

Low NOx one stage gas burners

GULLIVER BS



- One-stage gas burners with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

Gulliver BS series of one stage gas burners, is a complete range of Low NOx emission products, developed to respond to any request for home heating, conforming to the most severe standards regarding the reduction of polluting emissions.

This series of burners is available in four different models with an output ranging from 16 to 250 kW, divided in four different structures.

All the models use the same components designed by RIELLO for Gulliver series. The high quality level guarantees safe working. The burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.

In developing these burners, special attention was paid to reducing noise, the ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.

All the models are approved by the EN 676 European Standard and conform to European Directives, Gas Appliance, EMC, Low Voltage, Boiler Efficiency.

All Gulliver BS burners are tested before leaving the factory.

Guidelines for installation of burners in conformity to EU Regulation:

A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:

- With boilers (heater housings) already in service in the field, for replacement of identical products, in conformity to Article 1, paragraph 2, point (G) of the EU Regulation No. 813/2013;
- With boilers (heater housings) on a new installation, if they have emissions complying with the requirement of Annex II, paragraph 4 of the EU regulation No. 813/2013.

* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Note	Code
	kW	Nm³/h	Ph/V/Hz	kW			
BS1	16-52	1.6-5.2	1/230/50	0.15	CE-0085AQ0409	(1)(2)	3761158
BS2	35-92	3.5-9.1	1/230/50	0.18	CE-0085AQ0409	(1)(2)	3761258
BS2 TL	35-92	3.5-9.1	1/230/50	0.18	CE-0085AQ0409	(2)	20052601
BS3	65-197	6.5-20	1/230/50	0.35	CE-0085AQ0409	(1)(2)	3761358
BS4	110-249	11-25	1/230/50	0.53	CE-0085AQ0409	(1)(2)	3761458
BS4 TL	110-249	11-25	1/230/50	0.53	CE-0085AQ0409	(2)	20052612

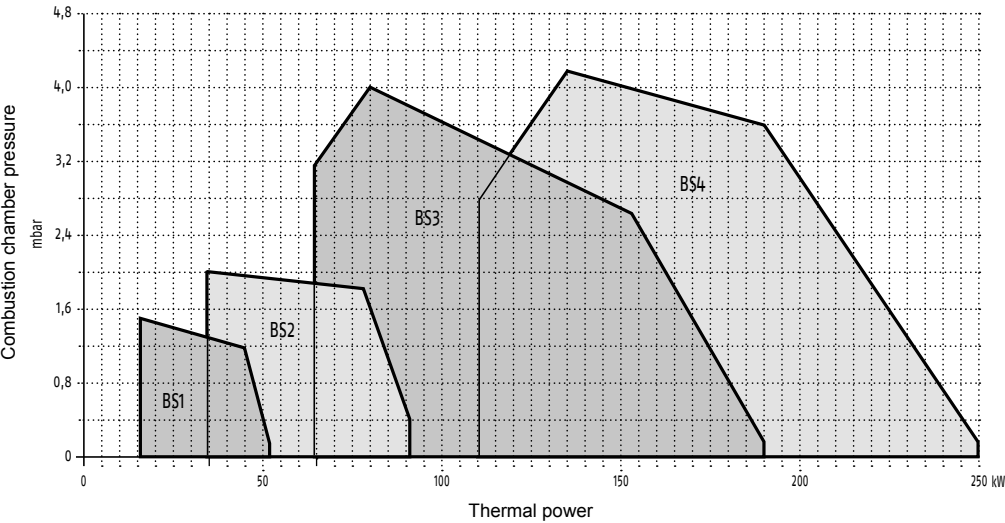
Net calorific value of natural gas (G20): 10 kWh/Nm³.

The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

(1) Order the appropriate accessory kit for extended head version.

(2) Model with plug and socket.

