	460	–	373	759	299	–	1035	512	–	–
DB 6 SE FGR	235	688	170	336	450	460	–	360	759	299	–	1035	512	–	–

BURNER – BOILER MOUNTING FLANGE
DB 2 SE FGR T200

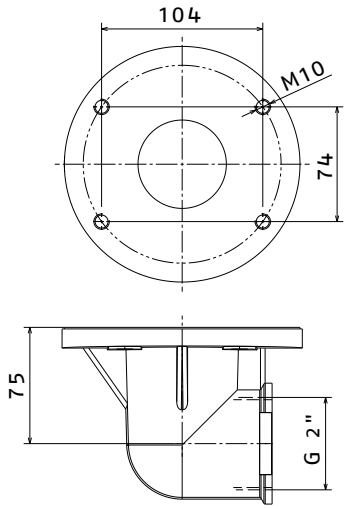
Air Duct Connection



Boiler Fixing

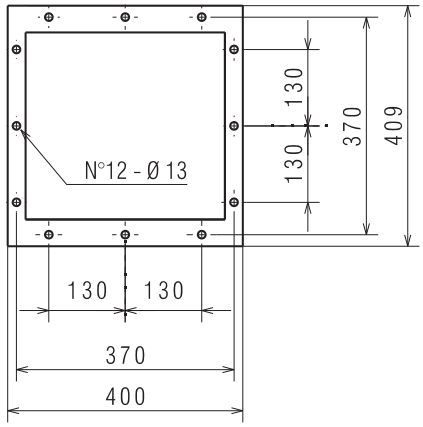


Gas Feeding

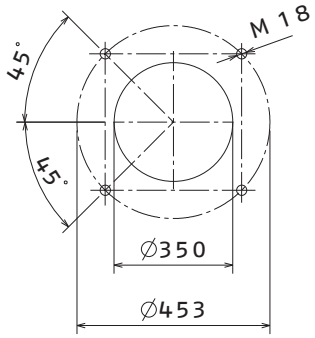


BURNER – BOILER MOUNTING FLANGE
DB 3-4-6 SE FGR T200

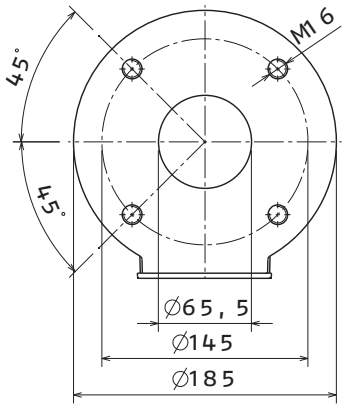
Air Duct Connection



Boiler Fixing

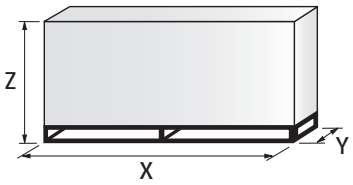


Gas Feeding



PACKAGING

Overall dimensions and weights to estimate the delivery.



MODEL	X	Y	Z	kg
DB 2 SE FGR	1700	950	830	120
DB 3 SE FGR	1930	910	970	220
DB 4 SE FGR	1930	910	970	220
DB 6 SE FGR	1930	910	970	240

Specification

DESIGNATION OF VERSIONS

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

Series:	DB			
Size:	0 - 1 - 2 - 3 - 4 - 6 - 9 - 12 - 16 - 20			
Fuel:	S	Natural Gas	NS	Heavy oil/natural gas
	L	Light oil	NAS	Heavy oil assisted atomizing/Natural gas
	N	Heavy oil	LS	Light oil/Natural gas
	NA	Heavy oil assisted atomizing	LP	Light oil/LPG
	P	LPG	NAP	Heavy oil assisted atomizing/LPG
Operation:	/E	electronic cam		
	/M	mechanic cam		
	/EV	Electronic cam and variable speed (with inverter)		
Emission:	C01	= Class 1 gas (EN 676)		
	C02	= Class 2 gas (EN 676)		
	C03	= Class 3 gas (EN 676)		
	FGR	= Induced flue gas recirculation		
Head length:	TC	standard head		
	TL	extended head		
Flame control system:	FS1	Standard/Intermittent (at least 1 stop every 24 h)		
	FS2	Continuous (1 stop every 72 h)		
Fuel supply:	FB	= from bottom		
	FR	= from right		
	FL	= from left		
Air supply:	A-0	= from bottom		
	A-90	= from right		
	A-180	= from top		
	A-270	= from left		
Air max temperature:	T150	= 150° C		
	T200	= 200° C		
	T250	= 250° C		
Auxiliary voltage:	230/50-60	230V/50-60 Hz		
	110/50-60	110V/50-60 Hz		

DB	2	S	E	FGR	TC	FS1/FS2	FR	A0	T200	230/50-60
BASIC DESIGNATION										
EXTENDED DESIGNATION										

* Estimated, emissions values, considering a hot water boiler with thermal load of 1,1 MW/m^3
Guaranteed values to be confirmed after the verification of the combustion chamber charachteristics

AVAILABLE BURNER MODELS

In the following table you can find the DB models available. Further versions are available on demand (long combustion head, gas supply from right/left, air supply from the top, specific equipment and many others).

CODE	MODEL	FUEL	HEAT OUTPUT *	
			(kW)	GAS (Nm^3/h)
20167773	DB 2 SE FGR TC FS1/FS2 FB A-0 T200 230/50 Hz	Natural gas	570-2400	240
20167775	DB 3 SE FGR TC FS1/FS2 FB A-0 T200 230/50Hz	Natural gas	800-3800	380
20167776	DB 4 SE FGR TC FS1/FS2 FB A-0 T200 230/50 Hz	Natural gas	1000-5000	500
20167778	DB 6 SE FGR TC FS1/FS2 FB A-0 T200 230/50 Hz	Natural gas	1400-7800	780

* Max capacity is referred to G20 (net calorific value 10 kWh/Nm3 - Density 0,71 kg/Nm^3) with NO FGR and combustion air temperature ≤ 50°C.

STATE OF SUPPLY

Dual block forced draught burner, modulating operation, separate supply, fully automatic, made up of:
- Air damper for air setting with air servomotor managed by microprocessor
- Variable geometry combustion head that can be set according to the required output
- Minimum air pressure switch
- Flame inspection window
- Electrical interface box with ignition transformer inside
- IP44 protection level.
- Infrared sensitive photoresistor for flame detection
- Maximum gas pressure switch
- Butterfly gas valve with servomotor managed by microprocessor
- Gas pressure test point to the combustion head.

Conforming to:
- 2014/35/EU directive (electromagnetic compatibility)
- 2006/42/EC directive (Machinery)
- EN 676 (gas burners) - Limited to the applicable parts
- EN 746-2 (Industrial thermoprocessing equipment) - Limited to the applicable parts.

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
- High voltage burner ignition
- Lifting rings.

Available accessories to be ordered separately:
- Adapter for gas train
- Flue gas recirculation butterfly valve with servomotor managed by microprocessor
- Flue gas recirculation temperature probe to prevent condensation in the burner intake
- Complete control panel for burner management and monitoring.

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

12/2019
TS0119UK00

[1]

[2]

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

[2] HEADQUARTER BURNERS DIVISION
S. PIETRO, LEGNAGO (VERONA) – ITALIA

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.

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.

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