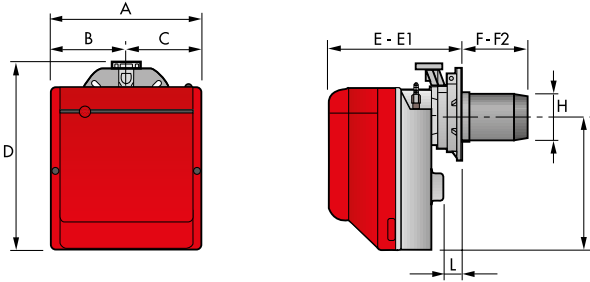
FIRING RATES



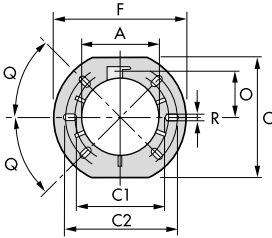
Useful firing rates for choosing the burner

Test conditions
conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

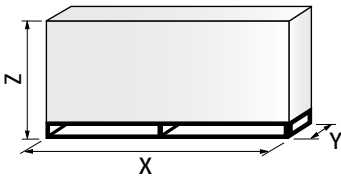
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
BS1	234	122	112	295	230	276	116	70	89	210	41
BS2	255	125.5	125.5	325	238	252	114	100	106	230	45
BS2 TL	255	125.5	125.5	325	238	252	184	170	106	230	45
BS3	300	150	150	391	262	280	128	110	129	285	45
BS3 TL	300	150	150	391	262	280	285	267	129	285	45
BS4	300	150	150	392	278	301	168	145	137	286	45
BS4 TL	300	150	150	392	278	301	325	302	137	286	45



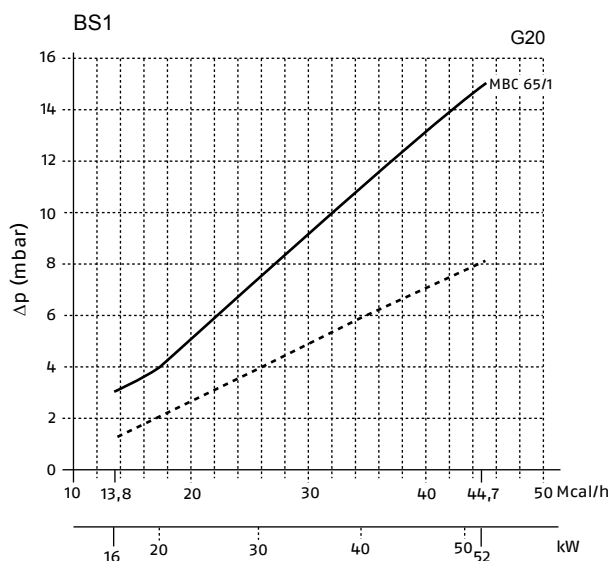
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1	89	167	140	170	192	66	45°	11
BS2 - BS2 TL	106	167	140	170	192	66	45°	11
BS3 - BS3 TL	129	201	160	190	216	76.5	45°	11
BS4 - BS4 TL	137	203	170	200	218	80.5	45°	11



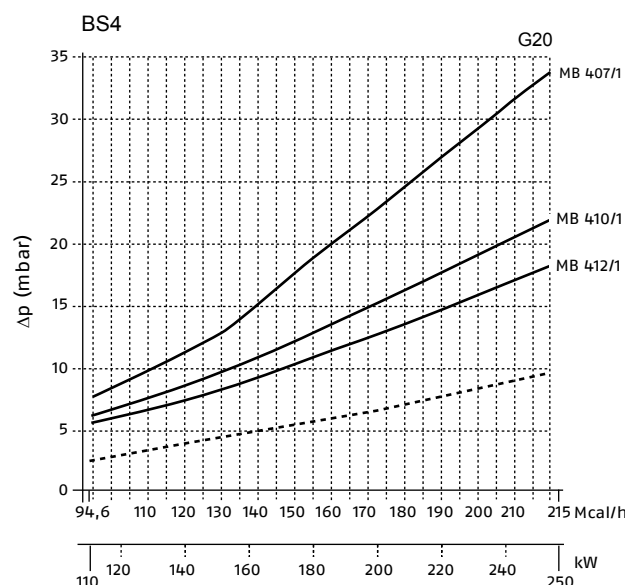
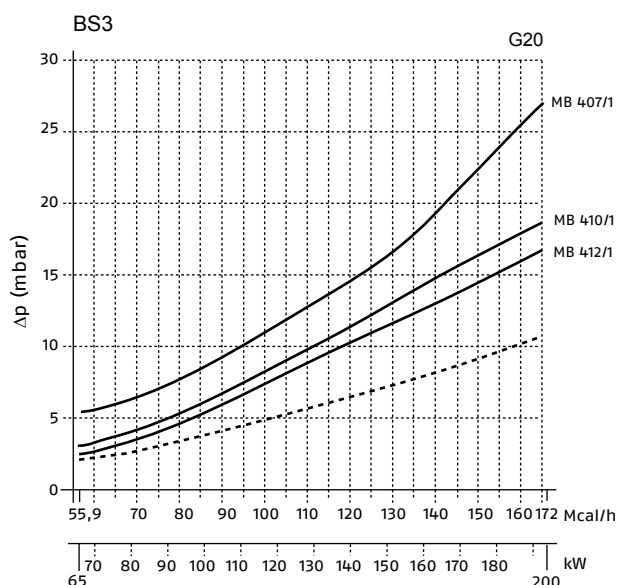
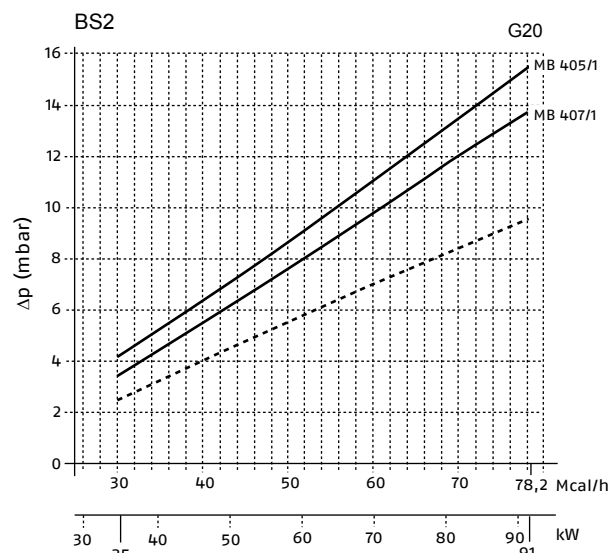
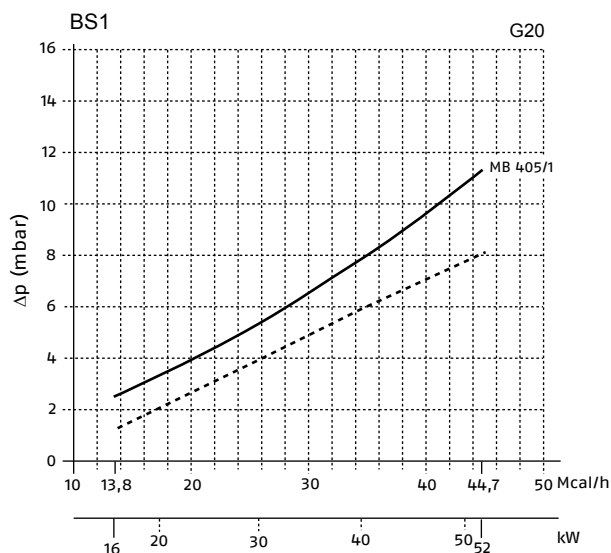
Description	X mm	Y mm	Z mm	Net weight kg
BS1	395	278	350	10
BS2	405	298	375	11
BS2 TL	583	290	370	11-13
BS3	450	345	440	15
BS3 TL	703	335	435	15-17
BS4	510	345	440	16.5
BS4 TL	703	335	435	16.5-18.5

PRESSURE LOSS DIAGRAMS

MBC SERIES GAS TRAIN



MB SERIES GAS TRAIN



Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added to this value.

— Combustion head + gas train
 - - - Combustion head

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner Natural gas/LPG
MBC SERIES ONE STAGE GAS TRAIN					
MBC 65/1-F1SD 20	3970570*	(3)	Rp ½"	(4)	BS1
MB SERIES ONE STAGE GAS TRAIN					
MB 405/1-F1SD 20	3970546*	(3)	Rp ½"	3010123	BS1
MB 405/1-F2SD 20	3970547*	(3)	Rp ¾"	3010123	BS2
MB 407/1-F2SD 20	3970544*	(3)	Rp ¾"	3010123	BS2
MB 407/1-F3SD 20	3970548*	(3)	Rp ¾"	3010123	BS3-BS4
MB 410/1-F3SD 20	3970549*	(3)	Rp 1" ¼	3010123	BS3-BS4
MB 412/1-F3SD 20	3970550*	(3)	Rp 1" ¼	3010123	BS3-BS4

(1) Please refer to "GAS TRAIN DESIGNATION".

(2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

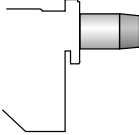
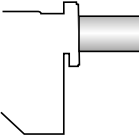
(3) With installed plug.

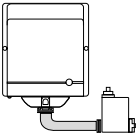
(4) Not available.

* 230V/50Hz - 220V/60Hz electrical supply.

NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	BS1	EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths. Standard head length = 70-116 mm - Extended head length = 150-160 mm		20031875
	BS2 (long)	Standard head length = 100-114 mm - Extended head length = 170-180 mm		3001007
	BS2 (extra long)	Standard head length = 100-114 mm - Extended head length = 270-280 mm		3001008
	BS3	Standard head length = 110-128 mm - Extended head length = 267-282 mm		3001009
	BS4	Standard head length = 145-168 mm - Extended head length = 302-317 mm		3001016
	BS1	ALTERNATIVE COMBUSTION HEAD KIT This kit can be used to prevent combustion instability which could arise with particular heat generators. To extend the adaptability of Gulliver BS burners to any sort of application, alternative combustion heads have been developed. These heads cause a very limited increase in NOx emissions, due to the slower air flow. Kit code for alternative combustion head.	(1)	3001059
	BS2	Kit code for alternative combustion head.	(1)	3001064
	BS3	Kit code for alternative combustion head.	(1)	3001060
	BS4	Kit code for alternative combustion head.	(1)	3001070
	BS1	LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner. Kit code for standard and extended head.		3001003
	BS1	Kit for LPG with Butane amount over 30%.	(2)	3002734
	BS2	Kit code for standard and extended head.		3001004
	BS2	Kit for LPG with Butane amount over 30%.	(2)	3002735
	BS3	Kit code for standard and extended head.		3001005
	BS3	Kit for LPG with Butane amount over 30%.	(2)	3002736
	BS4	Kit code for standard and extended head.		3001011
	BS4	Kit for LPG with Butane amount over 30%.	(2)	3002737
	BS1	TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner. Kit code for standard head only.	(2)	3002727
	BS2	Kit code for standard and extended head.	(2)	3002728
	BS3	Kit code for standard and extended head.	(2)	3002729
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault. It is supplied with burners with pin plug.		3001180

Drawing	Burner model	Specification	Note	Code
		MULTIBLOC ROTATION KIT There is a special kit available that can be used to install the burner turned 180°. This kit is designed to ensure the gas train valve properly.		
	BS1	Kit code for multibloc rotation kit.		3001179
	BS2	Kit code for multibloc rotation kit.		3001177
	BS3-BS4	Kit code for multibloc rotation kit.		3001178
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		3000945

(1) CE approval on field is required.
(2) Without CE certification.

STATE OF SUPPLY

- Monoblock, gas burners, completely automatic, one stage operation, made up of:
- Fan with forward curve blades
 - Cover lined with sound-proofing material
 - Air damper, completely closed in stand by, with external adjustment, with no need to remove the cover
 - Single phase electric motor 230 V, 50 Hz
 - Combustion head fitted with:
 - stainless steel head cone, resistant to high temperatures
 - ignition electrodes
 - ionisation probe
 - gas distributor
 - flame stability disk
 - Flame inspection window
 - Adjustable air pressure switch, with graduated selector, to guarantee burner lock out in the case of insufficient combustible air
 - Microprocessor-based burner safety control box, with diagnostic and remote reset functions
 - Protection filter against radio interference (included into burner safety control box)
 - IP X0D (IP 40) electric protection level.

STANDARD EQUIPMENT

- 1 gas train flange
- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 3 plugs for electrical connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue